

TRANSFORMATIVE LEARNING IN SCULPTURE CLASS:
EXPLORING NEW IDENTITIES AS ARTISTS, APPROACHES TO ARTMAKING,
AND UNDERSTANDINGS OF ART

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ABSTRACT

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Transformative Learning seeks to encourage learners to critically reflect on their assumptions and preconceptions, thereby transforming their existing frameworks and perspectives. This qualitative study investigates what Transformative Learning looks like in a diverse group of adult learners at a graduate school of education who attended sculpture classes intentionally designed to enable such change. When Transformative Learning is part of the teacher's intention, how, if at all, does learning through artmaking in mixed media sculpture classes transform these adults with regard to their understanding of their identities as artists and learners ("Who am I?"), their approaches to artmaking ("How do I make art?"), and their understanding of art ("What is art?")?

Furthermore, the study seeks to understand what aspects of their class experiences contributed to these transformations.

The study examines the studio creations and artmaking processes of five adults from diverse backgrounds and experiences and analyzes what they reported about their artmaking experiences.

Data gathered from semi-structured interviews, retrospective surveys, and class artifacts are organized and analyzed based on three stages of the Transformative Learning cycle—Stability, Reflection, and Transformation. The five participants' three stages are then discussed according to the participants' perceptions of their identities as artists, their understanding of art, and their approaches to artmaking, based on the research questions.

The findings of the study suggest that the participants experienced heightened levels of Transformative Learning in individualized ways. Data indicate that specific class activities—a gallery trip, in-class artmaking sessions with material and time constraints, and an artist statement exercise—contributed to participants' transformations over the course of the semester. Once the semester ended, some participants took further actions based on their changed perspectives of artist identities, understanding of art, and approaches to artmaking, which indicates that dramatic shifts and multiple perspectives can be achieved in an art class designed to teach for Transformative Learning.

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DEDICATION

To Juwon (Daniel), my son

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S.K.

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I – INTRODUCTION

Personal Experience of Transformation

The idea for this study, which investigates how adults experience Transformative Learning through making and responding to artworks in an art class, emerged from two significant events I experienced as an artist and educator.

The first relates to my educational background and experience studying and practicing art from high school to the present. Born and raised in Seoul, South Korea, I was educated in an atmosphere that heavily emphasized traditional academics. Having liberal-minded parents, I was always able to pursue what I wanted, which was to become an artist and teacher and to be surrounded by art, despite the challenges this might create for my future career and financial security. After several years of basic art training in drawing and painting, I studied painting and sculpture at a specialized arts high school in Seoul. Then, I attended the School of Visual Arts in New York City for my undergraduate and graduate study in Fine Arts.

One particular moment that influenced my idea for this dissertation happened when I was organizing the visual documentation (including photographs and videos) of my entire portfolio spanning kindergarten to graduate school. I realized that my artwork has evolved over time but has consistently revolved around a similar theme—the use of recycled materials—which was initially inspired by one of my mentors during my first year of college. My preconception of what art was changed drastically after taking a

foundation sculpture class, which encouraged students to complete a total of five art projects that addressed particular themes. For the first project, I worked hard to incorporate a lot of labor-intensive processes, such as woodcarving and plaster casting, to create a large-scale, self-portrait sculpture. However, one of my classmates, during group critique for the assignment, presented a very simple artwork. It was made of a few small plaster casts of everyday objects situated at random corners of the school buildings. He described his artwork as the act of his classmates searching for his art pieces and bringing them back to the classroom to construct an entirely new sculpture. I was shocked at the fact that something like that could be a work of art. It was hard for me to describe the work—was it a sculpture? Performance? Installation? Conceptual art? I remember my teacher being very sincere with my classmates and me and giving constructive feedback on our work. Additionally, throughout the course, my mentor provided a rich source of information on contemporary art via slides, documentaries, and assigned readings.

Reflecting back, my initial style of working in the class might have been influenced by my technique-based art education during high school in South Korea, where labor-intensive works representing various styles and techniques received a lot of positive attention. Prior to the sculpture class, I had a narrow and particular set of visual and conceptual frameworks that shaped my understanding of art. But during the course, within the five assigned art projects, I had complete freedom to “play” and experiment with unlimited materials. Sometimes, I spent the entire day working in the studio without noticing the passage of time. This experience made me feel truly alive and, as I

discovered later, aligned with the concept of “flow” as described by Csikszentmihalyi (1997). By the end of the sculpture course, I felt like I had gained a new understanding of and appreciation for what art is.

In a sense, I saw my own preconceptions of art and artmaking transform over time (Mezirow, 1997), which opened up new and revised perspectives that I later brought to my work as an MFA student and that I now bring to my encounters with various art works at schools, galleries, and museums. Additionally, my personal art practice, which involves objects made from unconventional art mediums (such as bubble wrap, dry cleaning plastics, abandoned laundry, and other found objects), often shown in unexpected places (for example, laundromats), also triggered my interest in students who might have a somewhat limited understanding of art and artmaking processes (similar to my case).

The second significant event—a series of observations—occurred over the many years that I have been teaching sculpture to art majors and non-majors in various educational settings, where I have frequently recognized that learning and artmaking paths vary widely regardless of students’ prior experiences or training in artmaking. I observed that some students often become frustrated and confused when they were asked to create an open-ended project as opposed to a structured project. In contrast, other students seemed to be free to just play and jump into a “let’s have fun” mentality, which ultimately helped them to experiment with various materials without worrying too much. These students didn’t seem to be afraid to experiment with materials and tools, even when they did not have previous experience with them.

Although this openness to freedom and experimentation is not characteristic of all students, I was intrigued by how many were able to both discover a new relationship to themselves as artists and learners as well as enact individualized artmaking approaches. In other words, some students seemed to find opportunities to re-think their ideas about art and themselves as artists through the course of the class. For instance, some students brought narrow definitions of art, artmaking, and themselves as learners and artists. In the beginning of the class, they would often only value certain forms, shapes, and concepts as artworks. Other students initially adopted an “I’m not an artist” mentality, and thus sought clear guidelines with regard to choosing materials and techniques for their projects. These students seemed fine when they were taught specific techniques—such as molding, casting, carving, using woodshop tools, or welding. They were able to learn technical skills and use them in objects they created in class. However, open-ended projects initially seemed to confuse them. They would frequently ask me questions like “Should I color? Should I carve? Is this finished?” The course activities, over time, challenged their assumptions about artmaking in ways that result in expanded ideas about what art is and who they are as artists. Other students, despite participating in the same class, failed to gain a clear understanding of the kinds of artistic autonomy that artmaking invites, and had a hard time engaging in class critiques and obtaining a sense of achievement through their artmaking.

I realized that some students found themselves as artists through the journey of discovering their own materials and working methods as time went by in the course. I also noticed that artmaking was not always confined to the class parameters but in some cases expanded into students’ personal and professional lives. For instance, in one of my

classes a student shared her experience of how she now looked at everyday objects as possible art materials. In class, this student had collected and compiled twenty different kinds of bread to create her final sculpture. Now, when she went to the grocery store, she saw everyday items with a different set of eyes—she saw some food items as possible art materials and started to pay attention to their shapes, textures, and colors. This did not happen prior to her class experiences with artmaking.

Confronted with students' mixed outcomes, as a teacher, I was eager to find out which dimensions of artmaking in an art class helped some students change their assumptions about art, artmaking, and themselves, and how they came to value the overall process. Reflecting on my observations inspired me to investigate how and which aspects of artmaking, and teaching, helps adults to be “transformed” over the course of time. I wondered about the relationship between artmaking in art class and the Transformative Learning framework.

Background to the Problem

Benefits and Significance of Transformative Learning

“Change,” or “transformation,” in students is an important and valuable element in learning environments in a general sense. Yet it can be difficult to grasp the particular dimensions and impact of such transformation. Jack Mezirow (2000), a scholar and educator in the field of adult learning & leadership, asserts that learning involves the process of using prior knowledge to understand and construct a new and revised

interpretation of the meaning of one's knowledge, as well as using the experience to move forward to future action (p. 5). Mezirow's Transformative Learning theory is rooted in adult learning stages and explains that students may experience Transformative Learning by critically reflecting on and revising existing structured assumptions based on personal experiences, thereby gaining a newfound meaning perspective (Mezirow, 1991). The theory encourages learners to revise their assumptions and preconceptions in order to transform their existing frameworks. Ultimately, Transformative Learning leads students to take further actions based on these changed perspectives and to thereby construct new relationships with the world in which they live as well as with themselves. As Cranton (1994) argues, one of the benefits of Transformative Learning is that it helps people become more "inclusive, discriminating, open, reflective, and emotionally able to change" (p. 36). In addition, Transformative Learning encourages problem solving through the act of redefining or reframing the problem through newfound perspectives. Often, such transformation happens in four ways: "elaborating existing frames of reference, learning new frames of reference, transforming one's points of view, transforming habits of mind" (Mezirow, 2000, p. 50). These four types of transformation can occur along a spectrum, ranging from very dramatic and intense changes to quiet, subtle changes.

There is extensive research investigating the use and benefits of Transformative Learning in academics. Many scholars and practitioners argue for the importance and benefits of Transformative Learning across a wide range of fields, including: (1) medical/dental and nursing education (Brooks et al., 2018; Cavanagh et al., 2019; Greenhill et al., 2018; Khoo & Teo, 2018; McDonald et al., 2018), (2) teacher education

(Addleman et al., 2014; Brooks & Adams, 2015; Caruana et al., 2015; Clifford & Montgomery, 2014; Forte & Blouin, 2016; Kim et al., 2018; Liu, 2013; Meijer et al., 2016; Munger et al., 2018; Steyn, 2017), (3) environmental management, literacy and language arts (Giles & Alderson, 2008; Tisdell, 2008; Wright et al., 2010), (4) spirituality and mindfulness practices (Bhattacharyya, 2016; Klobučar, 2015; Moyer & Sinclair, 2016; Tolliver, 2016), (5) agriculture and human values (Duveskog, Friis & Taylor, 2011; Kerton & Sinclair, 2010; Moore & Samuel, 2015; Tarnoczi, 2011), (6) theological education (Emslie, 2016; Fleischer, 2006; Nichols & Dewerse, 2010), (7) public relations and conflict resolutions (Benoit et al., 2017; Hobbs, 2014; Motion & Lois, 2014), (8) adult learning and leadership (Nicolaidis & McCallum, 2013; Panton, 2016; Sammut, 2014; Wilhelmson et al., 2015), and (9) continuing education and professional development, as well as general work. Examples of the benefits of Transformative Learning found in these studies include learners' enhanced openness and flexibility, increased empathy and willingness to take risks, greater appreciation of alternative perspectives for approaching problems, improved self-discovery and ability to honor multiple viewpoints, deeper and active engagement in learning, and greater autonomy in adulthood.

For instance, in a qualitative study of fourteen pre-service teachers' descriptions of technology integration in teaching reading, comprehension, and writing using tutorials, Juarez (2014) found that the teachers underwent perspective shifts as part of the Transformative Learning process and revised their assumptions and resistance to technology. Juarez asserts that Transformative Learning fostered positive shifts in the teachers' processing of innovative technology and literacy instruction, thereby increasing

their ability to help their own students learn using technology and reach their full potential. In the field of medical education, Khoo & Teo (2018) and Brooks, Magee, & Ryan (2018) found that Transformative Learning was effective in fostering medical students and professionals' commitment to redressing health disparities. Similarly, Schalkwyk et al. (2019) discovered that Transformative Learning helped health professionals to become active participants in providing care during their training. In the nursing education, researchers have reported that Transformative Learning allowed nurse educators to empower students to challenge their preconceived beliefs and values, thereby socializing them effectively to thrive in their clinical practices (Fletcher & Meyer, 2016; Kear, 2013; Parker & Myrick, 2010).

While Transformative Learning has been studied in many other fields, there is a lack of research on it in the field of arts education. More specifically, there are very few empirical studies investigating the nature and use of Transformative Learning in the arts.

Benefits and Significance of Arts Experiences

Consensus in the field of education suggests that the arts have a significant role to play in refining our sensory system through sound, sight, taste, and touch, and in fostering our imaginative capabilities, which in turn enable us to have fulfilling, humanistic, and constructive experiences (Eisner, 2002; Greene, 1995). Seeing through art enables a person to interpret everyday life experiences and objects in different ways while “transforming one’s consciousness” (Eisner, 2002, p. 11).

American organizational theorist Russell Lincoln Ackoff emphasized the importance and role of the arts in fostering human creativity and development. He wrote: “Art inspires and produces an unwillingness to settle for what we have and a desire for something better. It is the product and producer of creative activity, change; it is essential for continuous development” (Ackoff, 1998, p. 26). Ackoff and others have written that art not only refines our sensory experiences but also broadens our imaginative and creative capacities (Dewey, 1934; Eisner, 2002; Greene, 1995; Mezirow, 2000; Siegesmund, 1998).

When learning through artmaking, we perceive and experience a wide range of sensory experiences that help us recognize “what is in front of our very eyes, but recalling other images, provoking memories,” while selecting materials, iterating, experimenting, and discussing works in the artmaking process (Wolf, 1988, p. 146). Hafeli (2014) claims that one is able to “express ideas, feelings, and states of being” through making artworks (p. 233). Likewise, Burton (2016) argues that art practice offers students “an important voice through which to communicate their personal perspectives and concerns” (p. 939). Further, she argues that students are much more equipped to experience and contextualize when learning through various forms of artmaking (e.g. painting, drawing, new media). In such processes, students not only learn about the visual and tactile qualities and forms of the world, but also reflect and critically question “why things are the way they are and how they might be otherwise” (p. 939). This kind of “openness” has long been championed by Maxine Greene (1995, 2001), who devoted much attention to understanding the uniqueness of artistic creation. In her view, artistic creation is a result of imagination and “wide awakeness” to the world and others in order

to view the world from multiple perspectives. For Greene, art provides an instrument for meaning-making and for appreciating the ways that various people make sense of the world. In a sense, art works enable one to shift the locus of one's attention from a two-dimensional pictorial space to one's own conscious mind, and in that moment, one is invited in to be "awakened" in "multiply-perceived" dialogues (p. 150). According to Burton's (2016) and Greene's (2005) ideas about the purposes of art, we can explore the world deeply through the appreciation and creation of art, while at the same time opening ourselves up to meaningful cultural and educational experiences.

Thinking about the benefits of learning through art, Siegesmund (1998) asserts that art education can help students "learn to reason through perception" (p. 209). For our current society, where art education is somewhat marginalized, he suggests that we think about the value of learning through art and artmaking as follows:

To expand empirical knowledge to include art, and moving art into the mainstream of disciplined inquiry, may require art to move down from its pedestal...It is, however, a realm of feeling, sensory concepts, and exquisitely varied forms of human representation that give us insight into what it means to be in, relate to, and comprehend. Or, even more succinctly, to have knowledge of the world. (p. 212)

Transformative Learning and Art Education

Scholars and educators in adult education and other non-arts academic disciplines see potential in using arts-based activities to foster learners' Transformative Learning experiences (Cranton, 2016; Dirkx, 2001; Lawrence, 2012; Yorks & Kasl, 2006). According to Merriam (2004, p. 95), multidimensional learning—such as emotive,

sensory, and kinesthetic experiences—within arts-based activities may foster Transformative Learning. For example, Cranton (2016) acknowledges that various arts-based activities such as fiction, music, and visual art could aid learners' Transformative Learning from an imaginative and intuitive perspective (p. 118). In her earlier writing, Cranton (1994) argues that some arts-based activities could shape the learning process to become more “creative, innovative, and outside the cognitive realm,” and ultimately contends that this can be effective when fostering Transformative Learning (p. 153). Based on her observations over time, arts-based projects and activities enable Transformative Learning (p. 153).

Accordingly, some studies have shown how various arts-based activities and instruction empower adult learning. For instance, Simpson (2007) reports that some arts-based activities such as journal writing, collage making, performing, and poetry helped adults overcome intense emotional difficulties and experience Transformative Learning. Similarly, Lawrence (2012) argues that the arts have the power to transform individual worldviews to be more open and diverse, and that when experienced collectively they can potentially transform whole communities (p. 471). In a study by Lawton and La Porte (2013), a community of adults over the age of 50 who participated in community-based art education programs underwent Transformative Learning experiences by engaging in arts activities including storytelling, social interaction around art (including discussion), and collaborative artmaking. The study's arts-based activities enabled the adult participants, with their wealth of knowledge and unique perspectives, to integrate themselves within their community (p. 318). Another study (Wallace, 2008) also looked at the Transformative Learning process of adults in their mid-life. In this study, the

researcher analyzed portraits made by mid-life adults as well as field notes, transcribed audio/video recordings, and interviews, and discovered that some participants experienced Transformative Learning through perspective transformations.

In line with arts-based activities and Transformative Learning, several studies in pre-service teacher education have revealed the benefits of Transformative Learning. For instance, Bhukhanwala, Dean & Troyer (2016) found that thirty-four pre-service teachers were able to construct newfound ways of thinking and process the dilemmas of their student teaching practicum through arts-based student teaching seminar sessions. During this qualitative study, the student teachers took photographs, wrote journal reflections, and made artworks. Focus group interviews were analyzed in order to discover the importance and possibilities of arts-based activities in teacher education contexts. Similarly, Snepvangers & Bannon (2016) investigated the engagement of pre-service art and design educators in Transformative Learning through art and design curriculum and field-based experiences. They discovered that Transformative Learning helped participants reveal assumptions and perceptions about learning, thereby promoting teachers' evaluative and reflective practices. Snepvangers & Bannon argue that Transformative Learning can also help "deepen understanding of personal teaching practices and inform tertiary teacher education" (p. 38).

Researchers have also found connections between Transformative Learning and arts-based activities in the context of professional development for experienced teachers and teacher educators. For instance, Cain and Dixon (2013) conducted a study of teachers who participated in four-week long artist residencies, to explore Transformative Learning through various arts activities including puppetry, creative drama, music, and

movement. In this study, the researchers used both pre and post surveys to gain insights about participants' initial and later beliefs about their instructional styles. These data showed that some participants' perspectives about highly valued teaching strategies for working with children shifted from more "direct instruction" approaches to more "facilitation approaches." Although this shift did not occur for all participants, the researchers argue for the potential of arts activities for teacher professional development in that some participants were able to examine their attitudes, feelings, and beliefs as part of the change that occurred through engaging in the activities. Similarly, Mantas and Schwind (2014) found that an art-based inquiry process involving cocreative writing enhanced the Transformative Learning of two participants, a nurse educator and a preservice teacher educator. The study used critical reflective dialogue as a method to discover the relationship between the process of collaborative artmaking and Transformative Learning, which ultimately deepened participants' understanding of teaching and learning. Further, the authors argue how cocreative artmaking can invite critical reflective dialogue, build trusting relationships of coinquiry, and actively engage learners' imagination (p. 89).

With regard to the relationship between Transformative Learning and people's attitudes towards and understanding of art, Nangah (2015) studied how the disruption of discourse about African art influenced university students' perceptions of African aesthetics. The author studied a group of students in two sites—the Dallas-Fort Worth Art Museum and an Honors Art Appreciation course—and discovered that learning grounded in Transformative Learning theory disrupted students' perceptions of African art as the discourse of the "other," thereby developing students' understandings of "the multiple

realities of Africa's art histories" (p. 291). In a related investigation, Halpin-Healy (2015) examined the role that dialogic interpretation of art and expressive artmaking played in Transformative Learning within the Arts & Minds programs at the Studio Museum in Harlem. Specifically, the study looked at people with dementia (PWD) and their caregivers to unpack potentials of multicultural dialogues for influencing participants' cognitive and emotional levels in the museum space.

Additional studies have documented the roles of specific artmaking processes in Transformative Learning. Desyllas & Sinclair (2013), for example, used zine-making as a pedagogical tool for Transformative Learning in social work education. They discovered that using zines for creative expression helped students gain greater self-awareness and broader understanding of power hierarchies, which in turn could promote personal and societal transformation. In terms of different forms of arts-based learning, Hunt (2013) conducted a longitudinal qualitative study of students enrolled in a graduate-level creative writing program. In this study, the tutor team and instructors inserted various creative writing exercises into four creative writing courses geared towards personal development, self-reflection, identity, and imagination (pp. 6-7). Hunt (2013) found that creative writing through Transformative Learning promoted "greater openness and ability to 'think freely'" in students' writing processes (p. 15). In particular, one of the benefits of Transformative Learning was that it helped students to open up emotionally, discover a sense of self, and build trust within the collaborative environment and community.

In music education, Qi & Kari (2016) conducted five case studies in Brazil to explore aspects of Transformative Learning theory through music-making. The authors revealed that “meaningful, emancipatory, and affirming” music-making in five sites fostered Transformative Learning, as seen in the shift of learners’ perspectives to adopt “a more inclusive worldview” (p. 117). In line with inclusiveness and openness as one of the benefits of Transformative Learning, Lee (2013) investigated how transformative art education pedagogy could facilitate a positive and open attitude shift for educators in a semester-long social justice art education studio course. Lee found that learning through art promoted a perspective shift among preservice and practicing teachers, indicated in their improved racial attitude scores at the end of the course and evidenced by their written reflections, interview responses, and art pieces (p. 156). The study suggests that a Transformative Learning model helped reveal and revise educators’ worldviews, which helped them understand their students’ various perspectives. In line with increased awareness of others’ worldviews and respect, Bang (2016) argues how arts-based approaches and aesthetic education can facilitate transformative learning and promote “more constructive engagement with conflict” (p. 355). In his literature review and personal reflections, the author highlights “the restorative and transformative power of the arts” to foster new and open perspectives and cooperative relationships. Lastly, there is one empirical study in art education that investigates Transformative Learning through painting (James, 2007). James suggests in his doctoral dissertation that painting courses that are based in working from observation can ultimately support critical reflection and adult transformation in significant ways, regardless of prior artistic experiences. The author examined the artistic production of fifteen adults in painting classes at a graduate

school of education and found that at least five participants showed profound evidence of Transformative Learning in their paintings and writings, as well as in their attempts to develop and transform their personal identities, beliefs, and perceptions in creative ways.

Although the various studies cited above contain arts-based approaches, I argue that we cannot fully understand the dimensions of Transformative Learning in the arts from this research and therefore seek to shed greater light on its benefits and importance for the following reasons:

- Much past research on Transformative Learning in the arts includes various arts-based approaches employed in relatively short-term activities that occurred in workshops, professional development sessions, and programs in museums. These studies do not address long-term arts experiences in a college-level art class.
- Some of these studies involved looking at art and one or just a few artmaking activities in non-art or art settings and did not focus exclusively on making art in the context of a sculpture class.
- None of the research mentioned used a curriculum specifically designed to encourage Transformative Learning in an art class context.

The design of my dissertation study addresses all of these issues, thereby expanding the empirical knowledge base of Transformative Learning involving the visual arts.

From the Pilot Study to Current Study

A lack of research investigating the connection between artmaking in graduate sculpture classes and students' Transformative Learning Experiences may suggest the limited benefits of artmaking, specifically for graduate students with various backgrounds, which is a common situation in art classes in higher education. This lack of research could also hinder students' continued artistic development, the possible discovery and transformation of their identities as artists and learners, and their understanding of art. Beyond creating artworks, artmaking for adult learners may provide new avenues for Transformative Learning experiences. Therefore, it is important to investigate how artmaking for adult learners may enable or foster their Transformative Learning experiences.

To begin to explore possible connections between artmaking and Transformative Learning, I conducted a pilot study in 2015, within my own teaching, to examine if one can experience Transformative Learning through artmaking. In a sculpture class I taught at a graduate school of education, my students were majoring in a variety of disciplines—many of them were not pursuing art or art education degrees. The sculpture class employed both traditional and digital materials and tools, using digital fabrication machines (e.g., a laser cutter, a 3D printer, a digital embroidery machine) along with wood working tools and mold making and casting. My pilot study examined why these students chose to take studio art courses, and what they learned from artmaking experiences in the sculpture class. Further, the study explored what might be missing from discussions about studio teaching with a diverse group of students (including non-art majors), and what can be learned from students' varied experiences.

Through an analysis of interviews and sculptures created by three participants, the pilot study revealed that various kinds of Transformative Learning can be categorized into three domains: (a) the transformation of the perspectives that students had on contemporary art, (b) the transformation of the identities students initially had, which were “non-artist,” and (c) the transformation of the approach that students took towards playful experimentation within their artmaking processes. I found that all three students described feelings of frustration and difficulty with not having clear prompts and having to experiment, since they were used to goal-oriented tasks in their academic classes and workplaces. However, as the semester unfolded, they came to realize that one of the most exciting aspects of the process was the opportunity to play with various materials without worrying about time, assessment, or uncertainty. They became comfortable with ambiguity and autonomous in their choices regarding materials, presentations, and concepts. The study also revealed that students bring various levels of experience in three-dimensional artmaking to the classroom (especially those who had less experience and background in art), and that these prior experiences greatly influenced their transformation over the course of the semester, which resulted in various approaches to materials, methods of fabrication, presentation, and thinking about themselves and art.

My pilot study was limited by a number of factors, including but not limited to: the small number of participants and the fact that it only included non-art majors; the method of data collection, taking place exclusively during the course, created a possible power imbalance between me and participants since I was the instructor of the class and the interviews were conducted before the semester ended; and the absence of a curriculum designed specifically for the purpose of eliciting Transformative Learning.

My dissertation study was built from and improved upon the pilot study by conducting a deeper and more well-designed investigation into: (1) how learning through artmaking in a digital and traditional methods-based sculpture class transforms adult learners who bring various educational and personal experiences into the classroom, and (2) what Transformative Learning looks like in a class that is designed to bring it about. Specifically, the dissertation study investigates what Transformative Learning looks like in a diverse group of adults in a sculpture class (at a graduate school of education) that is specifically designed to bring about Transformative Learning.

In addition, there is a gap in the literature on the intersection of Transformative Learning and visual art although there is a plethora of research in other disciplines, as mentioned above. Art education researchers have neglected the potentials and benefits of Transformative Learning specifically through artmaking as well as in the context of an art class. The art education field can't claim the benefits argued in studies outside of art education, such as increased awareness of self, greater autonomy, and deeper engagement in learning and teaching, because we have very little research that supports these findings. My dissertation, which was designed to bring about Transformative Learning, is one project that can shed light on the dimensions and benefits of Transformative Learning in an art class.

Research Questions

My research investigates the following research questions: When transformative learning is part of the teacher's intention, how, if at all, does learning through artmaking in a mixed media sculpture class transform a diverse group of adults with regard to: (1) their identities as artists and learners, (2) their understanding of art and (3) their approaches to artmaking?

Specifically:

- In what ways do students transform their identities as artists and learners? What aspects of their class experiences do students attribute to these changes?
- In what ways do students transform their approaches to artmaking processes and materials? What aspects of their class experiences do students attribute to these changes?

In what ways do students transform their perspectives of art itself? What aspects of their class experiences do students attribute to these changes?

Educational Aims of the Study

As discussed earlier, in non-arts education contexts, scholars present many benefits of Transformative Learning—such as learners' increased openness, empathy, willingness to take risks, alternative perspectives on approaching/solving problems, new discovery of oneself, honoring multiple viewpoints, and deeper and active engagement in

learning (Khoo & Teo, 2018; Pepin et al., 2017). Likewise, studies of Transformative Learning in the arts provide some evidence of how arts-based activities foster transformations. However, there is little empirical research investigating the varied dimensions of Transformative Learning in an art class, especially one in which the teacher's intention and curriculum are designed for transformative learning. Therefore, one of the educational aims of this study is to provide an in-depth qualitative description of different forms Transformative Learning can take and what student outcomes look like when adult learners are engaged in sculpture activities in a semester-long graduate art class intentionally designed to encourage Transformative Learning.

There seem to be many common denominators between purported benefits of arts experiences and Transformative Learning, as in Eisner's (2002) argument that one of the lessons the arts teach us is to develop "multiple perspectives," so that one can appreciate many ways to see and interpret the world in which we live (pp. 70-92). If it is true that developing multiple perspectives or new ways to see oneself and the world through both artmaking and Transformative Learning can be a positive outcome, I argue that arts learning environments can provide benefits for students to not only learn about themselves but to also undergo transformation that will ultimately grow their artistic expression throughout their lives. This dissertation study intersects the fields of art education and adult education with a focus on adult personal and professional development. Additionally, an enhanced and deeper awareness of and increased research on transformation through artmaking and learning in the arts may also lead to understanding Transformative Learning in other disciplines. If students are able to experience these kinds of transformation in an art class, might they be open to change

while learning in other disciplines? I believe such transforming processes may foster and guide one's methodology of living and learning, which can in turn can make a better world that is more open to a greater possibility of alternative views.

Assumptions

The following assumptions address research criteria and limit the scope of the study for the sake of focus and clarity and frame the study within practical limits.

Assumptions Not to be Argued

- Art evokes multiple interpretations, imaginations, and perceptions.
- Contemporary art includes interdisciplinary concepts and styles, even within a single art sub-discipline (Dickie, 1974; Elkins, 2001; Moszynska, 2013; Steinweg, 2009). The dissertation follows this pluralistic framework, and thus the sculpture class that I studied was not limited to three-dimensional work but also included other forms of art such as drawing, photography, and painting.
- One semester of sculpture class produced enough data to begin to understand various facets of adult transformations.
- Transformative Learning for adult learners is beneficial to their learning in general.

Assumptions to Be Argued

- Given that participants brought unique backgrounds and previous learning from their formal education and personal experiences to the classroom, various characteristics of Transformative Learning may manifest differently for each individual.
- Participants' responses associated with artmaking experiences in a mixed media (tactile-digital) context are candid and personal enough to reflect the depth of individual learning.
- One of the main factors in facilitating critical thinking and reflection, and adult Transformative Learning, is the act of artmaking itself.
- Participants' artworks, along with their written statements (artist statements, reflective writing, online blog), reflect the continued development of graduate students in a variety of disciplines.

Summary

Chapter I introduced the notion of transformation by reflecting on personal and professional experiences and presented an overview and background to this qualitative case study. The key problem (gaps in the literature as well as a lack of research of transformative learning in an art class) and main and sub-research questions were presented, assumptions were identified, and the aims and significance of the study were described.

Chapter II offers a presentation of related literature and research and Chapter III gives a detailed description of the research methodology and methods for the study, including an overview of the sculpture curriculum and its weekly activities. Chapters IV, V, and VI represent the findings of the research. Chapter IV focuses on in-depth stories of five study participants based on Transformative Learning stages (Stability, Reflection, Transformation). A portrait of each participant is presented, including an introduction to the participant's background, initial assumptions and beliefs, and experiences making and viewing art across the semester. Furthermore, through the lenses of the Transformative Learning theory, individualized paths and dimensions of Transformative Learning is examined. Chapter V organizes the findings of Chapter IV into three categories across the participants and in alignment with the dissertation's research questions—related to participants' collective identities as artists, their understanding of art, and their approaches to artmaking. Chapter VI synthesizes the data and arguments of the study and reflects on their implications for education. Lastly, it provides a concise summary of the study and its conclusions regarding recommendations for future practice and research.

II – REVIEW OF THE LITERATURE

The main focus of the literature review is Transformative Learning theory and its practices, since Transformative Learning is the main theoretical framework of this study. The other section focuses on a brief review of literature in particular contexts of making art in the art class—highlighting notions of play and experimentation as well as notions of traditional and digital making. Play and experimentation connect to the primary transformation of dissertation participants’ approaches to artmaking. An overview of traditional and digital art making connects to participants’ shifts in understanding of art and approaches to artmaking within exclusively digital processes.

Transformative Learning

Since this study used a Transformative Learning framework to understand participants’ artmaking experiences, it is vital to examine various facets of the literature on: (1) Transformative Learning theory, (2) Transformative Learning phases and events, (3) critiques of Mezirow’s theory of Transformative Learning and gaps in Transformative Learning research in visual arts education, and (4) Transformative Learning through the arts.

Transformative Learning Theory

Before examining Transformative Learning closely, one needs to understand some of the general characteristics of adult learning, especially since theories and concepts of Transformative Learning are originally rooted in theories of adult learning and education (Cranton, 2006; Merriam, 2004; Mezirow, 1990). Cranton (2006), for example, lists some characteristics of adult learning as being voluntary, self-directed, practical, experiential, collaborative, and participatory (p. 3). According to Cranton, adult learning is voluntary since adult learners are willing to develop themselves personally and professionally, as evidenced by their choosing to become involved in formal and informal educational settings. Adult learners are self-directed because they often recognize their needs, set their learning aims, choose how they approach learning, and reflect on and critique their progress (Cranton, 2006, p. 3). Cranton, drawing on Dewey's (1934) book *Art as Experience*, suggests that the experiential aspects of learning are essential in adult learning since the learner is only able to undergo transformation with their experience. Also influenced by Dewey's humanistic view, adult learning is often seen as collaborative and participatory because adult learners learn new concepts, adopt new perspectives, and question and reflect on themselves through collaboration with others (Cranton, 2006, p. 4).

Since Transformative Learning theory is derived from multiple theories of adult learning (including, for example, the one outlined above by Cranton [2006]), many of which share core elements, it is often seen as relying on many of the same characteristics as those described above—voluntary, self-directed, practical, experiential, collaborative, and participatory—as the foundation for how adults are transformed through the process

of learning. However, beyond these shared characteristics of adult learning theory, “fundamental perspective change” is a unique element that is key to many of the seminal theories of Transformative Learning (Cranton, 2006; Mezirow, 2000).

For example, in order to better understand Mezirow’s Transformative Learning theory, one needs to understand his core concepts of learning, including “fundamental perspective change.” In explaining this concept, Mezirow (1991) first asserts that we are constantly interpreting and defining meanings (when seeing symbolic things) by “projecting imaginatively onto our sensory impressions” (p. 4). We perceive, comprehend, and remember things through our “sets of habitual expectation” or “meaning perspectives,” which generate a certain order (or “codes”) for our learning actions (i.e., perceiving, comprehending, remembering); we then objectify our “loaded perception” through speech (Mezirow, 1991, p. 4). To Mezirow, “meaning is an interpretation, and to make meaning is to construe or interpret experience...to give it coherence” (p. 4). This “meaning” is composed of (1) “prelinguistic” cues and “symbolic models” and (2) language, which are then processed through both presentational and propositional dimensions (p. 4). Mezirow further states that “the process of justifying or validating communicated ideas and the presuppositions of prior learning” is especially critical in the adult learning process, since assumptions that are not critically reviewed could ultimately cause distortion in ways of knowing (p. 5).

For Mezirow (2000), learning involves the process of using prior knowledge to understand and construct a new and revised interpretation of the meaning of one’s knowledge and experience, in order to expand the set of possible future actions one might take (p. 5). This new and revised interpretation is a “fundamental perspective change.” In

other words, we become more flexible in how we are able to appropriately respond to future scenarios if we have learned how to construct and revise new interpretations of our prior knowledge and experience.

Furthermore, according to Mezirow (2000), Transformative Learning requires that people be open to and emotionally capable of change and reflection, so that it is possible for them to generate beliefs and opinions that will provide more justified perspectives to guide action (p. 8). Mezirow (2000) argues that “Changes in one’s fund of knowledge, one’s confidence as a learner, one’s self-perception as a learner, one’s motives in learning, one’s self-esteem—these are all potentially important kinds of changes, all desirable....” (p. 50). To further explore these kinds of transformation, Mezirow also differentiates between “informational learning” and “transformational learning”¹ (p. 48). He asserts that if informative learning is about the changes in “what we know,” Transformative Learning focuses on the changes in “how we know” (p. 50). Both kinds of learning are valuable and important, and Mezirow adds that Transformative Learning aims at “reconstructing” the “frame” of knowledge while informative learning adds knowledge to an existing frame (p. 49).

In order to understand Mezirow’s (2000) use of the term “frame” within the context of Transformative Learning, one needs to understand the concept “frame of reference,” which he defines as “meaning perspectives,” or a “structure of assumptions and expectations through which we filter sense impressions, which involves cognitive, affective, and conative dimensions” (p. 16). Likewise, Cranton (1992) suggests that a frame of reference is comprised of two dimensions, “a habit of mind” and “resulting

¹Mezirow (2000) uses both “informative” and “informational” learning as well as “transformative” and “transformational” learning (pp. 48-51).

points of view” (p. 17). For Cranton, “habits of mind,” or “the broad predispositions that we use to interpret experience.... indicate a set of sociolinguistic, moral-ethical, epistemic, philosophical, psychological, and aesthetic assumptions.” Eventually, a habit of mind is conveyed as a “point of view” (p. 37). According to Cranton, one’s frame of reference can be shaped by unintentional cultural paradigms and/or personal perspectives. Mezirow (2000) also discusses habits of mind, and interestingly, in relation to my dissertation study which focuses on Transformative Learning in visual arts education, one of these concerns the aesthetic dimension. According to Mezirow, some aesthetic habits of mind include “values, tastes, attitudes, standards, and judgments about beauty and the insight and authenticity of aesthetic expression” (p. 17). Overall, habits of mind, for Mezirow, are composed of “expectations, beliefs, feelings, attitudes, and judgments,” which one follows automatically because they guarantee stable self-esteem, flexible coherence, opened community, and personal identity. Such habits persist until one confronts oneself by engaging in critical reflection (p.18).

In general, Cranton (1992) argues that it is difficult to revise or accept a new framework since one’s habits of mind are naturally and uncritically acquired through interaction with the surrounding environment, including families, communities, and culture, both implicitly and explicitly. Therefore, habits of mind “remain unquestioned unless we encounter an alternative perspective that we cannot ignore” (p. 37). The second dimension of a frame of reference, the “[Resulting] point of view,” is composed of clusters of meaning schemes—sets of immediate specific expectations, beliefs, feelings, attitudes, and judgments—that tacitly direct and shape a specific interpretation and determine how we judge, typify objects, and attribute causality. These meaning schemes

commonly operate outside of awareness (p. 18). In other words, the point of view is composed of many clusters of meaning schemes including “habitual, implicit rules we use to interpret experience” (Cranton, 1992, p. 37).

In regard to practical application of Transformative Learning theory for educators in the classroom, Cranton (1994) argues that “the educator must maintain an awareness of students’ individual differences, consider which events will be more likely to lead to critical self-reflection and self-knowledge, and expect variation in the processes that individuals go through” (p. 155). For learners, critical self-reflection and self-knowledge are most likely fostered and encouraged when they confront “a point of view that is different from their own” (p. 155). Cranton (1992) gives the following guidelines for educators:

Recognizing the learner’s assumptions that are acting as constraints in the situation; creating an environment, an activity, or an interaction which challenges those assumptions; providing an activity or the guidance to help the learner make those assumptions explicit; providing an activity or an interaction to explore the sources and consequences of the relevant assumptions; supporting and accepting the learner in this analysis; encouraging the learner to question the validity of the assumptions he or she holds; providing a psychological environment and relationship in which it is safe for the learner to do this questioning; providing guidance and support in the revision of assumptions; assisting in the process of integrating the assumptions into the learner’s overall perspective, particularly in dealing with conflicts; creating the environment in which the learner can act on revised assumptions; and, supporting the action when it is transferred to another environment. (Cranton, 1992, p. 151)

In designing the dissertation study, which focused on examining Transformative Learning in my own teaching, I was mindful of Cranton’s suggestions and adapted some of my instruction accordingly (see Chapter III for a detailed description of the curriculum developed to align with Cranton’s guidelines).

Transformative Learning Phases and Events

The core of Mezirow's theory of Transformative Learning was derived from a 1975 study that examined the various factors that influenced the success of women who had re-entered community college programs after taking a hiatus. In this study, Mezirow found that the transformation of perspective was one of the most significant elements in determining the success of the participants' transitions and learning experiences. Based on his findings, Mezirow concluded that there were ten phases involved in one's transformation of perspective, and these form the backbone of his Transformative Learning theory:

(1) a disorienting dilemma, (2) self-examination with feelings of fear, anger, guilt, or shame, (3) a critical assessment of assumptions, (4) recognition that one's discontent and the process of transformation are shared, (5) exploration of options for new roles, relationships, and actions, (6) planning a course of action, (7) acquiring knowledge and skills for implementing one's plans, (8) provisional trying of new roles, (9) building competence and self-confidence in new roles and relationships, and (10) a reintegration into one's life on the basis of conditions dictated by one's new perspective. (Mezirow, 2000, p. 22).

For Mezirow (2000), "a disorienting dilemma" (p. 22) is the first step for one to begin experiencing the process of Transformative Learning. One may have an experience that does not fit within one's pre-existing "frame of reference", which Mezirow also refers to as a "meaning perspective," that is "the structure of assumptions and expectations through which we filter sense impressions" (p. 16).

To help readers better understand Mezirow's (2000) phases, I provide the following example. Imagine that Hannah's parents have scheduled a cruise for their next summer vacation, but Hannah does not know how to swim, and has developed a phobia of drowning in the sea. As a result of this dilemma, Hannah may undergo some

difficult self-examination of feelings such as fear, anger, and shame (phase 2). She may experience the dilemma and associated feelings all at once, or incrementally, which over time leads to a gradual recognition of a disconnect between her meaning structure and her surrounding environment. Hannah believes that she will most definitely drown as a result of not having the ability to learn how to swim; but the combination of the aforementioned disconnect and her knowledge that someone her age, like her friend Minjung, has successfully learned to swim, despite also being afraid of drowning, forces her to critically assess her assumptions (phase 3).

After speaking with Minjung, Hannah recognizes that her discontent and the process of transformation are shared with others outside herself (phase 4). With Minjung's encouragement, Hannah agrees to explore the option of taking swimming lessons at the local pool (phase 5), and finally agrees to plan a course of action by scheduling weekly lessons for the next few months (phase 6). Hannah joins a swim class and slowly acquires knowledge and skills that will help her overcome her fear of the upcoming vacation cruise (phase 7). She decides to engage in the provisional trying of new roles by taking a trip to the beach to wade in the water (phase 8). As she improves her abilities, she builds competence and self-confidence in her new role and relationships, to the point that she can swim multiple laps in an Olympic-sized pool, and even encourage younger children who are learning to swim for the first time (phase 9). Finally, Hannah embarks on her trip having overcome her fear of drowning, thereby successfully reintegrating into her life on the basis of conditions dictated by her new perspective (phase 10).

In contrast to Mezirow's (2000) phases, Cranton (1994) defines Transformative Learning as the process "people examine problematic frames of reference to make them more inclusive, discriminating, open, reflective, and emotionally able to change" (Cranton, 1994, p. 36). While Mezirow primarily points out a single event—"a disorienting dilemma"—as a way to be provoked to experience Transformative Learning, Cranton argues that events that are gradual and cumulative over time can foster Transformative Learning (p. 36). According to Mezirow (2000), Transformative Learning happens in four ways, which are "elaborating existing frames of reference, learning new frames of reference, transforming points of view, and transforming habits of mind" through critically reflecting on one's beliefs, assumptions, and biases (p. 19). In all four of these ways, "changes" can occur along a spectrum, from very intense changes to quite subtle changes. Ultimately, Transformative Learning encourages problem solving through the act of redefining or reframing the problem. In those cases where the problem might be unknown, the theory suggests that imagination can be used to "examine alternative interpretations of our experience by 'trying on' another's point of view," since this allows one to think from many different angles (Mezirow, 2000, p. 20).

Mezirow's (2000) use of the concept of "'trying on' another's point of view" (p. 20) during the process of self-transformation suggests the active use of one's imagination. This can be related to the way Maxine Greene (1995) describes imagination as a vehicle for transformation in her book, *Releasing the Imagination: Essays on Education, the Arts, and Social Change*. There, Greene emphasizes the role and agency of imagination in education and culture by arguing that one needs to

enhance and cultivate one's own visions and ideas through active creative work in the arts. Greene elaborates the idea of imagination by saying, "The principles and the contexts have to be chosen by living human beings against their own life-worlds and in the light of their lives with others, by persons able to call, to say, to sing, and—using their imaginations, tapping their courage—to transform" (p. 198).

In discussing the way imagination can lead to transformation, Greene emphasizes the notion of changes in "consciousness" while Mezirow (1990) emphasizes changes through "critical reflection." Greene's (1995) term "consciousness" is closely connected to her idea of "wide-awakeness," and to Freire's (1973) notion of critical consciousness, which aims to raise students' consciousness in order to reveal oppression and emancipate student learning, imagination, and dialogue. Freire's (2000) view on learning echoes Mezirow's (1990):

In fact, those who, in learning to read and write, come to a new awareness of selfhood and begin to look critically at the social situation in which they find themselves, often take the initiative in acting to transform the society that has denied them this opportunity of participation. (Freire, 2000, p. 29).

These ideas echo Greene's (1995) call for educators to help students reflect on and transform their thinking and perspectives through attentive experiencing of the world (p. 190). For both scholars, the idea of "openness" is a core concept for the idea and process of transformation. Greene (2005) argues that educators ought to be "awake, critical, open to the world" (p. 80). Through this kind of openness, or wide-awakeness, we can be more mindful of others and ourselves, and be open to transforming undemocratic social practices (Greene, 1995, p. 35). For Mezirow, openness is critical when confronting existing knowledge and negotiating questioned and challenged meaning:

[There] are no fixed truths, or totally definite knowledge, and because circumstances change, the human condition may be best understood as a continuous effort to negotiate contested meanings. That it is why it is so important that adult learning emphasizes contextual understanding, critical reflection on assumptions, and welding meaning by assessing reasons. (Mezirow, 2000, p. 3)

Overall, we can see that both Mezirow's Transformative Learning and Greene's concept of imagination allow one to revise one's way of living life; both concepts aim to foster thinking, shed light on assumptions and fixed perceptions, and transform consciousness. Ultimately, Transformative Learning guides and shapes one's methodology of living, which encourages us to openly question, revise, and reshape our meaning schemes to guide us to be better citizens and learners. Enhancing our empathy and ability to take on another's perspective and revise one's existing perspective, which constitute a critical component of what it means to be a good citizen, is important if we want a more open and just world.

Table 1. Overview of Mezirow's (2000) Transformative Learning Theory

Definition of Transformative Learning	“Transformative learning refers to the process by which we transform out taken-for-granted frames of reference (meaning perspectives, habits of mind, mid-sets) to make them more inclusive, discriminating, open, emotionally capable of change, and reflective so that they may generate beliefs and opinions that will prove more true or justified to guide action” (Mezirow, 2000, p. 8).
Meaning of learning in Transformative Learning	“Learning is understood as the process of using a prior interpretation to construe a new or revised interpretation of the meaning of one’s experience as a guide to future action” (Mezirow, 2000, p. 5).
Kinds of Transformation	“Changes in one’s fund of knowledge, one’s confidence as a learner, one’s self-perception as a learner, one’s motives in learning, one’s self-esteem—these are all potentially important kinds of changes...” (Mezirow, 2000, p. 50).
Typical ten Phases of Perspective Transformation	<ol style="list-style-type: none"> 1. A disorienting dilemma 2. Self-examination with feelings of fear, anger, guilt, or shame 3. A critical assessment of assumptions 4. Recognition that one’s discontent and the process of transformation are shared 5. Exploration of options for new roles, relationships, and actions 6. Planning a course of action 7. Acquiring knowledge and skills for implementing one’s plans 8. Provisional trying of new roles 9. Building competence and self-confidence in new roles and relationships 10. A reintegration into one’s life on the basis of conditions dictated by one’s new perspective” (Mezirow, 2000, p. 22).

Critiques of Mezirow's Theory of Transformative Learning

Although my dissertation study relies heavily on Mezirow's theory of Transformative Learning as an important conceptual framework, his system has at least three weaknesses worth addressing here. First, as described in one line of critique by Taylor (1997, 1998, 2000a, 2000b, 2001), it is possible to question the validity of how Mezirow thinks about the process of "perspective transformation" (Taylor, 2001, p. 33). Taylor essentially disagrees with Mezirow on the importance of "critical reflection" as the primary means by which learners catalyze their own Transformative Learning (p. 218). For example, Taylor highlights alternative "ways of knowing" that rely on emotions, feelings, "unmediated perception," and trust in one's own sensory apprehension and understanding, all of which are just as critical to transformative experiences.

According to Taylor (1994), in addition to the lack of recognition of emotions and feelings in relationship to critical reflection, other studies have shown that some participants who experienced a perspective transformation responded to the initiating disorienting dilemma with little or no questioning of their values and assumptions. Instead of critically reflecting on their experience, these participants seemed to respond with unmediated perception, trusting their reaction of directed apprehension and sensory understanding, whereby the process of transformation takes place on an implicit level, outside the awareness of the individual.

A second shortcoming of Mezirow's (1991, 2000) framework, which is closely related to Taylor's (1994) critique, involves Mezirow's relative oversight of the "non-cognitive" or "non-rational" dimensions of Transformative Learning. According to

Taylor, while Mezirow does acknowledge the importance of an individual's pre-rational, emotional, and imaginative readiness for transformational learning, he often places much greater emphasis on the importance of rational and cognitive reasoning for such learning. In contrast, both Boyd (1989; 1991) and Dirkx (1998; 2001; 2006) tend to highlight and promote the emotional, intuitive, imaginative, and spiritual dimensions that enable Transformative Learning.

According to Taylor (2012), Mezirow's (1991) Transformative Learning theory explicitly saw how the meaning is constructed as "a rational process" (p. 8).

However, Taylor (2012) argues the importance of "extrarational" dimensions in Transformative Learning:

...an extrarational (imaginative, intuitive, individuated, depth psychology) approach to transformative learning are easily associated with the philosophical assumptions of humanism— freedom, autonomy, choice, importance of the individual. (p. 8)

Echoing Taylor's (2012) assertion, Dirkx (2001) argues the importance of "imaginal method" or "soul work" (p. 69). Later, scholars insist that such imaginative and emotional aspects of learning enable holistic understanding of learners' intellectual, emotional, moral, and spiritual dimensions (Dirkx, Mezirow, & Cranton, 2006, p. 125). Further, they emphasize the importance of recognizing one's expression of the inner world and of the "nurturing soul" as an overall goal of education (p. 128).

