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Drawing as Language

A thesis submitted in partial fulfillment of the requirements for the degree of Master of Art
Education at Virginia Commonwealth University.

by

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DRAWING AS LANGUAGE

By Rebecca Whitson, MAE

A thesis submitted in partial fulfillment of the requirements for the degree of Masters of Art Education at Virginia Commonwealth University.

Virginia Commonwealth University, 2019. Major Director: Dr. Sara Wilson McKay, Chair and Associate Professor, Department of Art Education.

All too often, the “I can’t draw” sentiment is believed by both the frustrated adolescent and adult alike. This is especially evident within the school environment. This paper aims to discuss how visual art --specifically drawing-- is structured, formed and expressed as a type of language, similar to a verbal, written, or physical one. This may give hope to even the most reluctant drawer that they *can* learn how to draw, opening another means of communication. An individual attains fluency when they are adept at drawing through the use of expression, technical, and observational skills, through practice and motivation, and through instruction. Also in this paper, I will discuss my findings from classroom action research demonstrating how adolescents and adults became more fluent.

Keywords: art, drawing, language, expression, skill, visual, vocabulary, memory, fluency, U-Curve, instruction, education, action research, naturalism

Vita

Rebecca Bethany Whitson was born on February 8th, 1981 in Waltham, Massachusetts and is an American citizen. She graduated from Reading Memorial High School, Reading, MA in 1999. She received her Bachelor of Fine Arts in Art Education from the University of Massachusetts, Amherst, in 2003. She subsequently taught Middle School Art in Winchendon, MA for two years. She presently teaches High School Art at King William High School in King William, Virginia, and has for the last fourteen years. She received her Master of Art Education from the Virginia Commonwealth University in Richmond in 2019.

Chapter 1

Introduction

The technical aspect of naturalistic drawing often sets artists apart as “talented” others. Seldom acknowledged are the skills and the practice that produced those results. In this paper, I will examine the reasons why some people believe drawing naturalistically is beyond their ability, and discuss how anyone, with motivation, can learn how to draw. The process of drawing will be explained through discussing the structure of drawing as a type of language that can be learned, the development of fluency in drawing, and outlining studies that chart results from exposure to drawing instruction, or lack thereof. I follow up the literature review to include my own research where I collect data from adolescents and adults through action research that demonstrates development of drawing as an artistic language.

Background to the Problem

On one Friday, every April in my school, the art teachers from the county gather together to hang student work for the local arts festival. It is a frantic scene: these teachers, who rarely see each other the rest of the year, exchange bits of conversation that bounce from pleasantries, current classroom events, lesson plans, anecdotes, and advice, all the while deftly wielding glue guns with their masking tape-stacked arms holding several artworks in one hand while atop ladders or chairs. They must move quickly as the show is the next day, and with each teacher responsible for organizing, displaying, and hanging often over two hundred pieces of work each within a few short hours, multitasking is key. Up until this point, these artworks have been carefully matted, labeled, and stored by the art teachers, waiting for this moment. There is a buzz of excitement in the air where selected students attend to these teachers’ needs, whirring back and forth like bees to my hive of a classroom, gathering adhesives, display materials, or a

variety of things that the teachers will inevitably forget to have brought from their neighboring schools. And then, at last, it is finished. The school is transformed from its barren off-white walls to a thing of multi-colored, intricate beauty. The exhausted teachers return the next day to greet crowds of parents that come to see what their children have been doing all year. Amid parent-teacher introductions and the excited exclamations of proud student-artists, it's inevitable to hear, "Wow, what talented kids!" and, "I wish I could draw like that." I smile and politely thank parents for the compliments, but gently remind them that it is the skills that they learn, their mistakes, and their art-making process that got them here. I've since reflected on these conversations multiple times, and they are not isolated to doting parents. Administrators, other teachers, and students have remarked to me that they "can't draw," usually in reference to drawing realistically. Where did these feelings of inadequacy come from? Why do so many people feel this way? This led me to investigate the root of this problem --how do people learn how to become better drawers?

Theoretical Framework

This thesis was born from wanting to collect evidence that adolescent students and adults can improve their drawing skills, which are widely believed to be fixed by the time they reach adolescence (Gardner & Winner, 1982). The underlying literature review focuses on understanding the development of drawing and why some people may feel intimidated to draw from adolescence to adulthood.