Similarly, Boyd's (1989) system of transformation focuses on what he frequently refers to as "an inner journey of individuation," which can be understood through the use of one's psychic dimensions (p. 459). Boyd argues that "the resolution of a personal dilemma and the expansion of consciousness" are the main factors to fundamentally changing one's personality (p. 459). Boyd's research on adult learning suggests that

certain dynamics of one's individuation process are rooted in "depth psychology"—a psychological framework influenced by Carl Jung that specifically emphasizes reflection on one's own "ego, shadow, persona, collective unconscious" and "psyche and soul"—and that such a process plays an important role in fostering one's Transformative Learning experiences (p. 458). Boyd also emphasizes the power of "image," which could reveal one's powerful emotions, as a catalyst to encourage one's learning process and transformation. Along with one's emotional and unconscious dimensions, Boyd also emphasizes the notion that group dynamics could significantly influence individual transformation (p. 460).

Since my study looked closely at adult learners' artmaking in a class, and because learners' individual and collaborative making processes will undoubtedly be influenced by their emotions, intuitions, and unconsciousness, both Boyd's and Dirkx's emphasis on "psyche and soul" may be helpful to understanding their transformation.

A third critique of Mezirow's theory, from my own view, is that his own empirical studies on adult learning (e.g., the 1975 community college study) took place within mainstream academic subject-area settings and focused on the adult learner's experience with traditionally-conceived forms of knowledge. Mezirow (1991, 2000) did not closely examine alternative settings and ways of knowing, such as those found and experienced within art studios and other creative domains (e.g. embodied learning and expressive ways of knowing). It's possible that aspects of Mezirow's theoretical framework, such as the ten phases of transformation, would appear differently had he included more creative domains and ways of knowing in his analysis.

While there is considerable research that has attempted to bridge the gap between Mezirow's adult learning framework and transformative experiences within the creative arts (e.g., James, 2007; Lawrence, 2012; Yorks and Kasl, 2006), I have yet to encounter a comprehensive study that examines Transformative Learning experiences in an art class when Transformative Learning is a deliberate part of a teacher's intention. The absence of this kind of research is one of the motivations for this dissertation, which might help determine the relevance of Mezirow's theory to visual arts, specifically learning in an art class.

Transformative Learning Through the Arts

Cranton (2016) asserts that arts-based activities may foster one's Transformative Learning. As mentioned in Chapter I, there have been a number of studies that have investigated possible links between arts learning and Transformative Learning (Bang, 2016; Bhukhanwala, Dean & Troyer, 2016; Cain & Dixon, 2013; Desyllas & Sinclair, 2013; Halpin-Healy, 2015; Hunt, 2013; James, 2007; Lawrence, 2012; Lawton & La Porte, 2013; Lee, 2013; Mantas & Schwind, 2014; Nangh, 2015; Qi & Kari, 2016; Simpson, 2007; Snepvangers & Bannon, 2016; Wallace, 2008; Yorks & Kasl, 2006).

From the neurobiological point of view, emotive, sensory, and kinesthetic experiences may foster Transformative Learning, since this kind of multidimensional learning aims for more holistic approaches and endeavors (Merriam, 2004, p. 95). Accordingly, Transformative Learning in the arts often involves imaginative and intuitive processes (Dirkx, 1997, 2001; Greene, 1995, 2001, 2005). As discussed above, Greene

argued that the experiencing the arts can evoke the imagination and enable one to envision multiple alternative realities. Similarly, Lawrence (2012) argued that the arts have the power to transform individual worldviews and when experienced collectively can potentially transform communities (p. 471). Thus, one could expect art related activities to have great potential to support Transformative Learning experiences.

The possibility of student transformation within an art class may be less linked to specific forms of art and more linked to the approaches to looking at and creating artworks that teachers use in class, and how these fit with students' previous experiences and understandings. Cranton (1994) found, through a longitudinal study, that some arts activities and teaching approaches have the potential to shape students' learning and learning processes in ways that lead them to be more "creative, innovative, and going outside the cognitive realm" (p. 153), and that this ultimately can foster Transformative Learning. She describes how arts-based activities offered students effective and creative ways of "expressing beliefs and examining perspectives," just as traditional academic activities with written words do (p. 156). As mentioned earlier, one long-standing and dominant theory of Transformative Learning states that such learning is most likely to happen when an individual question and revises preconceived assumptions (Mezirow, 2000).

Drawing on criticism of, and commentary on, Mezirow's theory (e.g., Heron, 1992; Taylor, 1998), Yorks and Kasl (2006) conducted an empirical analysis of 11 case studies and interviews with seven adult educators in order to examine the role of "expressive ways of knowing" in Transformative Learning. The term "expressive ways of knowing" refers to the learner's engagement in imaginative and intuitive processes

during the learning process (p. 47). The study provides an example of one educator, Jackie, who introduced expressive ways of knowing into her work with interns. She used different kinds of guided visualization to help her interns experience a reflective frame of mind while drawing, making collages, and using clay. Yorks and Kasl describe how one could experience expressive ways of knowing and transformative changes through visual art activities. This study only looked at short-term artmaking, as opposed to my dissertation study which examined these things over the course of a semester. Further, Yorks and Kasl's study took place in an informal setting, with interns, while mine while mine happened within a formal institutional setting with graduate students. In regard to differences in methods and goals, in Yorks and Kasl's study the art activity was one of many activities, while in my study making and responding to art were the only activities.

In regard to general art-based activities in Transformative Learning, Lawrence (2012) argues that various forms of arts such as fiction, music, and visual art could foster one's transformation given that engagement in artistic activities allows one to have a deep emotional and embodied experience. Lawrence described Transformative Learning through the arts as an "extrarational process," which departs from Mezirow's theory that solely focused on the rational process (p. 472). Lawrence asserts that art "breaks us out of boundaries that constrain," which ultimately allows one to explore and appreciate multiple perspectives (p. 473).

In regard to empirical research that investigated Transformative Learning in a visual arts class, James (2007) conducted a qualitative study in his work as a teacher with adult painting students. James suggests that painting courses that are based on working from observation can ultimately support students' critical reflection and adult

transformation in a significant way, regardless of prior artistic experience. In particular, James examined the artistic production of fifteen adults in painting classes at a graduate school of education, by analyzing their paintings (primarily from observation) and their written reflections on their experiences in the studio. He found that five participants showed profound evidence of Transformative Learning in their paintings and writing, and documented aspects of their personal identities, belief, and perceptions in creative ways.

As discussed in Chapter I, James' (2007) findings ultimately focused particularly on one participant's statement: "As the painting evolved, so did I" (p. 12). James concluded, "learning to paint encourages Transformative Learning when reflective writing and open discussion are integrated into the curriculum" (p. ii). Based on James' study, I was interested in discovering whether there could be any evidence of Transformative Learning in a diverse group of graduate students' artwork with a focus on a different artmaking approach—sculpture, instead of painting. In James's study, the main activity (i.e., learning to paint from observation) was restricted to certain sets of tools and materials—painting supplies and paints—which also structured students' bodily movements to mainly (1) standing or sitting in front of the canvas set on an easel and (2) painting with their brushes directly onto a two-dimensional surface. In my study, students used a wide variety of materials, tools, and fabrication approaches. More importantly, there are major differences between James's painting curriculum and the sculpture curriculum I designed for use in my dissertation, which I specifically formulated to align with strategies suggested for teaching for Transformative Learning (described in Chapter III).

Learning in Art Class

In addition to an understanding of Transformative Learning theory and its applications to teaching practice in the visual arts, as provided in previous sections of the literature review, my dissertation study is grounded in the nature of visual arts learning as seen through the lenses of experimentation and play, and traditional and digital artmaking. The sculpture class examined in my study focused on both digital and traditional approaches; thus, the second section deals exclusively with such approaches in maker education and art education. These topics follow, to conclude the review.

Experimentation and Play

In the book *Play*, Brown (2009) asserts that it is ultimately important to both play and recognize the importance of play in order to achieve a fulfilling human life. He introduces a discussion of the multifaceted elements of play, from biological, chronological, cognitive, cultural, and artistic perspectives. Brown reminds us that our chronological perspective changes; in childhood play is an easy, joyous, and natural activity, but often becomes “unnatural” and “shameful” in adulthood (p. 6).

Brown (2009) presents some key properties of play: “purposeless, voluntary, inherent attraction, freedom from time, diminished consciousness of self, improvisational potential, and continuation of desire” (p. 17). Many of the properties of play described by Brown are also part of Mihaly Csikszentmihalyi’s (1990) description of what he calls the “zone of flow,” which occurs when individuals are completely engaged in play (p. 6). A

Hungarian psychologist, Csikszentmihalyi defined the term “flow” as an optimal experience wherein people are so involved in an activity that “nothing else seems to matter; the experience is so enjoyable that people will continue to do it even at great cost, for the sheer sake of doing it” (Csikszentmihalyi, 1990, p. 4).

Csikszentmihalyi (1990) also encourages us to appreciate the emotional aspect of play, since it provides us with a sense of “anticipation, surprise, pleasure, understanding, strength, [and] poise” (p. 19). He emphasizes the biological necessity of play by noting that in the wild, those bears that are most likely to survive harsh environmental conditions are the ones that played the most as young cubs (p. 31). According to Brown (2009), adults who seek to apply specific goals, methods, and constraints to their moments of play often confuse play with work. However, Brown (2009) implicitly defines play as a “state of mind,” not “an activity” (p. 60) given two individuals engaging in the same action, one could be interpreted as playing and the other not, depending on the emotional and experiential states of the two persons. For example, if a student is busy with her artwork merely for the sake of finishing a class assignment, it is considered work (p. 60).

Piaget (1951) also differentiated between play and work:

Play is an activity “for pleasure”, while serious activity is directed towards a useful result irrespective of its pleasurable character...But it confuses the issue even more, for much “work” properly so-called has no other subjective end than satisfaction or pleasure and yet it is not play. (p. 148)

Piaget (1951) noted that the notion of play had been discarded or considered as “a kind of mental waste matter” in education, and he insisted that play is instead a critically important “pre-exercise” for children in fostering their intelligence (p. 151). For Piaget, a

self-motivated student who freely experiments and produces artwork while enjoying herself, and losing her sense of time and self, was, in fact, playing.

As an illustration, Hannah, one of the students in my pilot study, said: “Sometimes I don’t know what I’m aiming to—or what I’m doing. But I just like to touch and just keep trying and making with the plaster until I get the result that I like” (personal communication, 2015). It is clear that Hannah was experiencing play in the studio—enjoying the process, yet not knowing the end result or goal.

According to Brown (2009), the notion of play is already embedded in artists and creators who are mainly making things. For instance, contemporary sculptor Richard Serra explained his process of artmaking as follows, in an interview with journalist Charlie Rose:

And the playfulness. If you want to make art, at some point, you have to suspend judgment. And you have to involve yourself with play—and not worry about the outcome. So I do a lot of playing with modules in my studio until we decide where to take the play. And I think that for art students, that was one of the great things about Yale—a free play period. And play that isn’t about what’s foreseen, it’s about unforeseen. And I think a lot of what art does is teach us to see unforeseen ways—in new ways. (KunstSpektrum, 2011, n.p.)

For Serra, play invites us to think about “unforeseen” things that we couldn't have otherwise thought of. Thinking about artists’ unique traits, I came to wonder about how creative people’s thinking and making connects to the idea of flow. Interestingly, the notion of play is very evident in digital forms of making as well. Banzi (2011), a co-founder of the electronic prototyping platform Arduino, discusses his favorite definition of “tinkering,” which he borrowed from a conference brochure:

Tinkering is what happens when you try something you don’t quite know how to do, guided by whim, imagination, and curiosity. When you tinker, there are no instructions—but there are also no failures, no right or wrong ways of doing things. It’s about figuring out how things work and reworking them. Contraptions,

machines, wildly mismatched objects working in harmony—this is the stuff of tinkering. Tinkering is, at its most basic, a process that marries play and inquiry. (pp. vi-vii)

Clearly, one can see the connection between tinkering and play. Banzi (2011) further asserts that it is important to play with technologies without “a very defined goal,” whether they are in the form of hardware or software (p. 17). Banzi’s notion of play echoes Brown’s (2009) description that play is purposeless, voluntary, inherently attractive, free from sense of time, unconscious of self, improvisational, and continually desirable (Brown, 2009, p. 60). Banzi’s suggestion for those first learning Arduino is interesting, since he asks novice users to reuse existing everyday technology artifacts, such as “cheap toys or old equipment,” to tinker and play with in order to understand the concepts underlying complicated pieces of hardware and software (p. 7). He also gives an explicit explanation of the playful philosophy of Arduino:

The Arduino philosophy is based on making designs rather than talking about them. It is a constant search for faster and more powerful ways to build better prototypes. We have explored many prototyping techniques and developed ways of thinking with our hands...Classic engineering relies on a strict process for getting from A to B; the Arduino Way delights in the possibility of getting lost on the way and finding C instead...This is the tinkering process that we are so fond of—playing with the medium in an open-ended way and finding the unexpected. (p. 5)

Banzi’s (2011) description echoes a playful aspect of the artmaking process. Echoing Brown’s notion of play, the flow experienced by students while making art, under certain conditions, can make them less aware of themselves, the passage of time, and of the potential for failure. Spitz (2009) also explores the relationship between the notion of art play and art by arguing that “play” actually acts as a catalyst for the complexity and value of art. Essentially, he believes that art is often created from play,

and that there is no essential difference between an artist's play and a child's play, except for the fact that mature artwork has the potential to transcend its sociocultural and philosophical context (p. 118). With these perspectives on play in mind, one can argue that artmaking involves play as a central process, especially when encountering new tools and materials.

Traditional and Digital Artmaking

Traditional and digital materials invite action that sets in motion inquiry that leads to the materials' transformation from one state of being to another and determines parameters for their use. Whether a maker begins with play and exploration or with a specific intention—an idea, theme, or narrative—the material will immediately resonate, directing attention in a particular direction or opening new avenues for contemplation. Learning thus occurs in action, in the process of transforming and retransforming materials. (Burton, 2016, p. 939)

In education, the increasing significance of technology has been discussed by many scholars, such as Resnick (2006) and Blikstein (2013), who suggest that “making” with digital tools may be a powerful vehicle for inspiring innovative ideas and fostering autonomy in students, especially young children. Partly as a result of this trend, many artists, designers, and teachers have been challenged to research and develop approaches to teaching that balance fine art and design with digital making. For example, as an artist and educator, I myself am constantly challenged to develop approaches to teaching and learning that fuse art and technology and integrate traditional and new media forms.

While the impulse towards digital tools and techniques is a growing trend that provides new opportunities for merging new media and traditional approaches in art

education, we are just beginning to learn about the distinctive thinking and techniques for digital production associated with these new technologies. Studies and writing by Castro (2012), Knochel (2017), Knochel and Patton (2015), Patton (2014), and Sweeny (2010, 2013, 2015) have explored digital technologies within art education and how they can best be integrated into various studio art settings, including in higher education. And while the field of art education lacks a common framework for conceptualizing the integration of traditional and digital making in art education, it is plausible that, as Burton claims, “the growing world of digital technology offers itself as an interlinking bridge” between education for STEM and arts education (2016, p. 938). However, my position, which echoes that of Burton, is that the benefits of digital “making,” to students are perhaps enhancements of, but not fundamentally different from, the benefits that have always been offered by traditional artistic production. Below I explore how new digital tools relate to ways of thinking about art, as well as approaches to “making.” I look at how these approaches can be integrated into studio art and maker space settings, and also examine how certain concepts, such as “play” and “tinkering,” as well as certain approaches to materials and tools, might offer a common framework for thinking about the similarities between, and benefits of, traditional and digital making.

First, we need to understand the notion of “making” within emerging technologies. Important engineering- and science-related developments—such as the rise of the “do-it-yourself” (DIY) community, the maker movement, hacker culture, and the expansion of maker spaces and “fab labs” in formal and informal education settings—

have redefined what it now means to “make” something. But what is “maker culture,” and what are some of the common tools and frameworks (philosophies) used in the maker movement?

Typically, maker culture points to a traditional DIY culture that has been “upgraded” or “enhanced” through the use of new technologies. This combination generally includes the use of software and various digital fabrication tools such as 3D printers, laser cutters, CNC machines, robotics, and electronics—along with traditional tools such as woodworking, metalworking, and arts and crafts tools (Martinez, 2013, pp. 32-35). A kind of lab or space composed of such tools and software is referred to as a maker space or fab lab.

The notion of digital making in the maker movement originated with Seymour Papert, a mathematician, computer scientist, psychologist, educator, inventor, and activist born in South Africa. According to Martinez (2013), Papert believes that one particular experience can have different effects on various learners when they are learning through tinkering (p. 18). In 1985, the Massachusetts Institute of Technology Media Lab—the predecessor of today’s fab lab—was created by Papert and his colleagues to foster a concurrent hybrid of technology, communication, and design (p. 24). Through this process, learners are thought to start to take genuine ownership of their learning.

For Martinez & Stager (2013), “tinkering” is an attitude in which a maker is engaged in “a playful way to approach and solve problems through direct experience, experimentation, and discovery” (p. 32). In addition, tinkering embraces play and learning from creative and social perspectives (p. 36). The playful aspect of digital learning and making comes from Papert’s notion of *constructionism*, derived from the

notion of *constructivism* in education. Papert (1980a; 1980b; 2001) argues that learners can construct and re-construct new knowledge by connecting inherent and external information together, which ultimately makes them autonomous in their learning process (in Martinez, p. 33). Taken together, the essential philosophy of the maker movement lies in playful learning by doing, using innovative ideas and materials.

Franz & Papert (1988) further argues that a computer can also be treated as a material that can be transformed and “messed around with,” (p. 409) just like other common traditional art materials such as clay and color pencil. Martinez & Stager (2013) echoes the notion of playful exploration by arguing that “making” is a process of “messing about with transformative materials” (p. 33). According to Martinez & Stager (2013), openness to the way we approach materials, and constructivist ways of making and thinking in education, invite cross-disciplinary work. For instance, interesting overlaps are possible among art, science, engineering, computer science, which can broaden students’ personal empowerment and learning. In a sense, this kind of mentality and philosophy of the maker movement “extends and reinvigorates the best traditions of student-driven design and construction” (Eisenberg & Buechley, 2008). The spirit of the maker movement is not only about learning and making but also about powerful personal engagement and collaboration through problem-solving, making things, and sharing ideas within the community.

It is also notable that making and prototyping using emerging technologies (e.g. digital fabrication) can be seen as a 21st Century update of manual training processes that existed during the 1900s, although the kinds of materials and machines are different. The notion of “making” as we think about it today is rooted in approaches to art education

practiced more than 100 years ago and can be located in the philosophy and teaching of Arthur Wesley Dow (1857-1922), professor and head of the Art Department at Teachers College Columbia University from 1904 to 1922. The manual training movement in the early 20th Century, based in part on designing for industry, heavily influenced general and arts education in the United States. For instance, during the 1890s, Teachers College was affected by the manual training movement, in which manual training was an essential part of education. John D. Runkle (1822–1902), who first came up with the idea to include manual training in general education, was inspired by a Russian instructional exhibition featuring the Moscow Imperial Technical School’s use of industrial techniques (Efland, 1990, p. 165). Dow’s 1919 archival notes for a lecture entitled “Art Service in War and Peace” emphasized the importance of using machines to produce creative art and design, instead of just limiting machines to manual work. Dow claimed:

No machine can ever give us great art, but it can make things good in line, good in texture, and good in color. The artist may create superior quality with the factory loom, the shop lathe, the power press; he may use all tools, all machines, all materials, and any methods of manufacture. (Dow, 1919, p. 345)

According to Dow’s (1919) notes, he was open to such flexibility in the use of tools and materials because this kind of flexibility nurtured students’ creativity, even a century ago. Despite differences in the kinds of materials and tools between then and now, the manual training movement during the 1900s and the maker movement of contemporary times share a similar understanding of the purpose of a machine: that it is ultimately up to us as teachers to use our autonomy in using such machines and tools as ways of supporting student learning and creativity. In doing so, we might try to predict some creative ways to use new technologies in artmaking, similar to how traditional art

tools such as paint brushes and wood chisels were used in earlier times. This compels us to think about shared properties between studio artmaking and the kind of making that has emerged as a result of the maker movement.

From my perspective as a sculpture teacher, the notion of making and play are the two key concepts that exist in both digital tinkering and artmaking. Often, I have been confronted with some mixed responses when using new technology tools with students in studio art courses. In contrast to some students who reported great satisfaction when utilizing digital fabrication tools in their art projects, others stated that they failed to obtain a sense of achievement with such tools and showed consistent resistance to these new technologies. For this reason, I was constantly challenged to develop approaches to teaching and learning that fuse traditional and new media forms.

Undoubtedly, many art educators have merged the notion of play within artists' processes with sensitivity towards the use of materials. For instance, Burton (2016, p. 939) claims that both traditional and digital materials encourage learners to experience "motion inquiry," which opens up unlimited possibilities of material transformation. Hafeli (2014) further elaborates the idea of play and experimentation present in artmaking process in art studios and classrooms, and how teachers can intentionally plan for them:

By understanding what needs to be taken into account, worked through, and resolved as artists create their work—and putting that together with their own sense of what studio work entails and their understanding of students as artists and learners—art teachers can integrate artists' perspectives on studio thinking and action with other important considerations as they envision and plan art classroom experiences. (p. 229)

Ultimately, the process of “transforming and retransforming materials” (Burton, 2016, p. 939) comprises the learning, which accords with constructionist theories of thinking and learning using digital technologies. Along the same lines, Justice & Cabral (2013) discuss the importance of playful learning and making with a digital tool (a 3D printer) with children, which can be played with similarly to traditional art tools. In their study, Justice and Cabral found that one of the participants, Daniel, was able to understand the concepts of perspectives and spatial dimensions by playing with 3D designing software, without any formal instruction received by a teacher. We might also imagine that Daniel also would have learned about those concepts if he were drawing and doodling using a crayon. I agree with Franz & Papert’s (1988) argument that traditional and digital materials and tools can all fit within one overall category of things that we touch and feel while letting ourselves be engaged in playful experimentation. Further, there do not seem to be profound differences between how artists work and how engineers and scientists work towards their projects. For instance, Banzi (2011) asserted that tinkering and playing with everyday objects such as cheap toys or old gadgets can help one to learn about even the most complicated physical computing tools such as Arduino. For both Franz & Papert (1988) and Banzi (2011), playing with technology without worrying about goals during tinkering and making processes is critically important.

Thinking about the benefits of learning through art, Siegesmund (1998) suggests that art education can help students “learn to reason through perception” (p. 209). For our current society, where art education is somewhat marginalized, he suggests that we think about the value of learning through art and artmaking as follows:

To expand empirical knowledge to include art, and moving art into the mainstream of disciplined inquiry, may require art to move down from its pedestal...It is, however, a realm of feeling, sensory concepts, and exquisitely varied forms of human representation that give us insight into what it means to be in, relate to, and comprehend. Or, even more succinctly, to have knowledge of the world. (p. 212)

Overall, it is very intriguing that both digital making and artmaking share many similar characteristics related to thinking, researching, experimenting, playing, improvising, and iterating. While the use of digital tools is sometimes over-emphasized, mainly because of the unique, novel, and innovative technological functions that were not previously available, this emphasis sometimes ignores the importance of traditional artmaking.

For all of these reasons, it is important to find a good balance of both digital and traditional artmaking to foster student creativity and learning. Burton (2016), for example, sees it as problematic that “the current urge to improve American education in the direction of science, technology, engineering, and mathematics, as a way of nurturing complex thought and the workforce of the future, appears to ignore possibilities for creativity and flexible and innovative thinking offered by the arts” (p. 938). Therefore, collaborative efforts among artists, art educators, and educators are urgently needed in order to improve contemporary education. One suggestion would be to develop approaches to teaching that elegantly link traditional and digital tools and materials together. Franz & Papert (1988) asks educators to “seek out open-ended projects that foster students’ involvement with a variety of materials, treating computers as just one more material, alongside rulers, wire, paper, sand, and so forth” (p. 416). Treating traditional art and digital materials as similar things offers a simple way forward.

Summary

This chapter reviewed literature in two main areas. First, I presented a brief overview of Transformative Learning theory and related research as well as gaps in literature on Transformative Learning in the arts. Second, I presented a brief overview of related literature on learning in an art class. In this section, I first explored the notions of experimentation and play, detailing connections to creative processes. Then I discussed shared and distinctive learning from traditional and digital artmaking, drawing on literature from maker education and art education.

In the next chapter, I describe the methodology used in this research.

III – METHODOLOGY

This dissertation is a study of thirteen students¹ enrolled in a sculpture class that I teach at a graduate school of education. I employed a qualitative case study design involving an analysis of in-class surveys and artifacts (artworks, weekly journal entries, etc.), post-class surveys and interviews (retrospective surveys, individual interviews), as well as my personal teaching notes based on class observations. The data analyzed for this study was brought together in order to understand (1) what the participants' transformation looked like in a sculpture curriculum intentionally designed for Transformative Learning and (2) the ways in which particular elements of students' class experiences led to Transformative Learning.

Type of Study

This study examined the following research question: When Transformative Learning is part of the teacher's intention, how, if at all, does learning through artmaking in a sculpture class transform a diverse group of adults with regard to (1) their identities as artists and learners, (2) their understanding of art itself, and (3) their approaches to

¹ In Chapter IV, I chose to write findings of five selected students out of thirteen students for the purpose of in-depth description.

artmaking? Sub-questions also examined these three angles as they related to the particular aspects of participants' class experiences that contributed to their Transformative Learning.

Since the study sought to understand the details of art learning events and phenomena that contributed to the participants' changed views of themselves as artists, their artmaking practices, and their understanding of art—all dimensions that are grounded in the transformation of “meaning,” qualitative methodology was appropriate because it aims to reveal “deep and holistic meanings” (Yin, 2009, p. 26). Among many other researchers, Creswell (2007), Maxwell (2013), Merriam (1998), and Yin (2009) all emphasize that qualitative research is deeply concerned with understanding meaning. Merriam (1998) suggests that qualitative research conveys various forms of inquiry that help readers understand the meaning of social phenomena (p. 5). She further asserts that qualitative researchers are interested in understanding the meanings people have constructed; that is, how people make sense of their world and the experiences they have in the world (p. 6). Likewise, Maxwell (2013) claims that qualitative researchers aim “to understand how events, actions, and meanings are shaped by the unique circumstances in which these occur” (p. 30).

Given that this study focuses on specific individuals and their engagement in a bounded unit—the sculpture class—the case study method was appropriate. As Creswell (2007) describes, a case study “explores a bounded system...over time, through detailed, in-depth data collection involving multiple sources of information” (p. 73). Merriam (1998) also emphasizes the case study's focus on deep understanding, arguing that “a case study design is employed to gain in-depth understanding of the situation and

meaning for those involved. The interest is in participants' learning process rather than outcomes, in context rather than specific variables, in discovery rather than confirmation" (p. 19). In addition, Yin (2009) argues that a case study design involves the investigation of "a contemporary phenomenon [the 'case'] in depth and within its real-world context, especially when the boundaries between phenomenon and context may not be clearly evident" (p. 16).

Theoretical Framework

As detailed in Chapter II, the major theoretical premise for the study is derived from seminal scholarship in the field of adult education—in particular, the work on Transformative Learning by Jack Mezirow (1990, 2000) and Patricia Cranton (1994, 1996). As stated earlier, Mezirow (2000) asserts that learning involves the process of using a priori knowledge to understand and construct a new and revised interpretation of the meaning of one's knowledge and experience, to move forward to future action (p. 5).

I designed the structure of the study—including the sculpture course curriculum elements, selection of study participants, and the data gathering, analysis, and interpretation (all discussed below)—to be purposefully aligned with elements of Transformative Learning as described by Mezirow (1975, 1990, 2000) and Cranton (1994, 1996). Specifically, I decided to use a simplified version of stages—Stability, Reflection, and Transformation—based on Cranton's (1992) Transformative Learning

diagram¹ since (1) each participant's turning points or critical reflection moments can be categorized into a broader stage instead of a specific detailed stage, and (2) there were lots of overlaps between Cranton's detailed stages such as Reflection I and Reflection II due to the nature of the sculpture class. Therefore, the study design incorporates the following dimensions of Cranton's (1992) Transformative Learning cycle and stages (which is influenced by Mezirow's work). Since Mezirow's (1975) ten phases detail a learner's actions based on the Transformative Learning cycle, I've considered his phases when analyzing each participant's individual moments that led to different stages in time. In the following, I have elaborated on Cranton's model to reflect the context of my study:

(1) Stability Stage: Students enter the course with individual values and/or assumptions about their identity as artists, approaches to artmaking, and understanding of art. Assumptions are defined as "something taken for granted, a supposition," whereas values are the "social principles, goals, or standards accepted by the individual" (Cranton, 1992, p. 150). Through students' engagement with class projects and activities, and through interactions with their classmates and with me as their teacher, their assumptions and values are challenged.

(2) Reflection Stage: When faced with challenges in the Stability Stage, students then move on to the Reflection Stage, where they become aware of their initial assumptions and begin to examine them. Here, students analyze the sources and consequences of their assumptions. In Mezirow's (2000) theory, critical reflection, at this point, is a key element and turning point that enables the Transformative Learning

¹ Cranton's (1992) Transformative Learning diagram includes "Stability," "Reflection I," "Reflection II," "Are assumptions valid?" "Transformative Learning," "Changes in Assumptions," "Changes in Perspectives," "Actions on Changed Perspectives." (p. 150)

process. Critical reflection is the self-assessment of the way in which one has posed problems and formed one's own meaning perspectives (Cranton, 2006, p. 150). At this stage, students question whether their initial assumptions are valid. If they still hold on to their assumptions, then they return to the Stability Stage. However, students no longer hold their initial assumptions, they enter the Transformation Stage.

(3) Transformation Stage: Given that students no longer hold their initial assumptions, they will start to change their perspectives. After experiencing changes in assumptions and perspectives, students may take action based on these changed perspectives.

Context of the Study

Setting

As the dissertation study examined the Transformative Learning of students enrolled in a sculpture class that was intentionally designed to encourage Transformative Learning (through a specific set of class activities and projects aligned with Transformative Learning theory), I used my own class as the case site. I chose my own teaching as the site so that I could control the design and execution of the class activities.

The study was set primarily in Thingspace, a new renovated maker space art studio where the sculpture course took place primarily (the class met in the Chelsea gallery district, for one class period during the semester).

Thingspace is a hybrid maker space art studio that is equipped with a woodworking room, hot metal shop, molding/casting area, and digital fabrication station containing a laser cutter, a 3D printer, and digital embroidery machines. There varied materials for student to use in their projects—such as wood, metal, fabric, plaster, silicone, paint, wax, plastics, and random found objects. Additionally, a small exhibition area (with clean wall and pedestal) in the front of the space, a white board, and computer station are available to help students brainstorm, design, present, and document their projects.

In addition to two and a half hours of the sculpture class time per week, all students were generally advised to work on class projects either in Thingspace or outside of the space, on their own, for at least three hours per week. Accordingly, the studio was open for designated hours five days a week and staffed by an attending supervisor for safety reasons. A Studio Manager and I oversaw and maintained the studio together, to guarantee a safe and productive environment for students during the class and open hours.

Since many students in the class were not previously familiar with the maker space, the goal of the studio was to make a comfortable, safe, and enjoyable environment. For instance, the studio offered extensive air ventilation in each work area, professional track lighting in the exhibition area, a first aid kit, individual lockers for storage of materials and projects-in-progress, and a stereo for music listening. To foster natural discussion and interaction among students, all worktables and stools in the studio were movable. In my class, the majority of artworks were expected to be created in the studio; weekly journal writing, and reflective essays could be completed off-site.

Participants

There was a total of 21 students enrolled in the sculpture class in Spring and Fall of 2017. Out of those 21 students, I contacted 13 participants whose class artifacts showed some evidence of Transformative Learning. Eight students were not contacted since some of them (1) had missed important class activities such as Making sessions and a gallery trip, or (2) had graduated and were living abroad so it would have been challenging to conduct individual in-person interviews with them. The 13 participants studied included four men and nine women who majored in various educational disciplines and who had taken the sculpture class in 2017 (during either the spring or fall semester). The students' majors included Art Education, Arts Administration, Science Education, Math Education, Instructional Technology, Music Education, Adult Learning and Leadership, Clinical Psychology, Social Studies Education, Early Childhood Education, and Curriculum and Teaching. The 13 participants varied in terms of their prior art-related experiences: some had taken art classes in their adolescent years or during childhood, others studied art disciplines in college or had worked in the field, and some had never had a chance to do any art-related activities. At the beginning of the semester, none of them identified themselves as artists. Most participants were graduate students in their 20s and 30s, but one was in her 50s. The following table illustrates the backgrounds of the 13 participants regarding age, ethnicity/culture, major, and previous art experience.

Table 2. An Overview of the 13 Participants

Name (pseudonym) & Age	Semester	Ethnicity	Major	Prior art related experience	Reason for taking the sculpture class
Rose, age 25	Spring 17	White	Arts Administration	Undergraduate painting class	To find “fun” class as an elective
Anne, age 24	Spring 17	Asian (International student from China)	Instructional Technology and Media	Observational drawing class in middle school	To acquire artistic technique and creativity for future career
Tom, age 24	Spring 17	Asian (Asian American)	Curriculum & Teaching	Summer camp art experience in elementary school	To understand STEAM curricula better
Julie, age 25	Fall 17	Asian (International student from South Korea)	Arts Administration	Painting class	To better understand artistic processes & fulfill elective requirement
Rachel, age 55	Fall 17	White	The Spirituality Mind Body Institute	A graphic designer, CEO of graphic design firm	“to get back to hands”
Gina, age 31	Spring 17	Latinx	Economics and Education	No art classes after elementary school	To find a course that is different from other academic classes. To understand her roommate, an art major.
Tim, age 29	Spring 17	White	Science Education	Kindergarten art activities	To take “fun” class as an elective. To be creative in teaching at STEAM oriented school.
Ben, age 33	Spring 17	White	Music Education	Undergraduate elective art class	To fulfill an elective
Daniel, age 27	Spring 17	African American	Instructional Technology and Media	High School drawing class	“Fun” elective

Sophie, age 23	Fall 17	Asian (Asian American)	Clinical Psychology	Art class in elementary school	“Fun” elective
Stella, age 32	Fall 17	White	Art Education	Worked as a graphic designer for 5 years prior to her graduate study	To fulfill studio requirement
Kelly, age 25	Fall 17	African American	Adult Learning & Leadership	Graduate painting class	To improve painting practice
Molly, age 30	Fall 17	Latinx	Arts Administration	Arts administrator at numerous museums in NYC Photography	To take “fun” class as a break from thesis

In Chapter IV, I describe narratives of the Transformative Learning journey of a smaller representative group of participants—5 of the 13 (Anne, Gina, Tim, Stella, Molly). Focusing on this smaller group allowed me to describe each person’s process in greater detail. In the following section, I describe the selection criteria for both the 13 participants and the 5 focus participants profiled in Chapter IV and Chapter V.

Selection Criteria. Thirteen students who took the sculpture course in 2017 (Spring and Fall Semesters) were recruited for the study through a three-step selection process that incorporated a purposeful sampling method. Purposeful sampling aims to uncover, comprehend, and gain insight into (and therefore ought to select) the most informative sample possible (Merriam, 1998, p. 156).

Initially, potential participants were recruited via in-person and email invitations after the semester ended (and after final grade submissions) so as to avoid any power imbalance. If I had asked students to participate while the class was in session, they may have changed their in-class behavior or responses in their written assignments, such as in

weekly journal entries and final reflective essays. They may also have felt compelled or pressured to agree, due to teacher/student power dynamics. Therefore, recruitment took place only following the conclusion of the course.

The three-step selection process was based on (1) the theoretical framework's definition of transformation (Cranton, 1992, 2006; Mezirow, 1991, 2000) as applied to students' articulations of their identities as artists, their approaches to artmaking, and their understanding of art, (2) students' responses on the Demographic and Art Surveys, particularly related to their prior art-related experience and knowledge, and (3) purposeful selection for a representative sample.

The likelihood of transformation depended on certain keywords and phrases that I was able to detect in the students' class artifacts (e.g., Weekly Journal Responses, final artworks, and the Final reflective essay), which suggested the presence of transformation in the dimensions of (a) students' perspectives on their identities as artists and learners, (b) students' understanding of art, and (c) students' approaches to artmaking processes. All three of these dimensions were based on Transformative Learning Theory (Cranton, 1992, 2006; Mezirow, 1991, 2000). Demographic information and prior art-related experience and knowledge were collected from the surveys given on the first day of the class, which documented students' age, gender, ethnicity, major and prior art-related experiences. After that, a purposeful selection method was implemented to include a variety of genders, ages, and ethnicities, as well as a diverse array of prior art related experiences.

Researcher Role

In this study, I had the dual roles of being an instructor of the sculpture class (complete participant) and a primary investigator (researcher). As instructor and researcher simultaneously, I needed to carefully position myself to design the curriculum and data collection and analysis methods in the most objective way possible, while reflexively acknowledging my position as teacher and observer (see Appendix C). During the class, I observed and took personal teaching notes without knowing, anticipating, or assuming who would ultimately be selected for participants in the study. Upon obtaining their permission and confirmation after the class ended, I conducted interviews with participants and administered retrospective surveys.²

The majority of the data was collected as part of the course requirements (normal class conduct), including artwork documentation, sketches, final presentation, reflective essays, weekly journal entries, and visual artifacts gathered from Making Sessions (described below). I also took photographs and videotaped short clips of all students during class sessions upon receiving student permission through photo release forms (see Appendix B). These images and video clips were also shared with all students on an online platform (Cluster) for their reference as part of the class activities.

My role as a complete participant in the study was inherent in my position as an instructor of the course, since I was present with students during class time for fifteen weeks. Creswell (2013) defines a “complete participant” as being “fully engaged with people he or she is observing” (p. 166). In Merriam’s (1998) words, I was considered “a member of the group being studied” who had to “conceal his or her observer role from

² I further describe data collection (individual interviews and retrospective surveys) later in this chapter.

the group” (p. 100). Angrosino (2007) argues that being a complete participant may be helpful for the researcher to establish greater rapport with the people being observed (p. 54). This role is also described as an insider-researcher position, which potentially overlooks certain routine behaviors, makes assumptions regarding events, and assumes participants’ views and issues (Merriam, 1998; Unluer, 2012). This positioning of the researcher poses some potential disadvantages, such as creating a power imbalance between researcher and participants, and may cause problems (e.g., bias of researcher in collected data) for data gathered from observations. Another point to consider is that since I conducted individual interviews with thirteen participants only after they completed the class, my role changed from that of a complete participant to that of non-participant. Although some might argue that this presents a potential flaw in the study design, Creswell (2013) supports the idea of researchers switching back and forth in their roles, as such changes might be necessary for helping one to be “a good qualitative observer” (p. 167).

Design of the Study

Sculpture Curriculum for Transformative Learning

One of the important contexts of the study was the sculpture curriculum itself, since the dissertation focuses on students’ Transformative Learning experiences with regard to their identities as artists, their understanding of art, and their approaches to artmaking within a class designed to bring Transformative Learning about.

Teaching style. Influenced by my personal transformative experiences described in Chapter I and Mezirow's Transformative Learning theory (1991), I believe that the educator's job is to help students challenge and refine their identities, broaden their perspectives, and set the stage for them to become autonomous in their learning. Thus, for the sculpture class that formed the case study, while I encouraged students to learn art-related theory, read art-related literature, and appreciate existing art to develop good foundations, I simultaneously asked them to critically reflect on their learning and thinking in various ways. For example, I made sure to encourage students to constantly reflect on their work, through material inquiries and weekly reflective journaling. To help develop their identities as artists, I intentionally asked challenging and pointed questions about their perspectives on art and artmaking. I made sure students got a chance to reflect on their overall experience by giving them a copy of all of their journal entries from throughout the semester. Class activities and methods of instruction were rooted in the philosophies of "art as experience" and "playful engagement with materials" discussed by many seminal scholars in the field of art education (Burton, 2016; Dewey, 1934; Eisner, 2002; Greene, 1995, 2001; Hafeli, 2014).

In the service of critical reflection and personal transformation, individual communication is important in my teaching and mentoring. From research and personal observation, I have found that students feel most valued and do their best work when they receive individual feedback and attention. Further, I have found that in-person consultations—rather than email correspondence or online platforms—are helpful to me as a teacher in understanding each student's background, individual learning style and issues of interest. Therefore, for the sculpture class, I regularly

conducted individual consultations in which I met with every student to discuss their ideas and process, as well as any questions or concerns. In addition, their weekly journal responses helped me assess their individual needs and inquiries, especially those that may go unaddressed in group situations. To encourage the enthusiasm and participation of each student, especially those from foreign countries or marginalized cultures, I intentionally referenced art outside of the mainstream. This also served my goal of getting students to develop their own ways of using materials in their artmaking.

In addition to individual consultations, group discussions and activities are critically important for students and myself to engage with various interpretive, evaluative, and formative perspectives, and also to invite conversation about art. However, I have often found some students are shy and passive, partly due to different educational and cultural experiences, and therefore haven't yet developed the habit of sharing their valuable thoughts with other students. As such, in the sculpture class I made sure that students each had the chance to be a lead art critic. In addition, active participation in studio critiques helped all students to communicate with each other and share ideas, as well as develop a shared visual language as artists.

When assigning relevant readings, I take pride in helping students contextualize contemporary art and form connections between readings and their personal experiences. In the sculpture class, I made a point of adding a diverse contemporary artists and artworks as well as related texts in class slides. I also encouraged in-class and online group discussion as a tool for developing the habit of sharing ideas, questions, and concerns.

Maxine Greene (1995) argues that she “connect[s] the arts to discovering cultural diversity, to making community, to becoming wide-awake to the world” (p. 4). For Greene (1995), it was important for students to cultivate their own visions of the world while being “wide-awake.” Art refines our sensory experiences and broadens our imaginative and creative capacities about ourselves and the world in which we live (Dewey, 1934; Eisner, 2002; Greene, 1995); beyond that, however, my job as an art teacher is to help students shape their identities with open and inclusive mindsets, ultimately through Transformative Learning.

Projects and requirements. As part of the course, students were required to: (1) complete two preliminary sculpture projects in response to prompts and guidance, and one final sculpture project that was open-ended, (2) participate in two in-class Making Sessions,³ (3) submit twelve weekly journal entries, (4) write a final reflective essay, (5) contribute images and posts to the course blog (using the Cluster application), and (6) conduct a final PowerPoint presentation on the last day of class. Students also went on a field trip to view art in Manhattan’s Chelsea art gallery district, and regularly took part in in-class discussions focused on viewing and responding to art and artists’ descriptions of their creative processes.

The two preliminary sculpture projects were based on prompts regarding material, process, and theme. For each of these projects, students were given approximately two to three weeks of working time, which was followed by group critiques of their works. For the first preliminary project, students were given two thematic choices, and they were required to use a woodworking process. The first option asked them to create a self-

³ There were two Making Sessions per semester in which students were asked to create a sculpture in response to a set of thematic prompts with limited material and limited time (usually 30-40 minutes).

portrait sculpture using woodworking, and the second asked them to create a texture sculpture incorporating a subtractive process using wood. The second preliminary project also allowed the students two options, but they had to incorporate mold making and casting processes. The first option was to create a sculpture that addressed the theme of “nature versus. nurture,” and the second option was to create a sculpture depicting “chaos and harmony.” Since these preliminary projects were assigned during the first few weeks of the semester and students were learning various processes and materials, I wanted them to work with some constraints so that no one became too overwhelmed. Therefore, I was mindful to strike a balance between the structured assignment and the open-ended assignment. Compared to the two preliminary projects, the final sculpture was open-ended in terms of the way students were asked to approach the materials, themes, and process. This was because students were exposed to various materials and processes while engaged in the Making Sessions. By the time they started to work on their final projects, they had also taken a gallery trip.

Key activities based on Transformative Learning. Following Cranton’s (1992) suggestions that educators encourage critical reflection moments for students, specific activities and assignments were included in the course. These activities helped me track the Transformative Learning stages that ground the study. The goal was to use these as tools for locating the evidence of the students’ existing assumptions about art, and then to locate the arc of their transformed perspectives regarding themselves as artists and learners, their understanding of art, and their approaches to artmaking. When designing the sculpture curriculum to elicit Transformative Learning, I followed Cranton’s (1992)

11 suggestions to enable Transformative Learning for students (p. 151).⁴ Based on these suggestions, some key activities—demographic and art surveys, weekly journal entries, a gallery trip, Making Sessions, online platform (Cluster), group critique and discussion—were included as part of the sculpture class curriculum. Details of each activity are described below.

Demographic and art surveys. Cranton (1992) suggests that it is important to recognize learners' assumptions that may act as constraints in a learning situation (p. 151). It was vital for me to understand students' backgrounds, disciplines, prior educational experiences, and any art related experiences, not only as a researcher but as an instructor, in order to best facilitate the class and guide the students. To achieve this end, I designed a demographic survey and an art survey, which were given to students on the first day of class.

The demographic survey was comprised of eight multiple-choice questions and two short answer questions. These questions asked students about their age, ethnicity, and prior art related experiences—including their knowledge of art disciplines, materials, and tools, and how they assessed their knowledge of art in general. The last question asked students about their learning goals for the class (see Appendix D).

The art survey was comprised of seven short answer questions and one choice-based question. These questions asked students about the last art class they had taken (if they had taken an art class before), their identities as artists and learners, and approaches to artmaking, along with their initial expectation for the course, expected personal and professional impact from the course, and their understanding of art. The last question

⁴ A detailed list of eleven suggestions appears in Chapter II (p. 28).

asked students to indicate which of six images provided in the survey could be classified as art, and if so, why they considered them to be art. The six images ranged from classical Greek statues to contemporary art installations. The images depicted the Greek statue *Discobolus* (460-450 BCE), Gedi Sibony's *From The Center, Her Trumpeted Spoke Lastly* (2007/2010), Damien Hirst's *The Physical Impossibility of Death in the Mind of Someone Living* (1991), Tching Hsieh's *Performance I* (1978-79), Robert Gober's *Untitled Leg* (1989-90), and a painting, Dianna Molzan's *Untitled* (2009) (see Appendix E).

Weekly journal entries. As Cranton (1992) argues, journal writing in any format both helps in revealing potentially transformative moments and in getting learners to become more involved in the ongoing process of critical self-reflection (p. 153). There were a total of 12 weekly journal entries, and each journal prompt had four to five questions related to class activities. I intentionally excluded the journal assignment in the first two weeks and on the last day of the class since there were other obligations to fulfill: introducing students to the course and space on the first day and having them fill out the demographic and art surveys, and in the last week, completing all of the required assignments (the final reflective essay, the final presentation, and the final project). For the weekly journal entries, I gave students a list of questions at the end of class each week. They were asked to complete written responses to the questions, which prompted them to reflect on themselves as artists and learners, their approaches to artmaking, and their understanding of art. I formulated the questions to align with the Cranton's (1992) stages of the Transformative Learning cycle.

Table 3. Weekly Journal Entries in Relation to Cranton's (1992) Transformative Learning Cycle

	Stability Stage	Reflection Stage	Transformation Stage
Weekly journal #1~ 4			
Weekly journal #5~ 9			
Weekly journal #10~12			

The 12 weekly journal entries were used to keep track of changes in students' perspectives, as well as to gain insight into their thinking at various stages of the class. All 12 entries were divided into roughly three chronological timelines: beginning of the semester, mid-semester, and nearing the end of the semester (see Table 3). Each group of journal writing prompts was carefully designed to target the participants' stability, reflection, critical reflection, and transformative learning moments. Each journal prompt asked several exploratory and pointed questions of students about their initial thoughts regarding tools and materials shown during the class demonstrations, their reflections on individual studio time and group critiques, and takeaways from the Making Sessions. All of these targeted questions were based on the three aspects of the main research question: the participants' identities as artists and learners, their understanding of art, and their approaches to artmaking.

The questions for the 12 journal writing prompts were adapted from various sources, including Cranton's (1994) suggestions and Brookfield's (2015) work on critical thinking strategies. Some questions and prompts were aligned with Cranton's (1994) suggestions which are based on Mezirow's (1991) Transformative Learning model. As

discussed in Chapter II, although Mezirow primarily emphasizes the importance of critical reflection as a catalyst for Transformative Learning, Cranton (1994) further describes three kinds of reflection (content reflection, process reflection, premise reflection) for practical and educational uses (pp. 33-35). She argues that premise reflection, compared to content and process reflection, will further enable learners to see and experience the world in a different way (p. 35). The following table illustrates those three types of reflections and presents example questions that appeared in roughly half of the weekly journal entries.

As discussed in Chapter II, Mezirow (1990) describes six types of habits of mind involved in Transformative Learning. Cranton (1994, p. 36) developed questions designed to document these habits of mind. Weekly journal questions in my study borrowed from four of these six different types (psychological, philosophical, aesthetic, and emancipatory). For example, students were asked to answer the following questions:

- What do I believe about myself in terms of being artist? Why should I question this perception about myself? (psychological)
- What is my world view and why do I stay with this view? (philosophical)
- What do I do that is artistic? How have my views been shaped? Why do I care about my views? (aesthetic)
- What are my assumptions (regarding artmaking)? Why should I revise or not my perspective? (emancipatory)

In Week 13, all of the previous weekly journal entries were copied and handed back to students so that they could reflect on the entire semester. Some questions asked students to review their own responses in early journal entries and reflect on their processes and thoughts about themselves as artists, their understanding of art, and their approaches to artmaking:

- In reviewing all of your previous journal responses (Weekly Journals 1-4), what responses surprised you the most, and why?
- In reviewing earlier (Weekly Journals 1-4) and later journal responses (Weekly Journals 8-12), how, if at all, have your assumptions changed throughout the course of the semester?

Gallery trip. I selected the exhibitions for the class gallery trip based on student responses on the demographic and art surveys. I purposefully chose contemporary galleries in Chelsea since I wanted to include a variety of art forms (e.g., painting, photography, and sculpture) in order to challenge students' assumptions about art.

I did not give out any information about the exhibitions prior to the gallery trip because I wanted students to observe the artworks through immediate personal engagement instead of relying on information about the featured artists and their work. Instead of looking at works of art as viewers, students were asked to analyze and view the work as artists. During the debriefing after the gallery trip, the class shared their favorite exhibition(s) and rationales for those choices, as well as connections they made to their ideas for the final project assignment. Based on the responses, students were encouraged to further research their selected exhibition or artists after the trip ended.

Making Sessions. Following Cranton’s suggestion to help students act on their revised assumptions by creating a safe environment in which to try out new ideas and challenge themselves, I designed two in-class Making Sessions. The first Making Session was based on individual exploration of drawing materials and processes, resulting in a series of drawings that were transformed into a three-dimensional form. The second Making Session was based on collaboration, with working teams decided by lottery—an added challenging element. These surprises and challenges connect to the context and content changes involved in the Transformative Learning cycle described above. I purposefully did not inform students about the materials they would use and what they would create because I wanted to challenge them to focus on their artmaking actions. I prepared and set up unexpected materials in class, and students were given around 40 minutes to create a sculpture with a partner, following specific thematic prompts and using a set of given materials. I wanted to challenge students’ prior assumptions or framework of approaches to artmaking by using creative constraints as Cranton (1992) suggests. By creating a small sculpture using these “creative constraints”—limited time, material, and thematic prompts—students were empowered to think, experiment, improvise, and actively play with the materials. Students were also given an opportunity to “just play” and experiment with materials without a lot of planning. This was not only a teaching strategy, but a necessity due to limited time.

Online platform. I intentionally created an online account for the students to share ongoing ideas and discussion in visual and written formats. Students were encouraged to post pictures, videos, and sketches related to their artworks and processes, as well as to comment on classmates’ artworks and processes. This included more than

merely posting images of their methods, but also exchanging knowledge and sharing experiments, whether they turned out successfully or not. The students also uploaded art reference images such as photos taken during the gallery trip.

Group critiques. Cranton (1992) suggests that group discussions help students to challenge their current ideas about content knowledge or topics discussed in classes. It was critical for students in the study to constantly reflect on their understanding of art, as well as on their processes as makers of art—as these activities could enable Transformative Learning. In group critiques, in order to give equal opportunities to all students, everyone was given about 15 minutes for class discussion of their work. In this activity, one student volunteered to go first and serve as an art critic, talking about his or her peer's (the artist's) work for five minutes. According to Cranton, role-playing can be very helpful when encouraging students to view their assumptions or thoughts from multiple perspectives (1992, p. 164). The art critic then opened up the discussion for group participation. Lastly, the artist had a chance to share the process and explain the work. Then, the artist whose work was discussed selected, via a lottery system, the next student's work for discussion and served as the art critic to begin the process again.

All group critiques prompted student respondents to follow a four-step process:

- Step One: Plainly describe the work that you are seeing. Talk about visual and tactile attributes (e.g. color, texture, form, scale, materials, possible processes, etc.). Talk about how the work is presented (e.g. How is the lighting affecting it? How is the work's location affecting its presentation?).

- Step Two: Talk about the work in relationship to the project prompt: *abstract self-portrait with textures*. How do you see a connection between the work and the ideas of abstraction, self-portrait, and texture? Does the title seem to make sense in light of the work and the project prompt?
- Step Three: Talk about your more personal interpretation of the work, which might go beyond the more “descriptive” answer you gave in responding to the first prompt, and perhaps move beyond the more “theoretical” answer you gave in response to the second prompt. For example, how are you as an individual responding to the work in a way that your peers may not, given your own background and experiences?
- Step Four: Provide any suggestions or feedback that come to mind. Be constructive and not arbitrary. Try to give reasons for your suggestions and feedback.

Sequence of weekly class sessions. The sculpture class was comprised of 15 weekly class sessions, described below.

Week 1. In the first class, following a general welcome, students filled out the demographic and art surveys. After student introductions, I shared with the class images of contemporary artworks primarily composed of unconventional art materials, such as recycled and found objects. Some examples of artists that I included in the presentation were Tony Feher, Tara Donovan, Nobu Aozaki, Sarah Sze, Tom Friedman, Dan Steinhilber, and Maya Lin. I showed both full shots and extreme close-ups of each work—and challenged students to guess what material the artists used to create their work. After the discussion, I gave a studio tour, briefly going over various tools and

materials. Students were assigned their individual lockers and some materials. Lastly, I went over the syllabus, studio protocol, and open studio hours. For the next class, students were asked to post two images that they thought best represented them on the shared online platform, Cluster.

Week 2. This session included various woodworking processes that involved using power tools and shop machines, such as a band saw, miter saw, drill press, hand drills, sanders, grinders, a table saw, and lathe. Prior to demonstrating the tools, I went over safety protocols and general guidelines. The class spent about an hour going over all of the tools step by step. Students then practiced using the tools. Towards to the end of the class, students discussed their initial ideas for the first preliminary project and made sketches with either paper or clay. Finally, we spent about 30 minutes going over everyone's images posted on Cluster.

Week 3. I began the class with a brief slide presentation focusing on how artists have used drawing as a tool to plan and create their sculptures and installations. The artwork examples included not only contemporary works, but also a prehistoric cave painting (Lascaux) and Renaissance drawings. I included works by various artists including Leonardo Davinci, Vincent Van Gogh, Pablo Picasso, Henri Mattise, Alice Aycock, Annette Messenger, Keith Haring, Brice Marden, Janine Antoni, Rebecca Horn, Julie Mehretu, Sarah Sze, and Do-Ho Suh.

The rest of the class time was devoted to laser cutting tutorials as part of learning about the subtractive process. During this time, the class used a computer lab, and I went over how to design and prepare files using Adobe Illustrator, that would later be used for laser cutting and etching. We did every step together so that no one was left out. Once

students had prepared their files, I compiled them and we transitioned back to the Thingspace to start the laser cutting and etching. This process was crucial since students got to witness how they could start with a simple image from designing and editing with Adobe and end up with a more complex final output from the laser cutting. Every student had a small laser cut piece at the end of the class. The rest of the class was devoted to individual consultation and studio time, where I went around to talk with each student to discuss their first preliminary project. Starting in Week 3, students began to reflect on their studio processes and assumptions about tools in their first weekly journal entry.

Week 4. This session was a group critique and discussion focused on the students' first preliminary projects, using the framework for critiques discussed above. Students were asked to reflect on their works, as well as peers' works, in their journal entry for that week. Students also were encouraged to document their works and share them on Cluster.

Week 5. The class began with demonstrations on mold making and casting using plaster, alginate, wire mesh, burlap, and liquid plastic. Students then tried out these materials, creating test trials. While their plaster casts were drying, I showed for discussion examples of artists who use mold making and casting processes in their works. We discussed ancient objects from Mesopotamia and Greek culture, especially examples of the lost wax technique, as well as works by Rachel Whiteread, George Segal, Tony Oursler, Kiki Smith, Robert Gober, Janine Antoni, Nobu Aozaki, David Altmejd, Sarah Meija Kriendler, Tony Cragg, Do-Ho Suh, Diana Al-Hadid, Rona Pondick, and Richard Tuttle. The rest of the class was studio time for students to start working on their second preliminary project. I went around to talk to all of the students to discuss their ideas.

Week 6. Working with the idea of replicating an object, the class was introduced to basic 3D design and printing processes using Tinkercad software. The class met in the computer lab for about 30 minutes to as a group follow a step-by-step designing process. Students were then asked to, on their own, design a simple object to be 3D printed. The class then transitioned to the Thingspace to continue working on the mold making and casting process. Students had a choice between using their 3D print objects for casting using Alginate or a rubber mold or to using the objects as tools for imprinting textures into their clay molds. I encouraged the students to document their final results, as well as the artistic process, on the Cluster app.

Week 7. Before class, the first Making Session, I prepared a wide variety of materials—assorted papers (vellum, Bristol, water color paper, construction paper, acetate, colored paper) cut into various small sizes, oil pastels, watercolors, brushes, plastic knives, colored markers, water soluble ink and pens, tape, and assorted to create 12 gesture drawings within a 30-minute time frame. I timed one minute per each gesture drawing as students drew from observation. They were asked to use only oil pastel and watercolors. During this time, I prompted the participants to pay attention to their surroundings to find interesting areas or objects to draw from. In the second part of the Making Session, students were prompted to choose their favorite drawing. Then they were asked to take 10 minutes to create a sculpture illuminating a mood of their choice, using the other 11 drawings, along with scissors, tape, and wire. The class ended with a group critique and discussion. Students were asked to observe each other's sculptures and guess the emotion their artist peer was depicting before it was revealed.

Week 8. This session was a group critique of the students' second preliminary project. Students were asked to reflect on their works, as well as the works of their classmates in their weekly journal entry and were encouraged to document their final works and share them on Cluster.

Week 9. This class session was the trip to Chelsea art galleries. We spent an hour and a half looking at about 10 exhibitions at various galleries. As mentioned previously, I purposefully did not give students any information about the featured artists or exhibitions ahead of time. While on site at the galleries, I gave students a response form with the galleries listed and a space for reflection where they could document thoughts and ideas about the artworks on view as they related to the students' class projects (see an example reflection sheet in Appendix x). Students were encouraged to look at artworks not just from a viewer's perspective, but also as artists connecting these ideas to their own methods.

Week 10. The class met at the computer lab to complete an Artist Statement Exercise activity. Students were asked to read six different statements written by contemporary artists and make a drawing based on the description of the artwork in the statement. Afterward, the class shared their drawings and then I revealed images of actual works detailed in the artist statements.

Week 11. Before class, the second Making Session, I prepared a wide variety of materials—Plexiglas, wire, wire mesh, chicken wire, balsa wood, and paint). This session was based on collaboration. The students were paired up for 40 minutes to collaboratively create “the longest sculpture.” We had a group critique and discussion after the Making Session.

Week 12. Students had an entire class period to work on their final projects. During this time, I consulted individually with each student—focusing on their selected materials, processes, themes, and presentation methods. Toward the end of the class, I asked the students to share their projects-in-progress in groups.

Week 13. I gave a presentation on methods of documentation and presentation of artwork—including how to photograph and light the work—to help students professionally document their processes and final projects. The presentation highlighted using a pedestal, suspending the piece from the ceiling, and site-specific installation as well as multiple photographs taken from different angles and using different lighting. After the presentation, students transitioned to the computer lab to learn about basic photo-editing techniques, primarily using Adobe Photoshop. Students practiced editing their own photos of their work and I assisted them.

Week 14. This class was a group critique on everyone's final projects.

Week 15. We met at the computer lab and the students shared their final presentations in front of the class. They each spent about 15 minutes sharing all three of their class projects, as well as their processes and relevant artworks by other artists. Finally, the class discussed further resources and techniques for sustaining artistic practice, and shared resources for finding materials and locating galleries.

Data Collection

The data set for the 13 participants was comprised of common qualitative data types: interviews, retrospective surveys, observations, and class artifacts (Yin, 2009, p. 105). Overall, the study employs “multiple sources of evidence,” which could “strengthen findings through the convergence or triangulation of the data” (p. 239). More specifically, there are two different sources of data (student level and teacher level) existing across two different points in time (in-semester and post-semester).

Table 4. Overview of Student Level and Teacher Level Data During & Post Semester

	During Semester (15 weeks of class duration)	Post Semester (after the final grade submission and upon signing the consent forms by participants)
Student Level Data	<ul style="list-style-type: none"> • Class projects (three assigned sculpture projects, related sketches) • Written assignments (12 weekly journal entries, reflective essays) • Pre-surveys and Demographic Surveys • Images and posts shared on online platform (Cluster) 	<ul style="list-style-type: none"> • Individual interviews • Retrospective post, then pre-surveys
Teacher (Researcher) Level Data	<ul style="list-style-type: none"> • Personal teaching notes (for all students) • Photographs and video clips (excluding faces or any identifiable elements) 	<ul style="list-style-type: none"> • Relevant notes taken during individual interviews • Selected teaching notes of 13 participants • Selected photographs and video clips of 13 participants

Student level data. As seen in the above table, student level data included both in-semester and post-semester data. During the semester, all of the students were required, as part of normal class conduct, to: (1) create three sculpture projects (two

preliminary structured projects and one open-ended final project), (2) submit 12 weekly journal entries and one final reflective essay, (3) fill out the demographic survey and the art survey on the first day of the semester, and (5) post a number of photographs documenting their processes and three sculpture projects on Cluster.

After the semester ended and final grades were submitted, 13 out of the 33 students from the two courses were recruited. All 13 recruited students agreed to participate in the study and met with me for individual interviews and completed retrospective surveys. More details about the interviews and retrospective surveys are discussed below.

Interviews. Since I was examining possible transformations in each participant's perspective on art and within their approaches to artmaking, an interview approach was appropriate, since it provided in-depth information and descriptions of each participant's experience (Kvale, 2007).

All 13 students who were recruited to participate in the study were interviewed individually according to each participant's personal schedule. As mentioned previously, in order to avoid a power imbalance between the participants and myself, all interviews were conducted after the semester ended and after the final grades were submitted.

A semi-structured interview style incorporating about 20 key questions was used in order to understand "themes of the lived daily world from the subject's own perspectives" (Kvale, 2007, p. 10). Specifically, the interview protocol and questions were organized into seven categories, which were (1) a welcoming statement to acknowledge participation in the study and inform the participants how the interviews would be conducted and recorded, (2) introductory questions to investigate participants'

demographic information and initial expectations of the sculpture class, (3) questions regarding participants' identities as artists and learners, (4) questions regarding participants' approaches to the artmaking process, (5) questions regarding participants' understanding of art, (6) questions regarding the personal and professional impact participants received from the class, and (7) participants' future plans and concluding statements. In addition, participants were asked to indicate whether their answers to questions regarding their identities as artists and learners, their approaches to artmaking, and their understanding of art reflected the time before they took the class, indicated experiences they had during the course, or were related to the time after the semester ended. This was done in order to track any possible changes in their perspectives (see Appendix G).

In accordance with participants' acknowledgement and signatures on informed consent forms, these individual interviews were conducted and recorded using a voice memo application from my phone. After transcribing the interviews, I sent the transcription to the participants to give them a chance to clarify or expand on any particular points or ideas.

Retrospective surveys. The participants completed retrospective surveys following their individual interviews. The retrospective post-then-pre design is a popular way to assess learners' self-reported changes in knowledge, awareness, skills, confidence, attitudes or behaviors (see, for example, Howard, 1980; Lam & Bengo, 2003; Pratt et al., 2000; Rockwell & Kohn, 1989; Lam & Bengo, 2003). Researchers report that this method takes less time, is less intrusive, and avoids pretest sensitivity and response to

self-reported changes that shift biases that result from pretest overestimation or underestimation. In the retrospective post-then-pre design, both “before” and “after” information is collected at the same time (see Appendix F).

Teacher level data. Teacher level data also included both in-semester and post-semester data. During the semester, I kept personal teaching notes for all students. These were compiled in a 15-week long log of student responses from group critiques, discussions, individual consultations, and casual conversations both inside and outside of class, and my observations of students at work and interacting with one another. In line with Creswell’s (2013, p. 167) suggestion that case study researchers sometimes switch between the roles of researcher and participant, my observation was sometimes modeled after the “direct observation” style, and sometimes after the “participant-observation” style (Yin, 2009, p. 115). This was due to my previously mentioned dual roles as researcher and instructor, as I was engaged in students’ artmaking activities, while helping and guiding them, as well.

I took notes to document my observations of how students were engaged with certain tools and materials, including how they played and experimented and how they presented and talked about their sculpture projects during group critiques and discussions. I primarily took notes for the observations during and after each class, while also taking photographs and video clips of students’ sculpture projects, sketches, and studio processes.

Throughout the semester, students were engaged in studio processes where they used their hands to touch, grab, sand, rub, mush, manipulate, and create with materials and tools. They also made sketches and final displays of their art projects. The only ways

to adequately capture some of the actions were by using photography and video. Since the study focused on artmaking, the photographs and video recordings were viewed and analyzed for various hand movements and material exploration and uses (see Appendix B). After the semester ended and after the final grade submission, I collated relevant personal teaching notes as well as photographs and video clips of the 13 participants and used these teacher level data materials to compare with the student level data.

Data Analysis

Multiple sources of information were collected to enable triangulation among all of the data, and to ensure that findings were consistent (Yin, 2009, p. 241), as well as to analyze each participant in depth from multiple vantage points. The following table offers a summary of how each data source was analyzed.

Table 5. Collected Data and Analysis Process

Collected Data	Analysis procedures
<i>Interviews</i>	The audio recordings of one-on-one interviews (total of 13) were transcribed and shared with each participant immediately after all the interviews. This process was necessary and helpful for both the researchers and the participants to edit and resolve any ambiguous parts accordingly. Elements of Transformative Learning were detected and color coded and categorized according to research questions.
<i>Personal teaching notes (in & out of class time)</i>	This was analyzed with interview transcriptions simultaneously, which further aid as a source for discussion, coding, and categorizing.

<i>Surveys</i> (Demographic & Art)	Both Demographic and Art Surveys were analyzed thoroughly for each participant along with their individual interview transcriptions, personal teaching notes, various documents, and physical artifacts. These two surveys served as a chronological basis to investigate each participant’s possible Transformative Learning experiences since those were distributed at the first and the last day of the course.
<i>Various documents</i> (weekly journal entries, reflective essays, online postings on <i>Cluster</i> , photographs & video clips during the class)	Various documentations (also as part of the course requirements) were observed carefully and analyzed for discussion, coding, and categorizing, along with each participant’s interview transcriptions, personal teaching notes, surveys, and physical artifacts.
<i>Physical artifacts</i> (final artworks, unfinished works from Making Sessions, two Mini Projects, sketches, final presentation files)	Various physical artifacts (also as part of the course requirements) were further serve as a basis of discussion in surveys, weekly journal entries, and interviews according to themes, offering a source to compare and contrast beliefs, thinking, and perspectives.

Data analysis was based on a set of six commonly used analytic activities described by Berg (2009, p. 352). Following and applying his suggestions, all collected data was “organized to be ‘read’” in some fashion. I transcribed all of my interviews and personal teaching notes. Other data, such as each participant’s written assignments, and photographs and video clips taken during the duration of the semester, were organized chronologically to track any evidence of transformation and the arc of critical reflection moments. Then, after reading through the data several times, “codes [were] analytically developed and inductively identified” (p. 352). I employed open and axial coding methods to find relevant themes and codes based on three dimensions: (1) participants’ identities as artists and learners, (2) participants’ understanding of art, and (3) participants’ approaches to artmaking—all of which were based on the main research

question. The participants' 12 weekly journal entries, reflective essays, retrospective surveys, interviews, and posts on Cluster, as well as my teaching notes on each participant, were analyzed and coded based on the Transformative Learning cycle. After that, following Berg, I assigned "categorical labels or themes" to the codes, by identifying "similar phrases, patterns, relationships, and commonalities or disparities" throughout the entire data set (p. 352). For instance, relevant phrases or words were coded based on the three dimensions described above, then further analyzed according to the three phases (Stability Stage, Reflection Stage, Transformation Stage) of Cranton's (1992) Transformative Learning cycle.

To conclude the analysis, I inspected the sorted data to separate "meaning patterns and processes" (Berg, 2009, p. 352). Until I obtained a set of generalized patterns, "identified patterns" (p. 352) and themes were closely considered along with Transformative Learning Theory and the dissertation's research questions. Following Berg's (2009) suggestion, to reveal how Transformative Learning explained any changes that may have developed as a result of how each participant's artmaking unfolded over the course of the semester, all collected and treated data were presented and organized chronologically and thematically.

Limitations of the Study

Finally, as the study was designed to examine a particular phenomenon—Transformative Learning—within a specific context (sculpture class) and among a small group of participants (13 adult learners), there are naturally some limitations to the research. These are described below.

- Because the specific setting of this study, both the classroom (makerspace art studio) and specially designed sculpture curriculum, are so integral to the nature of the investigation itself, the dissertation's findings are limited to the particular sculpture class that served as the case.
- Because the study adopts a specific model of Transformative Learning, future studies may not be able to reproduce or predict results unless they adopt a similar theoretical framework.
- Because of my personal bias towards and interest in Transformative Learning, and because I intentionally designed the course specifically for Transformative Learning to take place, the study's results are not generalizable or predictive unless other teacher-researchers adopt a similar view of the theoretical background that undergirds this study.
- Selections of artworks shown in class slides, the artist statement exercise, and the art survey were my choice as the teacher-researcher. Additionally, the selection of

exhibitions and galleries during the gallery trip depended on the schedule and availability of galleries. I intentionally chose artifacts and exhibitions that I hoped would lead to a Transformative Learning experience with regard to art and artmaking.

Summary

In this chapter, I presented the methodology of the study, including a rationale for using a qualitative case study design, a description of how the study was intentionally designed according to the main theoretical framework of Transformative Learning, the context of the study including setting, participants, researcher role, and the design of the study detailing the sculpture curriculum designed according to Transformative Learning principles. Lastly, I presented the methods I used to analyze data, and the limitations of the study.

The next chapter presents the collected data and the findings according to five participants' narratives of their experiences in the sculpture class.

IV – FINDINGS

Chapter Overview & Organization

As mentioned in Chapter III, the sculpture curriculum was designed with Cranton's (1992) suggestion for Transformative Learning in a general educational setting. Each semester, the sculpture course was structured around various class activities, assignments, and three sculpture projects. In the first few weeks of the semester (Week 1-6) students were introduced to different tools and materials in a demonstration. During these weeks, students got to learn different techniques and processes with a wide range of materials. They participated in activities such as wood-working, mold making and casting, and digital fabricating, and two completed mini sculpture projects and one open-ended final project. There was a gallery trip to contemporary galleries in mid semester and two Making Sessions where students were asked to create a small sculpture in response to unexpected thematic prompts and materials within a limited time. The last few weeks of class were devoted to individual working time as well as sessions on documentation of artworks and an Artist Statement Exercise.

A detailed course synopsis is shown in Chapter III. Two semesters in 2017 (Fall, Spring) had exactly the same course schedule, except the exhibitions included in the gallery trip were different due to the changing nature of the gallery shows. The course

assignments were comprised of two Mini Projects with prompts, one final project, twelve weekly journal entries, a final reflective essay, a final presentation, and ongoing blog participation on Cluster.

As explained in the data analysis section of Chapter III, the findings from five students (Anne, Gina, Tim, Stella, Molly) are presented here in Chapter IV as stories of their Transformative Learning journeys in the sculpture class. In order to organize each student's particular Transformative Learning journey, chapter sub-headings more or less follow Cranton's typical Transformative Learning experience cycle. Therefore, each participant's narrative is divided into three stages: *Stability*, *Reflection*, and *Transformation*.

Within each stage, each participant's narrative was written from three different perspectives—identity as artist and learner, understanding of art, and approaches to artmaking—according to the main research questions.

As mentioned in the data collection section of Chapter III, each case's narrative is based on the analysis of multiple data sets, which are post-semester data (individual interview, retrospective survey), as well as in-semester data (twelve weekly journal entries, three sculpture projects, relevant sketches, photographs and video clips, a final reflective essay, a final presentation, and my personal teaching notes). To maintain the flow of each participant's narrative, I did not identify the source of every single data point. In some cases, I did indicate the source of the excerpts. In other cases, readers can assume that the data is based on one of the data sets (both in-semester class artifacts and post-semester research data).

Case 1. Anne

Stability Stage

As discussed earlier, Stability is a stage where learners start with their existing beliefs and assumptions about their identities as artists, understanding of art, and approaches to artmaking. In what follows, the Stability Stage encompasses Anne's existing beliefs about her identity as an artist, her understanding of art, and her approaches to artmaking before her classmates, the curriculum and other events challenged her assumptions.

Anne's initial identity as artist and learner. Anne, an Asian, was an international student from China, in her mid 20s, and in the last semester of her MA in Instructional Technology and Media. She decided to major in instructional technology because she thought that this training would afford her better opportunities and greater financial stability throughout her career. In her Demographic Survey, she noted that she did not have any knowledge about art and that she did not consider herself an artist. She wrote, "I don't really have any experience in art and I don't have knowledge of art or art history. So I definitely don't see myself as an artist." And when reflecting back on the beginning of the semester in her retrospective survey, Anne recalled feeling a lack of identity as an artist, indicating that she "strongly disagreed" with the statement: "I considered myself to be, or identified as, an artist."

During the first class session of the semester, I showed the students samples of final sculptures by former students, as well as works by contemporary artists, to emphasize various styles and mediums. At the end of that session, according to my teaching notes, Anne came up and asked me if students were expected to create works at levels of accomplishment similar to those shown in the slides. She said that if so, she was sure she would not be able to do this, as she was not good at art in general. Anne was worried about what she perceived as her lack of artistic ability and creativity and was not confident that she would be able to create sculptures to meet the expectations of the class.

Anne's Transformative Learning journey thus began with insecurity and anxiety. In her demographic and Art Surveys, Anne repeatedly emphasized that she was not good at making art and that she was a beginner. She also noted that conceptual and abstract artworks made her confused, and she believed these types of art only existed for people who were experts in the field—definitely not her. Anne showed a similar kind of insecurity—both about herself as an artist and in her knowledge of art—in her response to survey questions about her personal goals for the class: “I am afraid of making things with my hands and I'm not an artist. But I hope to understand myself better in different ways. Understanding the use of art tools might help me build necessary skills for my career.”

Again, Anne's preparation for her future career was her major concern and provided the most important reason for her taking the sculpture class. This was evident in her response to the survey question, “What do you hope to learn from the class?” Anne emphasized, as mentioned, that her primary goal was to get a stable job in the technology and education field. She said, “I hope to learn different kinds of techniques in sculpture

so that I can gain extra skills to become a competitive technology teacher in [the] future.”

Anne also mentioned that another reason for taking the class was to fulfill her elective credit before she graduated.

Even though her reason for taking the class was to gain new skill sets for her career, become more creative, and fulfill a requirement, Anne seemed to have aspirations to create labor intensive or highly polished sculptures. For instance, after my Week 3 presentation of contemporary artists' works, specifically those that used wood and plaster, Anne approached me at the end of class looking concerned. She was worried that she would not be able to create an artwork as polished as those I had shown by George Segal, that involved intricate human figures made of plaster. Anne was interested in making something similar to these sculptures, but in her journal response that week she wrote about how she didn't have prior skills because she was not an art or art education major.

Anne asked me in class how I would grade the project; this was important for her, since she planned to graduate the following semester. She needed to earn good grades on projects to pass the class in order to graduate. Accordingly, my teaching notes indicated that Anne always arrived 10 minutes before the class started, submitted all weekly journal entries on time, and participated actively in group discussion. She also regularly shared with me her beginning ideas and sketches for projects, seeking my affirmation that she should proceed according to these plans. Based on these observations, she seemed like a “good” student who would be present in classes on time and do all required work, even if her priority was getting a good grade to fulfill her elective requirement.

Anne's **initial understanding of art**. Growing up in a rural area in China, Anne described her adolescent educational experience as being fairly strict and career-oriented. Furthermore, because Anne grew up with conservative parents, her education was focused on traditional academics and she was not significantly exposed to art or artmaking in school (her one and only art course was a middle school drawing class). According to her response on the Art Survey, the way Anne looked at and understood art was influenced by her upbringing—partly due to a lack of exposure to a variety of forms of art. For example, as mentioned above, early on in the semester Anne felt confused by conceptual and abstract artworks.

One of Anne's starting assumptions about art was that it was something mysterious, confusing, or otherwise difficult to understand. This was evident in her response to the survey question "What is art?" The question asked students to consider six thumbnail images of historical and contemporary art, and then select the ones that they thought were representative of "art"—in other words, to choose which ones "counted" as art. They were also asked to provide a rationale for their selected images. Anne chose only an image of a traditional Greek statue as a genuine work of art. In her rationale for why she did not select, for example, an installation by contemporary artist Gedy Siboni, Anne stated the following: "This is pretty and great art, but I don't understand what they mean if they're not representational forms." Similarly, on the first day of class, when I presented images of abstract, conceptual, and realistic artworks by contemporary artists, Anne looked puzzled when she encountered one of the conceptual artworks, *I Will Not Make Any More Boring Art* (1971) by John Baldessari. It is a lithograph print with the phrase "I will not make any more boring art" written repeatedly

by the artist. When the class reflected on the slide, according to my teaching notes, Anne looked skeptical and asked me, “Why is this art? And who decides what is art or not?”

In contrast, during a slide presentation a bit later in the semester, Anne wrote about how she appreciated Kiki Smith’s bronze sculpture in *Genevieve and the Wolves* (2000), a figurative representation of a human and a wolf cast in bronze. Based on these early observations of Anne’s likes, dislikes, and reasoning about art, it was clear that she tended to appreciate and understand representational and realistic sculptures as works of art, and at the same time felt alienated and distanced from abstract and conceptual artworks.

Anne’s initial approaches to artmaking. On her Demographic Survey, Anne wrote that she was taught art in a very specific and traditional style, which included techniques such as rendering a realistic representation of landscape using watercolor and pencils. She appreciated and enjoyed working in this way during her early adolescent years. As mentioned above, an observational drawing class in middle school was her last art-related experience prior to taking the sculpture class.

On the first day of our class, along with photographs of artists’ works, I showed short video clips from a documentary of contemporary artists’ artmaking processes—from brainstorming ideas to executing them visually and three-dimensionally. The video clips included artists’ ways of inventing multiple ways to work with materials. As part of teaching for Transformative Learning in the sculpture curriculum, one of my missions as an instructor was to provide many different methods and materials at the beginning so that students could start to find their own favorite materials and individualized ways to

work with them. This was particularly important for students who brought a somewhat limited understanding of artmaking processes—for example, those who believed there were only a few ways to work with clay.

During this first class, Anne looked puzzled after watching an Art21 video clip titled *Improvisation* (2012), on how the contemporary artist Sarah Sze created her museum installation work *The Uncountables (Encyclopedia)* (2010). This clip showed much of Sze's process, from collecting materials to finally installing the piece in the museum. As the video title indicates, Sze primarily emphasized “the importance of improvisation and spontaneity” in her process (Art21, 2012). Anne explained that she was having trouble understanding the legitimacy or validity of artists who use mundane and everyday materials to create art; this skepticism was directed both at the artmaking process and at the status of the final product “as art.” Anne wrote in her weekly journal response:

I think the artist Sarah Sze was not serious about her artmaking. I can appreciate artwork that shows beauty or artists' physical efforts. However, Sze just used random objects to create her work and I'm not sure if I can accept this as art. I personally like to make [a] plan or sketch instead of just [using a] go-with-the-flow type of process.

She noted that she did not appreciate or understand why Sze added materials and objects such as butter, sugar, and random receipts to her artwork. Anne thought that Sze's work was not really an artwork because of Sze's use of everyday materials, which resulted in qualities that were not, in Anne's words, “serious” or “polished.”

Partly due to Anne's upbringing and prior educational experience, her beliefs and assumptions about approaches to artmaking and her understanding of art were somewhat limited. She decided to take the sculpture class to gain technical skills that would help her

in her future career. Her objectives influenced her approaches to artmaking, and her pieces were more technically oriented. Therefore, she did not appreciate improvisational artmaking processes, such as those of Sarah Sze. Similarly, Anne did not understand or value abstract and conceptual artworks. In the next section— “Reflection Stage,” I explore how Anne’s assumptions began to be challenged by class activities and by her classmates.

Reflection Stage

The Reflection Stage entails a learner’s critical reflection process, where a student starts to be aware of assumptions, and examines the sources and consequences of those assumptions. Critical reflection occurs when the learner asks the question “Is my assumption valid?” This inquiry serves as a turning point in the Transformative Learning theory. If the learner still validates prior assumptions and beliefs, she goes back to the Stability Stage. However, if the learner no longer holds prior assumptions and beliefs, she moves to the Transformation Stage.

Anne’s reflections on her identity as artist and learner. While Anne originally identified herself as a non-artist learner who took the sculpture course “to gain artistic techniques for the competitive job market,” by the gallery trip during Week #9, these conceptions had changed. As her journal entry describing the gallery visit indicates, she had begun to reflect on and challenge her initial thoughts about herself as a non-artist:

During the trip, we were required to interpret the artwork, so I paid more attention to each work. And I really tried to feel and understand the work from my perspective. Then I realized that even though I still couldn’t understand all of them, I began to have my responses to the artwork. I jotted down notes and took

close up pictures for myself when I got interesting ideas looking at some artworks. Sometimes, it was almost like stealing and sharing ideas from these artists for my own art project.

The excerpt above reflects Anne as she began see herself as an active viewer, being inspired by and “stealing” “interesting” ideas from artists to use in her artwork, and in general engaging differently with art. Instead of analyzing and understanding the original intention of artists as described by curators, Anne tried to feel and understand the work from her own feelings and perspectives. In a sense, Anne’s identity as a non-artist and passive viewer shifted to that of an artist and active viewer who would get ideas and interpret works on her own. She also noted about the artist from the gallery visit, “I’m not a famous artist like her, but I’d like to try her methods,” suggesting that although Anne understands she is not known for her artwork, she identifies in some sense as an “artist.”

Weeks after the gallery trip, in her retrospective interview, Anne described another instance of how she had started thinking about herself in a different way than she had at the beginning of the course. This further demonstrates a shift away from the Stability Stage conception of herself that she possessed at the start:

Reflecting back, I remember how I used to ask you so many questions and get your approvals—even little things like which colors should I paint my trial hand cast [in plaster]. I feel like I just didn’t trust my eyes because I didn’t see myself as an artist or a creative person.

It is clear in the quote above how Anne felt, *prior* to her reflection, fully conscious of herself as a student and non-artist who was not confident about her choices in artmaking processes, such as use of color in her sculpture. In other words, she saw herself as a student who needed step-by-step instructions and constant affirmations from the instructor in order to complete successful projects. Instead of relying on her own curiosity about the materials and developing her own processes in using them, she

assumed that the instructor's ways would be the only reliable or "right" choices or offer the only answers. As a result, Anne didn't feel comfortable trusting herself with small decisions like choosing colors for her trial hand cast. Instead of thinking herself as "an artist or a creative person," she relied on the instructor's creativity and judgment. The fact that she frames all these observations in the past tense indicates a shift *away* from this conception of herself as a non-artist.

Anne's reflections on her understanding of art. Anne's initial thoughts about her understanding of art included the assumption that only realistic representations made of traditional sculptural materials such as bronze, marble, and stone counted as art. At the beginning of the semester, she rejected conceptual and process-oriented artworks by artists such as John Baldessari and Sarah Sze, insisting that artwork should be labor-intensive in a way that demonstrates representational technique and polished details (as in George Segal's plaster figures). However, such assumptions started to be challenged by her classmates during the group critique of the first sculpture assignment (Week #4). After observing one of her classmate's abstract sculptures made of plaster, cast from plastic shopping bags, Anne noted the following:

One of my favorite projects among my peers was the plaster bag piece. I was really surprised that [work] can be made with the plastic bags that I use almost every day. Her work sort of pushed me to think that I should try using similar [items] for my next project. I like [how] the textures and interesting shapes came out.

Anne's changing conceptions of art stemmed from both in-class experiences, as described above, and the gallery trip; after the trip, she articulated her awareness of other assumptions she had previously held:

Before this trip, I felt like art [had] to be always somehow very polished and representational. During the trip, we were asked to interpret the artwork in our own ways without getting information about the artist or description about the exhibition. And at first, [I] really tried to feel and look at each artwork carefully even though I couldn't quite understand some. Then, I allowed myself to just purely [look] at the work without trying to analyze it. I know I may be wrong but at least I enjoyed looking at abstract art on my own. It was difficult because I was so used to [learning] about information and analysis from curators or art professionals when I took history classes growing up.

Similarly, after the course ended, Anne shared some additional thoughts (on her retrospective survey) about how her understanding of art grew during the gallery trip:

Reflecting back, I think the gallery trip allowed me to see that art can portray different moods. While some of the pieces were darker, and at times disturbing, others were very whimsical and light – which I think is more the direction I will go when going to museums and galleries myself in future [...] I also noticed how many artists used the same material in various ways. The mixed media pieces were particularly intriguing to me.

Anne's reflections on her classmate's artwork and the artists' works she saw during the gallery visit indicate that over time she started to look at art with an artist's mindset or view. This shift coincided with a significant change in her assumptions about art itself. In the early weeks of the class, Anne only appreciated and validated "polished" and representational sculptures as art, mostly objects made from traditional sculpture materials. Over time, however, she began to appreciate artists' use of alternative materials and processes as well as non-representational works (such as the abstract plaster work by her classmate). Anne also started to interpret and comment on artworks from her own perspective. Instead of trying to understand the work from others' (art professionals) points of view, she trusted her own interpretations and understanding of the work and made connections to her own projects. Anne began to position herself as an artist reflecting on others' works, relating them to her own work simultaneously. As this

happened, Anne started to enjoy the personal experience of looking at the art in the gallery instead of merely analyzing and understanding the work as prescribed by others.

Anne's reflections on her approaches to artmaking. At the beginning of the semester, on Week #2 and #3, I demonstrated steps for both the laser cutter and a few woodworking tools (band saw, sander, miter saw) so that students could gain an in-depth understanding of subtractive (cutting away) processes using wood. During these early class sessions, I observed Anne jotting down notes on each step in her notebook—what to do and what not to do. After the demonstrations, during the time when all students got a chance to experiment with the tools, Anne approached me and asked if she could sand a piece of balsa wood by hand with sandpaper *and* with the laser cutter; she was wondering if it was appropriate to use the laser cutter for sanding. I advised her to try both processes and find her own approach that worked for her project. This simple incident is representative of how Anne, though she tended to seek teacher guidance and affirmation at every step of her art process, nonetheless became interested in trying things out for herself. Anne's desire to experience things for herself in her artmaking is also represented in her own reflections, as shown below.

During the gallery trip, for example, Anne was very engaged in having her own quiet time with artwork. Prior to the trip, we read an article by Rika Burnham (1994) arguing for the importance of personal engagement with museum artwork. I also emphasized how the students would be looking at various forms of art and that they should think about how they could borrow ideas and get inspiration from the works. I did not want students to look at the works only as viewers, but rather as artists relating the works of other artists to their own ideas and artwork. I also asked students to not look at

press releases about the exhibitions we planned to see, so they would not be familiar with others' interpretations of the exhibitions prior to spending time looking at and engaging with the work on their own. Before the trip, Anne asked me what would happen if she did not understand the artwork. As a response, I encouraged her to focus on her own thoughts and engagement instead of analyzing or understanding the work too much. After the gallery trip, Anne's conception of acceptable approaches to artmaking was further expanded:

When I looked at Tara Donovan's work at the Pace gallery, it was like solving a math problem because I couldn't understand the work. But I decided to give myself at least 10 minutes just looking at the work, like Burnham's suggestion. I started to realize how Donovan created each painting-like work using thousands of plastic cards placed, stacked, and glued vertically inside of the frame. I was so shocked at how she created many works using the same materials [plastic cards]. I've never seen anything like this, and I appreciate her creative idea and intensive labor. Her work gave me an idea of how I might use unusual materials in my own way.

As Anne indicates here, her approach to artmaking was influenced by Tara Donovan's use of unusual items like plastic cards. Instead of limiting her process as she had in the past (for example, by closely following my tutorials and examples), she started to analyze Donovan's work from her own perspective as an artist and to make connections to her own project idea. She realized how there could be various ways to select and work with materials and how exciting this could be. Instead of merely looking at an artist's work from a passive viewer's point of view, she started to question and imagine the artist's process, and relate this to her own work as an artist.

While Anne's conceptions of artmaking were challenged by the gallery trip, they were also challenged by her work during class sessions. During Week #11, for example, Anne was engaged in the collaborative Making Session; the assignment was to create a

sculpture with her peer within a limited timeframe (40 minutes), using limited materials (clay, plaster, frame, paint, wire), and adhering to a thematic prompt (the longest sculpture). She felt lost at the beginning of the session but seemed to discover playful moments with materials:

Usually, during normal studio process we were given [...] certain material [and told to follow an] already (or predictably) known process. For example, in painting class, [we are told] what and how to paint in a predicted way. Unlike other studios, ‘making’ session process seems so open that you might get lost along the way. However, because of the openness and flexibility in the process, as I worked on the project I kept finding myself longing and [questioning] more than usual. In a way, I had to push myself not to think too much but rather to just touch the material and respond intuitively. I usually like to have plans for myself before physically making the work. But during the ‘making’ session, I allowed myself sort of jumping into the ‘unknown.’ My teammate and I wanted to have intricate portrait drawing on the frame mirror in a subtle way. And then, we both agreed to try the laser cutter to etch an image onto the glass. I was afraid to use the laser cutter because I didn’t know the right setting for the glass. Then, my teammate suggested that we could start from the lowest settings—like the lowest power, frequency—but then use the highest speed like 100. Just watching how the image was transformed into unexpected etched glass drawing was very interesting [...] Even though I’m not super confident about the laser cutting, I feel a bit more confident thinking about this process. Now I have some other ideas to try laser etching on different surfaces [materials] on my own for my final project.

As seen in above excerpt, Anne became aware of the limitations of individual studio time, where she used to follow predictable methods. However, she also started to realize differences between individual studio times and the collaborative Making Session, in which there could be surprising moments even with the constraints of material, time, and method. For example, Anne began to appreciate collaboration, which taught her to brainstorm ideas and processes with her partner. She was aware that she normally did not question the material or the process in her individual studio time, and that at first, she actively longed for a planned, defined outcome during the Making Session with her peer.

One of the biggest transitions that indicated her critical reflection was the fact that she started to be comfortable with ambiguity, which wasn't the case at the beginning. Prior to the Making Session, she only felt comfortable and confident when given a set of "approved" processes demonstrated by the instructor or shown in presentations of artists' works. But as indicated in her reflection, she began to develop an experimental mindset, to trust her decisions and persevere with them. She pushed herself to resist predetermined outcomes, to experiment, and to collaboratively brainstorm with her partner.

To sum up the Reflection Stage, Anne's prior assumptions and beliefs about herself as an artist, her understanding of art, and her approaches to artmaking were challenged and expanded by the gallery trip and Making Session. A contemporary artist Tara Donovan's use of everyday objects challenged Anne to rethink her choices of materials and artmaking process—focusing more on the artist's conceptual ideas and intentions rather than highly polished and technique-driven representational artwork. Even though it was subtle, Anne started to look at artworks as an artist—who looks for interesting ideas and materials and relates these to her own work—rather than just as a viewer. Instead of merely copying the instructor's demonstration or relying on the instructor's affirmation for which tool to use, through collaboration with her partner during the Making Session, Anne started to realize the potential of finding her own individualized way of working with the laser cutter. In the next section, Transformation Stage, I explore how Anne's critical reflections on her identity as an artist, approaches to artmaking, and understanding of art were further challenged, allowing her to develop additional new attitudes and reject previous assumptions and beliefs.

Transformation Stage

The Transformation Stage entails a learner's newfound perspectives resulting from previous critical reflection on prior assumptions. In this stage, depending on the individual, one may take actions based on changed perspectives.

Anne's transformed identity as artist and learner. After the collaborative Making Session in Week #11, Anne's journal response indicated a clear shift from her prior assumption that she was not an artist. She demonstrated a greater confidence in choosing materials and finishing her project without asking for teacher affirmation, which was not the case at the beginning of the semester. She shared her process of choosing materials in her weekly journal:

During the Making Session process, we were given a greater sense of purpose and direction. My teammate and I were working towards a more tangible goal. So I actually felt more successful at the end of the session than I did after normal studio sessions. I felt like I created a finished product that I was proud of. However, I realized how I could lead my individual studio time just like the Making Session so that I can follow intuitive process. In a sense, I'm not afraid of failure anymore. I'm confident that I could find other interesting ways from failed attempts. I felt like an artist in some way during this session. I feel more confident about [the] artmaking process, and I think this is what many artists might do in their studios.

Anne's final project for the course, which she titled *The Life Cycle*, contained various crafted element such as 3D printed small doors, plaster casts of toys, a wooden boat she sanded, and small sanded wooden blocks that were presented carefully on a pedestal in a horizontal way. In Anne's journal, her goal was for the viewers "to manually play and interact with all individual pieces." This work, in not being tied to realistic representation and polished techniques, is clearly different from the kinds of

artwork Anne originally envisioned herself making in the course. She journeyed from considering herself a non-artist (or a lapsed artist, as indicated below) and being a passive learner who took the class to fulfill a breadth requirement and gain skills to further her career in educational technology to a more active learner and artist. Her comments below show that she is no longer accepting conventions and holding onto her existing beliefs about herself or the artmaking process.

Throughout the semester, I think I discover and reconnect with the artist in me. It's been always there, but I never let my inner artist come out because of my fear and lack of confidence. This class pushed me [to] step out of my comfort zone and challenge me to look into myself carefully. Even though the artist in me is not perfect, I am glad to reconnect with it.

Anne's words here suggest that during the course she found her artist identity through the challenge of self-reflection. As an artist and explorer who stepped out of her comfort zone, Anne moved beyond her initial assumptions about herself as an artist. Instead of limiting herself as a non-artist, she reflected on her thoughts and actions within various class activities (Making Sessions, a gallery trip, etc.) to find herself "being" an artist. And this newfound identity helped her both look at the art of others differently and create her own art in her individual way.

Anne's transformed understanding of art. Anne's final reflections indicate a shift in her assumptions about the nature of art and her relationship to it. Anne talks below about an example of this shift that occurred after the Week #9 gallery trip, just past the middle of the semester,

Then I realized that I can interpret the artwork in my own way, and it has a greater personal impact rather than having an expert explaining the artwork to me. I paid attention to how each artist used materials in their own way and how they presented the work and why they would do it. I was amazed at the level of details. This made me more confident about myself looking at art—and trying to borrow ideas from these artists in my own projects. I'm excited about my next sculpture.

Instead of thinking about herself as someone who doesn't understand art, as she did at the beginning of the semester, she acknowledges challenging her own beliefs and perspectives about art by letting herself become fully immersed in artwork, without logically understanding it. Anne continues:

I sort of imagined myself having a dialogue with the artist before getting contextual information about artists. Not all the time, but sometimes, I was able to understand how the artist might use materials in interesting ways. Then I would focus on how I responded to the work and how I might try similar materials and process in my own project. It was definitely difficult to just [rely] on my personal thoughts and reactions when looking at art because I was used to [listening] to audio guides and [looking] at pamphlets... In fact, I found myself really enjoying this process of looking and reflecting. So my understanding of art has changed. Even if I look at [something] difficult like abstract art, I know I can still have personal connection and interpretation.

Anne's final reflections indicate other gradual changes in her understanding of art. She said that she used to think only "beautiful" objects that are in museums were considered art, and she couldn't understand what these objects "meant." Anne said that after the semester ended, she didn't consider art objects to be only in museums but rather "everywhere," especially in nature. Further, she wrote on the retrospective survey that her criteria for what counts as art had expanded to include "personal connection" to the artist's selection and use of materials:

As long as I get some sort of personal connections, about how the artist used a certain material in a particular way and that fascinates me, I value this more than how to understand and look at art merely from what's written from the artist's perspective.

Anne shifted from being self-critical and started finding ways to appreciate and understand art in her own way. She positioned herself as an artist looking at other artists' works rather than just an audience member trying to analyze and understand the artist's

intention and concepts. I see her changes in perspective and assumptions as one of the pivotal turning points for her Transformative Learning journey. Anne discovered the inherent joy in going beyond her own established aesthetic preferences.

Approximately two months after the semester ended, I got an email from Anne. After the sculpture class, she had spent some time thinking about her career direction and decided to apply for an internship at the Museum of Modern Art. She mentioned that she became very interested in art as a result of the class and she wanted to become an educator to facilitate similar kinds of learning experiences when she goes back to China. I wrote her a recommendation letter for her application, and she got the internship position for the following fall. Not only did she experience Transformative Learning, she also took further action based on her changed perspectives about art and art education.

Anne's transformed approaches to artmaking. In the previous Reflection Stage section, I described how Anne cited the collaborative Making Session as influencing her thinking about her artistic processes. In addition to the *collaborative* Making Session mentioned in that section, the *individual* Making Session also provided a set of materials (yarn, Plexiglas, plastic rods, wood, paint, wire) and a prompt: to create “the longest sculpture.” Students were given exactly 40 minutes to create a sculpture and make it ready for presentation. Anne responded that the most rewarding moment in that the individual Making Session was “when all the little cut out pieces were glued onto the wood board, and I thought [about] how to present the piece, I felt so accomplished because I would never think that I could make artwork only within 40 minutes.” Anne also revealed how she fully concentrated on her work for the duration of the exercise and didn't realize how much time had elapsed until I gave a cue. She explained how creating

a visual response to an unexpected prompt allowed her to “just start making and trying different things, trusting [herself] without a polished plan.” In a sense, she allowed herself to improvise and follow her intuition, which seemed to be a turning point in her artistic process. She said of the experience, “in this 40 minutes, most of the decisions were based on my intuition, and I really loved the outcome. And I felt more confident about myself.”