I will be approaching this research study from a constructivist point of view. Constructivism complements this action research project in that it is "concerned with understanding a phenomenon" (Buffington & McKay, 2013, p. 28) and is constructed to search for social truth. By utilizing action research, participants are consulted in the study, and research

results may be fluid and dependent on earlier findings. In the classroom, constructivist researchers view students as “active makers of knowledge, not just passive receptacles for fixed knowledge” (Buffington & McKay, 2013, p. 28). By working from a constructivist paradigm, I use not just the visual product as data, but also rely on the participants’ art-making process and the connections they make to inform the research and build the outcomes of my inquiry with my participants.

Definitions of key terms. In my literature review and study, I use several key terms. I define *talent* as a natural born gift or aptitude that requires little struggle in demonstrating, in this case, drawing. Very few of my students are talented, and those who are, still need practice. According to Milbrath (1998), talented drawers are “more accelerated in their depiction of object properties and spatial relationships” and that “artistic talent only develops when children actively focus their attention on their perceptions, visual memories, or drawing production” (p. 9).

I define drawing *skill* as a learned behavior that allows a person to improve their ability, whether it pertains to hand-eye coordination, observational drawing, proportion, shading, expression, or naturalism in drawing. Response inhibition, a working memory, fine motor control, and an understanding of symbolic representation are all vital in the creation of drawing skill (Simpson, Al Ruwaili, Jolley, Leonard, Geeraert, & Riggs, 2017). Symbolic representations ...encode a relation between a product of the mind (e.g., the category |dog|) and something in the world (a physical dog). Given that effective inhibition is associated with understanding these relations, it may also underpin the development of “representational” or figurative drawing. In a figurative drawing, the picture (a product of the mind) is visually similar to the subject it depicts in the world. Drawing a figurative picture requires an understanding of this relation (drawing–subject) (Simpson, et al. 2017, p. 2).

One of the skills I introduce is called *emulation*, or using a visual reference to reproduce a piece of art. I use this term instead of copying because this term could be confused with tracing, or given less importance as a tool than original thinking. Using the term *emulation* instead is meant “to signal the shift away from the traditional, narrow investigation of ‘mechanical copying’ as a passive pursuit toward a more broadly conceived analysis of artistic agency couched in terms of retrospection and creative response” (Gazda, 2002, p. 16).

I use the term *naturalism* as a style of representation based on the accurate depiction of detail from the natural world, with the least amount of distortion or interpretation (Collins, 2008). *Naturalism* in drawing is the true-to-life portrayal of visual appearances, physical characteristics, shapes, colors, forms, textures, lighting, shade, shadow, proportion, balance, and scale (Mittman, n.d.). *Symbolic images* are simplified images that stand for, or represent, a realistic object or idea, and are often the foundational structures of learning how to draw (Cohn, 2012). A final important term is *fluency*. When a person is fluent in a verbal language, they are able to speak effortlessly and have the ability to articulate themselves easily. In regards to drawing, I use the word *fluency* to describe the degree to which a person has practiced drawing enough to become proficient, adept in expressing themselves naturalistically.

Statement of the Problem and Research Questions

All languages have rules of construction and nuance that require practice to become fluent. Drawing fluently is no different, and there are essential skills and factors that contribute to this fluency. In Project Zero’s study conducted at Harvard, Gardner and Winner (1982) found adolescents often lose the ability to further their drawing skills due to such factors as lack of instruction, motivation, practice, and peer influence. When the visual arts are continued into adulthood, the findings suggested a return to creativity and improvement in skill and fluency

(Davis, 1997; Gardner, 1980; Gardner & Winner, 1982; Haanstra, Folkert, Damen & van Hoorn, 2011).

In conducting this study, the main problem I focused on was, “How does drawing instruction impact drawing fluency?” From this question, I explored the steps I took in my art classroom and analyzed student and adult participants’ drawings.

Other research questions that pertain to my study include:

- What methods of instruction are important in obtaining drawing fluency for the learner?
- How is visual fluency demonstrated in adolescents and adults?
- How do the adolescent “before” and “after” drawings I collect compare to the characteristics of typical drawing stage development according to Lowenfeld (1957), and Piaget (1951)?

Purpose of the Study

Most children progress through different stages of drawing, but without reinforcement and observational practice around the critical age of adolescence, these individuals may retain common pre-adolescent symbols in their drawings for the remainder of their adulthood (Gardner, 1980; Gardner & Winner, 1982; Haanstra, et al., 2011). The purpose of my study is to explore this phenomenon through reviewing artworks produced for three specific assignments by adolescents and adults. I am seeking to understand how my instruction informs drawing fluency and to observe how participants’ drawings change as a result of the lessons. From past classroom experience, I have observed students in my beginning art classes recall and revert to drawing symbolic images that they learned in childhood to represent ideas or objects. In my research study, the artworks produced by both the adolescent students and the self-identifying “non-artistic” adults will be analyzed to see to what degree students and adults rely on symbols

from memory initially, and in what ways their drawings change when observational skills are taught to produce more naturalistic drawings.