Reading her response, it becomes clear that her existing beliefs about the artmaking process had been challenged and transformed due to the specific class activities, which encouraged students to appreciate limitations as sources of inspiration. Because there was very limited time to brainstorm, produce, and finish the artwork in light of the unexpected prompts and materials, Anne had to allow herself to dive into the actual making part of the process rather than coming up with a prototype or fully detailed plan.

Further evidence of her turn toward accepting improvisation as a legitimate approach to artmaking comes from my teaching notes. During the earlier collaborative Making Session, I heard Anne tell her classmate, regarding the laser cutter process, that it is “really about experimenting to find one’s personal process and settings” (power, frequency, and types of materials) “beyond what is written in the user manual.”

Anne started to question if her assumptions about art and artmaking were still valid at various critical moments of reflection, including: when she was fully engaged in the collaborative Making Session by experimenting and working with her classmate; when she was engaged with the artwork from the gallery trip; and when she was learning about her classmates’ interpretations and analyses of their and her projects during group

critique. For example, Anne described how one of her classmates' final sculptures made her think about art in a different way: "Hannah's work stood out to me the most because the story behind the work touched my heart. And I think learning about my peers' artworks through listening to their stories help me realize that art is a way to express feelings and thoughts." As the semester moved on, Anne admitted that her classmates' art projects and processes influenced her a lot, especially during the group critique and collaborative Making Session. She said in one of her journal entries:

I feel like what my classmates [said] about their process and their ideas was very personal and helpful. It's very special. During the critique, we get to hear from everybody—what they want to say and how they want to present in the work. I feel like this part helped me understand and appreciate art and its process.

Unlike Anne's attitude at the beginning of the semester when she felt overwhelmed with what to say in the group critique—about her work as well as her peers' work—as indicated here, over time in the critiques, she started to better understand how one can develop a "personal" connection to art that goes beyond analyzing formal aspects of the work.

Earlier in the semester, Anne's biggest challenge seemed to be the process of "brainstorming" for a project. For her, it felt uncomfortable to visualize a final sculpture during the brainstorming stage. After critically reflecting on her artmaking process and artistic ability, she began to allow herself to freely explore her ideas and approaches to various materials, without being frustrated.

Such changes in her approaches to materials were drastic towards the end of the semester. During the group critique of everyone's final sculptures, I remember Anne making comments about one of her classmate's artworks, indicating that she appreciated the improvisational, interactive, and changing aspects of the work. She also noted,

I really appreciated how Ginger [her classmate] manipulated the 3D printed objects and plaster so creatively. I personally haven't experimented constructing multiple 3D prints to create a whole [other] object, but I would love to try that process myself next time. Her use of plaster for the base was effective as it gave smooth and rough textures simultaneously.

Reflecting on my teaching notes during the individual consultation when students started to work on their open-ended final project, it was clear that Anne became comfortable not knowing exact materials and themes and how to use them. Even though there were no guidelines for the final project in terms of material, size, or theme, Anne seemed to be "in control" of her thoughts and processes. She recalled this experience as follows:

It's almost like finding other sides of me through the artwork, which I never expected at all. I never knew that I was drawn to [these] soft kinds of texture but this gave me an opportunity to 'research' myself—the unknown me. So we'll see how it goes with my final project. I don't have a clear idea yet, but I trust that it'll eventually come to me.

She also noted that she could now appreciate an improvisational and intuitive process: "When I reflected on Sarah Sze's video clip about her improvisational process in Art21, I feel like I didn't understand back then. But I found myself doing it."

Summary of Anne's Transformative Learning

Anne's transformation throughout the course was wide reaching. At the start, she considered herself as a non-artist who had limited understanding of art, and she thought that only labor intensive or representational works should be considered as art. Her prior beliefs about the artistic process focused on using techniques that follow exactly how the instructor uses the tool and materials (she did not value improvisational approaches or ideas) and didn't validate abstract or conceptual work as being art. Towards the end, all of these assumptions were challenged, mainly by the gallery trip, two Making Sessions (individual & collaborative), and class discussions of contemporary artists' studio processes. By making personal connections when looking at art, Anne was able to understand and appreciate various forms of art in her own way, as an artist. She no longer relied on information supplied by galleries and art professionals to ascertain the meaning and significance of the pieces she viewed. Instead of constantly seeking my affirmation, direction, and explanation as instructor, Anne started using the Making Sessions and group projects to discover her own ways of working with tools and materials.

Case 2. Gina

Stability Stage

Gina's initial identity as artist and learner. Gina, in her early 30s, was an international student from Argentina who used to work in the financial district in Buenos Aires. She decided to develop her career and began studying in the Economics and Education program at Teachers College.

I still remember Gina's worried facial expression after the first day of class, which I recorded in my teaching notes. Like Anne, she was unsure about whether or not she would succeed in the course. She had shown up in the classroom almost an hour before the class started and we had a conversation about the course and the studio space. She was concerned about her lack of prior experiences in art because she assumed that she would be the only non-art person in the class. Furthermore, also like Anne, she was worried about getting a good grade since that was important for fulfilling her elective credits.

When we spoke in her interview after the course ended, Gina said she "always had an exam-oriented education" growing up and she didn't get a chance to take any arts-related classes after elementary school. Partly due to this reason, at the beginning of the semester, she didn't think of herself as an artist and claimed that she had no knowledge of what art and sculpture were. After the semester, she recalled this way of thinking: "reflecting back, I had never really thought of myself as an artist."

Gina stated two primary reasons for registering for the sculpture class: The first was to find a course that was somewhat “stress-free” and “different” from her other academic classes. She felt that at her previous finance job in Buenos Aires she had become somewhat “impatient” and “not creative,” as she was performing similar tasks over and over again. She said:

I worked for such a long time, and I work under a lot of pressure and I need to do things under time pressure, always have due times, so I feel myself always rushing into something without really thinking of who I really am. I didn't think of myself as an artist or creative person at all. My hope by taking this course was to somehow cultivate my patience.

It is clear that Gina started the class lacking confidence about being a patient and creative person. She also felt that “something was missing in [her] life” and decided to pursue her study in economics education in order to connect with other people and to be in a different environment. However, she became overwhelmed and stressed with the rigorous academic environment and felt burdened by her career change. When we spoke in the interview, she confessed that she often couldn't sleep at night because she was surrounded by cultural and societal expectations of “getting married and having a stable job like other people.” She also felt sorry for her parents, who supported her so she could study in the United States, and she often compared herself to her older sister, who met “all expectations” to be “a good daughter, wife, and an important member of society as a doctor.”

Gina's second reason for taking the sculpture class was to “better understand my roommate and share the same hobby.” Gina was living in an apartment in the city with her roommate, who was working in the fashion industry. She was always amazed at how

her roommate drew figures all of the time and how the interior design of her roommate's room was very different from that of her own. She shared her thoughts about her roommate's creativity:

I don't know what it was, but my roommate seemed so creative in every little detail like when we cooked and had dinner together, I was so amazed at how she was thoughtful of colors and decorations of the plate, which I've never thought of or paid attention to. Comparing myself with her creativity, I saw myself as a not creative person.

Gina's lack of confidence about her creativity and artistic abilities was also evident on the first day of class during the slide presentation of contemporary artists who use everyday and recycled materials to create art. Her first weekly journal response to the question, "Did you have any puzzling or confusing moments in today's class?" was that "the artwork shown in the class was interesting, but I was confused because I've never seen works like those in my life and I'm worried that I won't be able to create works like that because I don't even know where to begin. And I'm not an artist like them."

Overall, Gina didn't think herself as an artist at the beginning of the semester, which also gave her difficulty in following the class during the demonstrations of various tools and materials. She often looked confused after class, and we had conversations about her frustration. In the interview, she recalled those moments:

I felt like I just didn't trust myself being a creative person. For example, whenever we learned about the new tools, like woodworking tools and the laser cutter, I couldn't imagine myself using it creatively because I was just a student who was in another program and who was not even close to being an artist.

As seen in the interview excerpt, Gina's idea of an artist was closely connected to her self-confidence when learning about and using tools and materials.

Gina's initial understanding of art. On the first day of the class, Gina's selection of what she validated as artwork—from the six thumbnail images included on the Demographic Survey—were the *Discobolous* (Greek) statue and Dianna Molzan's deconstructed painting. Even though she circled the image of Diana Molzan's painting, she noted, "I think this painting is still in progress—not finished. So I'm not sure if I can think of this as artwork completely." For the rest of the images, she responded that she did not consider them as artwork since "the forms, shapes, and the location where it is exhibited seems unidentified." Partly due to lack of exposure to art growing up, which she described during our interview after the course ended, the only time Gina had an opportunity to go to museums or galleries was when she traveled to Europe with her family when she was eighteen. Gina recalled her experience at that time of being "hurried by" famous and important objects in museums as a tour guide lectured about the works. She said in the interview, "you know, I don't even remember what kinds of works I saw at the museum. We were rushed into one famous work after another.... But I clearly remember what we bought in the gift shop after the tour."

Gina recalled the discussion, at our first class session, of contemporary art made of recycled and everyday materials as being challenging to her ideas about art: "back then, art was difficult to understand and sometimes, abstract art, like the one with candies in the gallery [Felix Gonzalez Torres's installation] seemed somewhat pretentious and puzzling because I didn't see how that could be counted as art." In her journal entry for that week, Gina noted that "it was too confusing, and I was skeptical about the artist's artistic talent when I saw the work made of non-art materials."

Three weeks later, during group discussion and critique of the students' first sculpture projects, according to my teaching notes, Gina looked puzzled after seeing that one of her peers' artworks incorporated several plastic forks. In her journal entry for that week, after the group critique, Gina wrote:

I personally spend a lot of time sanding and grinding the wood to create my first project from what we've learned in the class. However, it was confusing to see some people's sculptures, which showed a lack of labor and time. Obviously, our sculptures are just exercise pieces and I don't think they are considered as artwork. But I feel like the work should still show a level of craftsmanship and labor.

It was clear that, similar to Anne, Gina considered the artist's "labor" and "craftsmanship" as main factors in validating works as "art."

Gina's initial approaches to artmaking. In Gina's interview, she recalled her time in Buenos Aires. She said that, due to the working environment in the financial district, "I was always chased by time and I worked with a lot of deadlines. It was all about deadlines and formatted structures." She had also noted on her Demographic Survey, in response to the question "Why did you decided to take the sculpture class?", that she was used to working with a lot of limitations and deadlines, which ultimately did not give her the freedom to "problem solve or seek creative solution." It seems that, partly due to this influence, Gina was comfortable with following my demonstrations of woodworking, laser cutting, and etching processes at the beginning of the semester. As I observed in one of the class sessions at that time, and noted in my teaching notes:

Gina stayed after the class today to go over the process by herself. Unlike other students in class, Gina took a lot of notes even though I told the class that the best learning experience for these tools is first just to try it instead of memorizing it... She seemed a little confused when [Sherie] shared her idea for the first project—that she would bring her own objects to go along with her sculpture.

My observation shows how Gina felt somewhat comfortable with having a set of rules and steps to follow and felt a bit confused when her classmate shared the idea of bringing in personal objects to create a sculpture, an approach Gina saw as different from how she perceived her own process. While she was working on her project during Week#2, Gina wrote in her journal entry that she often didn't "know where and how to start the project." At the end of the semester, when she reviewed all of her previous journal entries, she recalled similar initial confusion in this way: "My earlier journal entries spoke about 'not knowing how to explore' and 'need[ing] more time' and not 'fully understand[ing] how to use and apply the skills into making art.'" Similarly, as mentioned previously, Gina showed considerable anxiety at the beginning of the semester about her artistic skills and talents. On the Demographic Survey, she noted that she had only used "paper, pencil, and crayon before." In addition, she wrote, "I feel nervous about the class since I have to get an A or A- to fulfill the electives. But I'm not sure if I could get a good grade since I don't have any art experiences prior to this class." As part of the Stability Stage then, Gina was holding on to her assumption that it might be difficult to earn a strong grade in the sculpture class due to her lack of prior art experience.

Moving on to explore the laser cutter as a part of the subtractive process using wood, Gina seemed to follow the class demonstration closely, and she didn't seem to have any questions about laser cutting and etching processes. In her first journal entry, which asked students to describe their "initial feelings and thoughts about the laser cutter," she wrote:

I think artwork has to involve human hands in the production, not machine[s]. So using th[ese] kinds of digital fabricating machine[s] to do the work for us is somewhat being lazy and not authentic because you're not actually creating your work.

Gina was firm in her view that it would not be genuine or valid for artists to use digital tools in the artmaking process. In a sense, Gina thought of a laser cutter as a machine, not as an art tool. Along the same lines, Gina wrote in the Art Survey that she expected to “learn [the] traditional process of carving and modeling in sculpture.” Accordingly, Gina’s individual studio work involved a lot of carving and sanding of pine wood. She sought to represent her zodiac sign, Pisces.

As seen in the Stability Stage, Gina, an economics and education major, started out the class with some fear about being non-artist. Since one of her reasons for taking the sculpture class was to fulfill her electives, her focus at the beginning was on getting a good grade. Partly due to her prior work experience, she felt comfortable following a set of rules and guidelines during the class demonstrations. Similar to Anne, Gina had a hard time accepting abstract or installation art made of everyday and recycled materials. And she had difficulty accepting as “art” her peer’s sculpture project that seemed to require minimal labor. In the next section, Reflection Stage, I explore how Gina started to reflect on her identity as an artist, her understanding of art, and her approaches to artmaking.

Reflection Stage

Gina’s reflections on her identity as artist and learner. In mid-semester (Week #9), after the class gallery trip, Gina wrote in her weekly journal entry that she had had a chance to think in a different way about what it means to be an artist. She wrote:

It was almost like looking into an artist's brain—the way he felt about the world and himself. I looked at Michelangelo Pistoletto's work titled *Orchestra di stracci-vetro diviso* (1968) for almost 5 minutes. At first I felt like I needed someone else like an expert's explanation when I first looked at the work because I didn't understand it at all. But for that 5 minutes, I started to see details of materials he used like rags, bricks, a gigantic glass, fabric pieces, kettle, and plates, and how everything was organized in a very particular way by the artist. Then I started to imagine my first sculpture project using my own clothes and objects. I think I got the taste of how an artist might think before he or she physically created the work.

Again, like Ann, Gina slowly started to look at artworks through the lens of how an artist “might think” about selecting and organizing materials, and this new perspective gave her an opportunity to apply this way of thinking to her own artwork, which wasn't the case at the beginning of the class. Instead of analyzing the exhibition as simply a viewer, Gina put herself in the artist's shoes, taking on the artist's identity, asking herself how he would select the materials and how he presented the work.

Gina also recalled in her weekly journal entry that during the first Making Session (on Week #7) she thought of herself as “an art learner”, and as someone who “could be an artist.” She said, “during the session, I tried pretending that I'm an artist...for 30 minutes.” In our interview, Gina stated that after the Making Session she was able to “feel more liberated and creative” when “I sort of put myself into a state of hypnosis that I'm an artist and I'm creative.” She said that this mindset actually helped her choose the tools and materials by following her intuition, since the exercises were no longer about “mastering” certain tools and materials but focused instead on how students could incorporate those in their own ways. This consideration of herself as an independent artist making her own material choices was different from how she treated and thought of materials and tools at the beginning of the class.

Similar reflections on her identity as an artist happened during the group critique of the students' first sculpture project. According to my teaching notes, after a peer talked about how she was not confident about choosing which materials best suited her sculpture, Gina gave her feedback, saying that she appreciated how the use of the other student's materials reflected that student's personal experience. Similarly, in her journal entry for Week #8, Gina responded that she respected how everyone's sculptures were unique and different from each other and how "the critique felt like a conversation among artists." In the interview, Gina recalled the moment after the group critique as follows:

I remember how one my classmates, Tom, talked about his project. He seemed very insecure about his use of fabric and wood to represent multiple aspects about himself. To me, his sculpture looked so sophisticated and complete, but it made me sad that he himself didn't think like that and he wasn't confident at all about his work. I didn't have the courage to tell him back then, but if I were in that situation, I'd like to tell him that he is an artist and all of his choices are valid and important, so he should have more confidence.

As seen in the above excerpt, Gina started to think of herself as a non-artist as she had at the start of the course, but as an artist—by honoring her own thoughts and feelings, as well as by wanting to encourage her peers to try similar self-reflective methods.

Gina's reflections on her understanding of art. After the gallery trip, Gina shared her reflections in her weekly journal entry. She wrote:

Some art can be still pretentious or difficult, but at least I appreciate the artist's intention and original idea. I want to learn how these artists started to brainstorm ideas and actually created the work. I want to be in their brain—like the movie, *Being John Malkovich*.

Gina's initial thoughts about contemporary art being somewhat "pretentious" and "puzzling" didn't seem to dominate her feelings after the gallery trip. According to my teaching notes, during the gallery trip, rather than trying to quickly see all of the works exhibited, Gina spent a longer time with fewer art pieces. In response to the question for

that week's journal response, asking what her favorite exhibition was, Gina wrote how she enjoyed looking at Wangechi Mutu's work at Gladstone Gallery. She wrote that she "enjoyed looking at textures" and commented on "how the artist used something like felt or blanket to create a work." She felt that "the work didn't seem pretentious since it was figurative and symbolic." She added, "I never realized that artwork could be made of something other than stone or marble," which showed her fascination with the artist's unconventional use of materials. At the same time, Gina seemed comfortable with looking at somewhat representational and figurative works—this was also evident in her Demographic Survey, as mentioned earlier.

In the week following the gallery visits, the students worked on the Artist Statement Exercise. I asked them to make a drawing in response to an artist statement written by a contemporary artist, before viewing the work that was the subject of the statement. Gina drew a gigantic windmill structure in response to sculptor Alice Aycock's statement about her work *Park Avenue Paper Chase* (2014).¹ According to my teaching notes, after seeing the actual work by the artist, Gina shared her excitement with the class. In our interview after the course ended, Gina also recalled this moment, and characterized it as a turning point in her understanding of art:

I think the artist statement activity gave me a clue to understand the artist's mind and what art can be. Before then, I had a tendency to think [of] any abstract forms of art being unnecessarily complex or simple. But after seeing the artist's statement along with her work, it made total sense that art is really about visualizing your ideas and mind.

¹ *Park Avenue Paper Chase* (2014) is a series of sculptural installation at 57th street on Park Avenue, New York, NY, by Alice Aycock.

It was a pivotal moment for Gina to re-think what art is, and to broaden her understanding of artists' ideas and artwork. Similarly, Gina also responded in her weekly journal entry: "I think now I started to understand why this artist used this particular material to convey this idea. This is a unique way to deliver your message other than writing or poem." Gina started to define art as a vessel to contain one's idea, rather than as a pure visual artifact without meaning.

Gina's reflections on her approaches to artmaking. I wrote in my teaching notes that during the group critique of Mini Project #1, Gina looked confused by some of her peers' work. In our interview, Gina recalled her experiences of the first group critique, summarized earlier, in this way:

When I saw [Alec]'s work, I was a bit confused since he didn't seem to spend a lot of time on his work. He used [the] laser cutter to cut the balsa wood to create each puzzle piece, and then asked everyone to play the wooden pieces almost like a puzzle. Back then, I thought his work wasn't entirely his since most of the labor was done with the laser cutter.

Again, the notion of digital tools was confusing for Gina. She thought of Alec's laser cutting processes as not genuine. Gina elaborated her thoughts about the laser cutter: "If I were Alec, I would've used [a] band saw, and hand saw to come up with more genuine puzzle pieces."

A critical reflection moment occurred for Gina when she was engaged in an individual Making Session, in which students were asked to create 12 quick gesture drawings from observation of different spaces in the studio and then transform 11 of the drawings into a three-dimensional form evoking one emotion of their choice.

According to my teaching notes, Gina didn't get started with the first few gesture drawings partly because she wasn't sure if she was drawing in the "right" way. In her gesture drawings, she tried to erase the outlines of the drawing to make it cleaner. She noted in her journal entry after the Making Session: "For the first few drawings, I sort of wished I had more time with the drawing session. I wanted to get the perfect silhouettes of the chair, but I had to stop in the middle because of the time." However, she was able to create the rest of the drawings by using different styles (letting go of her wish to create "perfect silhouettes"). My teaching notes indicate that I encouraged her to find some interesting areas in the room by looking at those places from different angles. I also encouraged her to pay attention to her movements and to the materials she was using. The rest of her drawings showed more dynamic compositions, tonal values, and textures. And Gina didn't try to erase anything in those later drawings—she left multiple scribble lines as part of her drawings. Gina shared her thoughts about these new drawings:

For 1-minute drawings, I tried to draw little differently. I started to think of my eyes as a camera lens trying to re-look at everything in the studio. Even though I already know what the studio looks like, I started to pay attention to some hidden areas like in between plastic bins on the shelf and how the vacuumed pipes were attached onto the ceiling. Those areas I never really paid attention to, but it almost became alive... It was first difficult to not use an eraser, but I tried to focus on different textures that color pencils and graphite make and leave all the marks on my paper.

As for the second part of the Making Session, which was to transform eleven of the gesture drawings into a three-dimensional form that evoked one emotion of choice, Gina seemed puzzled at first. She recalled this moment in her journal:

At first, when I heard that I have to somewhat destroy my eleven drawings into a sculpture, I was somewhat hesitant to do so because I actually loved all my drawings. So I decided to take pictures of my eleven drawings before I start to cut those into strips for my sculpture piece. That's why I chose the emotion of 'agony,' that presented my feelings during the making process.

Even though Gina created her drawings in a very short amount of time (e.g., 30 seconds, 1 minute, 2 minutes), she became attached to them. Gina characterized her fondness for the drawings as having to do with her newly discovered, spontaneous drawing process and the looser style, or look, of the images—a result of, in her words, “leaving all the marks on the paper.”

Transformation Stage

To some degree, at first it was hard for Gina to appreciate the spontaneous process of making art. This was partly due to her prior belief that approaches to artmaking should be labor intensive and that finished work should look polished. The Making Session challenged Gina’s assumption about acceptable approaches to artmaking and allowed her to discover new appreciation for spontaneous processes. Gina’s prior characterization of herself as a non-artist started to shift as she began to focus on contemporary artists’ individual processes and ideas, which also gave her liberation and freedom to understand others’ artworks. She even pushed herself to think of herself as an artist, by envisioning integrating into her own work some of processes she admired in the work of other artists. However, Gina still assumed that digital tools could not be art tools, and that works made with such tools are not genuine. In the next section, Transformation Stage, I explore how this assumption was transformed, as well as how Gina’s identity as an artist and her approaches to artmaking further shifted.

Gina's transformed identity as artist and learner. As the semester unfolded, Gina became more confident about her newfound identity as an artist, especially when she was working on her final project. In her journal entry for Week #12, she wrote that she “didn't feel overwhelmed about not having a plan” because she trusted that an idea and materials selection would naturally come to her if she could focus on her own thoughts. In the interview after the course ended, Gina reflected on her individual studio time as similar to “research” time, which allowed her to focus on her life and surroundings. This was also evident during and after the collaborative Making Session towards the end of the semester (on Week #11). As described previously, the prompt was to team up with a classmate to create the longest sculpture possible using limited materials in 40 minutes. Gina recalled her experience as follows:

I think I did see myself as an artist during the Making Session because I had used all my senses to create something in a limited time. My teammate and I also each focus[ed] on our own feelings and thoughts about the prompt. What does the concept of “long” mean and how we can visualize the longest sculpture based on our experience? I also thought about the concept behind the artwork and I felt like that is a big part of being an artist. You sort of owned the idea and make decisions independently.

During the interview, Gina also shared her thoughts about what being an artist meant to her. “I don't have to be famous to be an artist and I can say that I'm an artist to myself.” Gina's thoughts about what it means to be an artist were rooted in the use of personal reflections as sources of inspiration and materials. In her journal entry for Week #10, while she was working on her final project, she said:

As an artist, I make art to express my inner thoughts and feelings. This allow[s] me to reflect on myself. That's why artmaking time became almost therapeutic for me—this is the only time to really look at myself from another person's point of view.

According to my teaching notes, during group critique of the final sculpture project, Gina shared images of her notes and sketches of her work. Then further along in her journal entry for Week #11, she explicitly described her process from the beginning to the end. She started with general questions about herself, naming her favorite color, texture, and artists whose work resonated with her personal experience (from the gallery trip). Then, she started to create a visual concept map linking her thoughts and visual ideas in many thought bubbles. Each thought bubble was then connected to potential materials. For instance, she connected the feeling of being “lost” to sheer fabric as a potential material—the sheer fabric gave her a sense of being fragile and transcendent in her life. She wrote about how, even if these ideas seem very elementary and simple, all of the images became important not only for her final sculpture, but also in her life, since she was able to rethink who she is and what she likes. While working on her final sculpture, she wrote in her journal about her expanded process for acquiring source material for her work:

I started to think more about the world—I mean my surroundings. It’s like I started to notice something I could have never paid attention to. I didn’t pay attention to art pieces in the subway, for example, before this class. But now I take pictures of little things for inspiration. In my phone, I’ve created a folder called ‘my art,’ which [is] composed of pictures that I took from everyday.

As seen in the above excerpt, Gina started to pay attention to subtle details, as well as to pervasive elements in her everyday life. She also reported that she was able to share her artistic ideas and process with her roommate, which gave her another opportunity to “respect other artists’ perspectives.”

Gina's transformed understanding of art. During a class session at the end of the semester, Gina asked me a question about art objects from the past exhibited in museums and how they are different from the kinds of contemporary art the students and I saw on the gallery trip. In the interview, she recalled this moment, and described her lingering questions, as the following:

Back then, and maybe still now, I'm still questioning how we define art. I visited [the] Metropolitan Museum of Art after the semester ended. And I've realized how art can be such a flexible term, which can be applied to contemporary times but then ancient times as well. I think who created objects or painting back then, like 600 BCE, probably didn't [think] of their objects as what we see and call art today since it had a special purpose like religious and ritualistic matters. It's fascinating how art is framed today and how broad it can be interpreted.

At the end of the course then, Gina was no longer holding her previous presumptions about art being limited to objects seen in a museum. She even started to further question the relationships between historical art objects in the museum and contemporary art shown in galleries, and to further explore how that challenged her to rethink what art is.

During the group critique of final work at the end of the semester (Week #14), Gina repeatedly used the word "artwork" for her classmates' pieces. This, according to my teaching notes, was not the case at the beginning of the semester. In her journal response, Gina noted how she "appreciated everyone's use of materials and presentation." She also noted how she believed that the artwork of her peers could be just as valuable as works in museums and galleries. She said in the interview, "art is no longer difficult. Or there may be other art forms that I feel [are] also overwhelming and difficult. But I know that I don't have to totally understand the work even if I just like how the

artist colored the surface or presented the work in an interesting way.” It’s clear from these statements how Gina’s initial understanding of art—largely limited to traditional objects such as Greek statues--was transformed over the duration of the study.

Gina’s transformed approaches to artmaking. As mentioned earlier, with its constraints of time, materials, and process, the second part of the Making Session involving brief, timed gesture drawings challenged Gina to push beyond her comfort zone. She constructed an elegant three-dimensional and high relief sculpture made of her eleven drawings. She created the sculpture by tearing off, cutting into, and folding the drawings with her hands. As for the reflections on her process, she shared her thoughts in her journal entry for the week:

I felt like an artist during the Making Session because I was feeling more confident and was starting to feel like a master with a lot of materials. The spontaneous energy of it also made me feel like an artist because creative ideas were rushing to my head without planning too much. Working with the wire mesh and my torn-up drawings made me feel somewhat liberat[ed] and sad at the same time. At first, I didn’t like the idea of ‘destroying’ my drawings, but then it was actually ‘transforming’ them into a volumatic form.

Even though Gina was feeling uncomfortable with tearing her eleven drawings in order to incorporate them into a three-dimensional structure, she later on perceived this action as “transforming” drawings into a sculpture rather than “destroying” them, which indicated a major shift in her thought process in regard to her approaches to artmaking.

A similar kind of shift occurred when Gina was working on her final project near the end of the semester. As mentioned earlier, in her initial approaches to artmaking, Gina perceived digital fabrication processes as not authentic and “lazy” compared to non-

digital processes. However, her thinking was challenged dramatically after encountering a project done by one of her peers, a work comprised of laser cut wood puzzle pieces that were painted. She reflected on her thoughts in the retrospective survey:

I was inspired by Steve's laser cut puzzle piece because at first, it didn't have generic feelings when I looked at the work. I actually like the idea of using the laser cutter to cut something more delicately, which could've been challenging if you were to cut the curve lines with a hand saw or the band saw.

Eventually, Gina started to see the potential of digital processes combined with more traditional processes. She shared her thoughts about her initial idea for the final project in a journal entry:

For my final sculpture, I want to create a 3D painting where the surface of the painting is highlighted with maximum textures and colors. Inspired by Steve's work, I want to test run a few different processes using [the]laser cutter, band saw, and perhaps 3D printer.

For her project, Gina collected various kinds of wood from the studio and on her own, outside the studio, to start testing out the laser cutter. She drew a master plan on large paper, and she also drew each shape to be cut out. She further explained her studio process for her final sculpture in a journal entry:

Among many artists we saw in the slides in class, I was particularly inspired by the work by Elizabeth Murray and Tom Wesselmann because of their approach of somehow combining sculpture and painting. At the same time, I also want my final work to illustrate both representational and abstract images. That's why I started to collect interesting images from the magazines. For the cut-out parts, I transferred my Illustrator files to the laser cutter to cut my balsa, MDF, and base wood. After learning about basic color mixing from Sohee and from YouTube, I started to mix my own colors to paint on the cut-out wood sheets. The entire process felt like baking a cake. Even though I knew I wanted to create a cake at the beginning, all the other decorative details came naturally without a tight plan, especially colors when I knew which colors I would go for once I physically mixed it.

Gina saw her approaches to artmaking as similar to baking a cake—perhaps decorating a cake—which indicates a shift in her initial approaches to art. Instead of being nervous and overwhelmed with the process, Gina trusted her decisions and intuition. In the interview, she further described her newfound approaches to artmaking:

Reflecting back, I thought that using [a] laser cutter or 3D printer is not genuine, or the artist is being lazy. But I've realized that it's not really about the tool itself—it's how we see and think about the idea. Even though I wasn't confident about how to use the laser cutter at first, I found my own way of working with it through multiple attempts. Even for my final project, I did a lot of thinking and brainstorming before I physically made the work, but then the rest of the work just worked out—nothing was coincidental.

Gina's approaches to artmaking evolved so much that she couldn't remember what it was like to create a piece at the beginning of the semester. At the end of the course, after reviewing her previous journal entries, she wrote her final reflection:

One of the most surprising thing[s] that I found from all my journal[s] was how much I didn't trust myself in the process... I was so doubtful when I hear[d] the artist Sarah Sze talk about her process of spending a lot of time thinking and conceptualizing ideas but then the actual making part just happened at once. But now I saw myself actually [go] through the similar process—which is amazing.

Summary of Gina's Transformative Learning

Like Anne, at the beginning of the semester Gina felt more comfortable working with a set of rules and steps, and confirming her decisions concerning art materials and processes through teacher affirmation. However, the gallery trip, Making Sessions, and peer discussions, allowed her to start to trust her intuitive process as an artist and gave her a newfound identity. Early on, Gina didn't consider digital tools as art tools, since

they were not “genuine” and symbolized a laziness in the artistic process. By examining her peer’s works and her own studio experiments, Gina’s assumptions were challenged, and she started to appreciate the unknown possibilities that the use of digital tools can provide to artmaking. Through the gallery trip, Gina developed a transformed understanding of what art could be and how art can be made out of non-traditional materials.

Case 3. Tim

Stability Stage

Tim’s initial identity as artist and learner. Tim, a White in his late 20s, was an MA graduate student in the Science Education Program at Teachers College. It was his last semester, and he had been student teaching at a middle school in NYC that emphasized STEAM² (Science, Technology, Engineering, the Arts, and Mathematics) curricula. He was about to graduate and already had a job offer to start working at school that encourages teachers to be more creative with their instruction. And this was one of his reasons for taking the sculpture class. He said in the interview:

I wanted to see if I could be more creative when teaching science to my students. But I honestly didn’t know where to start. But I know I want to incorporate art into my room in any way I can. I looked at other studio courses online, but sculpture seemed more open in terms of what I can do with my students compared to other classes like painting, ceramics, and printmaking.

² STEAM is an abbreviated term for curricula and projects that involve the academic disciplines of Science, Technology, Engineering, the Arts, and Mathematics.

Another reason that Tim wanted to take the sculpture class was to use his last elective for a non-academic class—in his words, “I just wanted to do something fun. Because my course loads have been pretty intense over the years, and for my electives, I wanted to do something that I would enjoy.” He also wrote on his Demographic Survey that he basically expected the course “to be fun.” Again, he didn’t want the class to be similar to his academic classes, where students and professors were, in Tim’s words, “just sitting and talking about the theories—specifically education or classroom protocols, etc.”

Even though his goal and rationale for taking the sculpture class was very clear at the beginning of the semester, Tim seemed to be insecure about his choice. He said in the interview: “I didn’t consider myself as an artist or even close to one. I guess I assumed that everyone except me would be coming from an artistic background and they had prior formal training in art. But I didn’t have anything like that.” Tim’s identification as a non-artist, similar to Anne and Gina, was confirmed in his response on the Retrospective Survey. He wrote:

For me when I came into the course, I knew that I’m just gonna be one of the only people that didn’t have like in the background in art or training in arts. So I think for me, it was kind of intimidating, not knowing that seeing or thinking the way that other students have been trained to do so.

It was clear that Tim began his journey in the sculpture class with complex emotional states—feeling confident about taking a fun elective class while also feeling insecure about his own artistic ability in comparison to his classmates, who he assumed all had backgrounds in art. Tim initially assumed that his fellow classmates “...would probably already know what they want to create, and how they can do it, and deep meanings for projects, but not me” (Retrospective Survey). Tim indicated in the interview

that he started to “categorize everyone into two groups—artist group and non-artist group” based on his classmates’ prior experiences and academic majors revealed on the first day of the class. In sum, Tim’s identity as a non-artist was influenced by both his prior educational experiences and those of his classmates.

In Week #5, when I showed video clips of contemporary artists talking about their creative processes related to mold making and casting materials, according to my teaching notes, Tim looked particularly puzzled. In his journal entry for the week, Tim wrote the following about his confusion:

When I heard the artist Judy Pfaff explaining her process being unforeseen and somewhat unexpected, I was really surprised by her process. Even the mature professional well-known artist still doesn’t plan every single item in her installation but rather sort of let it go by feeling the moments. When she said that she started to see all the things that she didn’t plan after she somewhat completed the work, I was shocked. On one hand, I suspect that she could’ve planned it well beforehand to avoid such unstable feelings.

Pfaff’s studio process, that partially relies on her expecting unplanned developments, started to challenge Tim’s presumptions about the definition and attributes of the artist. In the interview, Tim recalled this moment as:

You know I guess my default definition of artist was more of a traditional sculptor or painter who can depict super realistic representations. I imagined such artist would have started with a calculated plan by starting with a sketch, layering paints, and then keep rendering for the most attractive and realistic representations. At least that was what I remembered from the guided tour when I visited the Louvre Museum with my family.

Tim’s initial understanding of art. In response to the survey question that asked students to select images they considered to be art, Tim circled the images of the Greek statue and Dianna Molzan’s painting. His rationale was that “this one [Greek statue] is

definitely artwork—a great example of classical sculpture. This one [Molzan’s painting] seems like it’s somewhat unfinished because of how the lower part of the frame is left hanging.”

In the interview, Tim recalled the first day of the class when he was filling out the survey as “I guess back then, a European classical statue, which is usually a representation of humans, was a default definition of art and sculpture to me.” Tim responded on his retrospective survey that this was mainly due to his upbringing, which included a lack of exposure to a variety of different art forms.

Tim’s view of art affected how he thought of digital tools and materials as well, and this became evident during the first few weeks of class demonstrations. In Week #6, Tim wrote in his journal entry, “when I heard that we’re going to learn about [the] 3D printer, I was like, ‘Really? 3D printing can be sculptural process? Not really,’ so I didn’t really have expectation about the tool.” In addition, that same week he wrote that 3D design and printing have “too much of product like feelings” compared to works made of more traditional art materials.

After the class demonstration on foundational 3D designing using online software, Tim seemed distanced and unsure about how to proceed. Everyone had 20 minutes to design something simple for the first 3D print using Tinkercad software. According to my teaching notes, he stayed after the class to discuss his concerns with me. He asked me if he could somehow skip the 3D design and printing trial in the following class because he did not like the attributes of the 3D printer. Tim reflected on his thoughts about the 3D design process in his journal for that week:

I was frustrated when we had to design something small using Tinkercad for a short amount of time but also it didn't feel authentic to me at all. On my blank platform when using Tinkercad, I didn't know where to start. It was certainly a different process compared to casting my hand with plaster even though that came out as a failure piece. Overall, I don't think I will use [the] 3D designing or printing process for my project. If I had to create a prototype for my sculpture, I would rather use a block of clay instead of simulating a design using Tinkercad—it just doesn't feel real and tangible... If someone made works out of [a] 3D printer, that would be some sort of product design rather than a genuine work of art.

These incidents illustrate how at the beginning of the semester Tim was skeptical of works that are made with 3D printing, and of digital processes in general. In addition, he had a difficult time accepting non-traditional materials as part of the medium of art.

At the beginning of the semester, when I discussed with students the class requirements and projects, I explained that the two Mini Projects would be structured with specific prompts, while the final project would be open-ended. I told the students that for the final project, they would choose their materials, and these could include sound or performance, which are “intangible mediums.” According to my teaching notes, Tim, looking confused, asked me what I meant by “intangible mediums,” and inquired about which materials he could use for his project. Even though the list of materials was included in the course syllabus that we went over, he still seemed confused.

In the following class, I introduced a class discussion about contemporary artworks made with alternative or non-traditional approaches. The slides entailed work by various contemporary artists, such as performance projects by Nikki S. Lee, sound installations by Janet Cardiff and Susan Philipsz, and artworks by Dan Flavin and James Turrell (whose works use lighting and space to focus on viewers' optical experiences). In his journal entry for that week, Tim responded that he didn't consider some of these artists' works as art:

I was a bit confused when I saw Nikki Lee's performance series because she used herself as art material. I don't see a point [to] the project since all she left were snapshot photos of herself being in different cultural communities. I don't know the word for this kind of project, but I'm not sure if I would see this as art. Same thing for [the] sound work [of] Cardiff and Philipsz. At one point in the video clip, they said that they considered how sound would redefine space or sound being a sculptural form. I personally don't see how invisible sound could define space or how it could be work of visual art itself.

For Tim, a default definition of art was something made of tangible, visible, and traditional materials, such as stone, clay, and plaster. As a result, he was resistant to the idea that works made of alternative and non-traditional materials could be considered as art.

Tim's initial approaches to artmaking. According to his response on the Demographic Survey on the first day, Tim's expectation for the course was to "master sculptural techniques" and "learn something I can use in my school." In regard to expected materials, Tim assumed that he would only be using traditional sculpture materials such as stone, wood, and metal.

In Week #3, when I showed video clips of contemporary artists' studio processes (use of drawings and other materials in sculptures), Tim shared his reflections on one of the artists' comments about failure in his journal entry:

When I heard the artist Arturo Herrera saying that his artmaking process is like swimming in the sea where there are lots of sharks and enjoying swimming in there at the same time. I thought he was being dishonest, or he was being a bit dramatic about his metaphor for his studio process. I'm aware that at some point, I will have some failure pieces from my trials, but I'd like to minimize the chances of failure, unlike him.

In the video clip from Art21, Herrera started by saying that failure is actually a very healthy thing and people shouldn't be afraid of it. For Tim, failure could happen, but he wouldn't necessarily enjoy it and aim for it. With this attitude, Tim seemed

disappointed when his first plaster cast, a mold of his hands, came out broken. As assigned, he posted his pieces on Cluster and added comments: “My broken plaster hands. I’m moving onto other materials.” During the class, I encouraged him to glue the broken pieces together and I assured him that it is very natural to have broken plaster casts when doing it for the first time. However, according to my teaching notes, he did not want to keep his failed piece, nor did he want to continue exploring mold making and casting processes. Tim further explained his frustration about his failed plaster cast hands in his journal response:

I thought I did follow exactly how the instructor did [it] in the demonstration. I measured exactly one cup of water and started to mix plaster until I see a little island of powder. Then I tested the plaster mixture with my hand and it looked completely opaque. When I dipped my hands into the Alginate, I hold it still to avoid any air bubbles. Every step I took was precise with no error, but my plaster cast came out broken and it was so frustrating. At some points, I just had to accept that plaster is not my material since some of my other classmates’ casts came out perfectly without any broken parts.

Tim’s response to the broken plaster cast was different from the responses of some of the other students, who said that they would give the project another try instead of giving up. Given the fact that it was Tim’s very first plaster cast using Alginate, I wanted him to at least try the second casting so that he could learn about the process. However, Tim was resistant to undertake another trial, and this resistance showed his fear of failure in his approaches to artmaking. Tim’s assumptions about the ideal artmaking process—an endeavor that does not include failed attempts—made it hard for him to understand Herrera’s statement about honoring failures.

During the first Making Session, in which I asked students to transform their quick gesture drawings into three-dimensional forms about one emotion, according to my teaching notes, Tim asked for my affirmation concerning whether his drawings looked right. He recalled this moment in the interview:

I was caught with the idea of getting perfectly rendered drawings. But then I was running out of time with all twelve drawings. I didn't trust my intuition with my drawing. Every little mark and line look[ed] wrong to me and that's why I kept asking you about your opinion.

In addition, Tim constantly checked on how his classmates were drawing. He noted his experience of the Making Session in his journal entry that week:

For the 5-minute drawing, I wanted to follow how Christine was making interesting marks using water color and oil pastel. I used the exact combination of her colors, which are two different kinds of greens and one orange pastel to give more contrast. I was somewhat pleased with the drawing, so I chose that one as my favorite drawing to keep. The rest of the drawings were just disastrous.

Tim thought that he would be able to create his best drawing during the five-minute span, because he would have a longer period of time to devote to it. And he decided to borrow from his classmate's use of color, rather than discovering for himself interesting areas to draw with in developing his drawing. As a result, he was satisfied with his drawing. This incident indicated his lack of confidence in his own process.

Reflection Stage

As seen in the Stability Stage, Tim came to class with an assumption that he was a non-artist. He also categorized the class into two groups—"artist" and "non-artist"—depending on prior educational experiences. Expecting to learn something more technical, with standard procedures, Tim was confused about the studio process that

contemporary artists often use that involves unforeseen and unexpected aspects. In addition, in his initial approaches to artmaking, Tim couldn't accept the idea of experimentation, especially if it was likely that those experiments would become failures. Instead of trying multiple times, Tim gave up on using plaster after his plaster hand cast piece broke. In this section, Reflection Stage, I explore how Tim's assumptions about his identity as a non-artist, his strict approaches to artmaking, and his initial limited understanding of art began to be challenged and reflected upon through various class activities.

Tim's reflections on his identity as artist and learner. Towards to the end of the semester (Week #11), Tim worked on a project with his teammate, Ashley, who was an art education major and who was previously trained as a painter. Again, the students' assignment for this collaborative project was to create the longest sculpture possible using a given set of materials. During the session, working with Ashley, Tim's understanding about artists and the ways they work expanded. In his journal entry that week he wrote:

It was kind of nice knowing that even trained artists do have that mode of chaos. I witnessed that sometimes they have no idea of what they're going to do or where they're going to find inspiration from. And sometimes just like well, alright, this is what I'm given. So let's see what we can do when it could work or couldn't. But the point is just do it.

Returning to Tim's initial thoughts about other "trained people" in class, he initially believed that he would be the only person who lacked previous art experiences and training. According to his survey responses and journal writing at the time, he believed that trained artists would have a special process for making art, due to their training, which would be different from his as a non-artist. However, the collaborative

Making Session challenged him to rethink this assumption. In his journal entry, Tim noted that he “first didn’t know what to do or which materials to use” and he “couldn’t even get started with thinking of a good idea for the longest sculpture.” I remember Tim and Ashley being so overwhelmed at the beginning of the Making Session that they often asked me to give them confirmation that their ideas were good ones.

Towards the end, Tim and Ashley created an infinity shape sculpture, symbolically indicating the concept of the “longest” dimension. It was made of wire, plastic sheets, wood, and paper intertwined together. Tim shared his process and reflection on the collaborative Making Session in his journal:

The most challenging moments from the Making Session was that Ashley and I [were] so overwhelmed at the beginning, since we both didn’t know how to express the idea of long dimension into a visual form. So we chat about a minute and started to jot down possible solutions on a piece of paper. Since we had a very limited time, we had to test run a different material quickly so that we could make fast decisions... At the end, I was relieved that we made the work on time.

As seen in his excerpt, Tim had to experiment with and test a set of materials during the Making Session. This challenged his original ideas about artists’ processes, and how he wanted his own artmaking approaches to not result in failure of any kind. In the earlier weeks of class, Tim rejected failure and experiments as part of the artistic process. But after the Making Session, that changed. Tim shared his memories about the Making Session in our interview:

I think I had a very different concept about failure or trial and error in [the] artmaking process back then. I wasn’t confident in my decisions and studio process since I didn’t see myself as an artist. I sort of saw myself as an outsider in class. But then, the Making Session and working with my friends helped me discover my process. The experience from that Making Session gave me a turning point to rethink about experimentation and failure in my process.

For Tim, it was challenging to accept failure and experimentation as part of the artistic process. However, he was constantly reflecting on his initial approaches to artmaking, and the Making Session helped him to ponder new ideas about his identity as an artist.

Time's reflections on his understanding of art. Tim's idea of what could be validated as art had begun to shift by mid-semester. In Week #5, I showed slides of contemporary artists who incorporated the techniques of mold making and casting into their practices. Tim reflected in his journal:

It was actually interesting how Sophie Kahn used 3D prints to create mysterious feelings of human anatomy. At first, when I saw the work on the slide, and before I heard from the instructor what the work is made of, I thought that her sculpture was made of plaster casts and molds perhaps using plaster straps and wire because of its organic textures.

Initially, Tim denied that work made from digital processes was art. By encountering the work of artists that incorporates mold making and casting processes, Tim started to question his initial assumptions about the definition of art. He started to see, for example, that art could be made from 3D prints. This new acceptance of digital technologies didn't make him feel that all pieces that used these approaches were generic or product-like, as he initially did. When he saw Kahn's works, he didn't know that the pieces were made of digital materials because the surface treatment was organic and handmade. Similarly, Tim's assumptions were further challenged when he saw works by Tony Oursler. Oursler's combining of plaster with a projected image was something new for Tim, and he started to rethink how intangible materials like projection might fit into his own work. In his journal entry for the week, he reflected on his thoughts about art materials and what art could be:

I think Oursler's use of [the] video projection was brilliant. It's so interesting to think about the power of projection since the plaster object would be so plain without it. The projected images and patterns added extra elements to his work and it also made the work somewhat humorous. I kept trying to think of [a] scenario where he could've used other materials, but the more I think about it, the video projection was the perfect choice.

In contrast to Tim's initial assumption about what art can be and what it can be made of, both Kahn's and Oursler's works challenged him to rethink the use of non-traditional materials. However, in terms of his understanding of art, Tim seemed to go back and forth between the Stability and Reflection Stages. Even though the images of artworks I showed in class challenged Tim to consider intangible and digital materials used in artworks, he seemed to go back to the Stability Stage where he was holding his initial thoughts about art as being made of traditional materials. The gallery trip also spurred Tim to question his understanding of art. Similar to how Tim strongly believed that 3D materials and processes were not acceptable art materials, Tim was skeptical in the journal entry he wrote after the trip:

When I saw Tom Friedman's exhibition at Luhring Augustine gallery, I first didn't know how to respond to his works. It was basically some lines and shapes projected from the projector on huge walls. I'm not sure if I was there to see an art exhibition. He didn't even use any physical art materials. The most shocking piece was *Bugs* (2017) which he again used video projection to show two dots on the wall. I think he wanted to surprise viewers like me—but other than that reason, I don't understand the work and I think the artist is being somewhat lazy almost.

Friedman's work was Tim's least favorite among other exhibitions that we saw on that day. He was confused by the use of video projection in the artwork and further denied this approach:

Maybe I'm wrong, but I'd like to appreciate physicality and tactility of artworks not nontangible medium. To me, that's not really what I think is art. On the other hand, Thomas Houseago's sculptures at Gagolian gallery were closer to what I think is art.

As seen in his journal entries, Tim felt comfortable looking at artworks that featured physical materials, like Houseago's large scale abstract and figurative work, made of carved wood, clay, plaster, and bronze. Lastly, when I asked him in the interview about his various reactions to Friedman and Oursler's use of projection, Tim responded:

I think back then that Oursler's use of video projection made much more sense to me since I was able to make a direct link to why he needed to use it. The fact that Friedman's work was a bit more conceptual and abstract, which didn't contain a lot of visual messages, I got confused again in terms of why he had to use video projection in his work. And this influenced me to think about what art can be.

Tim's reflections on his approaches to artmaking. As mentioned previously, in the individual Making Session, Tim wanted to emulate his classmate's process in regard to the selection of colors, textures, and compositions for his longer duration drawing. After a few drawings that took either 1 minute, 30 seconds, or 5 minutes to complete, some reflective moments began to occur in the middle of his 1-minute drawings. Instead of following someone else's style to create a "perfect" drawing, Tim started to use different approaches to artmaking. That week, Tim wrote:

When the time limit was really short, like one or two minutes, I didn't have much time to think about what I was making or what materials I should use and in which order. I just had to quickly choose an object and quickly choose a material. And then, sometimes I was surprised with the result because some drawings that I sort of went with the flow came out much better. Sometimes the drawing came out really interesting and cool, other times I didn't like the results. When I had one minute, I still felt this initial feeling of being rushed, but I found myself having more time to go back to add details and layer different colors for the background. Somehow, I became calmer about time constraints.

Due to time constraints, Tim was challenged to draw quickly, for example in one minute. This constraint pushed him to focus on intuitive and improvisational aspects of drawing. My teaching notes also indicate that Tim seemed more focused on his drawings, and at a certain point he wasn't looking around to check on his classmates anymore. Even

though it was the same duration of time, his one-minute drawings at the beginning of the Making Session seemed different from the one-minute drawings at the end. For instance, his early drawing contained many lines, which might show Tim's effort to get the right proportion and shapes of the object that he was drawing. Also, his drawn image was positioned in the center area of the paper. In contrast, his drawings at the end contained more colors and shapes, as well as dynamic, not centered, composition. This was the result of starting the drawing at a tilted angle. Instead of having the drawing centered on the paper with blank space around the image, Tim paid attention drawing in the areas surrounding the main object in the composition. Even though the background of the classroom objects he observed and drew was not actually red, Tim pushed himself to choose colors that, while "random," also indicated his feelings towards the subject matter. He recalled this moment in the interview:

I guess the choice of the color red was very arbitrary. I didn't expect to use this color at the very beginning since my main goal for all my drawings were to depict them in a realistic manner. But then, when I knew that I didn't really have a lot of time, I somehow automatically went for more bold and aggressive marks. My eyes were fixated to the area that I was drawing, which was underneath my locker and the electrical cords were tangled. I don't know how I drew without looking at my paper, but I was making color choices very quickly. And somehow, I chose red and brown even though the actual area looked different. It was like combining what I saw, and I felt and imagined.

In his journal entry that week, in addition to his color choice Tim shared his thoughts about having constraints in the way of time and materials:

I didn't feel very constricted by the limited time or selection of materials because I think they each added a different element to the drawing. I do not have a lot of experience with drawings, so I didn't mind being forced to use one or many materials. It gave me exposure to the type of art I could create with these materials... If I were given much longer time like about an hour, I'm actually not sure if I would've made those spontaneous choice[s].

The limited time and selection of materials inspired him to go beyond his comfort zone to try new approaches to artmaking that were more intuitive and personal, as shown in

below excerpts from the interview:

I think it kinda just put my mind down like, even some of very trained or have a lot of experience can still go through things that are chaotic and it's harder than processing. Seeing things. It's just a matter of experiencing them in different ways.

Transformation Stage

As seen in the Reflection Stage, during the Making Session Tim gradually started to realize the potential of spontaneity as part of the artmaking process. Instead of holding onto his prior belief that artmaking processes should aim for a “perfect” outcome using the “right” methods and tools, Tim started to enjoy the intuitive decisions that he made during the session. Tim’s understanding of art changed from the idea that art can only be made of traditional materials, as did his idea that art involves mainly European classical statues. Instead, Tim started to reflect on his previous assumptions about artworks made in a non-traditional way, particularly when he encountered Sophie Kahn’s sculpture involving 3D prints. Lastly, he started to question his assumptions about artists, realizing after he worked with a peer during the Making Session that even a trained artist could have chaotic moments in the process. In the next section, “Transformation Stage,” I explore how Tim was able to transform his identity as an artist and to consider and explore other approaches to artmaking, all of which also influenced his newfound understanding of art.

Tim's transformed identity as artist and learner. Tim started the course as a learner whose goal was to fulfill an elective and find some ways to incorporate art into his science classroom. During the presentation of his final project, he emphasized how the journey in sculpture class actually helped him become more “authentic” to himself as a learner and teacher. Later, in his interview, he said:

When I was going through all my experiments, at first, I wasn't comfortable accepting the idea that my project didn't come out as expected. However, this gave me room for thoughts and growth—to become more sensitive and persevere with myself with almost anything. A month later, in my own classroom, I know I'll make some mistakes and I may need to experiment with a lot of things to find the best learning experiences for my students. But I know now that I also have to have a balance of pushing myself but also letting go and be adventurous.

It is clear from this statement that Tim's newfound identity as an artist influenced him to think about his teaching practice in a different way. Instead of denying or avoiding failures and experiments in his teaching, he started to honor those moments as opportunities for growth as a teacher. Tim shared his newfound identity as an artist in his Retrospective Survey:

Even though I'm not a trained artist and I don't exhibit my works in galleries and museums, I can say to myself that I'm an artist. Or at least, I now understand how artists think and create, and I can do that too. Even now [after the semester ended], I'm constantly thinking about ideas for my new sculpture and the ways in which I can combine art and science in the work as well as in my teaching.

After the Making Session, Tim started to analyze his peers' work like an artist, making connections to his own responses:

From my peers' Making Session, I was intrigued by Jenny's use of transparent material (acetate) from the drawing session to make hanging panels, like the tentacles of a jellyfish. I liked that the work was in the loose shape of a box, and featured materials from the interior of the box, becoming a more introverted examination. I learned later that Jenny struggled to come up with a piece that coincided with an emotion, but to me, despite guessing wrong what the emotion

was, the piece was able to elicit a mood with its use of acetate. It reminded me of this work by an artist who used large panels of hanging plastic sheets to project an experimental film.

As seen in the excerpt, Tim not only analyzed his peer's work through an artist's lens, but also made further personal connections. Towards the end of the semester, Tim became more confident about his sculpture, particularly the final sculpture. He was no longer comparing himself to other classmates who came from art backgrounds. He wrote about his sculpture in his weekly journal entry:

The title of my work is 'In Transit,' because it is still an ongoing project in a way. This is the first stop motion animation I made with many different materials, such as plaster casts of small objects, found items, wire, and paint. I started with the idea of storytelling about myself, specifically how my emotion changes throughout the day. I didn't want to make the film too literally because I want viewers to engage with my work from their own lens—relating to their lives. Everyone has emotions and it's often the matter of how much you're expressing it. As an emerging artist, I'd like to continue exploring this idea with different materials, and this piece is still on ongoing exploration. But I don't have any regrets in my process.

With his newfound identity as an “emerging artist,” Tim planned on exploring the concept of emotion even after the class ended. Unlike the beginning of the semester, when he expressed concerns and insecurity about his artistic ability, he was in control of the process of making the final work, *In Transit*. According to my teaching notes, Tim showed confidence when he was sharing his process and ideas with the class during the group critique. When one of his classmates wondered about his process, asking him if there were any scenes of the film he wanted to go back and redo, Tim responded that he appreciated all the scenes and that he was interested in the idea of keeping everything alive in the moment—not trying to edit every frame with perfection. In contrast, Tim showed insecurity when he presented his first sculpture to the class. He recalled this moment:

Back then, I was not an artist and I think that mindset hindered me to further explore my own authentic idea because I was constantly worried about the outcome and being compared to other people in the class. But now I have different view of thinking of myself as an artist.

For Tim, acknowledging himself as an artist was not just about labeling his newfound identity. It gave him a new mindset for his work, allowing him to be more courageous and confident about his artmaking process:

I felt like I was expressing myself in my own way and not in a way that I thought I had to or in a way that anyone else was doing. Embracing, expressing, and valuing our own unique perspectives and personalities is a lesson that will impact on all of my students.

Tim became confident about finding his own way to express his ideas as an artist. Furthermore, he started to rethink his teaching practice. This could be similar to how he was able to develop a transformed artistic identity by valuing his unique artistic qualities.

Tim's transformed understanding of art. Similar to his reactions to the artist Sophie Kahn's work made of 3D prints, Tim faced a critical reflection moment towards the end of the semester. It happened when he encountered images I showed in class of works by other contemporary artists who use digital materials and processes:

I was completely blown away by Josh Kline's work made of not only 3D prints but also, everyday objects like shopping carts, plastic bags, and random hardware tools. Last week, I was somewhat skeptical about the use of 3D prints as art materials. But how Kline used the 3D printing process as part of his work with theatrical settings and prop like objects was authentic. Every piece of materials in his work seemed to be so intentional—even a slight angle of it. I realized that it's not always the materials or process that define what art is, but instead it's determined by the artist's genuine thoughts and attention to extreme details.

As seen in this response from Tim's journal, he was amazed at Josh Kline's use of not only digital materials and 3D prints, but also the fact that the artist's work was very carefully orchestrated, using both found objects and 3D prints. He also used the metaphor "theater" when describing Kline's work because of how the pieces were installed on the

floor as well as on the walls. A couple of weeks before, even after seeing Kahn's and other artists' works made of digital fabricating tools, Tim was still skeptical about the validity of art made of digital materials, even though those works helped him rethink the materials in the artwork. However, Tim further researched Kline's works himself and posted more images on Cluster to share with his classmates, along with his comments:

It was like a turning point for me to think [of a] 3D printer as an actual sculptural tool after I saw how other contemporary artists are incorporating 3D prints in their work. Digital tools don't always give us product like feelings, and perhaps these tools can be just the same as other traditional tools?

Once again, Tim's initial understanding of art had transformed from his default definition of art as a Greek statue. In his own work for his short stop motion animation (final project), Tim incorporated a mix of different materials that included 3D prints and laser cut pieces to express different stages of emotion—which indicated his shift in thought. When he reflected on a semester's worth of his journal entries, he responded to the most surprising moments:

Looking back, I think Friedman's work made of just the video projection confused me back then because I was still holding onto my default mode of art, which was Greek statue—something made of rigid traditional materials that often shows [the] artist's hand. But this thinking kept me away from focusing on what the artist wanted to say because I was so caught up with what [it] is made of. Now that I look at Friedman's work again, I can actually appreciate his intention and thoughtfulness of his selection of materials.

Once the semester ended, Tim sustained changed perspectives when looking at and thinking of art. He also took action. In his interview, he shared his experience of taking his family to different galleries in the city:

My sister and my mom visited me from Virginia, and I had to take them to the galleries in Chelsea because I sort of wanted them to feel what I felt during the class—about art and the fact that there are many different forms of art [that] exist

in the world. My sister in fact she was thinking of switching her major to fashion design, and I know fashion could be very different from fine arts, but I wanted to give her some inspirations.

With his newfound perspective and understanding about art, Tim went further by taking his family to galleries in Chelsea. Having realized that art is not limited to traditional materials, Tim wanted to expose his family to a wide range of contemporary art. Tim also shared stories of taking his sister to see the exhibition without giving her prior information, similar to how he was instructed in class. This helped her to look at art with a fresh perspective, thereby analyzing art from the artist's mindset. According to Tim, at first his sister was confused when she was told not to read any information about the artists or the exhibitions. Tim shared his thoughts in the interview:

It was interesting when my sister seemed uncomfortable looking at work without any prior information, similar to how I felt about art at the beginning in class...I think it's kind of amazing to have an artistic view even if you don't pursue art as a career, since it helps you to pay attention to small things in life and all of a sudden I started to honor taken for granted things.

Having an artistic mindset changed the way Tim sees the world around him. And now he wants to help others experience it. For Tim, being an artist goes beyond just creating physical works. It leads to a new way of looking and thinking about many other things in his life.

Tim's transformed approaches to artmaking. As mentioned earlier, Tim entered the course with strong beliefs about the prior artistic training of his peers, and their resulting knowledge and talent as artists. Consequently, he thought that he would be the least creative person in the class, partly due to his lack of experience and exposure to art. However, he started to trust his decisions during his individual studio time in class—an experience similar to how artists would work independently in their studios. He started

to be comfortable with ambiguity, experimenting with materials even without a clear goal. His initial biases against digital processes and materials were no longer present by the time he undertook his final project. He described his studio process for the project in his journal entry:

Working on my final project, the entire journey was an adventure. I never imagined that I would use stop motion animation, something not tangible, to create my work. My initial idea started with exploration of various emotional stages abstractly. Even though my final piece will be in the form of video, I still wanted to include various three-dimensional physical textures, forms, shapes, and compositions into my film... I shared my thoughts with Sohee and she showed her collaborative film that illustrates an entire process of making as part of the work. I had a broad plan but everything else just kind of happened like it was meant to be.

As seen in the excerpt above, Tim was no longer constrained by the idea of the physicality of the materials. He played with the idea of using 3D, 2D and 4D elements, as well as the stop motion animation, which dealt with time. During the group critique, Tim shared with the class how he had done a lot of experiments that also guided his process.

Tim recalled this moment in the interview:

When I was finally done with the editing of my video, I remember how Herrera's statement about enjoying swimming in the sea with a lot of sharks actually made total sense. I was somewhat skeptical when he said that the failure is a healthy thing. But now I saw myself actually go through a similar process with lots of interesting failures and trials. If everything, I mean including every single detail, came out exactly how I imagined it, I'm not sure if I would've enjoyed the process much. The failure pieces informed me to think about another approach and then another failure also taught me something else. It was like a domino effect.

Thus, in contrast to Tim's earlier thoughts about approaches to artmaking, he started to understand other contemporary artists' processes, particularly Herrera's emphasis on experimentation and failure. In his reflective essay that detailed his final project, Tim further described his process that involved a lot of experiments with various kinds of movement:

At first, I made a storyboard as Sohee suggested. It was a total of 20 scenes that I sketched. For each scene, I annotated a list of possible materials, emotional stage, background sound, and transitions to the next scene. The whole process felt like a research or science experiment... For the third scene where I expressed the emotion of feeling "dynamic," I've used strips of paper coming out from a liquid plaster. Along with the paper strips, I've also used rubber bands to start stretching in and out and dry pigments to spread colors in plaster. I rolled a piece of clay to create a zigzag quilt, which I then disarranged to give the feeling of dynamic and ever changing.

My teaching notes indicate how Tim spent hours in the studio outside of the class to experiment with simple materials for his final project. One day he was using 100 sheets of regular, letter size copy paper. Tim said those were his "recycled papers," which he printed once for another class, but then decided instead to use them as one of the materials for his stop motion animation. According to his journal response that week, he first soaked the sheets of paper in glue mixed with water for a few hours until the texture of the paper became softer. Then he started to layer the sheets on top of one another, until all 100 pieces had been stacked. In his words:

I tilted each paper about 5 degrees to get interesting textures similar to how Donovan created one of her sculptures using a bunch of index cards. During this process, I had these unexpected moments when printed ink on the paper started to melt and created an interesting tonal value on the paper. The texts were transformed into paint. After I layered 100 sheets of paper, I let it dry completely using a heat gun. Once it got dried, I then took a box cutter and started to cut shapes to make multiple holes.

Another important transformation was Tim's use of digital materials in his final sculpture. While he initially thought that art pieces made with digital fabrication tools and materials were not true works of art, Tim actually started to incorporate almost all of the digital fabrication tools in the studio in his final project. For instance, for some of the scenes in his stop motion animation, he used plastic sheets to laser cut various geometric shapes that were then painted in acrylics. Because the plastic sheets were iridescent colors, Tim used different LED lights for reflecting effects. In between the laser cut pieces, one could see an interesting interplay of light and shadow from the reflections.

Tim recalled his process with the laser cutter in the interview:

You know, I never imagined using a laser cutter in my work, because I didn't see the potentials at the beginning, other than efficiency. After seeing other artists' works made of digital materials, I started to wonder, is it about the materials or is it about the idea? Then, when I was working on different scenes in my final work, I naturally gravitated towards using the laser cutter to get more than 100 pieces of plastic shapes. And then I immediately thought of using the laser cutter somehow. I was so attracted to the idea of coming up with many variations of geometric shapes that were first hand drawn, then transferred to Illustrator, then edited, and finally output using the laser cutter. Even though the machine cut those shapes, every single piece of plastic looked different because those were originally coming from my drawings.

Tim was no longer comparing himself to other classmates in terms of his artistic creativity. He was fully immersed in his own process, and he was confident with his approaches, including any failed attempts that emerged in his experiments.

Summary of Tim's Transformative Learning

Entering the class with both excitement and apprehension at the beginning of the semester, Tim did not trust unexpected moments and failures in his artmaking process.

After the Making Session and the gallery trip, Tim slowly started to reflect on his assumptions about how one should approach artmaking. His initial presumption about having a non-artist mindset was transformed into a new artistic identity, which allowed him to no longer be afraid of failure and unexpected moments. Additionally, he was not trying to emulate the processes of his peers. Instead, he became more autonomous in his decision-making and ideas. Though he had initially denied that art could be made with digital tools or intangible materials, he himself used these materials to create his final stop-motion animation project. During his process, Tim developed his own way of planning, creating, and editing video independently. Tim decided to take the sculpture class not only to fulfill his elective requirement, but also to acquire art skills so that he could better integrate art into his science classroom. However, towards the end, Tim's newfound identity as an artist and approaches to artmaking helped him discover unique ways to work with materials. In a sense, his initial reasons for taking the class became byproducts, among other outcomes, of his new artistic purpose.

Case 4. Stella

Stability Stage

Stella's initial identity as artist and learner. Stella, a White in her early 30s, was a student in the Art Education Program at the time of the study. For five years prior to enrolling in the graduate program, she was a professional graphic designer, primarily working with typography for design firms. She also had experience as an assistant art

teacher at a community center. Before majoring in graphic design in undergraduate school, Stella painted portraits. Even though she had the most art training out of the five participants, Stella—like Anne, Gina, and Tim—started the sculpture class feeling insecure about her artistic ability. As she stated in her Demographic Survey: “I don’t consider myself as an artist at all. Right now, my identity is closer to a future novice teacher.” She shared her thoughts about her journey in art education in the post-semester interview:

My whole life I’ve always been artistically inclined and I’ve always taken as many art classes as I could through high school and I ended up majoring in art in college. But when it came time to choose a major it felt at the time like graphic design was the right choice, partially because it was the more competitive program at my school and I wanted to be a part of that but also it felt like a more clear route to a career.

Even though she had majored in art and worked as a professional designer, Stella had some specific criteria for acknowledging herself an artist, criteria that she did not believe she fulfilled. After the first day of the class, students were asked to post online a few images about themselves (excluding selfies). Stella uploaded her typography works from her previous job. When the students discussed everyone’s images, Andy commented that Stella’s typography work looked amazing and professional, saying to the class that Stella was an “artist.” In response to his comments, Stella strongly denied that she was an artist—she countered that typography works were not even close to art. Similar identification as a non-artist took place during the collaborative Making Session when Stella was creating the longest sculpture possible with her teammate. She further shared her thoughts about her experiences as a graphic designer:

I did mostly two-dimensional work, illustration and design work, a lot of work with typography. When I think back, I don’t think what I was doing was art—at least not similar to the sculpture class. Things were very structured, and it was all

about problem solving, almost every project that I was given, or even ones that I made for myself, had a clear problem to solve—like how we can sell this product or how can we create a clear poster for an event. Things like that...I've done more recently but I didn't have hardly any three-dimensional work before taking the sculpture class.

During her job as a graphic designer, Stella worked with clients to come up with various typography designs, and this process felt like a problem-solving process with external constraints rather than artmaking with complete artistic freedom. Since she mostly worked with typography or designs using digital programs, trying to create something three-dimensional with direct contact of her hands in materials seemed very new and different from how she used to work in the design firm: "Somehow I missed touching things instead of using a mouse to work with a computer all the time. I wanted to get back to my hands." Unlike the other participants, Stella's idea of her identity as an artist was directly connected to the processes she felt did and did not define art practice.

Stella had three major reasons for taking the sculpture class. The first reason was to fulfill her Art Education studio requirement. The second reason was to use her hands more actively. And the last reason was so that she could become a well-rounded art teacher, able to use not only 2D but also 3D materials in her teaching. In the interview, Stella revealed her thoughts about the artist and teacher identity:

When I was working as an assistant teacher and volunteering in the community center, I was surrounded by creative teachers who also made small drawings or paintings as a side thing. I remember having conversation with them, and no one ever defined themselves as artists even though they were still creating works.

Stella's initial identity as an artist was somewhat influenced by those of her colleague teachers, who also didn't identify themselves as artists despite regularly creating drawings and paintings. Her mindset influenced her studio process, which, according to my teaching notes, often relied on teacher affirmation. She asked me questions such as

“What would the ideal materials be to start my project idea?” and “Do you think my work is done?” These kinds of questions showed her lack of confidence as an artist at the outset of the class.

Stella’s initial understanding of art. Coming from an art background, Stella initially identified all six images as works of art on her Art Survey the first day of the class. However, after the semester ended, she shared her confusion about the definition of art in the interview:

Maybe it’s the influence from my undergraduate art history classes where I mainly learned about classical western art objects and paintings, many of them realistic depictions of landscape, deities, rulers, etc. I felt like those ancient people back then probably had no idea how modern people would look at what they’ve created as art... so western classical art sort of became the baseline of what art was to me.

Even though Stella originally identified all six images as art, it was challenging for her to appreciate various forms of art. It seemed that she understood the concept of diverse art forms and approaches in a logical manner yet couldn’t fully value all of those different forms that art could take. In the interview, Stella further described her confusion about contemporary art, particularly one of the images from the Art Survey—the installation by Gedi Sibony:

When I first saw the image [Sibony], it looked like a photograph taken from the construction sites. I tried to find any evidence of object or painting in the image, but I couldn’t... I actually didn’t have any concrete reason to select all six images as art.

For Stella, accepting conceptual and process-oriented works as art seemed challenging at the beginning of the semester, partly due to the limits of her previous training as a graphic designer. She further shared her thoughts about her initial definition of art in the weekly journal entry:

Even though we learned that art could be defined in many different ways, I had my own guidelines in terms of what I consider as art or not. Having a sense of “completeness, harmonious compositions, creative use of materials” were some criteria for myself.

Even though Stella knew that many forms of art exist, she insisted that she wanted to stay with her own criteria to validate what art could or could not be. She also expressed her feelings about conceptual, abstract, and process-oriented art in the Art Survey:

I personally don't appreciate conceptual art or art made of found object[s] because they don't show authenticity and the artist's labor in their work. Somehow, I just don't understand these forms of art when I saw them in the galleries or museums. To me, they have pompous or too-easy feelings.

As seen from the above excerpt, Stella expressed negative attitudes about certain forms of contemporary art—art works that used approaches that did not fit with her original definitions of art (these definitions focused primarily on figurative or representational paintings or sculptures, and “completeness” of the work). She recalled her thoughts about art at the time of entering the class, in the interview:

Back then, my criteria of what art should be was based on aesthetic qualities of work. For example, the work had to show some level of completeness or labor. And that's one of the reasons why I couldn't consider process driven installation as art because I didn't think that there was an artist's intention or any level of completeness. My reaction to those works was like, 'oh, these artists can leave their works unfinished because they're already famous.' When I looked at unfinished work or highly conceptual work with very minimal artist's hand, it used to make me almost angry and I didn't know why.

Thus, early on for Stella, art had to have a level of completeness and a clear intention. Further, Stella couldn't appreciate conceptual and process-oriented works because she believed that those approaches could just be an excuse for established artists to get by with less work or labor.

Stella's initial approaches to artmaking. Asked on the Demographic Survey what her expectations were for the class, perhaps partly due to her prior training as a graphic designer, Stella responded that she would like to create “clean and neat sculpture.” For her second project, she created a wooden drawer that was neatly decorated with small geometric shapes. During the group critique for that project, she shared how she wanted to incorporate the clean, geometric style of Piet Mondrian, who is a source of inspiration for her professional design work. However, she wrote in her journal entry that week that “my project turned out to be not exactly as I planned.” Stella was not pleased with the “imperfection” of jointed wood parts that were not quite aligned. In addition, her original idea was to create a jewelry box out of clear Plexiglas, but she “failed to get perfect measurements of each section.” One can see how Stella was very concerned about perfection in her work, and that she was disappointed with how her first sculpture came out. In the interview, Stella recalled this moment:

I think it was because I was so used to working with clients when I worked as a designer at the firm. There, I had to come up with “perfect” customized designs for various clients, and had to have a very clear step from A to Z. So it was almost impossible to put my voice into the design. But then, in the sculpture class, I felt a bit confused and liberated at the same time, especially when I was working on my first project. I knew I wasn't creating my piece for clients but in my mind, I sort of wanted to please everyone.

As the excerpt above indicates, even though the assignment provided more artistic freedom than a client-based design project, Stella still focused on creating a perfect sculpture for someone else—her classmates and me. She struggled with allowing enough space for her own voice. Since her first sculpture did not turn out as she expected, she showed a lack of confidence during the critique. My teaching notes indicate how Stella often showed a lack of confidence when describing her work in front of the class,

especially during the group critique. She often said things like “This was just an exercise, nothing fancy,” or “There is lots of fraud to this work,” or “It’s not really an artwork.” I remember how her classmates tried to encourage Stella, saying how her sculpture turned out really well and they were impressed with her techniques. However, according to my teaching notes, Stella continuously showed regret and disappointment throughout the critiques.

In Week #5, when the students and I discussed images of various contemporary artists’ use of mold making and casting processes, I remember how Stella kept asking me about how long it took for these artists to create such works and commented how she needed to make sure to have multiple plans for her second sculpture project. That week, I asked the students to write in their journals specifically about their initial ideas for the second project. Stella noted:

My first project gave me a lesson, which is to come up with multiple plans in case plan A doesn’t work out, I can move to the plan B. I’m going to spend more time coming up with a master plan for my 2nd Project. And this will prevent any imperfection, I think.

It is clear from her remarks how Stella was still holding on to goals for her artmaking process that involved “perfect” plans. Stella seemed to feel safe and comfortable when she had perfectly planned steps for her projects. However, these kinds of tightly planned procedures hindered her experimentation and improvisation.

Reflection Stage

As seen in the Stability Stage, even though she theoretically knew that many forms of art exist, Stella had difficulty accepting conceptual and process-oriented works as art. Partly due to her prior experience as a graphic designer and her new focus on teaching art, she didn't consider herself to be an artist—instead, she saw herself as a novice teacher, portraying a lack of confidence in her art abilities. Her graphic design training also influenced her artmaking approaches in that she was looking to use a design-oriented step-by-step approach to creating sculpture. When she saw that she had created imperfectly joined wood parts in her first project, she was disappointed. In the next section, I explore how Stella begin to critically reflect on her strict approaches to artmaking, and on her understanding of art that excluded conceptual and process-oriented works. Then I will explain how she began to think about herself as an artist.

Stella's reflections on her identity as artist and learner. After watching the videos of contemporary artists' studio processes in Week #3, Stella started to wonder about elements of the featured artists' creative processes that seemed different from her own beliefs about artmaking. Stella reflected on what “surprised” her in her journal entry that week:

To me, the video clips that we watched somehow demystified the artists' studio process. When the artist Judy Pfaff said that she usually flailed around a lot before making work, and she even saw many things that she didn't plan in her work, I was somewhat surprised. When I saw her installation, everything looked so calculated and detailed, and I would never have imagined that she actually let her feelings guide the process instead of coming up with a tight plan. This made me think that even the professional and famous artists are normal human beings.

Again, for Stella, identity as an artist was directly connected to one's process and approach. For example, coming from a graphic design background and now studying to

be a teacher, she repeatedly told the class during the first group critique that she approached her work too much like a teacher, and not as an artist. For her first sculpture project, Stella created many small abstract faces made of clay and decorated them with various materials such as yarn, buttons, colored sand, and saw dust. Her theme for the sculpture was “diversity in the classroom.” According to her journal entry that week, Stella attributed her theme to her goal as a teacher to increase an awareness of various cultures and ethnicity in school. My teaching notes indicate that Stella was passive about presenting her work in front of everyone during the critique. Instead of being confident, she told the class that her work was just a “failed attempt” and that her piece could be used as “teaching materials” rather than viewed as artwork. After the critique, she reflected on her feelings about her project in her journal entry. This revealed her ideas about her own making process at that point in time:

My project came out okay, but this is closer to my teaching materials rather than artwork. I guess I wasn't fully immersed in my studio time like the contemporary artists we watched from the class. When a lot of them talked about 'being lost in time,' and how 'things sort of worked out in the process,' I couldn't quite understand what it means or how it feels like, partly because I've never been in that zone.

The idea of immersion in the process or being “in that zone” was an artistic concept that Stella couldn't quite grasp, because she had not yet experienced it for herself as an artist. However, her initial identity as a non-artist was challenged after the collaborative Making Session in Week #11. At that time, Stella and Hannah, her partner, had to collaboratively create the “longest sculpture,” within a time limit of 40 minutes. After the session, Stella wrote in her journal:

The Making Session with my teammate felt very different from my normal studio time in that Hannah and I had a very simple plan to create the longest sculpture, but then everything else just sort of worked out. I felt like we were in that 'zone'

that the contemporary artists talked about in the video clips. I don't know if it was due to the limitations. If this is the feeling and process that the artists have in their studio, then I feel like I can consider myself as an artist one day too.

Stella and Hannah created a tunnel structure resembling a hexagonal cylinder made of balsa wood. They attached mirrored acrylic sheets to the entire interior of the wooded structure so that viewers would see multiple reflections of themselves when they looked into the piece. To them, the multiplicity of reflections and illusions of interior space gave their structure the feeling of being “the longest.”

According to my teaching notes, after she was influenced by what she described as a more immersive experience with Hannah in the collaborative Making Session, Stella started to schedule individual studio time outside of the class meeting times. She shared her artistic process and her increased autonomy in decision-making in her weekly journal response at that time:

I wanted to emulate my individual working time to the Making Session. So I came into the studio during the open hours and gave myself a limited time. One time, I came in at 11am and spent an hour working. After taking a lunch break, I came back to the studio and did another hour [of] working time... What surprised me the most was reading about my uncertainties in my sketchbook working with new materials in one week and then having more confidence and developing a sense of play for the materials the next week. In some moments, I almost felt like materials direct me to do certain things and I found myself being in the flow moments so naturally. I trust my decisions in every little step, and I felt so good about it.

Stella's reflections on her understanding of art. As described earlier in Chapter III, towards the middle of the semester the students were engaged in the Artist Statement Exercise in which they examined six artist statements written by modern and contemporary artists. I gave the students written copies of the artist statements—some of them came directly from the artists' official statements (for example, from their websites), while others were excerpts from interviews with the artists. I asked the

students to examine each artist statement and then make a drawing of what the works described in the statements might actually look like. Interestingly, Stella's drawings for all six artist statements had base structures that resembled mounts for statues. According to my teaching notes, when I revealed the actual artworks Stella looked surprised. She reflected on this experience in her weekly journal entry:

When I saw that my thumbnail drawing of a flower sculpture was actually the work by Georgia O'Keeffe, I was so surprised because I learned about her paintings. On the other hand, when my swirly sculpture drawing somewhat matched with the actual sculpture by Alice Aycock, I was relieved...It was interesting how I was unconsciously adding base structure for all my drawings. I think perhaps I assumed that all three-dimensional works always have some sort of base or frame.

As seen in the above excerpt, Stella's assumption about the nature of sculpture—in that it was necessary for sculpture to be mounted on a base—changed through the artist statement project. Stella further shared her reflections on her other takeaways from the exercise:

The Artist Statement Exercise was extremely helpful to see how various artists have different styles of writing their statements. And how the artist statement showed their ideology and methodology. I was surprised by how I used to look at art in a certain format, but after seeing the variety of different styles, use of materials, and method of presentation, it made sense that contemporary art has no boundary. Yet I learned that artists have their own intention and meaning behind their work—even the most simple or conceptual art...It was also interesting to see how my peers interpreted and imagined artworks from the statements totally differently.

Stella's initial assumptions about abstract and process-oriented art also were challenged by the Artist Statement Exercise, because now she was able to understand the artists' intentions for their work. As for the relationship between the statements and the artworks, Stella didn't agree with some of her classmates who insisted that vague or abstract statements were not helpful or were "bad":

Some people in the class kept saying that vague or conceptual statements were bad because you couldn't picture the piece visually. I didn't think this is necessarily true, especially if the statement is on a wall in a museum right next to the work. I don't think it's bad if the artist wants to have a more conceptual statement if they want their audience to have to think and find their own interpretation. This also taught me how I might approach my artist statement as an artist.

For Stella, artist statements went beyond written texts that aided the artwork.

They could be part of the work or different representations of the artist's voice. In addition, in her journal entry that week, Stella shared her feelings about non-traditional art forms inspired by the contemporary artist Skye Gilkerson, in response to Gilkerson's artist statement:

When I read Gilkerson's artist statement, at first, I couldn't quite imagine what the actual works might look like. But the statement was so interesting since it entailed the artist's biography and what she's interested in. Initially, I drew a rectangular painting piece with extruded frames coming out from the wall. But then I consciously knew that her work might not be in a traditional painting or sculpture. When I finally saw the actual work, Pale Blue Dot, in the slide, I was so amazed by the artist's idea of transforming the landscape into such an abstract and tiny form. It was like making a commentary about the relationships between human and nature.

As seen in the above excerpt, encountering Gilkerson's work challenged Stella's prior assumptions about what art could be. Gilkerson's work is not in a traditional painting or sculpture format but placed in a transportable small wooden viewfinder. This caused Stella to become curious about process-oriented and interactive work, and allowed her to begin to appreciate these non-traditional forms of art. During an in-class conversation with Stella, I learned that she further researched Gilkerson's works and started to focus on the artist's ideas, rather than her physical execution of works.

Stella's reflections on her approaches to artmaking. In Week #11, the class was engaged in the collaborative Making Session. The theme was “drawing and sculpture” using watercolors, oil pastels, different kinds of papers, wire, and tape. As mentioned in Chapter III, I asked the students to create quick gesture drawings from their observation of areas in the studio they found interesting. I told them to pay attention to “overlooked things,” such as a corner of the door, how the wall meets with floor, and other aspects of the studio space. The second part of the session was to choose one of their favorite drawings and hang it on the wall. At the same time, students were asked to take fifteen minutes to transform the rest of their 11 drawings into a three-dimensional sculpture that evoked one emotion of their choice.

My teaching notes indicate that Stella was concerned from the beginning till the end of the Making Session. In her journal entry for that week, Stella described her anxiety: “compared to the normal studio process, I had a very limited time to think and brainstorm to create good drawings. To execute my design as soon as possible and as successfully as possible was definitely challenging.”

She also commented how it was challenging to create a realistic drawing of her peer, who was part of her observation of an area of the studio space: “I wasn't even half way through drawing Hannah's profile but then I was so disappointed when I heard the time check that two minutes already passed.” However, Stella had a turning point in the midst of the Making Session when she started to use the rest of her 11 drawings as materials to create a three-dimensional form. In the interview, she recalled this experience:

At the beginning, I thought that I didn't have any idea how I would transform my drawings into a three-dimensional structure. I felt like my brain was completely wiped out for a few seconds. And I obviously didn't have enough time to come up with my plans, but instead, I first thought of one emotion of my choice, which was "calm." And then, I started to pay attention to different formal elements of art of my drawings – textures, colors, and lines. It was almost as if these elements were talking to me. It was similar to when Russell Crowe started to see certain phrases, letters, and numbers popping out from documents in the movie *Beautiful Mind*. It was so liberating. I sort of let my drawings dictate my process. Even though we were given 15 minutes to transform our drawings into the sculpture, it felt a bit longer, which is somewhat ironic even when I think about it now. I didn't feel like I was chased by the time like I was when I was trying to get the perfect portrait of my peer.

In the interview, Stella recalled her experiences in two Making Sessions (both individual and collaborative), saying she actually started to enjoy touching materials, which wasn't the case in the beginning. Stella shared her overall reflections on the Making Sessions:

At first the most challenging was coming up with an idea in such a short amount of time. Usually I think for a long time before I finally make a decision, especially because I have so little experience when it comes to three-dimensional art, so having little time to think and plan was challenging. However, this also felt freeing in a way because I didn't have to think or plan, I just did. The limitations of time particularly challenged me to just dive into touching and making something.

After the individual Making Session, she also shared her feelings about familiar materials such as watercolor and crayons:

I was reminded [about] a few basic techniques during this session that I was taught in Kindergarten. This includes using watercolor on top of oil pastel to create wonderful patterns and making oil pastel layers on top of one another, then scraping off the top layer to reveal something underneath. I was wholeheartedly excited by the fact that I was able to discover something so simple yet so striking as an adult.

Even though Stella already knew about watercolors and oil pastels, the individual Making Session pushed her to think about these familiar materials in a different way. Instead of being restricted to a few methods for using the materials, Stella experimented with them as if she had never worked with them before. In addition, Stella started to appreciate her peers' works with from a new perspective. During the critique of the second project on chaos and harmony she wrote:

From Rae's work and everybody else's, I learned that chaos can be represented in the process and not be completely apparent in the end product. For me, I felt compelled to show both chaos and harmony in the end product. Knowing that there is an alternative way of expressing the relationship of two concepts from my classmates, I am now inspired to bring in this concept the next time I decide to explore materials with the same dichotomy of chaos and harmony. My understanding of materials has changed a lot since learning about how my classmates used both digital and traditional materials. For example, Sophia's work had this amazing iterative overall process that started out with using plaster and then Photoshop to laser cut the patterns generated from the plaster mold. The combination of digital and traditional tools can sometimes create a beautiful hybrid work of art that does not have to conform to any standards of beauty.

Even though some of her peers' work seemed to Stella to be unfinished, or too focused on the process, she started to appreciate the intentions and ideas rather than only the final outcomes.

When Stella was working on her final project, which involved lot of plaster use, she wrote in her journal: "When I did a plaster cast with my hand, that was just a really different experience, I can't really explain why I like it so much because part of it, to be fully honest, is that you produce something tangible." Inspired by artists from both class discussions of contemporary art and exhibits she saw during the gallery trip, Stella spent a lot of time thinking and brainstorming ideas as well as searching for the right materials for her project.

During the Reflection Stage, Stella started to circle back on her initial assumptions in which she characterized herself as a non-artist. This reflection occurred after she looked at video clips of contemporary artists describing their studio processes, all of which involved the notion of “flow.” The first Making Session pushed her to follow her intuition rather than a set of plans, which helped her experience a sense of immersion or flow just like the contemporary artists. This incident gave her time to reimagine herself as an artist. According to Stella, the factors that lead someone to be an artist involve a sense of flow. Simultaneously, when engaging in the Artist Statement Exercise, she started to focus on artists’ ideas and intentions, rather than the final outcomes of their work. Even though Stella still holds onto the idea that a step-by-step process can be used for creating perfect drawings, she was able to let her materials guide her process during the individual Making Session.

Transformation Stage

Stella’s transformed identity as artist and learner. It was during studio time when Stella was working on her final sculpture, towards the end of the semester, that she was finally to have what she considered to be an artist’s mindset. Inspired by the tunnel structure sculpture from the collaborative Making Session a few weeks before, Stella wanted to create something that had interior and exterior structures made of plaster and wire to illuminate a notion of “depth.” As mentioned earlier, Stella was hesitant to use plaster at the beginning of the semester—at that time she thought it was too “messy.” Part of this was due to her prior experiences as a graphic designer who was used to doing

everything in computer programs and on paper. However, for her final project Stella liked the idea of challenging herself with an unfamiliar material. She thought that the limitations she had during the Making Session (that gave her the turning point to rethink her identity as an artist) actually helped her be in the zone of flow, which is what she saw the contemporary artists we discussed experience in their studio processes. She wrote in her journal at that time:

I want to see what happens when I have a very rough plan for my final sculpture but let my materials, which are plaster and chicken wire, guide my process similar to what I did in the second Making Session. I may feel unstable, but I know that I can be in the zone of making.

Here, Stella started to trust her decisions and process as an artist rather than relying on my affirmation and confirmation as her teacher. She became more autonomous and intentionally worked with constraints similar to those presented in the Making Session. It would have been easier for Stella to create a work similar to her first project, which involved calculated steps and non-messy materials. However, Stella went a step further by challenging herself to use plaster, even though she used to be resistant to it. Stella posted a picture of her small plaster and wire mesh experiment pieces on the shared blog and left a message for the class:

Struggles, trials, and failures were my experiences, and now not only have I overcome these obstacles but also embraced it. So I'm willing to experiment more and fail more because now I know that's when I'm getting my own idea. Here are some of my attempts using plaster and wire mesh—I've tried morphing the wire to have cave like forms and experimented with various layers of both plaster paste and plaster straps. It's interesting how the outcomes sometimes change beyond my expectation.

Instead of being uncomfortable with the unplanned studio process where she utilized materials she had not used before, Stella intentionally and confidently conducted a series of experiments outside of class, using plaster and wire mesh to search for her own process. Stella shared the central theme of her final sculpture in her journal:

As I illustrated in my artist statement, my work centers around the idea of personal journey and trauma. I draw inspiration from personal experience, as well as anecdotes, to express through the sculptural form different types of pain and healing. Part of this theme relates to advice I received from a surgical nurse, that if I focus and closely examine my pain, the pain would be easier to cope with. Another idea relates to a book I read regarding Buddhism, which reminds me that everyone has physical or emotional pain they have to overcome. I hope my work would be a narrative that serves as a tender and intimate access point for people to examine their own experiences of pain.

The above excerpts show that Stella was now focusing on her personal connections and stories, rather than being overly concerned with the physical attributes of materials. As she described in her statement, her newfound artmaking process and her identity as an artist were illustrated in the various textures of plaster and wire mesh that she created. The concave sections of her sculpture were covered with plaster paste multiple times to illustrate smoothness, whereas exterior parts were intentionally textured roughly with plastic knives and other tools.

After completing her final plaster sculpture, Stella shared her thoughts about her newfound identity after the group critique. She wrote:

I do see myself as an artist because I created something completely on my own informed by my personal feelings and ideas. You sort of owned the idea and make all decisions independently. Acknowledging myself as an artist also pushed me to trust my intuitions. I felt like I was in those freezing moments where I was focusing on my process completely.

One can see how Stella was comfortable with both the predictable and unpredictable aspects of the entire artistic process for her final sculpture. Instead of being insecure about her artistic ability or being afraid of using unfamiliar materials, Stella challenged herself to follow her own thoughts, feelings, and intuitions. When she was given copies of all of her previous journal entries so that she could reflect on the entire semester, she realized how her idea of being an artist evolved throughout the semester:

Looking through all my journal responses, I was surprised about how much I was worried about not being able to create a piece that is artistic enough. It seems a little silly now. As long as I'm enjoying the creative process and expressing myself in my own way, I'm an artist.

Stella's transformed understanding of art. Stella's understanding of art, especially her thoughts about conceptual and abstract forms of art, was challenged again during the gallery trip to Chelsea on Week #9. As evident in her journal entry after the trip, the artist Roni Horn's cast glass sculptures at the Hauser & Wirth gallery were particularly intriguing to Stella:

I was really inspired by the semi-transparent glass cast molds by Roni Horn. Just experiencing her work in person gave me one of those frozen moments. Even though her work was very simple, and it didn't contain any representation in it, I felt a sense of self-reflections when I looked at the work for the first time. As part of the protocol, I tried not to look at the press release of the exhibition to gain more information about the artist or the meaning behind it. I spent at least 15 minutes there—I don't know how that happened, but the elapse of time felt very short...I learned that just because sculpture is minimal and conceptual, it's not always pompous.

After the gallery trip, Stella researched Horn's work and her approach. She shared her research reflections, again in her journal:

It was interesting to hear about the process of making--it was so interesting to set them kinds of 'self-glowing.' I liked the idea of using a very specific material—'colored molten glass' to convey meanings about generating matter and

uncertainty. The work kind of speaks for itself through the passage of time...Thinking of her work, I actually got some interesting ideas and plans for my final sculpture.

Stella went beyond just appreciating Horn's work—she was making connections to her final sculpture. Later on, Stella created a work that also conveyed the notion of time and ephemerality using various mixed media. During her process of working on the final sculpture, Stella wrote in her journal about how engaging in artmaking helped change her perspectives about art:

I knew how to design things on the computer, and I knew how to use paint from my previous training. But I was so hesitant to create something three-dimensional and conceptual. And I used to deny conceptual, minimal, and abstract art. But when I actually touched the materials and brainstorm[ed] my ideas about my sculpture, I realized that it's not really about different styles of art. Rather art is really about conceptualizing and visualizing artists' minds and thoughts. In my case, I first started with an overarching theme, then, I moved on to do a series of experiments with all possible materials. I went to hardware stores in Chinatown and searched Amazon to get the right LED lights and electronic parts for my sculptures... Being engaged in the actual making and thinking process, now I feel like I have a true appreciation of art.

Similar to her reactions to a broader and more abstract artist statement, which she valued, Stella tried hard to create work for her final project that was poetic, rather than literal. She wrote about her process:

Somehow, I wanted to give extra layers or curtains in front of the message that I tried to convey. And then, I thought of a different way, which was to first minimize the amount of texts shown on the monitor, second to use minimal colors possible, and lastly to repeat the same objects multiple times instead of telling a story in a literal way.

After the semester ended, in the interview, Stella shared her thoughts about art and sculpture:

Art or sculpture –this word that's so hard to define. And I ended up having this really amazing eye opening, freeing experience of what art means and how I can approach artmaking, hands-on processes. And it totally changed my mind about what kind of an artist I am and what kind of work I am capable of making, and

how to look at other artists' ...who work in many different materials with intentions and ideas. This ultimately gave me new understanding of what art is and what art could be.

Stella's transformed approaches to artmaking. Three weeks were left until the last day of the semester, and my teaching notes indicate how, as mentioned earlier, Stella spent extended hours in the studio outside of our regular class time. Her commitment for her final sculpture was also evident in Cluster, where she shared photos of her processes. With each post, she shared her artmaking actions that took place during the process. For instance, she wrote:

Day 3 experiment with different hand actions: I lift and inlay clay to get textured plaster cast. Then I cover the plaster cast with alginate to re-cast the same object but with liquid plastic. With the plaster cast piece, I kept scratching and sanding the edges with different grades of sand paper starting from 50 to 500. So far I have ten casts made of all different materials. I love pouring wax and liquid rubber into my alginate mold.

As seen in the above excerpt, Stella was immersed in making and experimenting with different materials, notably without a concrete plan that she previously thought was necessary. The focus of her artmaking process shifted from the final "perfect" outcome to a sense of enjoyment, as she focused on her own creative inquiries, and engaged with various materials. She also paid attention to different hand movements, such as "lifting, inlaying, covering, pouring, scratching, and sanding." She was no longer hesitant to use plaster. In her final Reflective essay, Stella wrote:

One way that I learned to overcome the challenge was to actually begin, by making anything at all, or by physically engaging with the materials, by touch, or by test runs. I personally enjoyed being immersed in my studio time with my hands. Sometimes just touching the material gave me an idea.

For her final sculpture, Stella created a vessel-like sculpture comprised of wire mesh, burlap, plaster straps, plaster, and paint. During the last week of individual working time, she wrote in her journal that she experimented with different lighting options for her sculpture. Beyond the experimentation related to the final work, Stella further challenged herself to play with various forms of light and shadow. It was a different kind of perfection. She wrote about it in her journal in this way:

I appreciate how the tactility of my sculpture is maximized with a different amount and angle of the light source. My sculpture evokes different feelings when it was lighted with the fluorescent, incandescent, spot, and LED lights. With the use of lighting elements, I was partly inspired by the artist, Mary Corse's work. Thematically, I kept thinking about the artist, Roni Horn's choice of materials and her ideas... This pushed me to think about photographing my work somewhere outside where I can play with the natural light.

It is interesting how Stella maintained her personal voice while referencing other artists' use of materials and concepts. Stella also experimented with the documentation side of the work. My teaching notes indicate how Stella challenged her initial approaches and understanding of art and artmaking through photographing her work. I remember a series of photographs Stella took that included extreme close up shots, full shots, and photos with different kinds of lighting—and that she wanted to discuss these with me. That week, Stella wrote in her journal:

I think the photographs of my sculpture could be another work, which I can continuously work and develop. The tactility shown on the photographs look different from the actual sculpture, which was interesting.

Different from her initial approaches to artmaking, which were heavily influenced by pre-planning and attempts at “perfection,” when I asked Stella about her artmaking process, she said:

My work is not static in a sense that I would work with my work by continuously observing and iterating it. I like the feeling of being alive in the studio. Literally, I felt like I wasn't thinking anything else but my sculpture and how my hands were moving. It is therapeutic in a way.

At the close of the semester, Stella was not thinking about coming up with perfect and polished plans anymore. Rather, she let herself enjoy the process by feeling her hands moving and working with materials. After the semester ended, Stella recalled her artmaking moments:

Struggles, trials, and failures were my experiences and now not only I have overcome these obstacles but also embraced it. So I'm willing to experiment more and fail more because now I know that's when I'm getting my own ideas.

Summary of Stella's Transformative Learning

Even as an art education major who was previously trained in graphic design, Stella started the class with a surprising lack of confidence in her artistic abilities. Partly due to her experience as a graphic designer, her initial approaches to artmaking were limited to step-by-step processes, through which she aimed to create the "perfect" project. Gradually, inspired by the studio processes of contemporary artists that involved the notion of flow, as well as by working with her peers in the studio, Stella started to question her assumptions about what it means to be an artist and what an artistic process entails. By spending individual studio time under self-imposed time constraints, Stella started to experience full immersion in the studio process, similar to the artists she saw in the videos we discussed in class.

Instead of being resistant to plaster as she was in the beginning of the course, Stella started to experiment with plaster and chicken wire, even going beyond what she learned in class demonstrations. Theoretically, Stella knew that there are many art forms, but she was initially skeptical and for several weeks held onto her preferences for art that was “polished” and “complete.” When she encountered Skye Gilkerson’s process-oriented and interactive work and when she saw particular works in the exhibitions on our gallery trip, Stella’s assumptions were, again, challenged.

Case 5. Molly

Stability Stage

Molly’s initial identity as artist and learner. Molly, a Latino in her early 30s, was in her last semester of the Arts Administration Program when she decided to take the sculpture class. She had been working as an administrator at several museums in NYC, and she also did some curatorial work. On her Demographic Survey, Molly noted that she always used to love looking at art, but “never really had a chance to take a studio class.” However, she enjoyed taking photographs and editing them. In the interview, Molly acknowledged that her initial reason for registering for the course was that she wanted to find a class where she didn’t have to “think a lot.” She said, “I knew I wanted to take a course where I could take a break from my thesis class and job. And somehow I thought that the sculpture class would be perfect since it would be fun.”

Molly described her initial identity as an artist at the beginning of the semester:

I've never really considered myself as an artist. Being an artist carried too much weight for me since I wasn't actively creating art. I was working as an administrator and curator. However, during a series of interviews with artists whom I worked with at the museum, I felt a pulse to create something with my hands. Listening to their ideas and process made me curious about the actual art production. But then, I've never really tried to create something other than some photographs, partly due to the lack of time and space.

On the Art Survey, in response to a question about materials she had previous experience with, Molly circled only photography. However, she added a note saying that she could “understand all the listed materials theoretically.” During the introduction on the first day of the class, Molly shared her thoughts about various materials, saying that she knew what they were but hadn't had a chance to actually use them to create art herself.

Molly's initial understanding of art. Like the other study participants, Molly indicated in the Art Survey that she didn't consider herself to be an artist—she explained that she identified as an art administrator.

In regard to what she considered as art, she circled all six thumbnail images to indicate that they were artworks, but noted, “it's up to everyone how they define what art is.” However, even with her broad acceptance and validation of different art forms at the outset of the course, Molly was resistant to the idea that particular digital tools and machines were valid for making art. After the demonstration with the laser cutter in Week #2, her response to one of the questions I posed for journal writing— “What was your initial thought or feeling about the laser cutter?”—produced this response:

It was a little intimidating at first to use because it seemed like a very hazardous material that could catch on fire at any moment. My initial feelings about the laser cutter are that it's a fancy and timesaving machine to design a product—not for art. So if I make something just with the laser cutter, I wouldn't necessarily consider the outcome as art rather a blueprint for the actual artwork or something.

Molly's presumption about the laser cutter being a highly technical and effective machine, but not an art tool, influenced the way she engaged with the laser cutter during the trials after the demonstration. In the Retrospective Survey, she recalled her thoughts at the time:

I knew theoretically that nowadays many contemporary artists are creating works digitally or using digital fabricating machines like 3D printers or laser cutters. Yet I didn't really consider works completely digitally fabricated as true works of art compared to paintings and sculptures where you can see artists' hands in them.

Again, like the other participants, Molly held on to her initial definition of art, assuming that digital process and materials cannot produce a “true” work of art. In her response to a question on the Retrospective Survey, she also admitted that this thought was partly influenced by her work experience as an administrator at museums, primarily working with traditional painters and sculptors. Similar to her thoughts about digital materials, she did not count her peers' works as works of art:

I don't know why I thought about it in this way, but unconsciously, I automatically didn't identify everyone's [her classmates'] projects as experiment pieces. During our first group critique, many of us were sort of shy or insecure about sculpture projects. And this also affected me to think that we're not artists and what we created are not artworks because automatically I was comparing everyone's insecure attitude to mature and mid-career artists.

Similarly, Molly noted that her previous training as an administrator and her undergraduate art history classes also influenced such definitions of art. She shared her thoughts about this influence in the final reflective essay:

Reflecting on my art history classes, my view of looking at and thinking of art was dependent on what art historians and archeologists argued and found. And at some point, I thought those facts embedded with their own perspectives as absolute truth. For instance, when I learned about ancient Greek art, how each different period such as ‘Geometric period,’ ‘Orientalizing period,’ ‘Low classical,’ ‘High classical’ somewhat suggest to the readers that the Greek sculptors slowly ‘develop’ their artistic skills from something very simple and abstract to highly realistically rendered status like *Dying Gaul* which shows extreme details of musculatures, bone flexes, and veins. And this training influenced me to judge what could be high versus low art. And I gravitated towards a highly rendered one as artwork.

On the same note, Molly wrote in her first journal entry, following the first day of class when the students and I discussed contemporary artists who use recycled and intangible materials: “I think the use of everyday materials and motif were interesting but I’m not sure if a piece of crumbled paper could be a work of art, especially if an unknown person create it.” In addition, her posts of images of artists’ works on Cluster at the beginning of the semester were mostly comprised of realistic representations—mainly Greek or Roman classical art objects and statues.

Molly’s initial approaches to artmaking. During introductions on the first day of class, Molly shared her reflections about working with many artists as an administrator and curator. She told the class that while conducting a series of interviews with artists about their concepts and studio processes, she began to feel curious about the artistic process, and imagined how it would feel to actually create works for herself. Reflecting on this time in the post-class interview, she said, “I guess back then I assumed that I could understand all these artists’ processes by merely listening to them and being in their studios.” It was clear from her remarks in class that working with materials as an artist herself would help fulfill her goal of more completely understanding artists’ studio processes.

While Molly was working on her first sculpture project, she was inundated with ideas informed by and borrowed from artists she considered to be “masters.” As she explained it at the time: “I’m actually feeling overwhelmed because I don’t know how I’m going to combine twenty ideas. Part of me is telling me to follow the traditional approach of carving my profile using wood and chisels.” Instead of focusing on her own ideas, she wanted to emulate other, in her words, “professional” and “world-renowned” artists’ ideas in her work. Partly because Molly had a lot of previous knowledge about art compared to other students in the class, she was often frustrated by having too many ideas.

As described above, Molly expected to use traditional tools and materials in her sculpture projects throughout the course. In her journal entry for the week of planning for that project, she wrote:

For the next project, I’d like to create a replica of Giacometti’s sculpture. I love his use of elongated figures and simplified forms. And next to the piece, I want to make a small version of a Greek statue. I’m thinking to build the form with modeling clay, and then cast it using plaster.

As indicated in her initial plan for the second project, Molly again decided to “replicate” work made by other artists rather than focusing on her own ideas.

Reflection Stage

Molly started out as a student who saw the sculpture class as a way to take a break from her academic classes. Partly influenced by her prior work experience at museums, Molly made clear distinctions between the definitions of artist and non-artist as well as between “true” works of art and non-art. Regarding Molly’s approaches to artmaking, she

was interested in mimicking the old masters' works instead of finding her own interests. In the Reflection Stage, I describe how Molly started to undergo several critical reflection moments as she considered the possibility of herself being an artist and began to re-think the use of digital materials.

Molly's reflections on her identity as artist and learner. Molly's initial identity as an artist was based on being an "observer" of artists and their processes rather than a "maker" herself. She said that she enrolled in the course so that she could learn about artists' processes from her own experience creating artworks.

After the individual Making Session in Week #7, where she was asked to quickly create 12 drawings from observation of the classroom space, using limited materials, Molly wrote in her journal:

I felt so liberated during the Making Session. I actually liked the constraints of time and materials because those challenged me to just feel and create drawings without any predetermined thoughts or plans... Most importantly, I got chilled when my hands were touching different textures of materials. With the oil pastels, I just wanted to rub and smooch with my fingers. With the graphite gestures, I loved the idea of drawing with my non-dominant hand—which helped me focus on my art movements.

For the second part of the Making Session when Molly was asked to transform 11 of her drawings into a sculptural form, she described how she made fast and bold decisions without being stressed. She recalled this moment in the interview:

It was a nice surprise when I was asked to create something three-dimensional using my drawings as materials. But then, this reminded me of improvisational aspects of some artists' processes that they would follow intuitions and imaginations without precise calculations. Just focusing on seeing and feeling—that was the key for me to continue with the second part of the task... I saw myself actually making and feeling something instead of describing another artist's process. I felt like an artist for the first time.

Using her own hands to touch materials and create something in the first Making Session was a turning point for Molly to expand her identity as an artist, and it was part of her goal in taking the class. Later in the course, when Molly was working on her first sculpture, she shared her process—inspired by the constraints in the Making Session—in a journal entry:

I liked the idea of giving myself some sort of constraint similar to what we did in the Making Session. I wanted to have the feeling of being an artist again through the similar process. I thought of a few different materials that I would use for my sculpture and set an hour three times a week to complete my project.

In contrast to her rationale for signing up for the sculpture class to “take a break” from her academic classes, Molly became proactive about her artistic process and tried hard to create an environment that would set her up and support her as an artist. For example, my teaching notes indicate that while working on her Mini Project #1 incorporating subtractive process using wood materials, she wanted to add the theme of “chaos and harmony.” Molly used her notebook during each studio block to create and share a list of her actions with and feelings about the materials she used. At the end of the semester, she submitted the lists as part of her reflective essay. One can see how Molly paid attention to her artmaking actions during her studio time:

Day 1: I have three sheets of base wood in size 12x12. I drew shapes that represented chaos for 1 minute using oil pastel. Then I moved on to cut those drawings using a band saw in the wood shop for 5 minutes. I collected entire cutout pieces including not so great ones. Then, I take cut out pieces onto the worktable covered with a plastic sheet. I spend 1 minute to think about what harmony means to me. Then I melted beeswax to coat each cut out wood in different manner that represents harmony.

During the group critique of this work, Molly confidently shared her process with the class. She also shared her lists of discoveries from each studio block. And as her writing below indicates, thinking of herself as an artist moved her away from the initial conception of herself as a non-artist:

During each studio time, I've learned how to push myself as an artist to the limits of my ability to create and within the limited time, tools, and materials. My takeaway from this experience is that my understanding of an artist has shifted from my previous thoughts that I cannot create art or I'm not an artist.

Molly's reflections on her understanding of art. Like the other participants, due to her initial understanding of art as mainly consisting of Western classical objects, Molly had some difficulty talking about art made of unconventional materials. In the first few weeks of the course, when she encountered contemporary artworks made of recycled items and found objects, Molly admitted that she felt distanced from the class:

I'm not an expert in contemporary art, particularly the ones made of unconventional materials. But I just couldn't quite grasp the meanings of the work. And I cannot appreciate the visual qualities of work although they look "interesting." Perhaps I was so used to looking at traditional forms of art, which hindered me in looking at other forms of art with fresh perspectives.

Even though Molly initially didn't appreciate art made of unconventional materials, she started to examine the origins and consequences of her assumptions about art. Later on, when she encountered other forms of art made of digital materials, she again had a dilemma concerning her initial thoughts about art. In addition, after the demonstration of the laser cutter and 3D printer for the first Mini Project, Molly didn't want to try using one of the machines herself. According to my teaching notes, she was concerned and wanted to talk with me about her project idea. In her journal entry that week, Molly shared her initial thoughts and feelings about the laser cutter and 3D printer:

To me, digital tools are interesting tools that can be seen in engineering labs or architecture firms when they need that extra technological output. But I personally don't see how I could use these tools to create my sculpture. At the moment, all I can think of is to make something for a hobby—make a DIY earring for myself or something.

As seen in her response, similar to her views of art made from recycled or alternative materials, Molly was still biased against art produced using digital tools. However, ten weeks later—after the collaborative Making Session with her teammate where they were to create the longest sculpture possible, she faced a critical reflection moment. According to my teaching notes, Molly and her teammate Jack started to use the laser cutter to create an installation piece that was meant to be suspended from the ceiling. The final piece was comprised of several elongated laser cut pieces using clear acrylic sheets that looked like swirly lines and scribbles which were then wrapped multiple times with blue and yellow yarns.

Molly recalled this moment in the interview:

It was like a Project Runway when I heard that we had to create a sculpture within 40 minutes. My teammate, Jack, suggested that we should use the laser cutter to cut out customized designs of elongated lines. I first suggested him that we should just go for the manual process of using a band saw or sander. It wasn't an argument, but he and I had different views about the tool. We ended up spending extra time just talking, and then we had no choice but then to use the laser cutter to make the process quicker. I drew designs on a piece of paper and then he scanned my design and transferred the jpeg to Illustrator. Then, we resized the art board to match with the size of the Plexiglas we had. We finally laser cut our design using the suggested setting. Then, I was actually surprised with how the piece came out—partly because I didn't really have any expectation. It was quite interesting to see how my hand drawn design was translated onto the plastic sheet by the machine. At least during that moment, the laser cutter was another teammate.

Even though Molly initially didn't like the idea of using the laser cutter in the Making Session, with the influence of her teammate's suggestion and the time constraint, she was forced to use it. As a result, she realized how the process of transforming her

drawing into a laser cut and etched plastic piece was surprisingly “interesting.” This element of surprise allowed her to challenge her initial understanding of art, and to reform her opinion that art made through a digital process is not genuine or not really a true work of art. In a sense, Molly’s engagement in an artmaking process that involved digital tools, which she had until this point rejected, gave her time to critically reflect and to rethink her understanding of art.

Molly’s reflections on her approaches to artmaking. Another critical reflective moment for Molly came in the middle of the individual Making Session in Week #7. Instead of using a wider range of materials for her quick gesture drawings—I remember encouraging her to try oil pastel or pen—Molly insisted that she would only use charcoal and graphite pencils because she wanted to imitate the drawing style of Renaissance artists. Part of the activity called for students to draw with their non-dominant hand, and when she was asked to do this, she saw that she liked the effect this approach created. Molly realized that her drawing didn’t need to copy the styles of the Old Masters, and that she could create and stick to her own style:

I didn’t have any expectation for the fifth drawing when we were asked to draw objects and our surroundings with our non-dominant hands. I started to follow outlines from the worktable to the shoulder of my classmate. I held my paper with my dominant hand, and I was drawing with my non-dominant hand. It was interesting how I didn’t look at my drawing until I was done. Once I’m done with the outline, when I looked at my drawing, I actually liked the irregular line qualities and how my non-dominant hand defined the negative and positive space with sensitive outlines. Even though this drawing wasn’t perfect, I ended up choosing this one as my favorite one.

It was during the critical reflection moment when she drew with her non-dominant hand that Molly started to see the potential of her artistic process. As the second part of the Making Session began, Molly seemed excited because of her

discovery. She was asked to create a three-dimensional form, using her drawings, that expressed an emotion of her choice. Below are her reflections on this phase of the project:

I didn't have any idea how I would transform paper into a three-dimensional structure. I knew I wanted to use sadness as my emotion because I used a lot of blues in my drawings, so I started from there. When I think about sadness, I think about being broken, or trying to make it look like you're fine when really you're not. So I decided to 'break' all of my drawings and put them back together in a way that didn't fully make sense. It was hard ripping up some of my drawings that I really liked (even though I only worked on them for a minute or two). However, some of the pieces, particularly those on watercolor paper and with graphite actually had a really cool effect after they were torn... from this Making Session, I actually got a new idea about my second project. I'm not sure if I would like to keep the first idea.

Transformation Stage

Instead of being limited by her initial approaches to artmaking and her previous understanding of art, Molly started to experience new possibilities surrounding her artistic process that were unexpected and spontaneous. Her original plan to replicate the Old Masters wasn't valid anymore. In the Transformation Stage section, I describe how Molly was able to further reflect and revise her assumptions in class, which later enabled her to experience a transformed identity as an artist and learners and to find newfound approaches to artmaking.

Molly's transformed identity as artist and learner. As mentioned earlier, about her initial and developing identity as an artist, Molly further challenged herself to discover her artist identity. When she was engaged in the second Making Session with her teammate, she shared her thoughts about this process in her journal entry:

I enjoyed working with Jack on our longest sculpture. When I think of collaboration, it's something we normally know that it's important and it's like a trend in education or in the art world—and we were pushed to do in many of our classes. But I felt like it's hard to visualize and reveal how collaboration could work... Jack who I collaborated with, we've also found a lot of similarities in just life experiences and things like that so it was really easy for us to talk about concepts and ideas and that led us to memories and things like that. Jack and I were like a team artist—collaborators. As soon as we heard the prompt of 'the longest sculpture,' we immediately jot down ideas that came to our minds that were not too literal. We did the time check, and after 5 minutes of discussing ideas, we each grab a few materials from the bin to start making sculpture. We each decided that we would work separately for 10 minutes and then bring back what each of us made and to somehow combine two works together. We both talked about how alive we were in that moment. There was no doubt that we were artists.

Similar to how Molly had artistic moments in her individual studio time block, she again enjoyed creating work with her teammate. Molly was proud of the collaborative sculpture and she acknowledged herself as an artist, which was not the case at the beginning of the semester. She was no longer just an “observer” of art, but by trusting her decisions and intuition she became actively engaged in her artistic process. Towards the end of the semester, in her journal entry for the week, she revealed her thoughts about her re-formed identity as an artist:

I feel like I could be an artist and art administrator at the same time. When I developed my own project and when I'm in the moments of thinking and making, I'm an artist. But I'm adding one more condition here. I've seen many mid-career and well-established artists who would usually recycle the same or very similar styles and concepts of art over and over again instead of challenging themselves. I do not want to be one of them. I like the idea to keep pushing myself with fresh ideas. I want to come up with good and interesting questions for my art work.

In the interview, Molly went further with these new ideas about being an artist:

I also want to be collaborative artist. At least from my limited experience, most well-known or popular or blue-chip artists—they do not listen to other people when it comes to their work and ideas, which is completely fine. But I want to be an artist who has those soft skills and flexibility.

Her newfound identity as an artist allowed Molly to challenge herself further and to continue her art practice even after the class ended. A month later, in the interview, Molly shared with me that she had been accepted into a short-term art residency program in Europe. Molly shared with me that she had decided to enroll in a short-term art residency program in Europe. Even though it was not a funded residency program where she was responsible for the residency fee, she explained to me that she was proud of herself for making the decision to spend her summer participating in an art residency instead of vacationing in Cancun. She shared her reflections about the impact of the class on her professional aspirations as an artist:

You know I never really thought that I would consider myself as an artist before taking this class. I often assumed that I cannot even try to create something because I don't have any space or time. And also, because I'm just not an artist. But then, I've realized how it was really about the mindset. Once I went through various experiments in my studio process, I gave 100%. At the same time, I started to respect my process and I naturally started to think of myself as an artist. And that mindset helped me try something new, like this residency program. I have to tell you that I've actually applied to 11 different residency programs within the U.S. and international countries, but I didn't give up and kept trying.

Instead of giving up, Molly persevered in the process of applying to multiple residencies. This was a big shift from her initial identity as a non-artist, to her newfound identity as an artist who actively made plans and continued with her art practice. As for her takeaway from the class as an artist and administrator, Molly shared her thoughts in her reflective essay:

The biggest lesson I learned about myself was that though I work and study in the art field, theory alone is not enough. Through the process of pushing myself to create artworks, I can better understand issues that artists, curators, and gallery owners would consider. As an artist, I was able to understand the artistic process better and I found my own process. I also learned that by encountering my own anxiety about artmaking not only as an art administrator but also as an artist, I can better advocate for artists and creative spaces.

Molly's newfound identity as an emerging artist also informed her mission as an art administrator who could listen and understand artists' issues and processes, not as an outsider, but as an artist herself.

Molly's transformed understanding of art. Similar to Molly's earlier experience of using digital tools with her teammate, looking at one of her classmate's later projects again challenged her assumptions about art:

Karen's work was particularly thought-provoking because it was addressed a topic that is on my mind often: How does one maintain mindfulness with the constant barrage of messages from different digital platforms including emails, texts, and other chat messages? And when one takes a break from digital communication, how does one explain to the senders of the messages that it isn't about them? Her work was able to creatively create this 21st century anxiety in a few accessible materials of skewers and paper in an artful way.

Unlike Molly's earlier attitude that her peers' work was not art, but just experiment pieces, she began to analyze her classmates' work with a different set of eyes. She started to appreciate Karen's piece—which was composed of mixed media with digital components—as a work of art. Towards the end of the semester, when Molly was working on her final sculpture, my teaching notes indicate that she asked for suggestions of artists who incorporated the use of digital materials. After examining the artists' work, she wrote about her research in her journal:

After looking and reading about these artists who used digital materials in their process or part of the work, I felt like I now gained appreciation about different kinds of art forms. Sometimes, these digital tools weren't just used as a procedural way or for efficiency, but it was used with a specific intention of the artist. And I've also somewhat experienced this myself too. Along with the Making Session and learning about these artists, it has led me to a new idea of what I've considered my art to be or what art could be.

Molly shared her own experiment pieces using different digital tools each week on Cluster. She also posted other contemporary artists' works made with digital tools and materials, to share with her classmates. While she was working on her final sculpture, she wrote about her thoughts about the digital process:

I didn't consider using digital materials in my work partly because I didn't see them as art materials. When I was researching different models of 3D designs, I found out that some museums are starting to incorporate digital fabrication workshops and resources in their education departments. Specifically, I was amazed at how the Smithsonian Museum posted the 3D design versions of some ancient objects. I'm realizing how digital materials and tools are part of art in a bigger framework and definition. I'm still polishing my final idea for the sculpture, but I want the piece to have the combination of digital and traditional materials.

With her newly found and revised understanding of art, she researched different works made of digital materials and started to make personal connections in her artwork. After the semester ended, Molly shared her thoughts about her understanding of art in her reflective essay:

Contemporary art, particularly...with digital materials and processes, has been regarded as either 'blue chip' in the art market, or works that truly push boundaries in how we consider art. To me, contemporary art is about reflecting our epoch, the society, culture, and climate we live in today. Therefore, I knew that digital processes in artmaking are not merely relevant, but will become integral in how we receive and relate to art. This class helped me understand that there are still many ways that 'artist's hand' can still be viewed in digitally-crafted sculptural works, and that there are new ways of self-expression that can be valuable in digital tools.

Molly's transformed approaches to artmaking. Initially, Molly wanted to create a piece comprised of many different layers of laser cut and etched plastic sheets (partly influenced by her experience in the collaborative Making Session with Jack).

Molly used the metaphor of cooking to explain her thoughts on the artmaking process, in that both cooking and artmaking involve a certain level of transformation in terms of the forms and content. She said in the interview:

It was hard to describe in words when I witnessed how my hand drawn marks were transformed completely into something else using the laser cutting and computer program along with wood sanding and cutting. I personally never imagined myself even considering digital tools as genuine artistic tools before this class, but now I feel like I have new eyes to understand artists' use of digital materials and tools.

During the group critique—even though she did not end up staying with her first idea—Molly further shared her process of making different marks just with a pen and pencil, scanning the drawing, editing it using Illustrator, transferring the file to the laser cutter, laser cutting using colored wood sheets, and finally adding surface treatments to the laser cut wood sheets. She noted in her journal entry how excited she was about the transformational process that occurred when using the digital fabrication tools. She also added that she actually enjoyed not knowing what kinds of effects would come through this process. She recalled this moment in the Retrospective Survey:

I didn't have any regrets in my process even though I ended up not using the laser cut sheets of plastic. I would've not learned about this machine if I didn't try it. And this process actually inspired me to think of a relief sculpture composed of plaster casts and interactive electronics.

Toward the end of the semester, Molly was working on her final sculpture with her revised plan. She shared her process in her journal:

Now that I tried using the laser cutter, I'd like to explore the 3D printing process. I'd like to explore ideas of life and death using a different set of materials. I decided to get some help from my classmate, Jack, who had suggested that I would use a sensor and Arduino that I would attach to my sculpture to indicate the amount of time left on the screen.

Instead of denying that digital materials were legitimate, Molly was ready to take an adventure. She further challenged herself by using the 3D printing process. Instead of emulating or copying the works of other artists, Molly designed a skull using 3D design software, which she then used to make a rubber mold to cast multiple plaster skulls. Even though Molly enjoyed the newfound approaches of relying on spontaneity and improvisation, she tried to work with systematic plans as well:

I called broken skulls a “happy accident” because I actually ended up using those on my final work. However, instead of just using failed pieces as they are, I went through a lot of editing process of carving and sanding down each piece to make it more intentional. For my rubber mold for the skull, I revisited the notes I took during the class demonstration in the earlier weeks and also researched some different approaches. Then, I tried using rubber max and dragon skin to test run different textures of molds.

Instead of giving up on the first idea and throwing away the failed plaster skull casts, Molly continued to use the process to explore different possibilities. She paid attention to the broken skull plaster casts to brainstorm ideas to include them in her final work, by editing each piece to get different details. After the semester ended, Molly recalled her takeaway from the sculpture class:

The biggest lesson I learned about myself was that though I work and study in the art field, theory alone is not enough. Through the process of pushing myself to create artworks, I can better understand issues that artists, curators, and gallery owners would consider. I learned that by encountering my own anxiety about artmaking not only as an art administrator but also as an artist, I can better advocate for artists and creative spaces.

Summary of Molly's Transformative Learning

Similar to Tim's case, Molly was able to apply her newfound perspective regarding artists and approaches to artmaking in her workplace and career. Through discovering her own artistic processes, Molly gained a greater appreciation of artists and professionals in museums.

In summary, Molly started out as a student who initially registered for the sculpture class hoping that she could have a break from her academic classes. Partly due to her experience as a museum professional, Molly strongly denied being an artist at the beginning of the semester. For her two Mini Projects, she merely wanted to emulate the old masters' painting instead of attempting to experiment with her process and materials. Through the collaborative Making Sessions, she was challenged by her teammate, Jack, to rethink digital materials as being just as valid as traditional art materials. With her newfound perspective about herself as an artist, she took the further action to apply for a short-term art residency to continue discovering her creative process.

V – DISCUSSION

Organization of the Chapter

Chapter V is based on an analysis of the five participants' experiences of Transformative Learning, drawn from data in the findings presented in Chapter IV. Chapter V explores how learning through artmaking in the sculpture class changed five graduate students' identities as artists and learners, their understanding of art, and their approaches to artmaking when Transformative Learning was part of the teacher's intention.

Chapter V is organized in two parts. The first part contains the cross-case analysis of three Transformative Learning stages (Stability, Reflection, Transformation) for the five participants. I first present a cross-case analysis to compare how participants experienced each stage based on the main theoretical framework (Transformative Learning theory and literature). The second part of the chapter looks at forms of transformation based on the dissertation's three research sub-questions. It analyzes three thematic transformations regarding the identities of the five participants, their

understanding of art, and their approaches to artmaking. In addition, the second part of the chapter summarizes different aspects of the participants' class experiences that can be attributed to their transformations.

Part I. Cross-Case Analysis of Transformative Learning of Five Participants

Stability Stage

Based on Transformative Learning Theory and a general cycle, learners start with a pre-existing set of assumptions that have formed their perspectives on life (Cranton, 1992, p. 148). Often, these assumptions or existing value systems are influenced by personal or educational experiences. In the context of the graduate-level sculpture class that grounded the dissertation, all five participants' previous educational and professional experiences affected their initial perspectives of their artistic identities, understanding of art, and approaches to artmaking. In Gina's, Molly's, and Stella's cases, their previous work experiences influenced their perspectives about their identities as artists and learners. Gina and Molly did not consider themselves to be artists. As an Economics in Education major who formerly worked as a financial analyst, Gina did not see herself as a creative and artistic person. Even though Molly had been working extensively in many art museums, partly due to her professional experience working/communicating with "real" artists she considered herself to be an educator or observer, rather than a "maker" or an artist. Similarly, Stella was hesitant to consider herself an artist; she instead thought of herself as a future art teacher and a former graphic designer. As a professional graphic

designer, Stella differentiated between design work created according clients' wishes and demands and creating art—which she saw as more open-ended for the artist, involving fewer external constraints and expectations.

The way the five participants perceived, comprehended, and remembered what it means to be an artist and who qualifies as one was shaped through existing “meaning perspectives,” which generated a certain order or codes for their learning actions (Mezirow, 1991, p. 4). Ultimately, Transformative Learning aims at reconstructing people’s meaning perspectives or “frame[s] of knowledge” (Mezirow, 2000, p. 49). At the beginning of the semester, similar to how prior work experience formed meaning perspectives for Gina, Molly, and Stella in regard to their identities as non-artists, prior educational experiences informed Anne and Tim’s meaning perspectives and assumptions about their non-artist identities. Anne’s education at a traditional and exam-oriented school in China influenced her belief that a professional artist is someone who could produce a highly realistic representation. Anne’s last art class before she took the sculpture course was an observational drawing class in middle school. Often, one’s frame of reference is shaped by unintentional cultural paradigms and personal perspectives (Mezirow, 2000, p. 17), and this is especially true in Anne’s case.

In contrast to Anne, Tim’s past education and experiences had given him a dualistic view, which caused him to categorize himself and his classmates into non-artist and artist groups. Tim recalled his thoughts in the interview: “I didn’t consider myself as an artist or even close to being one. I guess I assumed that everyone except me would be coming from an artistic background and they had prior formal training in art.” In a sense, the fact that Tim didn’t have any formal art experience allowed him to automatically

disqualify himself from being creative or artistic. During the Stability Stage, none of the five participants considered themselves to be artists and all exhibited a lack of confidence in their artistic abilities.

According to Transformative Learning Theory, initial meaning perspectives suggest a habitual set of expectations (Mezirow, 2000, p. 183). All five participants' existing meaning perspectives and their sets of assumptions/beliefs are connected to their rationales for taking the sculpture class, as well to their personal/professional expectations for the class. For instance, Gina and Molly took the course in order to take a break from their academic classes and they had somewhat low expectations for what they would create in class. This was partly due to their initial assumptions about their non-artist identities. On the other hand, Anne, Tim, and Stella were focused on acquiring necessary skills and knowledge for their future careers. For instance, Stella chose the sculpture class to fulfill degree requirements, which would ultimately help her become a well-rounded art teacher who has expertise in a wide range of art materials and processes. Anne wanted to gain helpful skills for her future career in the instructional technology field, and Tim took the class to become a creative teacher at a STEAM oriented school by integrating art into his science lessons.

Even though the students' rationales for taking the sculpture class varied, they all expected, primarily, to gain technical knowledge and skills rather than foster their artistic potential. Interestingly, during the Stability Stage, all five initially relied heavily on my affirmation (as their instructor) of their ideas about and approaches to completing their

first and second sculpture projects. The students' identities as non-artists made them insecure about choosing the "right" or ideal materials and processes and caused them to be unsure about how to successfully complete their assignments.

Another interesting connection between the five participants' perspectives during the Stability Stage concerns their understanding of what art is, or how they defined art. In response to the Art Survey given on the first day of class, Anne, Gina, and Tim all indicated that the "classical Greek statue" counted as art. This suggests the impact of their prior educational experiences, which focused on traditional notions of art based on western classical works. Their past experiences and exposure to art shaped all three students' "meaning perspectives" about art (Mezirow, 2000, p. 183). On the other hand, Stella and Molly both indicated that all six works on the survey were valid artworks, albeit with some insecurity and skepticism. In this case, I argue that Stella's and Molly's prior professional *and* educational experiences in the art field formed their more expansive meaning perspectives about art.

According to Transformative Learning Theory, an existing "habit of mind" or "point of view" results in one's meaning perspectives, and indicates a set of sociolinguistic, moral-ethical, epistemic, philosophical, psychological, and aesthetic assumptions (Cranton, 1992, p. 37). In the context of the dissertation study, the five participants' initial points of view about art contributed to their aesthetic assumptions. For example, Anne's initial understanding of art was influenced by her upbringing and prior educational experiences—how academics and society view art and how students were taught about art that focused more on the physicality of the work (e.g., "traditional art materials", "polished surfaces") rather than ideas and processes. Thus, she had

difficulty understanding non-representational and conceptual art at the beginning of the semester. Similarly, Gina and Tim were skeptical about the validity of works that had unfinished elements such as the hanging frame in the painting by Diana Molzan. In addition, Gina's initial understanding of abstract art as "pretentious" and "puzzling" made her question abstract artists' talent. Stella showed a similar frustration and insecurity about process-oriented works such as Gedi Sibony's installation made of non-traditional art materials. In a sense, all five participants' initial understandings of art were primarily influenced by a dated western notion that defines art as mainly European classical art.

The participants' opinions were closely interconnected with their initial approaches to artmaking and materials. For example, Tim and Molly both initially reject the validity of digital tools (3D printer and laser cutter) in their artmaking processes and asserted that work made of such tools cannot be art. As such, Tim and Molly had a difficult time incorporating digital fabricating machines as part of their artistic process at the beginning of the semester.

Molly was resistant to using technology because of its "less-genuine and less-artistic" qualities compared to traditional materials and tools. She recalled, "I personally never imagined myself even considering digital tools as genuine artistic tools before this class..." Tim, Gina, and Anne expected to use traditional sculptural materials such as stone, wood, and metal, not everyday materials (such as found objects) or digital technologies. Learning about contemporary artists' studio processes resulted in a "disorienting dilemma" (Mezirow, 2000, p. 22) for all five students.

According to Mezirow, people may experience a disorienting dilemma when their new learning experience or knowledge does not fit within their existing frame of reference or meaning perspectives. In general, all five students exhibited confusion and difficulty accepting the ideas of playful experimentation, improvisation, failure, and the unforeseen and unexpected as valid aspects of the artmaking process.

Anne, Gina, Tim and Stella felt comfortable when following a set of in-class instructions and demonstrations guided by me as instructor. In contrast, they often felt uncomfortable initiating their own steps during individual working time in and outside of the class. Molly restricted herself from being experimental, instead relying on her professional experience in museums by following or emulating the traditional styles and processes of “master” artists. Anne’s initial assumptions about traditional artmaking processes were challenged by the practices of contemporary artists, specifically Sarah Sze’s studio process that involved a deliberate lack of planning and improvisation, and the use of found objects. This disorienting dilemma led Anne to invalidate Sze’s artmaking process: “I think the artist Sarah Sze was not serious about her artmaking... She just used random objects to create her works and I’m not sure if I can accept this as art.” Tim also experienced some frustration when he encountered the work of contemporary artist Arturo Herrera. Herrera honored failure as part of his artistic process, whereas Tim’s initial approaches to artmaking involved a clear step-by-step process intended to prevent any possible failures. When Tim’s plaster hand cast came out broken, he said: “My broken hands. I’m moving onto other materials.” Similarly, Stella’s initial

approaches to artmaking were challenged when she saw imperfections in her wood joint parts. Stella became exasperated since she was used to using predetermined steps to finish perfectly rendered graphic projects when working as a designer.

While Mezirow (2000) primarily points out a single event—“a disorienting dilemma” (p. 22)—as a way to provoke transformative learning, Cranton argues that events that are gradual and cumulative also can foster transformative learning (Cranton, 1994, p. 36). My findings—that all five participants’ disorienting dilemmas in the Stability Stage were varied and happened gradually—influenced by multiple class activities and events occurring over time—support Cranton’s view.

Reflection Stage

Over time, the five participants’ initial sets of values and assumptions discussed in the Stability Stage section were contradicted by, in Cranton’s words, “people, events, or changes in context which challenge the learner’s basic assumptions” (Cranton, 1992, p. 148). According to Mezirow (2000, p. 22), after encountering disorienting dilemmas, learners may start self-examination with feelings of fear, anger, guilt, or shame, followed by a critical assessment of existing assumptions. This is the beginning of the Reflection Stage portion of the Transformative Learning process. Mezirow argues that at some point following the Stability Stage, learners arrive at a “critical reflection” moment when they must decide if initial assumptions are valid or invalid. In other words, the individual undergoes “a critical assessment of assumptions” (p. 22). In the context of the dissertation study, all five participants’ critical reflection moments regarding their initial

identities as artists, understanding of art, and approaches to the artmaking process happened at different times, and were influenced by various events that took place in the sculpture class.

Mezirow's early work (as summarized in Mezirow, 2000) primarily emphasized the importance of critical reflection as a catalyst for Transformative Learning. Following on Mezirow's ideas, Cranton (1994) further described three kinds of reflection ("Content Reflection," "Process Reflection," "Premise Reflection") with practical and educational applications (Cranton, 1994, pp. 34-35). In the context of the dissertation study, Content Reflection—which examines the content or description of a problem—can be compared to the students' understanding of their identities as non-artists and somewhat limited or narrow conceptions of art and approaches to artmaking. For example, during the class discussions of contemporary artists' works, it was not uncommon for the study participants to ask such questions as "Why did this artist use digital materials?" Following Cranton, the students posed these questions because their existing meaning perspectives about what art is (paintings, drawings, and sculptures made from traditional materials using traditional processes) were being challenged by. As further illustration, at other times study participants resisted trying out new tools, materials, or processes for themselves—but over time and with reflection, they ultimately did try these new approaches in their own work. For instance, when Molly was resistant to using digital tools in her project, the incident itself was problematic within her frame of mind. But after experiencing Content Reflection through later journal writing about artists' works that used digital technologies—she did use them, particularly the laser cutter, during one of the Making Sessions.

While Cranton (1994) describes Content Reflection as the content of a problem, Process Reflection refers to checking on the problem-solving strategies that are being used (p. 35). According to Cranton, one may reflect on the process of understanding the problem by asking questions such as: “How did this come to be? Did I miss something? Do I not understand?” (p. 35). For instance, in the study, during the Making Session, Tim and Stella became comfortable with experimentation and improvisation without necessarily realizing it at the time—they had previously resisted such artmaking approaches. Later, in both the immediate journal writing for that week and the post-course interviews and surveys, they were able to recall and reflect on questions that asked: “How did I experiment with this material which wasn’t the case before? How did I arrive there in that moment?”

Lastly, according to Cranton (1994, p. 35), when the problem itself is questioned and closely examined, one may go through Premise Reflection, which ultimately leads to the transformation of meaning perspectives or habits of mind. Cranton argues that Premise Reflection, in contrast to Content Reflection and Process Reflection, will further enable learners to see and experience the world in a different way. For instance, Anne may have asked herself why she thought it was important that art should be highly representational and polished. She might even ask questions such as “Why did I care about this assumption in the first place? What has caused this?” Along the same lines, Mezirow’s (1990) description of habits of mind—including psychological, philosophical, aesthetic, and emancipatory (in Cranton, 1994, p. 36) enter into the Reflection Stage with questions such as “What do I believe about myself as being an artist or non-artist? Why should I question this perception about myself?” (psychological) and “What are my

assumptions regarding the artmaking process? Why should I revise these assumptions?” (emancipatory). In the context of the sculpture class, all five participants’ initial assumptions about their identities as artists and learners, their understanding of art, and their approaches to artmaking were stimulated or assessed by fellow classmates, the sculpture studio itself, art materials, and various class activities. Once again, according to Cranton, in *Premise Reflection* a learner starts to be aware of his or her assumptions that have been challenged and then examines and reflects on them (p. 148).

All five participants engaged in various kinds of reflection throughout the semester while they were immersed in different class activities. For example, all five participants reflected on their initial identities as non-artists during the first Making Session, gallery trip, discussion of contemporary artists’ studio processes, and interactions with peers while making artwork together. For example, for Anne’s Reflection Stage the gallery trip was pivotal. While encountering contemporary artworks, particularly Tara Donovan’s piece made of unconventional and everyday materials, Anne started to assess her previous definition of art as only appearing technically polished and made of traditional sculptural materials. This reflection also challenged her assumptions about her artist identity. Instead of merely looking at artworks as a viewer, she started actively looking at art as an artist—by applying her observations to her own artwork. Similarly, the gallery trip was very influential for Tim. One of Tim’s initial meaning perspectives—that works that use digital tools and materials do not qualify as art—was challenged when he saw Sophie Kahn’s sculpture made of 3D prints. At this time, both

Anne and Tim started to reflect on their artistic identities and understanding of art, simultaneously realizing that art could be made of unconventional or digital materials, depending on the artist's idea and intention.

Critical reflection for all five participants happened initially with regards to assumptions about their approaches to artmaking (even though they all had different meaning perspectives about their artmaking processes). Then, participants' reflections on their artmaking processes led them to revise their assumptions about their identities as artists or non-artists.

For example, the collaborative Making Session activity played an important role in all five participants' reflection processes. As per Mezirow's suggestions for fostering Transformative Learning, small-group activities or discussions may aid adult learners' reflecting process (Mezirow, 2006, p. 167). In the sculpture class, students were asked to create a small sculpture with a partner, with limited time and materials in response to an unexpected thematic prompt. During this activity, they were able to observe and reflect on each other's artmaking processes.

In addition, the group discussion/critique at the end of the collaborative Making Session helped all five participants to reflect and re-examine their assumptions in a variety of ways. Although all five participants did not consider themselves as artists in the Stability Stage, the limitations provided in the Making Session forced them to critically reflect on their assumptions of not being an artist. For instance, Anne's initial belief that she wasn't an artist or creative person led her to constantly seek teacher affirmation about her projects—she did not initially rely on her own artistic ideas and decisions. She believed that exactly and only following my guidance as the instructor

would help her gain necessary skills to create “successful” artwork. However, her meaning perspective and beliefs were challenged when she was working with her partner during the Making Session. She was forced to be in a specifically designed learning environment in which minimal or no instructor engagement was provided. She had to choose her own materials and process with her partner, within a relatively short amount of time, and this helped her to assess her previous assumptions about herself as a non-artist. Through experimenting with materials, she was able to realize the potential to come up with her own ways of working with different materials. This was a critical moment, in that it led to progress throughout the semester for Anne to become more independent and confident in her decision-making.

Similar to Anne’s case, Molly believed that following or emulating “master” artists’ styles, materials, and processes would be the best way for her to create her sculpture projects. This assumption was challenged when she was engaged in the individual Making Session, in which she had to produce multiple gesture drawings and create a sculpture out of them in 30 minutes. In Molly’s words, “those [limited time and materials] challenged me to just feel and create drawings without any predetermined thoughts or plans.” Molly’s remarks indicate that, through reflection, her prior belief that following master artists’ approaches was the only way to successfully create art was examined and revised. Like Anne, this moment of reflection also led to positive progress throughout the semester—as Molly gained more confidence in decision making and continued to develop her own personal ideas and approaches rather than only emulate traditional processes of master artists.

The reflection processes for Gina, Stella, and Tim were slightly different from those of Anne and Molly, in that their processes involved critical reflections on their approaches to artmaking, which eventually influenced the ways they thought about themselves as artists. For example, Gina initially believed that (1) strictly following the instructor's guidelines and rules would guide her to successfully create her sculpture projects, (2) "good" or "real" art had to be made through labor intensive processes and had to look technically polished, and (3) artmaking had to involve a step-by-step and calculated process. Stella had similar set of initial beliefs informed by her prior work experience as a graphic designer—she felt comfortable only when she had a detailed, step-by-step plan working towards her sculpture projects. Tim also looked for the "right" way of working with tools and materials at the beginning of the class.

Gina, Tim, and Stella seemed to be more comfortable following the guidelines in class but exhibited confusion and insecurity when working during open studio hours outside of the class time. In Gina's words, for example, she didn't "know where and how to start the project" when working independently. For Tim, minimizing the risk of failure in the process was important. Tim recalled his discomfort with failure during the individual Making Session: "I was caught with the idea of getting perfectly rendered drawings... Every little mark and line looked wrong to me and that's why I kept asking your opinion." However, towards to the end of the Making Session, Tim's initial ideas about failure as part of the process were challenged. He recalled that instead of giving up on some of his drawings that did not meet his expectations—drawings that might become failed attempts—he kept working on them: "When I had one minute [in the timed drawings], I still felt this initial feeling of being rushed, but I found myself having more

time to go back to add details and layer different colors for the background. Somehow, I became calmer about time constraints.” Further, describing a gesture drawing of clustered electronic cords in the studio, he added: “Somehow, I chose red and brown even though the actual area looked different. It was like combining what I saw, and what I felt and imagined.”

Similar to how Tim was able to “combine” personal feelings, ideas, and imaginings while making his gesture drawing, Stella was able to follow her intuition rather than staying with a set of plans, which was different from her prior belief about following master artists’ processes and styles. In a sense, the notion of limited time and materials, and a collaborative working environment, helped Gina, Tim, and Stella to critically reflect on their previous assumptions about valid approaches to artmaking and helped them experience spontaneous, improvisational, and intuitive processes during the Making Sessions.

Experiences with an array of art materials through class activities acted as a catalyst to enable all five participants to reflect their assumptions about valid artistic processes. All five participants responded to experiential activities (Making Sessions) and relational activities (group discussions/critiques) comfortably and effectively through direct contact with art materials and processes. Mezirow argues that activities that emphasize “sensing” or “feeling” functions may promote learners’ critical questioning and reflecting processes (Mezirow, 2006, p. 154). These critical reflection moments influenced the way the participants understood what art is or can be, and brought significant changes, as discussed in the Transformation Stage section that follows.

Transformation Stage

Mezirow defines Transformative Learning “as the process by which people examine problematic frames of reference to make them more inclusive, discriminating, open, reflective, and emotionally able to change” (Cranton, 2006, p. 36). In the context of the dissertation study, the five participants’ frames of reference were (1) closed or limited regarding their identities as artists and learners, (2) restricted or static regarding their understanding of art, and (3) closed and resistant to changes regarding their approaches to artmaking—at the beginning. All five participants underwent “critical self-reflection” and gained “self-knowledge” (p. 155) once their individual points of view regarding their identities as artists, understanding of art, and approaches to artmaking were challenged. According to Mezirow, after critical reflection moments a learner may go to two different pathways: the first leads to the beginning of the Transformation Stage and the other directs back to the Stability Stage. When the learner assesses that initial assumptions are invalid, then Transformative Learning starts to occur (p. 149). As Mezirow (1991) asserts, Transformative Learning aims to expand learners’ consciousness through the transformation of profoundly held worldviews and paradigms.

The five participants’ transformative learning and actions on changed perspectives exhibited different patterns and took place within different time frames. For Anne, Gina, and Molly, reflection on and changes in their approaches to artmaking affected their identities as artists and their understanding of art simultaneously. For Tim, reflections and changes in his identity as non-artist influenced the changes in his approaches to artmaking and understanding of art. In Stella’s case, critical reflections on

her understanding of art rapidly influenced her approaches to artmaking, which then affected her identity as an artist. Interestingly, all five participants' initial approaches to artmaking heavily relied on my guidelines and instruction as their teacher; thus, they often asked for my affirmation rather than focusing on their own individualized approaches and decisions.

For Anne, transformative learning accelerated when she imagined herself and enacted ideas as an artist after reflecting on the artwork and approaches of contemporary artists. Anne's initial approach to looking at art was as an informed viewer (analyzing and understanding the work based on the museum guide or art professionals' interpretations), and this approach was based on her upbringing and educational experiences. Anne's initial approach to viewing art was no longer valid after she encountered Tara Donovan's artwork during the gallery trip. At this point, the act of looking at art no longer relied on information gotten from others. Now, her own interpretations and thoughts, therefore her ways of looking at art, changed from simply a viewer's (non-artist's) perspective to an artist's perspective as she started to imagine and question other artists' processes and relate those to her own artwork. She said about Donovan's work: "I've never seen anything like this, and I appreciate her creative idea and intensive labor. Her work gave me an idea of how I might use unusual materials in my own way."

In Anne's case, where the problem (initial understanding of art) might have been unknown to her, Mezirow suggests that "imagination" can be used to "examine alternative interpretations of our experience by 'trying on' another's point of view," since this "trying on" allows one to think from many different angles (Mezirow, 1990, p. 20).

Similarly, Greene (1995) emphasizes the role of imagination in education and culture by arguing that one needs to enhance and cultivate one's own visions through the application of imagination and the arts. Greene further elaborates the idea of imagination by saying, "The principles and the contexts have to be chosen by living human beings against their own life-worlds and in the light of their lives with others, by persons able to call, to say, to sing, and—using their imaginations, tapping their courage—to transform" (p. 198). In discussing the way imagination can lead to transformation, Greene emphasizes the notion of changes in "consciousness" while Mezirow emphasizes changes through "critical reflection." In Anne's case, changing her approaches to making art through looking at other artists' works and imagining their processes, then applying these to her own work, allowed her to form a new identity as an artist. In addition, Anne's transformed perspective on artists' approaches and on her own artist identity naturally helped her form a new understanding of art.

Like Anne, at the beginning of the course Gina was comfortable only when working with the set of rules and the instructional guidance I provided in the demonstrations. Upon reflecting on this early learning style, later on in the course she noted that her attitude had shifted—she had moved on to appreciate the possibilities of digital processes and to trust her intuitive process as an artist rather than rely exclusively on my directions. Particularly, after the Making Session, Gina acknowledged that she felt like an artist for the first time because, as she put it, she was "feeling more confident and was starting to feel like a master with a lot of materials." Gina said: "The spontaneous energy of it also made me feel like an artist because creative ideas were rushing to my

head without planning too much.” This was a significant perspective transformation for Gina, who used to be resistant to not having a set of plans and constant teacher affirmation as she created artworks in the class.

Similar shifts in approaches to and perspectives on artmaking occurred in Molly’s case when she was engaged in the collaborative Making Session. Working with her teammate she was able to observe her partner’s more open and spontaneous way of working with materials, and she attributed this experience to ultimately feeling proud and confident herself, as an artist, about their collaborative sculpture. This indicates that Molly’s initial assumption in regard to her understanding of what counts as art and valid artmaking processes (that only “master” or well-known artists’ processes are valid and student work is not “real art”) was transformed to a new perspective that respected and honored both her and her peers’ artworks. In Stella’s case, changes in her understanding of art happened first when she encountered the contemporary artist Skye Gilkerson’s interactive sculpture piece, from the Artist Statement Exercise in class. Stella’s initial belief that only “polished” works or “complete forms” counted as artwork prevented her, at the beginning, from accepting different forms of art such as installation, interactive work, and conceptual work. After reading and understanding Gilkerson’s intention for and personal narrative about the artwork, Stella’s initial assumption became invalid. This gave her courage to experiment with the materials that she was resistant to—which were plaster and chicken wire. Her transformed perspectives regarding art challenged Stella to be experimental in her artmaking process and to go beyond just the instructor’s demonstrations or a set of rules.

Tim's transformative process was triggered by both changes in his assumptions regarding his identity as an artist and his approaches to artmaking simultaneously. Tim strongly believed that he would be the least creative person in class since he didn't have any formal art training compared to his classmates. These assumptions were revised when, upon reflection, he realized that even trained artists and his peers who did have prior art experiences experienced failure and unexpected moments in the process. This realization about failure as a natural part of the studio process conflicted with his initial assumption that artists or art majors would always come up with perfectly executed plans, without going through failures and trials and errors. At the same time, encountering Sophie Kahn's artwork made of 3D prints gave him critical reflection time to assess his assumption about what art is. In the Stability Stage, Tim didn't consider any works made through digital processes as "real" art and didn't consider intangible materials as a true art medium. These beliefs shifted after Tim considered Kahn's use of 3D materials and processes as well as Tom Friedman's use of intangible material—video projection image. Tim's realization that failure is part of the creative process and intangible materials are valid for artmaking helped him apply failure and experiments intentionally in his final project. Tim developed his own process from planning, storyboarding, editing, and finalizing his stop motion animation (which is made of intangible material), while honoring instances of experimentation and failure.

In line with Tim's transformed understanding, and ultimate acceptance, of digital materials, Molly initially didn't consider such work to count as art even though she was familiar with contemporary digital art from her experience working in museums. As Molly said, "I didn't consider using digital materials in my work partly because I didn't

see them as art materials”—still holding on to her meaning perspectives related to her definition of art. However, her beliefs about technology were challenged as she reflected upon working with her partner in the collaborative Making Session. Here, she started to see that digital processes can be as valid as the traditional processes she so highly valued. As mentioned previously, based on Molly’s changed perspectives, she ended up creating, for her final project, an interactive mixed media sculpture that contained a sensor, 3D prints, and laser cut wood. Further, Molly, like Tim, ultimately came to honor experiments and failures as part of her artmaking process.

As a result of Transformative Learning, all five participants took actions based on their changed perspectives once the sculpture class ended. For instance, Anne decided to apply for the internship as an art educator at an art museum—this was different from her original plan to pursue a career in instructional technology. Newfound understanding of art encouraged Tim to take his family to museums so that they could experience personal/individualized ways of looking and appreciating artworks as he had done in class—instead of relying on the audio guide. Changed perspectives and appreciation of digital processes encouraged Molly to better understand contemporary artists’ processes that involve digital fabrication, which wasn’t the case at the beginning.

Part 2: Cross-Case Analysis of Five Participants' Identities as Artists and Learners, Understanding of Art, and Approaches to Artmaking

This section of Chapter V analyzes the findings with regard to aspects of Transformative Learning according to the dissertation's three research sub-questions:

- (1) In what ways do students transform their identities as artists and learners?
- (2) In what ways do students transform their understanding of art?
- (3) In what ways do students transform their approaches to the artmaking process?

In addition, this part of the chapter summarizes aspects of the participants' class experiences that can be attributed to their transformations and connects the study's findings to relevant literature.

The transformations of the five study participants as artists and learners, along with changes in their understanding of art and their approaches to artmaking, occurred with great variety. Often, changes and reflections regarding their approaches to artmaking influenced the way they thought of themselves as artists. Other times, changes in the participants' understanding of art and approaches to artmaking happened simultaneously, and ultimately affected their newfound identities as artists. In a sense, transformations regarding identities, approaches to artmaking and understanding of art were all interconnected.

In What Ways Do Students Transform Their Identities as Artists and Learners?

Kroger (2000) argues that early adulthood involves a breakthrough in one's effort to "find" one's identity after departing from adolescence (p. 141). Throughout one's lifespan, identity can change depending on biological, social, and psychological factors. The dissertation study showed that five early adults in an art studio setting experienced a shift in identity from that of "learner and non-artist" to that of "learner and artist." James (2007) explored this sort of shift in artist identity as well, in a study of the artistic production of fifteen adults in painting classes at a graduate school of education. Through analyzing students' paintings on canvas and their written reflections on their experiences in the studio, James found that learning to paint realistically and working from observation can ultimately support students' critical reflection and transformation of identity in significant ways, regardless of prior artistic experience. He also found that some participants showed profound evidence of Transformative Learning in their paintings and writing. James relays one participant's statement in particular: "As the painting evolved, so did I" (p. 142). Similar to the students in James' study, the participants in my dissertation study also evolved during their Transformative Learning experiences in the sculpture class.

While James' (2007) study examined Transformative Learning as an outcome within a larger inquiry into teaching and learning in a painting class, my dissertation study was more tightly designed to focus only on students who showed evidence of Transformative Learning within a curriculum that was specifically formulated to foster this kind of learning. As previously mentioned, the five participants in my study experienced subtle changes in their identities as learners and artists. One of the common

starting conditions was that they did not think of themselves as artists at the beginning of the semester. Anne, Gina, Tim, and Molly claimed to have little or no experience in artmaking before taking the sculpture class. Their initial expectations for the class were (1) to fulfill an out-of-program elective requirement with an “easy A,” (2) to learn and gain necessary techniques for future careers, and/or (3) to take a break from intense academic classes and jobs. Stella, an art education major, decided to take the class to fulfill the required studio credits and to gain well-rounded techniques and experiences with various materials in order to be a competitive art teacher once she graduated from the program.

Since they all insisted that they didn’t take any art related classes in high school and college, recent prior experiences and training in art were standard criteria for determining artist identity for Anne, Gina, and Tim. For instance, Anne’s most recent art-related experience was her observational drawing class in middle school and Tim’s was in Kindergarten. Gina’s most recent art class was in elementary school and Molly took some studio courses during her undergraduate studies. However, Molly also had recently been taking photographs as a hobby.

A lack of prior art training or art-related experiences influenced Tim’s and Anne’s strong feelings about their identities as non-artists on the first day of the class. For instance, Anne repeatedly insisted that she was not good at artmaking in general, and in her surveys, she noted that she was just a beginner. Tim categorized his classmates into artist and non-artist groups. In line with Tim’s assumptions and criteria related to prior art training and experience, Anne also did not label herself as an artist. She assumed that students who were in the art field had more specialized knowledge of art than she did,

and she defined them as artists while she herself was not because she did not “have knowledge of art or art history.” Gina also didn’t think of herself as “an artist or creative person at all.” She claimed that she would be the only non-artist or non-creative student in class due to a lack of experiences in art.

Ironically, prior work experiences in the art world were also important criteria for Stella and Molly when defining themselves as non-artists. For instance, Stella’s case was interesting as her prior work experience as a graphic designer caused her to distinguish between the commercial design process and an artist’s creative process for making art. For Stella, the graphic design process was not an “authentic” type of artmaking, but rather a task to satisfy clients. This was based on her assumption that artists do not engage in commercial work (and therefore they do not work with clients). Similarly, Molly’s prior work experience in art museums (primarily working with artists and educators) guided her away from thinking of herself as an artist. For Molly, “true” artists were the ones who were constantly making and exhibiting their works in galleries and museums. Therefore, even though she had been taking photographs as an art practice, she could not define herself as an artist since she was not actively creating or exhibiting in art venues like “true” artists do. In these ways, Stella and Molly developed their own criteria for artist eligibility based on their own work experience in the art and design worlds.

At the beginning of the semester, all five students’ initial beliefs that they were not artists led to insecurity and anxiety, and limited their artmaking processes and understanding of art. Anne exhibited anxiety and insecurity when working with her hands to achieve the kinds of mastery with materials she envisioned—her goal was to make well-crafted, representational sculptures to earn a good grade in the course. Further, she

had difficulty understanding and accepting conceptual and abstract works as art. Gina also exhibited confusion and anxiety when she learned about contemporary artworks made of everyday objects and recycled materials since she had “never seen works like those in [her] life.” She also didn’t know where to begin because she did not consider herself to be a creative person or an artist like the contemporary artists discussed in class.

Similarly, Tim started the class constantly comparing his artistic ability to that of other students who he believed to be artists, and this added to his insecurity. Tim also was skeptical about the validity of the contemporary artists’ unplanned and spontaneous artmaking processes we discussed in class. He perceived these approaches as unconventional and surprising, as he “imagined such artist[s] would have started with a calculated plan” rather than improvised decision making. Similar assumptions about artists’ creative processes were exhibited in Stella’s case. Since she approached design as a digitally based problem-solving process, she was insecure about using her hands to work with materials in creating a sculpture. On the other hand, Molly approached the sculpture class merely as a learner who didn’t want to “think a lot” like she had to do in her academic classes. She just wanted to have fun. Further, Molly did not think of herself as an artist since “being an artist carried too much weight for [her] since [she] wasn’t actively creating art.” In other words, all five participants began the class as somewhat passive learners, rather than active learners, and as non-artists rather than artists.

However, the participants’ prior assumptions about themselves as non-artists and simply learners (initially, the students’ main concern was to get a good grade) were challenged by classmates, events, and changes in context. In this study various class activities, such as the gallery trip, individual and collaborative Making Sessions,

discussions about contemporary artists and their work, and individual studio time, as well as peer-learning and the collaborative process, triggered participants' critical reflection processes. At the same time, weekly journal writing aided this process so that participants could constantly check their initial assumptions and ideas and reflect on the transformation in their thinking throughout the semester.

First, the gallery trip played an important role in Anne's and Gina's assessment of their initial beliefs that they were not artists. As described previously, the gallery experience did not feature a guided tour, and information about the exhibitions and featured artists was not provided prior to the trip. This was intentional on my part, so that students could have individual time with the artworks and develop personal associations with them before reading artist statements about and critical reviews.

At the gallery, Anne and Gina were able to connect their responses to the ideas of the featured artists to their own projects and processes. For example, Anne mentioned, "I'd like to try her methods," emphasizing her personal takeaway from an artist's work. Gina started to imagine the artists' studio processes rather than focusing merely on the final presented works, saying, "I think I got the taste of how an artist might think before he or she physically created the work." After the gallery trip, Anne and Gina started to pay attention to personal connections when viewing contemporary artwork in class, rather than immediately jumping to analysis and questioning or challenging the use of particular materials and methods of presentation. Both Anne and Gina started to identify as artists rather than just viewers, actively making connections to their own art projects, and

thereby gaining some level of confidence. These critical reflective moments further challenged Gina to take ownership of her learning and studio process and led her to imagine herself as an “artist” during her individual studio time.

For Tim, Stella, and Molly, individual and collaborative Making Sessions were the course activities that challenged initial assumptions about non-artist identities. For instance, through the collaborative Making Session, Tim’s definition of an artist changes, as he said, “it was kind of nice knowing that even trained artists do have that mode of chaos.” This realization conflicted with his initial assumption that artists do not experiment or do not fail as they test out their ideas. Tim came to understand that being an artist is not quantified by the amount of prior art training or experience, but rather depends on approaching artmaking with a level of confidence and feeling comfortable with ambiguity and failure.

Similarly, Stella thought of her first sculpture project as “just a failed attempt,” but in working with a peer during the collaborative Making Session and experimenting together, she gained new perspectives regarding exploration and expressing ideas as part of her own artistic identity. Later, when Stella was working on her final sculpture, she took action based on her changed perspectives. She focused on her feelings and ideas, rather than merely completing the work. Following and honoring her own thoughts, feelings, and intuition, Stella thought of herself as an artist, arguing “As long as I’m enjoying the creative process and expressing myself in my own way, I’m an artist.” In Molly’s case, direct contact with materials helped her revise her initial assumption about her non-artist identity. During the Making Session, Molly appreciated tactile experiences, touching different textures of materials with her hands. She started to experiment in her

own way with familiar materials like oil pastels, focusing on her hand actions. For Molly, it was liberating to experience intuitive and tactile process herself, rather than observing other artists doing so (from her work experience in museums).

Indeed, tactile experiences using her hands and a variety of materials seemed to be the best method for Molly to find enjoyment and self-discovery. This is in line with Merriam's (2008) assertion that one's transformation and self-reflection can happen through kinesthetic and bodily experiences (p. 95). This finding a "new" or "revised" self is understood to be a fundamental perspective change in transformative learning (Mezirow, 2000). Correspondingly, over time, the first place Molly looked to become inspired and rethink herself as an artist was within herself, focusing on her own process.

One visible common pattern seen in all five participants was that their active engagements in the artmaking process. Using experiments, improvisation, and intuition inspired by contemporary artists and works from the gallery trip and Making Sessions were key in their newfound identities as artists. In other words, by the end of the course they each approached the class projects predominantly from the perspective of an artist, seeking a deep engagement with the studio process.

Some of the subjects' transformed creative identities resulted in their pursuit of future artistic endeavors. Gina continued to challenge herself to focus on her own ideas rather than following other artists' processes, and eventually decided to continue her artist journey by participating in an artist residency program in Europe. In Tim's case, his transformed identity as an artist focused on his individual expression impacted his

teaching philosophy as a novice science teacher. As he wrote in his journal: “embracing, expressing, and valuing our own unique perspectives and personalities is a lesson that will [have an] impact on all of my students.”

Stella and Molly (the students who had more art related experiences) seemed to have slight delays in their reflection and artistic transformation processes, perhaps because they had somewhat high expectations (informed by prior educational and work experiences) regarding artist identity. However, through continuous reflections on their assumptions in specific class activities such as Making Sessions, the Artist Statement Exercise, and the gallery trip, both Stella and Molly were able to discover new identities as artists and individualized approaches to artmaking. Overall, one of the major themes in regard to their identities as artists can be summarized as a transition from *learner to artist*, which allowed them to discover artist identities.

In What Ways Do Students Transform Their Understanding of Art?

When answering the question in the Art Survey given out on the first day of class about which of six images represented a work of art, Anne chose only the classical Greek statue (Anne initially reported, prior to taking the class, that her exposure to various forms of art was limited). Both Gina and Tim selected the Greek statue as well as contemporary artist Dianna Molzan’s painting, albeit with some skepticism and insecurity about that painting seeming “unfinished”—the work had rolled painted canvas hanging in the painting frame, unlike a traditional painting. In contrast, both Stella and Molly, who had extensive exposure to and experience in art and whose majors were art-

related, responded that all six images could be considered as art. However, both Stella and Molly exhibited distain and skepticism regarding process-oriented installation, such as that as seen in Gedi Sibony's work and artworks made with digital fabricating processes.

Overall, the five participants' initial understandings of art in the Stability Stage were reflected in their definitions of art as work that is technically polished, labor-intensive, made by hand (instead of by digital machines), and done in a European or Western style. With this definition of art, the five participants were confused by conceptual, abstract, and process-oriented pieces, and found works made of unconventional, recycled, and digital materials challenging and inauthentic. These types of artworks puzzled some participants, and they struggled with how to relate to and judge them. In addition, these works often made them question the artist's talent and skill. Interestingly, Gina thought of such art forms that appeared to be unfinished (such as Molzan's painting and some of the installation work) as being "pretentious." Tim and Molly labeled work made from a digital fabrication processes as being inauthentic and "lazy."

As summarized previously, during the Reflection Stage the participants started to question and critically reflect upon their initial understanding of art. This happened during the gallery trip, Artist Statement Exercise, group critique, discussion of contemporary artists' work, collaborative Making Session, and individual studio time.

The gallery trip was designed to expose students to various forms of art, not limited to sculptures. As mentioned in Chapter III, students were not given the list of galleries until the day of the field trip, so they were not able to gain any prior knowledge

or information about the artists and exhibitions they would see that day. Additionally, students didn't receive any instruction or guidance during the trip. I simply gave a cue when they should move on to the next exhibition.

Taking individual, unscripted, quiet time with the pieces allowed Anne, Gina, Tim, and Stella to experience moments of critical reflection. Anne and Stella made personal connections to their own sculpture projects. Once again, Anne noted about Tara Donovan's work: "I've never seen anything like this, and I appreciate her creative idea and intensive labor. Her work gave me an idea of how I might use unusual materials in my own way." This perspective demonstrates a significant shift from Anne's initial understanding of art—which discounted conceptual and abstract art—and shows her to have a new relationship with the artwork as she relates it to her own. Likewise, Gina started to appreciate the ideas she found in the artworks she saw, rather than focusing on the skills involved in crafting the work, and she became fascinated by the artist's use of unconventional materials, which differed from the stone or marble that she had always associated with art.

Tim showed a similar change in attitude about the use of non-traditional art materials, as he reflected on Tom Friedman's work made of intangible video projection images. Tim went back and forth between the Reflection and Stability Stages. He argued that he appreciated the tactility and physicality of artworks and therefore did not accept intangible materials as being valid art media. Later on, an encounter with Josh Kline's artworks, comprised of 3D prints and found objects, pushed Tim to further reflect upon his assumptions regarding intangible or digitally fabricated works. Tim was amazed at Kline's use of digital materials and found objects and was impressed with their careful

orchestration. This transformation in his understanding of art influenced how he approached materials in his own work: “Digital tools don’t always give us product-like feelings, and perhaps these tools can be just the same as other traditional tools.” Tim’s changed views connect to Gina and Molly’s transformed perspectives concerning an emphasis on the artist’s ideas and intentions, rather than on the nature of the art materials. Similarly, after gaining a newfound understanding of art and acceptance of digital processes, Molly was excited to experiment with the laser cutter. In doing so, she became fascinated by the potential of digital fabrication. In sum, Gina, Molly, and Tim all changed their minds regarding digital materials. As a result of their transformed understanding of art and art materials, the five participants treated all materials—including found objects, traditional materials, and digital materials—as equally valuable.

Encouraging students to question and explore digital and traditional art materials ignites their thinking and creating processes. Cabral and Justice (2013) conducted a study exploring the use of 3D design and printing with young children. They discovered that digital 3D design and printing provided expanded learning opportunities, not “merely as a sophisticated tool” (p. 4). For instance, two participants (Daniel and Sam) created a rocket ship using 3D design and printing processes in a way similar to how they engaged with other materials, such as clay and crayons. In doing so, they utilized specific knowledge gained from both traditional and digital materials by exploring and questioning various attributes and possibilities of such materials (p. 3).

In my study, Tim and Molly made similar realizations, coming to see digital devices as opportunities to experiment and learn, rather than merely as tools. My findings also support Franz & Papert’s (1988) assertion that educators should “seek out open-

ended projects that foster students' involvement with a variety of materials, treating computers as just one more material, alongside rulers, wire, paper, sand, and so forth" (p. 416). Franz & Papert's (1988) belief that traditional art and digital materials should be treated as similar in importance for students' learning has proved relevant and accurate in my study. Resnick (2006) also echoed the idea of the importance of treating digital and traditional materials with same approaches and thinking around them, perceiving "computer as paintbrush" (p. 1). In addition, Resnick argues that encouraging deep personal connections could increase students' motivation as well as foster their deeper understanding and knowledge (p 7). Through such a process, one may able to adjust and continue with a project with "a deep sense of personal involvement and ownership" (p. 9). Gina, Molly, and Tim approached and explored digital tools as they did other art materials in their Reflection and Transformation Stages, which then allowed them to discover new relationship with such tools. In a sense, they didn't merely consume or use the tools but rather inquired around the tools to work with them—thus, gaining autonomy and ownership of learning with personal attachment to their artmaking processes and projects.

On the same note, the importance of material inquiries in an art learning context has been highlighted by art educators and scholars (Alesina, 2010; Burton, 2016; Ecker & Mostow, 2015; Hafeli, 2011, 2014). In context of my study, sometimes artmaking combined with digital processes (as in Making Sessions) greatly helped students become immersed in the processes because they were able to see the immediate transformation of materials. The greater accessibility of digital materials also provided greater flexibility to experiment. For instance, Gina was able to test run the laser cutter in her own way after

revising her assumptions and conquering her fear about digital fabrication tools. Eventually, she was able to gain confidence and enjoy working *with* the laser cutter, comparing the use of the tool to “baking a cake.” Similarly, accessibility to the laser cutter helped Stella experiment with the tool using different materials and settings and meticulously record her process during Transformation Stage.

In addition to the gallery trip, the Artist Statement Exercise triggered opportunities for participants, particularly Gina and Stella, to reflect on, challenge, and expand their initial understandings of art. As mentioned in Chapter III, students were given six written artist statements discussing one original work and asked to create a small drawing for each statement, imagining what the actual work might look like from reading the statements. At the end of the class session, the students shared their drawings and their thoughts about each statement while I revealed images of the actual works.

This exercise was specifically designed to further challenge students’ assumptions (as per Cranton’s (1992) suggestions for Transformative Learning) about their understanding of art and the artistic process. As discussed previously, Gina was inspired by Alice Aycock’s artist statement, and her drawing looked very close to one of Aycock’s sculptures. In considering Aycock’s statement, which described her piece Park Avenue Paper Chase as being about “the metaphorical visual residue of the energy of New York City” (Young, 2014), Gina started to realize that understanding art goes beyond simply considering the structure and appearance of physical objects (how the work is put together or how it looks). On the other hand, the Artist Statement Exercise led Stella to realize the causes and consequences of her initial assumptions when she saw that her drawings for all six artworks contained base structures. This indicates that she

was able to critically reflect on her assumptions (sculptures have bases) regarding her understanding of art. Similar to Gina, Stella started to appreciate the artist's intention and the meaning behind the work in the Artist Statement Exercise, even in the cases of the conceptual and interactive art seen in the artist statement slides. She was also surprised by the diverse drawing responses to the six statements and started to realize how people can interpret and imagine the artworks in individualized ways.

Finally, group critiques and class discussions about contemporary artists' works gave participants, particularly Anne, Molly, and Tim, an opportunity to stretch their understandings of art. Both Anne and Molly reflected on their assumptions about the artistic validity of their peers' sculpture projects. Initially, they didn't consider their own sculptures or the creations of their peers as "true" artworks. Rather, they identified them as "just the assignment" or "trials." For example, by looking at and discussing her peers' works, that were made of everyday objects and recycled materials, Anne's assumptions about the definition of art were further challenged. Likewise, by looking at the works of contemporary artists in class, such as Sophie Kahn and Josh Kline's use of digital tools and found objects, Tim was able to reflect on his assumptions that digital materials cannot yield art.

All five participants' newfound understandings of art were partly influenced by their perspective changes during the Transformation Stage, regarding their respective artist identities (see previous section on changes to participants' artist identities). Looking at works done by contemporary artists and by their peers—not just as viewers, but as artists making personal connections to their own sculpture work—helped them to reflect on their assumptions about art. This is in line with Werchkul's (2017) findings that

emphasize the importance of personalized experience when studying and looking at works of art, which helps people take ownership of learning. In her study, students responded in a personal way, even to a prehistoric artifact such as *Woman from Willendorf* (c. 24000 BCE), when they were encouraged to reflect on direct or indirect emotional connections. Some of Werchkul's students' responses to *Woman from Willendorf* include: "...I also like how the obvious form of fertility is contrasted by the ambiguous nature of the head. Is it looking down? Why are no facial features?" (p. 15).

Similarly, I found that Anne and Gina felt fully immersed when looking at art, imagining how to connect their ideas about artists' works to their own sculpture project ideas. Others revised their assumptions about art being difficult, pretentious, puzzling, and mysterious, coming to a new understanding of art that emphasizes artists' ideas and intentions rather than the final outcomes. At the same time, some participants, putting aside their previous preferences regarding artistic style or the types of materials used, were surprised to learn how artists paid close attention to details and carefully composed their work. Whether they were looking at conceptual, minimal, or abstract art, the focus was on the artist's process and ideas. These changed perspectives affected each student differently, both within the class and after it ended. For instance, Gina further questioned the notion of art in different times and contexts, comparing artifacts from ancient times with the art of today. After the course ended, Tim took his family to various contemporary galleries to help them experience what he had experienced—full immersion and personal connection with the artworks.

The five participants' new understanding of art speaks to the notion of "pluralism in art," a concept linked to Danto (1992), Dickie (1974), and Moszynska (2013), all of whom see and define art and artmaking using a pluralistic lens. Today, boundaries between various art disciplines such as painting, photography, and sculpture have become blurred, and much contemporary art has been categorized as multidisciplinary art practices (Causey, 1998; Moszynska, 2013; Stiles & Selz, 2012). More specifically, scholars have written about contemporary art and practice and its connections to emerging technologies exploring unlimited possibilities regarding materials, fabrication, and concepts (Beorkrem, 2013; Johnston, 2015; Mongeon, 2016; Yuan, Leach, & Menges, 2018; Zilber, 2015). As a result, the concepts of "medium" and "artistic process" are open to a wide variety of materials and approaches. Danto and Dickie, especially, assert that place and architecture can define what counts as an artwork. Dickie, for example, contends that a work of art is an artifact that is created for the public, within the place of art "institutions" (1974).

Interestingly, such a notion of art was found in the five participants' initial understanding of art during Stability Stage. For example, Tim chose Greek statue image as the only work of art since the work was situated in the museum, while how he didn't consider Gedi Sibony's site-specific installation as art since the work was situated in non-museum contexts. Rather than focusing on place and architecture, Moszynska (2013) defines art according to the specificity of medium. She asserts that the boundaries of sculpture have become blurred within today's multidisciplinary, pluralistic art practices. As a result, often, the understanding of what counts as an appropriate medium for art has shifted from traditional art materials such as metal and wood to "provisional and

everyday materials” such as found or ephemeral objects (p. 6). For instance, Moszynska discusses how Duchamp’s readymade art sets the precedent for a broadened perspective towards found objects as appropriate art material (p. 42). These shifts have led to the “non-medium-specific approach” in contemporary art practices, wherein the source of an artistic impulse or idea has become recognized as particularly important. Moszynska extends this discussion to a consideration of how technology has influenced art and the concept of art, and of how artists have started exploring the use of bioengineering, nanotechnology, and electrical engineering in their art practices.

In sum, all five students’ initial understandings of art focused on works that (1) were made of traditional art materials (e.g., paint, clay, stone, metal), (2) show artists’ talent or labor intensiveness, (3) were situated in museums or what they remember from art history texts, and (4) were recognizable and representational. Such assumptions about art began to be challenged by the gallery trip, Making Sessions, and the Artist Statement Exercise. During the Transformation Stage, all five participants were able to gain their own understanding and definition of what art is from personal stance. For instance, Tim and Molly accepted works made by digital processes as art through their own engagement in that process. Anne was able to incorporate found objects and digital materials as part of her final sculpture. These changes align with new possibilities and approaches to art that are increasingly becoming fused with emerging technologies (Beorkrem, 2013; Johnston, 2015; Moszynska, 2013; Mongeon, 2016; Yuan, Leach, & Menges, 2018; Zilber, 2015). Overall, participants journeyed from having a general understanding of art reflective of traditional Western works and methods to developing a

personal definition of what art is. These individualized understandings embraced contemporary and non-stereotypical forms of art and reflected participants' transformations from understanding art as students to *understanding art as an artist*.

In What Ways Do Students Transform Their Approaches to Artmaking?

All five participants' initial approaches to artmaking exhibited similar patterns—(1) a lack of confidence, (2) a need for frequent teacher affirmation and guidance, (3) discomfort with ambiguity or an unknown outcome, and (4) comfort with detailed planning and goals—and these patterns were partly influenced by upbringing, education, and prior work experiences. Their initial identities as non-artists or non-creative people connected with their initial approaches to artmaking. The subjects' initial goals and expectations for the sculpture class were to fulfill an elective or required studio credit, to try something fun, and to acquire necessary techniques for future careers. In most cases, according to the demographic survey given on the first day of class, such techniques involved mastering sculptural processes using traditional art materials such as wood, plaster, stone, and clay. For instance, Anne's initial approach and expectations for her process were influenced by her prior experience in an observational drawing class. Since there Anne was taught not to leave any blank space in her drawings, she felt confused about unfinished qualities and improvisation in the artmaking process.

In fact, at the outset all five participants exhibited confusion and difficulty during the individual studio time, especially when they had to brainstorm their own ideas and plans. In contrast, they were all able to successfully follow my guidance and prompts

during the in-class demonstrations. Feeling insecure about not having prompts or a set of rules prompted the participants to ask for teacher affirmation instead of trusting their own ideas and plans.

For example, Gina's prior work experience as an analyst in the financial industry influenced her approaches to artmaking. That is, her professional practice primarily relied on adhering to existing rules and boundaries. In class, she felt comfortable with limitations and deadlines—treating sculpture projects as a set of tasks. Tim's dualistic view of the division between the artist and non-artist groups in class made him feel insecure about the idea that “failure” could be a part of the process. He was particularly confused with the studio process of the contemporary artist Arturo Herrera, who honored the notion of failure through trial and error. Often, Tim tried to follow the exact process used by his peers instead of experimenting on his own. Partly due to her prior experience as a graphic designer who used to work with computers, Stella was hesitant to use any “messy” materials in her projects. Rather, she wanted to create clean and neat pieces that aimed for “perfection.” Even though she had extensive experience in studio art, she exhibited insecurity about her projects during the group critiques and expressed fear of working alone without my guidance or instructional prompts. In addition, Stella had to have a detailed, step-by-step plan before she started to work on her projects. Lastly, Molly relied heavily on her understanding of master artists' styles and processes, thereby not giving herself an opportunity to explore and develop her own individualized approaches to materials. Her initial belief was that emulating master artists' styles was a “confirmed” and “secure” way to create sculptures. In other words, to some extent, all of the participants tried to avoid any failure in their artmaking processes. Overall, all five

students' primary concern was to create successful sculpture projects so that they could get a good grade. Lastly, assuming that artmaking should involve artists' physical hands, the students were skeptical about using digital fabrication tools as part of their artmaking processes

Such initial assumptions regarding approaches to artmaking were challenged by two primary class activities—the gallery trip and Making Sessions (both individual and collaborative). First, the gallery trip gave Anne an opportunity to critically reflect on her assumption about artmaking processes involving non-art materials. Surprised by Tara Donovan's inclusion of thousands of business cards in her pieces, Anne realized that the artmaking process doesn't always involve rendering realistic representations or multiple traditional techniques, such as carving and sanding. Anne said, "I was shocked at how she created many works using the same materials. I've never seen anything like this and I appreciate her creative idea and intensive labor. Her work gave me an idea of how I might use unusual materials in my own way." This indicates her shift in perspective regarding the value of a labor-intensive artmaking process involving alternative materials and techniques.

Both individual and collaborative Making Sessions dramatically challenged all five participants' initial approaches to artmaking. As described earlier, the individual Making Session was divided into two steps—first, students were asked to create twelve gesture drawings from their observations of interesting objects and areas in the studio, using oil pastels, pencils, colored markers, and watercolors in intervals of 30 seconds, 1 minute, 2 minutes, and 5 minutes. Then students chose one of their favorite or "best" drawings and posted it on the board for group discussion. Meanwhile, students had to

transform the remaining gesture drawings into a sculpture that represented one emotion of their choice. During the group critique and sharing, everyone took a guess regarding the emotion of each sculpture before the artist revealed it. The entire Making Session was timed and monitored by me. Following Cranton's (1992) suggestion for teaching for Transformative Learning, this activity was designed to promote students' active use of hands and peer learning, all while implementing constraints of time and materials. The collaborative Making Session asked students to team up in pairs for 40 minutes to create "the longest sculpture" using mixed media materials. Students were encouraged to interpret what "the longest" and "sculpture" meant, and the I wasn't involved in discussing their ideas, so as to not influence them.

Anne was able to participate in playful moments with materials while working with her peers in the collaborate Making Session. Further, she later applied this process in her own project. In Gina's case, the individual Making Session helped her move beyond the "right" ways of making things. During the first part of the session when she had to create quick gesture drawings, it was hard for her to concentrate on the classroom objects and background she was looking at, since she was so focused on creating perfectly accurate and "clean" drawings. She used the eraser often to delete any traces of marks except the main lines. However, due to time constraints she eventually decided not to use the eraser and she was able to create interesting and more complex images, saying, "it was first difficult to not to use eraser, but I tried to focus on different textures that color pencils and graphite make, and leave all the marks on my paper." This indicates that, instead of focusing on creating attractive and realistic drawings, Gina started to pay

attention to textures and details created by each drawing material. Similar to Anne, Gina was able to discover spontaneous processes that were different from the pre-planned and precise steps that were the hallmarks of her initial approaches to artmaking.

During the individual Making Session, Tim discovered this notion of spontaneity in the artmaking process, as well. He said: “I just had to quickly choose an object and quickly choose a material. And then, sometimes I was surprised with the result because some drawings that I sort of went with the flow came out much better.” Somehow, the limits of time pushed him to focus on the intuitive and improvisational aspects of artmaking, thereby causing him to stop imitating his peers’ drawings or relying on teacher affirmation. While he was fully immersed in the drawing process, Tim valued the arbitrary choice of colors, even for small details, saying “I chose red and brown even though the actual area looked different. It was like combining what I saw, and I felt, and imagined.” This shows the shift of his initial approaches to artmaking from methods that relied heavily on perfectly planned process and goals to something more spontaneous.

During the second part of the individual Making Session, Stella felt liberated when she had to turn her gesture drawings into a sculpture depicting an emotion of her choice. She viewed the process as “transforming” her drawings into a new form, rather than one that forced her to destroy her old drawings. She was no longer hesitant to touch materials and create with messy ones. Molly started to appreciate imperfect and irregular lines in her gesture drawings, specifically the one made with her non-dominant hand. Instead of insecurely relying on other artists’ processes, Molly discovered her artistic potential with personalized approaches to materials. She said, “Some of the pieces,

particularly those on watercolor paper and graphite actually had a really cool effect after they were torn,” indicating a shift from her initial approaches to artmaking that were geared towards perfection.

In the Transformation Stage the five participants’ approaches to artmaking indicated newfound qualities and attitudes towards materials and processes. These included: (1) ownership of learning and making, (2) comfort with ambiguity, (3) being immersed in the process (flow), and (4) exhibiting confidence and enjoyment. Often, participants stated that they were fully immersed in and focused on the process and felt “alive” and frozen in the moments. Anne actually did not realize how much time had elapsed during the Making Session when she had “just start[ed] making and trying different things, trusting [herself] without a polished plan.” Similarly, Gina experienced “spontaneous energy” that made her feel like an artist, as she generated a flow of creative ideas. Stella was able to try using different and unfamiliar materials, allowing her to get into the zone of making and experimenting. During the individual time, Stella paid attention to her hand movements and recorded them. She was fully immersed in her studio time and did not notice how long she had been working.

These incidents, which conflicted with the participants’ initial approaches to artmaking—one that did not allow for experimentation and improvisation—connect to the notion of play and flow. All five participants’ responses speak to an understanding of play as something that makes people less conscious of themselves, time, and failure (Brown, 2009). Brown asserts that “play” is essential to human development and the quality of our lives, including the ability to broaden our perspectives. He defines play as different from work in that play is purposeless, voluntary, improvisational, self-

motivated, and inherently attractive, and involves a diminished consciousness of self and time (p. 17). Echoing Brown, Spitz (2009) asserts that play is as an important part of the creativity and complexity of art, and that art is often made in a continuous act of play. Further, when one is engaged deeply in play, he or she enters what has been described as a zone of “flow,” composed of serenity, timelessness, and complete concentration (Csikszentmihalyi, 1990). Similarly, the participants described how during their artmaking processes they felt significantly self-motivated, had maximum concentration, and were not aware of the passage of time, despite spending many hours in the studio. The notion and enactment of play seemed to be a dominant and integral theme and mode of engagement during their art practices.

At the beginning of the semester, all five participants struggled to accept play as an integral part of their artmaking process. All commented on frustration over not having a prompt in regard to the materials or not having clear end results. However, such assumptions about artmaking approaches were transformed via various activities. Each of the participants also started to honor playful moments through experimentation, iteration, improvisation, and intuitive processes. Molly, for example, compared working with the laser cutter to cooking, since both involved a certain level of transformation of forms and content. Similarly, Gina noted that working with the laser cutter was like baking a cake, since both processes allowed her to trust her decisions and intuition, as the original ingredients were completely transformed into a new piece. It was clear that lack of confidence limited participants’ ability to play. When students were working on their

final projects (that had no prompt), they became more comfortable with not having a goal or clear guidance and began to discover their individualized processes and let them guide their artmaking.

As the semester unfolded, all five students became deeply engaged with the question of play and the playful aspects of their artmaking. At the beginning of the class, the students seemed to struggle to accept play as an integral part of their artmaking process. In particular, Tim had difficulty accepting failure. However, his newfound approaches to artmaking allowed him to respect the prospect of failure in his final projects. His own words, “the failure pieces informed me to think about another approach and then another failure also taught me something else. It was like a domino effect.” This shows his shift in perspectives. This change occurred when working with digital materials, as well. Molly, Gina, and Tim were no longer afraid of not having guidance. Instead of merely following the instructions, they went above and beyond with the process of working with digital fabrication tools, thereby discovering individualized approaches to each tool. This would not have been possible without confidence. Gina emphasized “trusting oneself” and Tim honored his artmaking process as an “adventure.” All five students’ later processes mirror the kinds of artists’ processes in which play invited them to think about “unforeseen” things.

Interestingly, the notion of play connects to tinkering (Martinez & Stager, 2013), which allows one to imagine the process without knowing the outcomes or resources (Banzi, 2011). Students who enjoyed using digital fabrication, as well as combining both traditional and technological approaches, were actively engaged in “tinkering” and playful experimentation. For instance, some became autonomous in their learning by

“playing” with the various settings (e.g., the speed, power, frequencies, and materials) of a laser cutter and 3D printer. Although they did not have a substantial amount of prior experience using such tools, they enjoyed the process. Some even liked the burned or failed prints that came out of the laser cutter. In a sense, the notion of active approaches and playing altered the original functions and characteristics of the laser cutter, which is generally known for being a procedural and form-based machine.

Constraints regarding time, materials, and process during the Making Sessions also helped students experience experimental and playful encounters. On this particular point it seems useful to refer to Renshaw et al. (2010), who explore an interesting connection between play and constraints. Their study on physical education adds support to the suggestion that educators can employ limits on tasks, performers, and environments to inspire playful physical movements and sharp decision-making. In my study, participants went from merely following teacher demonstration and approaches with calculated plans to discovering *individualized approaches to artmaking as artists* by becoming comfortable with ambiguity, experimentation, intuition, and playful exploration.

Summary

Chapter V analyzed the five participants’ Transformative Learning dimensions from two angles: (1) cross-case analysis of Stability, Reflection, and Transformation Stages among participants, and (2) cross-case analysis of participants’ identities as artists and learners, understandings of art, and approaches to artmaking. Specific class activities

such as Making Sessions, Artist Statement Exercise, a gallery trip, and group critiques/discussion acted as catalysts for participant's Transformative Learning, which enabled them to adopt newfound approaches to artmaking, discover new identities as artists, and gain individualized understandings of and relationships to works of art. In Chapter VI, I summarize the study and provide recommendations for further practice and research.

VI – SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Dissertation Summary

My research interest in adult Transformative Learning in art class grew out of working with a diverse group of students from various education disciplines while wearing several hats—sculpture instructor, sculptor/mixed media artist, and researcher. In my teaching of sculpture classes prior to undertaking the dissertation study and through a pilot study I undertook, I witnessed how some students who did not consider themselves to be artists at the beginning of the class saw themselves as artists by the end of the course. I also observed how some students transformed their perspectives on the artmaking process and their understanding of art from the beginning to the end of the class. I wondered how these students' initial perspectives evolved throughout the class, and what factors within the class contributed to such change.

To address these questions, I surveyed and synthesized relevant literature on Transformative Learning theory and learning in the visual arts (Chapter II) and designed the dissertation study to examine what students' Transformative Learning looks like in a curriculum designed specifically to bring it about (a curriculum aligned with

Transformative Learning principles). In Chapter III, I described the curriculum and the class context, and provided a detailed explanation of and rationale for the qualitative case study design.

A total of thirteen students participated in the study, and the findings focused on five representative participants (Anne, Gina, Tim, Stella, and Molly). Data for the study included students' class artifacts (three sculpture projects, sketches, twelve weekly journal responses, and demographic & art survey responses), field notes from my class observations, individual interviews, and retrospective survey responses.

The multiple sources of data enabled triangulation among all of the data as well as the opportunity to analyze each participant in depth from multiple vantage points (Yin, 2009, p. 241). Cranton's Transformative Learning cycle (1992) was used to analyze and organize each participant's narratives in three stages: Stability, Reflection, and Transformation. Further, within each stage, each participant's narrative was written from three different angles: identity as an artist and learner, understanding of art, and approaches to artmaking (Chapter IV). The data for all of the participants was compared and contrasted, using the same Transformative Learning framework and alignment with the research questions, and these findings were discussed in light of relevant literature (Chapter V).

Findings from the study suggest that all five of the focus participants underwent Transformative Learning in individualized ways with regard to their identities as artists and learners, their understandings of art, and their approaches to artmaking. During the course of the semester, each of the participants focus participants developed identities as artists, new possibilities and value for diverse approaches to artmaking, and new

understanding of art. Within the context of this study, Making Sessions that provided extreme constraints in materials and time helped participants revise and reflect on their initial assumptions about approaches to artmaking and what art is. Reflective journal writing also encouraged participants to constantly revise and challenge their assumptions. Peer learning and collaborative artmaking environments provided a safe space for participants to try new things with revised assumptions.

In addition, changes in participants' artist identities often interconnected with the changes in their approaches to artmaking or understandings of art. It can thus be argued that transformation in an art class with an intentional curriculum brought about a rather organic Transformative Learning process as opposed to a linear line of change. The following section sums up key findings and offers a discussion in response to each sub-research questions.

Conclusions

This study investigated how learning through artmaking in a sculpture class transformed five adults with regard to their identities as artists and learners, their understandings of art, and their approaches to artmaking. Below are answers/responses to each sub-question regarding their transformation from there three angles.

From Learner to Artist: The Making of an Artist Identity

Findings from the study help to illuminate the ways that students transformed their identities as artists and learners, and the aspects of their class experiences that they attributed to these changes. These findings address the study's first sub-question.

All five participants—Anne, Gina, Tim, Stella, and Molly—began the class with the initial belief they were not artists. Reasons for such assumptions had to do mainly with the students' lack of previous visual artmaking experiences and training, and limited prior study in art and art history field. For four of the five participants, their identification of themselves as non-artists, and simply as learners, related to their reasons for taking the sculpture class in the first place (for example, fulfilling an out-of-program elective or taking a break from strictly academic coursework).

The study found that the participants' non-artist identities closely influenced both their initial approaches to artmaking and their initial understandings of art. Some participants constantly compared their artmaking process and finished artworks with those of others (works by contemporary artists shown in class slides works by peers who had more experience in art), thereby causing more insecurity and skepticism about themselves as artists. The participants' initial attitudes about themselves as artists (identifying as non-artists) hindered their intuitive and improvisational capacities and led them to constantly seek for teacher affirmation.

However, specific class activities fostered the participants' Transformative Learning process in regard to the development of artist identities. For example, the gallery trip challenged some participants to revise their assumptions about themselves as non-artists, specifically when they actively made connections between materials,

approaches, and ideas in the contemporary artists' works they saw and their own class art projects. These students shifted from being merely art learners and art viewers to *artists* being inspired by other artists' works. In another example, the Making Sessions challenged participants to revisit and revise their creative identities through observing and adopting the experimental and intuitive approaches of their peers, through collaborative artmaking. In these sessions, initially narrow assumptions about acceptable artists' processes and "getting it right" were widened to include play, experimentation, and failure.

In keeping with Cranton (1992), who argues for the importance of role-playing as a way to encourage learners to view situations and problems from others' perspectives (p. 164), I argue, based on the dissertation's findings, that indirect role-playing (imaginary role-playing with artists during the gallery trip) occurred for participants when they were fully immersed in looking at art, imagining the possible artistic processes used to make the work, and then imagining further how they might incorporate these processes in their own class projects. Further, this imaginary role-playing happened as well in the collaborative Making Session in which more artistically closed-minded students adopted the experimental and non-traditional approaches of their more artistically open-minded peers.

From Greek Statue to Contemporary Artworks: Understanding Art as an Artist

Findings from the study revealed the ways that students transformed their understanding of art and which aspects of their class experiences contributed to such changes. These findings address the study's second sub-question.

Responses from the art survey given at the beginning of the semester showed that the five participants initially believed that art always: appears complete, looks technically polished, is labor-intensive, and involves art materials and tools such as paints, brushes, drawing materials, paper, canvas, plaster, stone, metal, and other traditional art materials, rather than digital production tools and equipment. In addition, Western European classical works seemed to be the default definition of art for all five participants. All five participants felt a certain level of confusion, skepticism, and discomfort when encountering artworks that were relatively conceptual, abstract, and process-oriented, as well as works made of found objects, or constructed through unconventional, recycled, or digitally fabricated processes. These kinds of works made them puzzled, caused them to struggle, led them to question the artist's talent, and prodded them to label the works as "pretentious" (in the case of abstract and conceptual art) or "lazy" (in the case of digitally fabricated art).

These beliefs were challenged by two main class activities—the gallery trip and the artist statement exercise. During the gallery trip, participants revised their initially negative beliefs about conceptual and process-oriented artwork and artists' use of unconventional and digital materials—ultimately coming to appreciate them. With Cranton's (1992,1994) Transformative Learning cycle in mind, changes in the teaching/learning context can be as simple as shifting the location for learning from the

studio classroom to art galleries, where students can imagine themselves as artists looking at other artists' works. Similarly, the artist statement exercise provided participants an alternative channel to understand artists' diverse intentions and ideas.

Individualized Approaches to Artmaking as an Artist

Finally, with regard to the research questions, findings from the study revealed the ways that students transformed their approaches to artmaking processes and materials through various class activities. These findings address the study's third sub-question.

All five participants' initial approaches to artmaking were highly influenced by their non-artist identities—they started the course with a lack of confidence, constant need for teacher affirmation and guidance, discomfort with ambiguity and unforeseen outcomes, and comfort with pre-calculated plans and goals. They felt confused and lost during the individual studio time when brainstorming ideas and plans on their own. In contrast, they were comfortable during the individual trials followed by the instructor-led demonstrations on specific sets of tools and materials.

Among many class activities, the gallery trip and Making Sessions helped participants revise previous beliefs about and find new approaches to their own artmaking. For some, this involved using non-traditional art materials when their previously held beliefs that such approaches did not “count” as art initially prevented them from doing so. Within the class activities, constraints of time and limited materials acted as an important catalyst to challenge the participants' initial approaches to artmaking. Since students were given a relatively short amount of time for some projects,

they had to dive into making and experimenting instead of spending prolonged time brainstorming and planning. This helped them to experiment, improvise, and deal with the discomfort of ambiguity and uncertainty. An important finding of the study is that projects I purposely designed with extreme limitations (time, materials) did offer an opportunity for participants to challenge and revise their assumptions that had been limiting their artistic practice. This finding is contrary to Cranton's (1992) argument that a limited time constraint with many learning materials could hinder learners'

Transformative Learning process.

When responding to a theme-based prompt in the collaborative Making Session—particularly when they were asked to create the longest sculpture—all five participants were challenged to revise their assumptions about what art is and how they might approach such prompts in their own ways, without looking for one right answer. The collaborative learning environment allowed participants to learn from each other through modeling and, through sharing ideas and visions, which helped them discover new approaches to artmaking and accept diverse, new perspectives (Bennis & Beiderman, 1997; Steiner, 2006).

Taken together, all five participants' initial approaches to artmaking were revised and opened up to newfound ways of making art—including taking ownership of learning and artmaking, being comfortable with ambiguity, being fully immersed in the artmaking process, and being confident and enjoying the overall process. These practices and ways of thinking, as discussed in Chapter V, align with research on play and “flow” (Brown, 2009; Csikszentmihalyi, 1990; Spitz, 2009). In some cases, through experimenting with and becoming excited about the immediate results afforded by digital tools, participants

engaged in the kinds of playful moments and tinkering using new technology tools as described by Banzi (2011), Martinez and Stager (2013), and Cabral and Justice (2013). These newfound playful approaches with computer-based technology allowed these participants to revise their initially negative views of digital fabrication processes.

Recommendations for Practice and Further Research

Beyond transformations with regard to their identities as artists, understandings of art, and approaches to artmaking, participants in the study took other actions based on their changed perspectives—and several of these occurred after the course ended. One participant applied for and was offered an internship at an art museum, another was awarded entry to art residency program, and still another began to regularly take his family to art galleries to help them experience what he went through: gaining a newfound understanding and appreciation of contemporary art. Even though these further actions are limited to the context of study, it is important to acknowledge the potential of learning through artmaking when teacher intentionally fosters Transformative Learning. Therefore, this study prompts additional questions and considerations concerning Transformative Learning in the arts contexts.

- Specific characteristics of class activities in this study such as creative constraints (e.g., structured prompts and limited time) in Making sessions and role playing and imagination occurred in the gallery trip and the Artist Statement Exercise played an important role in inspiring participants' Transformative Learning. How might teachers incorporate such activities into their classrooms?

- If students in studio art classes were able to experience the kinds of changes in perspective and action brought about by transformative art learning, might they also be more open to multiple viewpoints and diverse perspectives in different disciplines, such as art history and social studies? To answer this question, research is needed on Transformative Learning in the visual arts that focuses on cultural diversity and social justice.
- What else might be learned about Transformative Learning through artmaking in other settings, for example among specific groups of students (e.g., medical students, students in art and design schools)?
- Given the needs of more research in education of artists in art school contexts (Alexenberg, 2008; Madoff, 2009; Salazar, 2013), how might curriculum informed by Transformative Learning foster the teaching and learning of future artists and designers in art and design school contexts?
- How might we educate pre-service teachers and museum educators to be able to develop learning experiences that incorporate Transformative Learning principles?

Often, as teachers, we make conscious or unconscious assumptions about our students. It is important to revise and check our assumptions and also to acknowledge and understand that this reflective process has to be continuous. Ultimately, Transformative Learning in an art class can help teachers respond to diversity in an individualized way—not following standard rules or policy—so that teachers gain a deeper understanding of their students as learners and artists.

It is not my intention that other educators follow exactly what I did in my sculpture class, but rather I want to advocate for the importance of Transformative Learning and awareness of its stages—Stability, Reflection, and Transformation. I also wish to highlight how further actions can be taken, which may be linked to connected learning environment and self-directed learning—to increase students’ autonomy in their learning. If we continuously try to revise our thinking and curriculum/teaching so that students get ample opportunity to critically reflect on and revise their assumptions, we move one step closer to student-centered classrooms and students’ authentic and deeper learning.

REFERENCES

- Ackoff, R. L. (1998). A systematic view of transformational leadership. *Systematic Practice and Action Research*, 11(1), 23-36.
- Addleman, R. A., Nava, R. C., Cevallos, T., Brazo, C. J., & Dixon, K. (2014). Preparing teacher candidates to serve students from diverse backgrounds: Triggering transformative learning through short-term cultural immersion. *International Journal of Intercultural Relations*, 43, 189-200. doi:10.1016/j.ijintrel.2014.08.005
- Alexenberg, M. (2008). *Educating artists for the future learning at the intersections of art, science, technology, and culture*. Bristol, U.K.: Intellect.
- Angrosino, M. (2007). *Doing ethnographic and observational research*. Thousand Oaks, CA: SAGE Publications, Inc.
- Bang, A. H. (2016). The restorative and transformative power of the arts in conflict resolution. *Journal of Transformative Education*, 14(4), 355-376. doi:10.1177/1541344616655886
- Banzi, M. (2011). *Getting started with Arduino*. Sebastopol, CA: O'Reilly Media Inc.
- Bennis, W. G., & Biederman, P. W. (1997). *Organizing genius: The secrets of creative collaboration*. Reading, MA: Addison-Wesley.
- Benoit, C., Belle-Isle, L., Smith, M., Phillips, R., Shumka, L., Atchison, C., & Flagg, J. (2017). Sex workers as peer health advocates: Community empowerment and transformative learning through a Canadian pilot program. *International Journal for Equity in Health*, 16(1). doi:10.1186/s12939-017-0655-2
- Berg, B. L. (2009). *Qualitative research methods for social sciences* (7th ed.). Boston, MA: Allyn & Bacon.
- Bhattacharyya, S. (2016). Embodied Challenges: Transformative learning. *Journal of Feminist Studies in Religion*, 32(1), 131. doi:10.2979/jfemistudreli.32.1.14
- Bhukhanwala, F., Dean, K., & Troyer, M. (2016). Beyond the student teaching seminar: Examining transformative learning through arts-based approaches. *Teachers and Teaching*, 23(5), 611-630. doi:10.1080/13540602.2016.1219712
- Blikstein, P. (2013). Digital fabrication and “making” in education: The democratization of invention. In J. Walter-Herrmann & C. Büching (Eds.), *Fablab: Of machines, makers and inventors*. Bielefeld, Germany: Transcript Verlag.

- Boyd, R. D. (1989). Facilitating personal transformations in small groups. *Small Group Behavior*, 20(4), 459-474. doi:10.1177/104649648902000406
- Boyd, R. D. (1991). *Personal transformation in small groups: A Jungian perspective*. London: Routledge.
- Brookfield, S. (2015). *The skillful teacher: On technique, trust, and responsiveness in the classroom* (3rd ed.). San Francisco, CA: Jossey-Bass.
- Brooks, E. M., Magee, M. L., & Ryan, M. (2018). Fostering transformative learning, self-reflexivity and medical citizenship through guided tours of disadvantaged neighborhoods. *Medical Education Online*, 23(1), 1537431. doi:10.1080/10872981.2018.1537431
- Brooks, K., & Adams, S. R. (2015). Developing agency for advocacy: Collaborative inquiry-focused school-change projects as transformative learning for practicing teachers. *The New Educator*, 11(4), 292-308. doi:10.1080/1547688x.2015.1087758
- Brown, S. (2009). *Play: How it shapes the brain, opens the imagination, and invigorates the soul*. New York, NY: Penguin Group.
- Burnham, R. (1994). If you don't stop, you don't see anything. *Teachers College Record*, 95(4), 520-525.
- Burton, J. M. (2016). Crossings and displacements: The artist and the teacher, reweaving the future. In D. H. Gitomer, & C. A. Bell. (Eds.), *Handbook of research on teaching*. Washington, D.C.: American Educational Research Association.
- Cabral, M., & Justice, S. (2013). Material learning: Digital 3D with young children. Proceedings from Fablearn 13: Digital Fabrication in Education, Stanford University, October 2013, Palo Alto, CA.
- Cain, B., & Dixon, J. A. (2013). The arts connection. *Journal of Transformative Education*, 11(4), 261-274. doi:10.1177/1541344613514135
- Caruana, V., Woodrow, K., & Pérez, L. (2015). Using the learning activities survey to examine transformative learning experiences in two graduate teacher preparation courses. *Insight: A Journal of Scholarly Teaching*, 10, 25-34.
- Castro, J. C. (2012). Learning and teaching art: Through social media. *Studies in Art Education*, 53(2), 152-169.
- Causey, A. (1998). *Sculpture since 1945*. Oxford University Press.

- Cavanagh, A., Vanstone, M., & Ritz, S. (2019). Problem of problem-based learning: Towards transformative critical pedagogy in medical education. *Perspectives on Medical Education*, 8(1), 38-42. Retrieved from <http://doi.org/10.1007/s40037-018-0489-7>
- Clifford, V., & Montgomery, C. (2014). Transformative learning through internationalization of the curriculum in higher education. *Journal of Transformative Education*, 13(1), 46-64. doi:10.1177/1541344614560909
- Cranton, P. (1992). *Working with adult learners*. Middletown, OH: Wall and Emerson.
- Cranton, P. (1994). *Understanding and promoting transformative learning*. San Francisco, CA: Jossey-Bass.
- Cranton, P. (1996). *Professional development as transformative learning: New Perspectives for teachers of adults*. San Francisco, CA: Jossey-Bass.
- Cranton, P. (2000). Individual differences and transformative learning. In J. Mezirow and Associates (Eds.), *Learning as transformation: Critical perspectives on a theory in progress* (pp. 181-204). San Francisco, CA: Jossey-Bass.
- Cranton, P. (2006). *Understanding and promoting transformative learning: A guide for educators of adults*. San Francisco, CA: Jossey-Bass.
- Creswell, J. W. (2007). *Qualitative inquiry and research design: choosing among five approaches*. Thousand Oaks, CA: SAGE Publications, Inc.
- Creswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five approaches*. Los Angeles, CA: SAGE Publications, Inc.
- Csikszentmihalyi, M. (1990). *Flow: The psychology of optimal experience*. New York, NY: Harper Collins.
- Danto, A. (1992). *Beyond the brillo box*. Berkeley, CA: University of California Press.
- Desyllas, M. C., & Sinclair, A. (2013). Zine-making as a pedagogical tool for transformative learning in social work education. *Social Work Education*, 33(3), 296-316. doi:10.1080/02615479.2013.805194
- Dewey, J. (1934). *Art as experience*. New York, NY: Perigee.
- Dickie, G. (1974). *Art and the aesthetic: An institutional analysis*. New York, NY: Cornell University Press.

- Diduck, A., Sinclair, A. J., Hostetler, G., & Fitzpatrick, P. (2012). Transformative learning theory, public involvement, and natural resource and environmental management. *Journal of Environmental Planning and Management*, 55(10), 1311-1330. doi:10.1080/09640568.2011.645718
- Dirkx, J. M. (1997). Nurturing soul in adult learning. *New Directions for Adult and Continuing Education*, 1997 (74), 79-88. San Francisco, CA: Jossey-Bass.
- Dirkx, J. M. (2001c). Images, transformative learning and the work of the soul. *Adult Learning*, 12(3), 15-16.
- Dirkx, J. M. (2001d). The power of feelings: Emotion, imagination, and the construction of meaning in adult learning. In S. B. Merriam (Ed.), *The new update on adult learning theory: New directions for adult and continuing education* (pp. 63-72). San Francisco, CA: Jossey-Bass.
- Dirkx, J. M., Mezirow, J., & Cranton, P. (2006). Musings and reflections on the meaning, context, and process of transformative learning. *Journal of Transformative Education*, 4(2), 123-139. doi:10.1177/1541344606287503
- Dow, A. W. (1908). Training in the theory and practice of teaching art: Courses: Short courses; and courses in other departments. *Teachers College Record*, 9(3), 47-54. Retrieved from <https://www.tcrecord.org/Content.asp?ContentId=11886>
- Dow, A. W. (1919). Art service in war and peace. *Teachers College Record*, 20(4), 353. Retrieved from <https://www.tcrecord.org/content.asp?contentid=3718>
- Duveskog, D., Friis-Hansen, E., & Taylor, E. W. (2011). Farmer field schools in rural Kenya: A transformative learning experience. *Journal of Development Studies*, 47(10), 1529-1544. doi:10.1080/00220388.2011.561328
- Efland, A. D. (1990). *A history of art education: Intellectual and social currents in teaching in visual arts*. New York, NY: Teachers College Press.
- Eisenberg, M. & Buechley, L. (2008). Pervasive fabrication: Making construction ubiquitous in education. *Journal of Software*, 3(4), 62-68.
- Eisner, E. (2002). *The arts and the creation of mind*. New Haven, CT: Yale University Press.
- Elkins, J. (2001). *Why art cannot be taught*. Champaign, IL: University of Illinois Press.
- Emslie, N. (2016). Transformative learning and ministry formation. *Journal of Adult Theological Education*, 13(1), 48-63.

- Fleischer, B. (2006). Mezirow's theory of transformative learning and Lonergan's method in theology: Resources for adult theological education. *Journal of Adult Theological Education*, 3(2), 147-162. doi:10.1558/jate.2006.3.2.147
- Fletcher, K. A., & Meyer, M. (2016). Coaching model + clinical playbook = transformative learning. *Journal of Professional Nursing*, 32(2), 121-129. doi:10.1016/j.profnurs.2015.09.001
- Forte, K. S., & Blouin, D. (2016). Fostering transformative learning in an online ESL professional development program for K-12 teachers. *The Qualitative Report*, 21(4), 781-797. Retrieved from <http://ezproxy.cul.columbia.edu/login?url=https://search-proquest-com.ezproxy.cul.columbia.edu/docview/1792207651?accountid=10226>
- Franz, G., & Papert, S. (1988). Computer as material: Messing about with time. *Teachers College Record*, 89(3), 408-417.
- Freire, P. (2000). *Pedagogy of the oppressed: 30th anniversary edition* (Vol. Thirtieth anniversary edition). New York, NY: Bloomsbury Academic. Retrieved from <https://ezproxy.cul.columbia.edu/login?url=https%3a%2f%2fsearch.ebscohost.com%2flogin.aspx%3fdirect%3dtrue%26db%3dnlebk%26AN%3d815358%26site%3dehost-live%26scope%3dsite>
- Giles, D., & Alderson, S. (2008). An appreciative inquiry into the transformative learning experiences of students in a family literacy project. *Australian Journal of Adult Learning*, 48(3), 465-478. Retrieved from <http://ezproxy.cul.columbia.edu/login?url=https://search-proquest-com.ezproxy.cul.columbia.edu/docview/89071651?accountid=10226>
- Greene, M. (1995). *Releasing the imagination*. San Francisco, CA: Jossey-Bass.
- Greene, M. (2001). *Variations on a blue guitar: The Lincoln Center Institute Lecture on Aesthetic Education*. New York, NY: Teachers College Press.
- Greene, M. (2005). Teaching in a moment of crisis: The spaces of imagination. *The New Educator*, 1(2), 77-80. doi:10.1080/15476880590934326
- Greenhill, J., Richards, J. N., Mahoney, S., Campbell, N., & Walters, L. (2018). Transformative learning in medical education: Context matters, a South Australian longitudinal study. *Journal of Transformative Education*, 16(1), 58-75.
- Hafeli, M. (2014). *Exploring studio materials*. New York, NY: Oxford University Press.

- Halpin-Healy, C. (2015). Report from the Field: Multi-cultural Dialogue and Transformative Learning in Arts & Minds Programs at The Studio Museum in Harlem. *Museum and Society*, 13(2), 172-188. doi:10.29311/mas.v13i2.325
- Heron, J. (1992). *Feeling and personhood: Psychology in another key*. Newbury Park, CA: SAGE Publications, Inc.
- Hobbs, R. (2014). Teaching about propaganda: An examination of the historical roots of media literacy. *Journal of Media Literacy Education*, 6(2), 56-67. doi:10.23860/jmle-2016-06-02-5
- Howard, G. S. (1980). Response-shift bias a problem in evaluating interventions with pre/post self-reports. *Evaluation Review*, 4(1), 93-106.
- Hunt, C. (2013). *Transformative learning through creative life writing: Exploring the self in the learning process*. London: Routledge.
- James, J. (2007). *Learning to paint as adult transformation* (Order No. 3269082). Available from Dissertations & Theses @ Columbia University; ProQuest Dissertations & Theses Global. (304859365). Retrieved from <http://ezproxy.cul.columbia.edu/login?url=https://search-proquest-com.ezproxy.cul.columbia.edu/docview/304859365?accountid=10226>
- John-Steiner, V. (2006). *Creative collaboration*. New York, NY: Oxford University Press.
- Johnston, L. (2015). *Digital Handmade: Craftsmanship and the new industrial revolution*. London: Thames & Hudson.
- Juarez, L. M. (2014). *Transforming literacy instruction: Exploring pre-service teachers' integration of tablet technology in reading, comprehension, and writing*. Digital dissertation at Texas A&M University-Corpus Christi.
- Jung, C. G. (1965). *Memories, dreams, reflections*. New York, NY: Vintage.
- Kear, T. M. (2013). Transformative learning during nursing education: A model of interconnectivity. *Nurse Education Today*, 33(9), 1083-1087. doi:10.1016/j.nedt.2012.03.016
- Kerton, S., & Sinclair, A. J. (2009). Buying local organic food: A pathway to transformative learning. *Agriculture and Human Values*, 27(4), 401-413. doi:10.1007/s10460-009-9233-6
- Khoo, H. S., & Teo, W. L. (2018). A transformative learning approach to teaching management skills in medical education. *Academic Medicine*, 93(4), 516-517.

- Kim, J., Wong, C., & Lee, Y. (2018). Transformative learning through an online global class project in teacher education. *The Teacher Educator*, 53(2), 190-207. doi:10.1080/08878730.2017.1422577
- Klobučar, N. R. (2015). The role of spirituality in transition to parenthood: Qualitative research using transformative learning theory. *Journal of Religion and Health*, 55(4), 1345-1358. doi:10.1007/s10943-015-0088-4
- Knochel, A. (2017). Tracing dysfunction: A review of dysfunction and decentralization in new media art and education. *Studies in Art Education*, 58(3), 255-257.
- Knochel, A., & Patton, R. M. (2015). If art education then critical digital making: Computational thinking and creative code. *Studies in Art Education*, 57(1), 21-38.
- Kroger, J. (2004). *Identity in adolescence: The balance between self and other* (3rd ed.). New York, NY: Routledge.
- KunstSpektrum. (2011, May 20). Richard Serra - Talk with Charlie Rose (2001). Retrieved January 20, 2019, from <https://www.youtube.com/watch?v=KEvklGKd6uE>
- Kvale, S. (2007). *Doing interviews*. Thousand Oaks, CA: SAGE Publications, Inc.
- Kvale, S., & Brinkmann, S. (2009). *Interviews: Learning the craft of qualitative research interviewing* (2nd Edition). Thousand Oaks, CA: SAGE Publications, Inc.
- Lam, T. C., & Bengo, P. (2003). A comparison of three retrospective self-reporting methods of measuring change in instructional practice. *American Journal of Evaluation*, 24(1), 65-80.
- Lawrence, R. L. (2012). Transformative learning through artistic expression: Getting out of our heads. In E. W. Taylor & P. Cranton (Eds.). *Handbook of transformative learning* (pp. 471-485). San Francisco, CA: Jossey-Bass.
- Lawton, P. H., & La Porte, A. M. (2013). Beyond traditional art education: Transformative lifelong learning in community-based settings with older adults. *Studies in Art Education*, 54(4), 310-320.
- Lee, N. P. (2013). Engaging in the pink elephant in the room: Investigating race and racism through art education. *Studies in Art Education*, 54(2), 141-157.
- Liu, K. (2013). Critical reflection as a framework for transformative learning in teacher education. *Educational Review*, 67(2), 135-157. doi:10.1080/00131911.2013.839546

- Madoff, S. H. (2009). *Art school (propositions for the 21st century)*. Cambridge, MA: MIT Press.
- Mantas, K., & Schwind, J. K. (2014). Fostering Transformative Learning Through Cocreative Artmaking Processes and Emerging Artful Forms. *Journal of Transformative Education*, 12(1), 74-94. doi:10.1177/1541344614541327
- Martinez, S. L., & Stager, G. S. (2013). *Invent to learn: Making, tinkering, and engineering in the classroom*. Manchester, NH: Constructing Modern Knowledge Press.
- Maxwell, J. A. (2013). *Qualitative research design: An interactive approach*. Thousand Oaks, CA: SAGE Publications, Inc.
- McDonald, H., Browne, J., Perruzza, J., Svarc, R., Davis, C., Adams, K., & Palermo, C. (2018). Transformative effects of Aboriginal health placements for medical, nursing, and allied health students: A systematic review. *Nursing & Health Sciences*, 20(2), 154-164. doi:10.1111/nhs.12410
- Meijer, M., Kuijpers, M., Boei, F., Vrieling, E., & Geijssel, F. (2016). Professional development of teacher-educators towards transformative learning. *Professional Development in Education*, 43(5), 819-840. doi:10.1080/19415257.2016.1254107
- Merriam, S. (1998). *Qualitative research and case study applications in education*. San Francisco, CA: Jossey-Bass.
- Merriam, S. (2004). The role of cognitive development in Mezirow's transformational learning theory. *Adult Education Quarterly*, 55(1), 60-68.
- Merriam, S., & Caffarella, R. (1999). *Learning in adulthood*. San Francisco, CA: Jossey-Bass.
- Mezirow, J. (1975). *Education for perspective transformation: Women's reentry programs in community colleges*. New York, NY: Columbia University.
- Mezirow, J. (1990). *Fostering critical reflection in adulthood: A guide to transformative and emancipatory learning*. San Francisco, CA: Jossey-Bass.
- Mezirow, J. (1991). *Transformative dimensions of adult learning*. San Francisco, CA: Jossey-Bass.
- Mezirow, J. (2000). Learning to think like an adult: Core concepts of transformation theory. In J. Mezirow and Associates (Eds.), *Learning as transformation: Critical perspectives on a theory in progress* (pp. 3-33). San Francisco, CA: Jossey-Bass.

- Mezirow, J., & Associates (2000). *Learning as transformation: Critical perspectives on a theory in progress*. New York, NY: Wiley, John & Sons.
- Mongeon, B. (2015). *3D technology in fine art and craft: Exploring 3D printing, scanning, sculpting and milling*. Burlington, MA: Routledge.
- Moore, A., Freer, T., & Samuel, N. (2015). Correctional agriculture as a transformative learning experience: Inmate perspectives from the Marion County Sheriffs Office Inmate Work Farm Program. *Journal of Correctional Education*, 66(3), 16-27. Retrieved from <https://www.jstor.org/stable/26508009>
- Moszynska, A. (2013). *Sculpture now*. New York, NY: Thames & Hudson.
- Motion, J., & Burgess, L. (2013). Transformative learning approaches for public relations pedagogy. *Higher Education Research & Development*, 33(3), 523-533. doi:10.1080/07294360.2013.832163
- Moyer, J. M., & Sinclair, A. J. (2015). Stoking the dialogue on the domains of transformative learning theory. *Adult Education Quarterly*, 66(1), 39-56. doi:10.1177/0741713615610625
- Munger, M. H., Murray, M., Richardson, M., & Claussen, A. (2018). Transformative learning in teacher education. *International Journal of Adult Vocational Education and Technology*, 9(4), 54-64. doi:10.4018/ijavet.2018100105
- Nangah, M. M. (2015). *Disrupting the discourse of the other: A transformative learning study of African art* (Order No. 10034355). Available from ProQuest Dissertations & Theses Global. (1775393636). Retrieved from <http://ezproxy.cul.columbia.edu/login?url=https://search-proquest-com.ezproxy.cul.columbia.edu/docview/1775393636?accountid=10226>
- Nichols, M., & Dewerse, R. (2010). Evaluating transformative learning in theological education: A multi-faceted approach. *Journal of Adult Theological Education*, 7(1), 44-59. doi:10.1558/jate.v7i1.44
- Nicolaides, A., & Mccallum, D. C. (2013). Inquiry in action for leadership in turbulent times. *Journal of Transformative Education*, 11(4), 246-260. doi:10.1177/1541344614540333
- Panton, R. (2016). Transformative learning and the road to maternal leadership. *New Directions for Teaching and Learning*, 2016(147), 19-25. doi:10.1002/tl.20195
- Papert, S. (1980a). Constructionism vs. Instructionism. Retrieved from http://www.papert.org/articles/const_inst/

- Papert, S. (1980b). *Mindstorms: Children, computers, and powerful ideas*. New York, NY: Basic Books.
- Papert, S. (2001). *Project-based learning*. Retrieved from <http://www.edutopia.org/seymourpapertprojectbasedearning>
- Parker, B., & Myrick, F. (2010). Transformative learning as a context for human patient simulation. *Journal of Nursing Education, 49*(6), 326-32. doi:<http://dx.doi.org.ezproxy.cul.columbia.edu/10.3928/01484834-20100224-02>
- Patton, R. M. (2014). Games that art educators play: Games in the historical and cultural context of art education. *Studies in Art Education, 55*(3), 241-252.
- Pepin, J., Goudreau, J., Lavoie, P., Bélisle, M., Garneau, A. B., Boyer, L., Lechasseur, K. (2017). A nursing education research framework for transformative learning and interdependence of academia and practice. *Nurse Education Today, 52*, 50-52. doi:10.1016/j.nedt.2017.02.001
- Piaget, J. (1951). *Play, dreams and imitation in childhood*. Oxon, OX (UK): Taylor & Francis Group.
- Pratt, C. C., McGuigan, W. M., & Katzev, A. R. (2000). Measuring program outcomes: Using retrospective pretest methodology. *American Journal of Evaluation, 21*(3), 341-349.
- Renshaw, I., Chow, J. Y., Davids, K., & Hammond, J. (2010). A constraints-led perspective to understanding skill acquisition and game play: A basis for integration of motor learning theory and physical education praxis? *Physical Education & Sport Pedagogy, 15*(2), 117-137. doi:10.1080/17408980902791586
- Resnick, M. (2002). Rethinking learning in the digital age. In Geoffrey S. Kirkman, Peter K. Cornelius, Jeffrey D. Sachs, & Klaus Schwab (Eds.), *The global information technology report: Readiness for the networked world*. New York, NY: Oxford University Press.
- Resnick, M. (2006). Computer as paintbrush: Technology, play, and the creative society. In D. Singer, Golikoff, R., and Hirsh-Pasek, K. (Eds.), *Play = Learning: How Play Motivates and Enhances Children's Cognitive and Social-Emotional Growth*. New York, NY: Oxford University Press.
- Rockwell, S. K., & Kohn, H. (1989). Post-then-pre evaluation: Measuring behavior change more accurately. *Journal of Extension, 27*(2). Retrieved from <https://www.joe.org/joe/1989summer/a5.php>

- Salazar, S. M. (2013). Laying a foundation for artmaking in the 21st century: A description and some dilemmas. *Studies in Art Education*, 54(3), 246-259. doi:10.1080/00393541.2013.11518897
- Sammut, K. (2014). Transformative learning theory and coaching: Application in practice. *International Journal of Evidence Based Coaching and Mentoring, Special Issue*, 8, 39-53.
- Schalkwyk, S. C., Hafler, J., Brewer, T. F., Maley, M. A., Margolis, C., Mcnamee, L., & Davies, D. (2019). Transformative learning as pedagogy for the health professions: A scoping review. *Medical Education*. doi:10.1111/medu.13804
- Siegesmund, R. (1998). Why do we teach art today? Conceptions of art education and their justification. *Studies in Art Education*, 39(3), 197-214.
- Simpson, S. (2007). Discovering self and purpose in the arts: The role of imagination and creativity in transformative learning and adult education's responsibility in facilitating this learning for individual and social change. *Adult Education Research Conference*. Retrieved from <https://newprairiepress.org/aerc/2007/papers/96/>
- Snepvangers, K., & Bannon, R. (2016). Transformative learning: Ecologies of practice in art and design education. *Australian Art Education*, 37(1), 38-56.
- Spitz, E. H. (2009). Art as play?: The digital and the surreal. *American Imago*, 66(1), 111-118. doi:10.1353/aim.0.0042
- Steinweg, M. (2009). Nine theses on art. *A Journal of Ideas, Contexts, and Methods*, 3(1), 1-12.
- Steyn, G. M. (2017). Transformative learning through teacher collaboration: A case study. *Koers*, 82(1), 1-15. doi:http://dx.doi.org.ezproxy.cul.columbia.edu/10.19108/KOERS.82.1.2220
- Stiles, K., & Selz, P. (2012). *Theories and documents of contemporary art: A sourcebook of artists' writings*. Berkley, CA: University of California Press.
- Sweeny, R. (2010). *Inter/actions/inter/sections: Art education in a digital visual culture*. Reston, VA: National Art Education Association.
- Sweeny, R. (2013). Complex digital visual system. *Studies in Art Education*, 54(3), 216-231.
- Sweeny, R. (2015). Ten ways of making. *Art Education*, 66(2), 4-5.

- Tarnoczi, T. (2010). Transformative learning and adaptation to climate change in the Canadian Prairie agro-ecosystem. *Mitigation and Adaptation Strategies for Global Change*, 16(4), 387-406. doi:10.1007/s11027-010-9265-7
- Taylor, E. W. (1994). Intercultural competency: A transformative learning process. *Adult Education Quarterly*, 44, 154-174.
- Taylor, E. W. (1998). The theory and practice of transformative learning: A critical review. Columbus, OH: Ohio State University. (ERIC Document Reproduction Service No. RR93002001).
- Taylor, E. W. (2012). *The handbook of transformative learning: Theory, research, and practice*. San Francisco, CA: Jossey-Bass.
- Tisdell, E. J. (2008). Critical media literacy and transformative learning. *Journal of Transformative Education*, 6(1), 48-67. doi:10.1177/1541344608318970
- Tolliver, D. E. (2016). Spirit-ness at work: Connections between workplace spirituality, transformative learning, and social justice. *New Directions for Adult and Continuing Education*, 2016(152), 73-84. doi:10.1002/ace.20214
- Unluer, S. (2012). Being an insider researcher while conducting case study research. *The Qualitative Report*, 17(29), 1-14. Retrieved from <http://ezproxy.cul.columbia.edu/login?url=https://search-proquest-com.ezproxy.cul.columbia.edu/docview/1504065886?accountid=10226>
- Wallace, W. S. (2008). *Portraits: Discovering art as a transformative learning process at mid-life* (Order No. 3302675). Available from ProQuest Dissertations & Theses Global. (304811241). Retrieved from <http://ezproxy.cul.columbia.edu/login?url=https://search-proquest-com.ezproxy.cul.columbia.edu/docview/304811241?accountid=10226>
- Werschkul, H. (2017). *Experiences of art: Reflections on masterpieces*. Gordon Goff Publisher.
- Wilhelmson, L., Åberg, M. M., Backström, T., & Olsson, B. K. (2015). Enabling transformative learning in the workplace. *Journal of Transformative Education*, 13(3), 219-238. doi:10.1177/1541344615574599
- Wolf, D. (1988). Artistic learning: What and where is it? *Journal of Aesthetic Education*, 22(1), 143-155.
- Wright, R. R., Coryell, J. E., Martinez, M., Harmon, J., Henkin, R., & Keehn, S. (2010). Rhyme, response, and reflection: An investigation of the possibilities for critical transformative learning through adult poetry reading. *Journal of Transformative Education*, 8(2), 103-123. doi:10.1177/1541344611406737

- Yin, R. K. (2009). *Case study research: Design and methods (4th Ed.)*. Thousand Oaks, CA: SAGE Publications, Inc.
- Yorks, L., & Kasl, E. (2006). I know more than I can say: A taxonomy for using expressive ways of knowing to foster transformative learning. *Journal of Transformative Education*, 4, 43-64.
- Yuan, P., Leach, N., & Menges, A. (2018). *Digital fabrication*. Tongji University Press.
- Zilber, E. (2015). *Crafted: Objects in flux*. MFA Publications.

Appendix A

Informed Consent

Exploration of Adults' Hands-on Artmaking

Principal Investigator: Sohee Koo, adjunct sculpture instructor & doctoral candidate at Teachers College, Columbia University (sk3820@tc.columbia.edu, 347-449-0533).

DESCRIPTION OF THE RESEARCH: You are being invited to participate in this research called "*Exploration of Adults' Hands-on Artmaking*." This study will explore your thoughts and reflections on hands-on artmaking that occurred during *A&HA 4093: Sculpture as Making*. There are two separate kinds of data to be collected for this study: first, you will be asked to participate in a one-on-one, in-depth semi-structured interview(s). Second, you will be asked to respond to the survey to reflect before and after participating in the course. Upon your agreement, class artifacts and written assignments including demographic survey, pre-survey on views on art, documentation of three art projects (2 mini and 1 final project) as well as art projects from in-class making sessions, 13 weekly journal responses, 1 reflective essay, and a final presentation file along with photographs and video clips taken during the class will be used as a secondary data to analyze your individual transformative learning. All of these data will be used with your advance permission.

RISK AND BENEFITS: This is a minimal risk study, which means the harms or discomforts that you may experience are not greater than you would ordinarily encounter in daily life while taking routine physical or psychological examinations or tests. However, there are some risks to consider. Some subjects might feel some discomfort talking about aspects of their hands-on artmaking experiences towards which they feel less than entirely confident—for instance, if a subject is uncomfortable using digital technologies, he or she might feel frustrated or slightly anxious talking about their experience using those during the course. However, you do not have to answer any questions or divulge anything you don't want to talk about. You can stop participating in the study at any time without penalty. There is no direct benefit to you for participating in this study. Participation may benefit the field of art, art education, adult, higher education to better understand the aspects of hands-on artmaking and transformative learning.

PAYMENTS: There will be no payment for participation in the study.

DATA STORAGE TO PROTECT CONFIDENTIALITY: Subject confidentiality will be strictly preserved through the use of pseudonyms and color-coding of the interview and other research data. All data will be kept in a locked file cabinet in my home office, which is accessible only to me. Any electronic and digital documentation such as photographs, video clips, coded transcripts, and class artifacts will be stored on the researcher's password-protected laptop and external hard drive.

INVOLVEMENT: Participation is voluntary and subjects may refuse to participate or withdraw from the study at any time with no negative or positive consequences in terms of student grades, class standing or other entitlements. Approximately four to ten subjects will participate in this study. If you decide to participate, your interview will be audio-recorded by the principal investigator for approximately 60 minutes.

After the audio recording is transcribed, the audio recording will be deleted. If you do not wish to be audio-recorded, you will not be able to participate. A follow-up interview may take place upon your agreement, and if necessary. Additionally, you will be asked to fill out a retrospective pre-then-post design survey, which may take approximately 20 minutes. The study is over when you have completed the interview and filled out the survey.

HOW WILL RESULTS BE USED: The results of the study will be used for my dissertation in the Program in Art & Art Education at Teachers College. Research reports might be given at educational conferences, presented at meetings, published in educational journals, and used for other educational purposes. Your name or any identifying information about you will not be published.

CONSENT FOR AUDIO RECORDING OF INTERVIEW(S): Audio recording is part of this research study. You can choose whether to give permission to be recorded. If you decide that you don't wish to be recorded, you will not be able to participate in this research study.

_____ I give my consent to be recorded _____
Signature

_____ I **do not** consent to be recorded _____
Signature

RELEASE OF PHOTOGRAPHS AND VIDEO RECORDINGS: Photographs and video recordings are part of this research study. You can choose whether to give permission to be released. If you decide that you don't wish to be recorded, you will not be able to participate in this study. The photographs and video recordings will be viewed and analyzed for various hand movement and material exploration and uses since the study focuses on "hands-on" artmaking. *No* faces will be visible in photographs and no faces and *no* audio are recorded in the video. ** Please note that these photographs and video clips were previously taken by the primary investigator during the normal class conduct and have already been shared with you as part of regular course activities.

_____ I give my consent to release my recorded photographs and video recordings _____
Signature

_____ I **do not** release my recorded photographs and video recordings _____
Signature

WHO MAY VIEW MY PARTICIPATION IN THIS STUDY:

___ I consent to allow written, video, and photographed materials to be viewed at an educational setting or at a conference outside of Teachers College and for publications _____

Signature

___ I **do not** consent to allow written, video, and photographed materials to be viewed outside of Teachers College, Columbia University _____

Signature

OPTIONAL CONSENT FOR FUTURE CONTACT:

The investigator may wish to contact you in the future. Please initial the appropriate statements to indicate whether or not you give permission for future contact.

I give permission to be contacted in the future for research purposes:

Yes _____ No _____
Initial Initial

I give permission to be contacted in the future for information relating to this study:

Yes _____ No _____
Initial Initial

PARTICIPANT'S RIGHTS

- I have read and discussed the informed consent with the researcher. I have had ample opportunity to ask questions about the purposes, procedures, risks and benefits regarding this research study.
- I understand that my participation is voluntary. I may refuse to participate or withdraw participation at any time without penalty to student status or grades; services that I would otherwise receive.
- The researcher may withdraw me from the research at his or her professional discretion under special circumstances.
- If, during the course of the study, significant new information that has been developed becomes available which may relate to my willingness to continue my participation, the investigator will provide this information to me.
- Any information derived from the research study that personally identifies me will not be voluntarily released or disclosed without my separate consent, except as specifically required by law.

- I should receive a copy of the Informed Consent document along with this participant's rights.
- If at any time, I have any questions regarding the research or my participation, I can contact the primary investigator, who will answer my questions. The investigator's phone number is 347-449-0533 (mobile), 212-678-4189 (Thingspace), and email is sk3820@tc.columbia.edu.
- If at any time I have comments, or concerns regarding the conduct of the research or questions about my rights as a research subject, I should contact the Teachers College, Columbia University Institutional Review Board (IRB). The phone number for the IRB is (212) 678-4105, and the email is IRB@tc.edu. OR, I can write to the IRB at Teachers College, Columbia University, 525 West 120th street, New York, NY, 10027, Box 151.

My signature means that I agree to participate in this study

Print name: _____ **Date:** _____

Signature: _____

Appendix B

Photo Release Form

Photograph and Video Documentation

Throughout the semester, students will engage as a normal part of instruction with video recording of their hands with actions such as touching, grabbing, sanding, rubbing, mashing, playing, and creating with materials and tools as well as the sketches and final display of their art projects. There are no other ways to adequately capture some of the hands-on actions without photographing and videotaping. *No* faces will be visible in photographs and no faces and *no* audio are recorded in the video. The photographs and video recordings will be viewed and analyzed for various hand movement and material exploration in sculpture class. Please refer to below example photographs and screenshots from videos.



Example Screenshots From Videos During Group Critique and Making Sessions

Consent and Release for Photographing & Videotaping [during the normal class conduct]

By entering the premise, I consent to videotaping and photography and their release, exhibition, or reproduction to be used for inclusion on websites (e.g., Thingspace website), exhibition wall, research, or any other purpose by Teachers College (TC).

I was informed from the instructor (Sohee Koo) of *A&HA: 4093 Sculpture as Making* that all photographs and video footages will be shared with myself and fellow classmates via Google Drive for class assignment purposes only and personal records (e.g., inserting some of the photographs and video recordings for my final presentation power points).

I agree that the instructor or Thingspace staff may use such photographs and/or video recordings of me without my name and for any lawful purpose, including for example such purposes as publicity, illustration, advertising, and other web content.

I have read and understand the above:

Printed Name: _____

Address: _____

Date: _____

Signature: _____

Appendix C

Working with Own Students in Research

TEACHERS COLLEGE
COLUMBIA UNIVERSITY

OFFICE OF SPONSORED PROGRAMS
 BOX 151

Institutional Review Board
Using Your Own Students as Research Participants

INSTRUCTIONS: Please include this sheet with your application if you are using your own students as research participants. To determine if your proposal to use your own students meets the requirements of an Exempt study under Category 4, please answer the questions below, in the exact order presented:

QUESTION	YOUR RESPONSE (clearly highlight your response)
<p>1. Is there any other way to carry-out the project?</p>	<p style="text-align: center;">YES NO</p> <p>*If no, continue below.</p> <p>*If yes, please reconsider your proposal prior to submission.</p>
<p>2. Do the benefits of the study outweigh the risks of coercion?</p>	<p style="text-align: center;">YES NO</p> <p>*If yes, continue below.</p> <p>*If no, please reconsider your proposal prior to submission.</p>
<p>3. Does an intervention occur?</p>	<p style="text-align: center;">YES</p> <p>NO</p>

	<p><i>To further determine the answer to this question, please also respond to the following:</i></p> <p>Are you free to assign the proposed activity/intervention in your role as an instructor?</p> <p>YES</p> <p>NO</p> <p>Can the entire class engage in the proposed activity/intervention, even if you're only analyzing a subset of students?</p> <p>YES NO</p> <p>** Please note that I will only be recruiting participants AFTER the class ends to avoid any power imbalance.</p> <p>Can the data be de-identified in any report or publication?</p> <p>YES NO</p> <p>Does the activity/intervention require participation outside the classroom or outside normal class hours (except for homework)?</p> <p>YES NO</p>
<p>4. Did your principal sign a letter stating s/he has read your proposal and agrees with your assessment done above?</p> <p>** I'm teaching at TC, and there is not principal involved in the program.</p>	<p>YES</p> <p>NO</p> <p>*If yes, your proposal is considered an Exempt study under category 4.</p> <p>*If no, this is an intervention study that needs full board approval.</p>

Appendix D

Demographic Survey

1. Which of the following best describes you at Teachers College?
(Circle all your answer)

- a) Undergraduate student
- b) Graduate student
- c) Continuing education student
- d) Other (please specify): _____
- e) I wish not to answer

2. Please WRITE OUT YOUR major and degree of your study.

3. What is your age? (Please circle your answer)

- a) 21-25
- b) 26-30
- c) 31-35
- d) 36-40
- e) 41-45
- f) 46-50
- g) Other (please specify): _____
- h) I wish not to answer

4. Which of the following best describes your ethnicity? (Circle all your
You may choose more than one answer)

- a) American Indian or Alaska Native
- b) Asian
- c) Black or African American
- d) Hispanic or Latino
- e) Native Hawaiian or Other Pacific Islander
- f) White
- g) Other (please specify): _____
- h) I wish not to answer

5. Do you have any prior experience in the following categories?
 (Please circle your answer)
- a) Sculpture or Mixed Media
 - b) Painting
 - c) Printmaking
 - d) Ceramics
 - e) Photography
 - f) Film/Video
 - g) Digital fabrication
 - h) New media
 - i) Interdisciplinary (please specify: _____)
 - j) Other (please specify: _____)

6. Which of the following materials did you use in the past? (Note: please circle all the materials that you had *any* experience with; regarding the items in parenthesis, circle the specific ones).

Paints (acrylic, oil, tempera, spray paint)	Clay (water based, oil based)	Plaster	Alginate	Resin	Wax
Liquid plastic	Liquid rubber/silicone	Cardboard	Foam board	Plexiglas, cast acrylics, PETG sheets	Paper (Bristol, construction, vellum)
Wood	Metal (steel, aluminum, chicken wire, wire mesh)	Fabric, leather, yarn	Various found objects	Electronics (LEDs, motors, Arduino, sensor)	String, fishing line

7. If you used materials not listed above, WRITE OUT the materials below.

8. Did you have experience with any of the following tools? (Please circle all that apply. If possible, please circle the specific tool within the parentheses).

- a) Woodworking tools (a band saw, a miter or chop saw, sander, drill press, planner)
- b) Hand power tools (a electronic drill, grinder, hand sander, router, rotary tool (e.g. Dremel),
- c) Metalworking tools (an arc welder, mig welder, metal chop saw, metal band saw, metal grinder)
- d) Mold making & casting tools
- e) Traditional arts and craft tools (scissor, glue, glue gun, construction paper, etc.)
- f) Digital fabrication tools (a laser cutter, a 3D printer, a digital embroidery machine)
- g) New Media tools (electronics, soldering tools, LEDs, motors, etc.)
- h) Software (Adobe suite—illustrator, photoshop, etc., 3D design software)
- i) Photography and video tools (camera, camcorder, microphone)
- j) Other (please specify): _____

9. Please circle the category that best describes you.

- a) I have no knowledge of contemporary art
- b) I have some knowledge of contemporary art
- c) I have quite a bit of knowledge of contemporary art
- d) I am an expert in contemporary art
- e) Other (please specify): _____

10. Why did you decide to take this course? (PLEASE WRITE OUT)

Appendix E

Art Survey

1. Please WRITE OUT the last art class you took. (e.g.; drawing, high school)

2. In 21st century, art and artmaking is sometimes identified as an ambiguous and interdisciplinary matter. Think about each of the contents below and circle all that applies to you.

(1) I see myself as an artist	Strongly disagree	Disagree	Do not know; neither agree nor disagree	Agree	Strongly agree
-------------------------------	-------------------	----------	---	-------	----------------

(2) I am pretty good at making or creating things with my hands	Strongly disagree	Disagree	Do not know; neither agree nor disagree	Agree	Strongly agree
---	-------------------	----------	---	-------	----------------

(3) I tend to use <i>all</i> of my senses (sound, taste, touch, sight, feel, smell) when making or creating	Strongly disagree	Disagree	Do not know; neither agree nor disagree	Agree	Strongly agree
---	-------------------	----------	---	-------	----------------

(4) I am afraid of making things with my hands	Strongly disagree	Disagree	Do not know; neither agree nor disagree	Agree	Strongly agree
--	-------------------	----------	--	-------	----------------

(5) I generally feel comfortable with project(s) with structured prompts	Strongly disagree	Disagree	Do not know; neither agree nor disagree	Agree	Strongly agree
--	-------------------	----------	--	-------	----------------

(6) I generally feel comfortable with open-ended projects	Strongly disagree	Disagree	Do not know; neither agree nor disagree	Agree	Strongly agree
---	-------------------	----------	--	-------	----------------

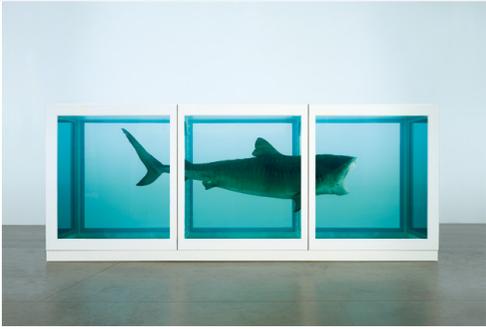
3. What do you think artmaking is? Do not worry if you never heard this term before. I am interested in your first impression or best guess (Please WRITE OUT your answer).

6. In your opinion, what is art? (Please WRITE OUT your answer)

7. Why would you make art? What does making art mean to you?

8. For each images below, (a) please circle YES or NO if it counts as art, and (b) WRITE OUT briefly why you do or do not think it as art.

Images	Do you think it counts as art? (Please circle your answer)	Why or Why not? (Please WRITE OUT your answer)
	<p>YES/ NO</p>	
	<p>YES/ NO</p>	

	YES/ NO	
	YES/ NO	
	YES/ NO	
	YES/ NO	

Strongly disagree	Disagree	Agree	Strongly agree	I felt comfortable sharing ideas and thoughts about my ideas	Strongly disagree	Disagree	Agree	Strongly agree

BEFORE taking <i>A&HA4093</i>				I felt comfortable making choices when there was no prompt in art projects	AFTER taking <i>A&HA 4093</i>			
Strongly disagree	Disagree	Agree	Strongly agree		Strongly disagree	Disagree	Agree	Strongly agree

* Please WRITE OUT your responses.

What did you expect to learn from <i>A&HA 4093</i> ? (BEFORE taking the course)	Were your expectations met? (AFTER taking the course)

BEFORE taking the class, how did you hope <i>A&HA 4093</i> would impact you personally?	AFTER having taken the class, in retrospect, do you think <i>A&HA 4093</i> impacted you personally?

BEFORE taking the class, how did you hope <i>A&HA 4093</i> would impact you professionally?	AFTER having taken the class, in retrospect, do you think <i>A&HA 4093</i> impacted you personally?

BEFORE taking <i>A&HA 4093</i> , what was your conception or definition of art?	AFTER taking <i>A&HA 4093</i> , what is your conception or definition of art now?

BEFORE taking <i>A&HA 4093</i> , what did making art mean to you?	AFTER taking <i>A&HA 4093</i> , what does making art mean to you?

Appendix G

Interview Questions

Objectives	Questions
Welcome text	<p>Primary Investigator (Interviewer): Thanks so much for agreeing to talk with me today. As I mentioned when we set up the interview, I am conducting research on adults' learning experience in an art class. I'll be asking you about your experience before and after <i>A&HA 4093: Sculpture as Making</i>, but also any reflections or thoughts leading up to this present moment. Please let me know if you have any questions or concerns about the research, interview, or informed consent forms that I've previously shared with you. As I mentioned in the consent form, I'll be audio recording this interview so that I can return to your responses later. I'm most interested to hear and learn about you and your experience, so there are no right or wrong answers. Please feel free to pause the interview if you need a break. Do you have any questions before we begin?</p>
1. Introduction	<ul style="list-style-type: none"> * Could you tell me about your current program and degree at Teachers College? * Reflecting back, why did you decide to take the sculpture class? * Did you have any expectations for the course? If so, what were they? * What did you hope to learn from the class?
2. Regarding identity as an artist and learner	<ul style="list-style-type: none"> * If at all, how did your understanding of yourself as a learner change over time, from the beginning of the course till the end of the course? * Have there been any additional changes in your self-perception since the end of the course? * Did you consider yourself or identify as an artist at the beginning of the course? <ul style="list-style-type: none"> → (If no): Why didn't you think of yourself as an artist back then, and did you think of yourself as an artist at the end of the semester? → (If yes): Why did you think of yourself as an artist at the beginning of the course? * Did you consider yourself or identify as an artist at the end of the course? <ul style="list-style-type: none"> → (If no): Why do you think that the events and experiences you had in the course did not change the way you think of yourself in this respect? → (If yes): What events or experiences, either in or out of class, influenced this change? * Do you think of yourself as an artist now? <ul style="list-style-type: none"> → (If no): What makes you say that? → (If yes): What makes you say that?
3. Regarding the artmaking process	<ul style="list-style-type: none"> * What kind of artmaking did you expect to do in this course at the beginning of the semester? * What kind of artmaking did you end up doing throughout the course? * Did you have an approach to artmaking at the beginning of the course? <ul style="list-style-type: none"> → (If no): Why do you think you didn't have a conception of this idea? → (If yes): What was your understanding of this idea? * Did you have your own approaches to artmaking at the end of the course? <ul style="list-style-type: none"> → (If no): Why do you think you didn't have a conception of this idea at the end of the course?

	<p>→ (If yes): What was your understanding of this idea at the end of the semester?</p> <p>* Would you say there has been a change in your thoughts about artmaking process as a result of the course?</p> <p>→ (If no): Why do you think that you see art-making in the same way before and after the course?</p> <p>→ (If yes): How would you describe these changes? What events or experiences, either in or out of class, influenced this change?</p> <p>* If at all, has there been any change in your understanding of art-making since the course ended? Why or why not?</p>
4. Perspectives on art itself	<p>* Reflecting back, what were your initial thoughts about art before taking the course?</p> <p>* Did you think about art a lot before the course? Why or why not?</p> <p>* What were your thoughts or views on art at the end of the course? Were they different from your thoughts or views on art before the course?</p> <p>→ (If no): Why do you think your thoughts or views on art didn't change throughout the course?</p> <p>→ (If yes): What events or experiences, either in or out of class, influenced this change?</p> <p>* Did you think a lot about art at the end of the course? Why or why not?</p> <p>* What are your thoughts about or views on art now? Have they changed since the end of the course?</p> <p>→ (If no): Why do you think your thoughts or views on art didn't change after the course?</p> <p>→ (If yes): What events or experiences influenced this change, from after the course up until now?</p> <p>* Do you think a lot about art now? Why or why not?</p>
5. Personal and professional impact	<p>* Overall, if at all, how do you think <i>A&HA 4093: Sculpture as Making</i> impacted you personally?</p> <p>* Have you found yourself applying anything you learned in the course to your personal life?</p> <p>* Overall, if at all, how do you think <i>A&HA 4093: Sculpture as Making</i> impacted you professionally?</p> <p>* Have you found yourself applying anything you learned in the course to your professional life?</p> <p>* Is there any kind of art-making that you have continued doing, or would like to continue doing?</p> <p>* Have you become more or less interested in art education as a result of the course?</p>
6. Going forward & conclusion	<p>* If you had to describe your overall experience of the course, how would you describe it?</p>