Literature review overview

Relevant Areas of Research

Structure and Development, Developing Fluency in Drawing, and Theories of Visual Development are the foundational sections I lay out in my literature review to understand how drawing is a type of language. In Structure and Development, the literature breaks down how verbal and written languages are constructed, and how drawing, through the use of symbols, is likewise developed and applied in semiotics (Cohn, 2012; Gardner & Winner, 1982; Goldberg, 1993; Jackendorff, 2003; Wilson, 2003; Wilson & Wilson, 1977). Language --traditionally thought of as verbal, written, or physical-- is built with syntax, lexicons, production scripts, and schemas. In the development of drawing as a visual language, lines and shapes stand for letters and words, and when combined, form more intricate pieces of information in the form of images, or symbols, used for communication (Cohn, 2012; Jackendoff, 2003). Building upon knowledge of rudimentary drawings, humans build a storehouse of these remembered objects (Cohn, 2012). This visual memory becomes increasingly more complex through practice, imagination, expression, emulation, observation, and cultural nuance.

In Developing Fluency in Drawing, I investigate what it means to be fluent in drawing, the motivation behind making images as explored through expression and technique, the controversy about copying images, observational drawing as a learned strategy, and different timelines and theories of visual language development (Arnheim, 1974; Duncum, 1988; Eisner, 1972; Gardner, 1980; Kozlowski & Yakel, 1980; Lark-Horovitz, Lewis & Luca, 1967;

Lowenfeld, 1957; Pariser, Kindler, & van den Berg, 2008; Piaget, 1951; Smith, 1983; Wilson & Wilson, 1977; Wilson & Wilson, 1982).

The Theories of Visual Development section explores research theories pertaining to the quality and quantity of representational and expressionistic aspects found in artworks of children, adolescents, and adults, across several studies (Davis, 1997; Duncum, 2003; Fineberg, 1997; Gardner, 1980; Gardner, 1989; Haanstra, Damen, & van Hoorn, 2011; Jolley, Fenn & Jones, 2004; Picard & Gauthier, 2012; Rush & Lovano-Kerr, 1982). By focusing on these three themes, the literature review provides a holistic background to the development of the study.

Gaps in the Existing Literature

Review of the literature revealed a limited number of studies documenting instruction influencing student art. In Harvard Project Zero's studies, researchers were not educators and therefore could not document how instruction impacted the development of naturalism. Many drawing as language researchers are also not art educators but rather psychologists, their research lacking in real-life study of important developments in moving from symbols to naturalism. Through my action research, I contribute to this body of knowledge.

In my literature review, I describe a rift between expressionism, and learning techniques and skills. I found the literature taking sides, and not advocating a holistic approach to drawing language development by utilizing both as tools (Lowenfeld, 1957; Piaget, 1951). Also lacking were the number of existing models of drawing development, Harvard Project Zero's "U" trough, or decline, of drawing (Gardner, 1980; Gardner, 1989), and Duncum's diagonal chart being the primary examples for reference (Duncum, 1988; Haanstra, Damen, & van Hoorn, 2011).

Methodology

The experimental approach to research involves defining variables, creating hypotheses, running tests, confirming or negating explanations, and coming to conclusions. Action research, on the other hand, focuses on human inquiry through interacting and collaborating with participants as part of the process of discovery, and not as subjects to be only observed and studied (Klein, 2012; Stringer, 1999). This approach allows the researcher and involved participants to uncover answers together that are relevant and contextualized within the community (Stringer, 1999). In action research, researchers are often teachers who are “concerned with the broader questions and issues impacting teaching, learning, and schooling and is not confined to a K-16 classroom” (Klein, 2012, p. 3). By utilizing action research, teacher-researchers can learn to better understand, improve, and reform their practice through planning, acting, observing, and reflecting (Klein, 2012; Stringer, 1999).

Using a constructivist paradigm to investigate how instruction affects naturalism in drawing, I felt action research was the best methodology for this study. Set in a rural Virginian high school art classroom, I interact with my students during assignments in a way that helps them improve their drawing skills, and the students impact how I become a better teacher. In this ever-evolving co-practice, we learn to investigate, evaluate, and analyze our artwork.

Background to the Study

As a seasoned teacher of sixteen years, I am familiar with what drawing strategies have been successful for me in the past and how to convince novice or reluctant drawers to try. For my study, I chose to focus on two groups of participants: adolescents and adults. For the first group, I used my two Art 1 classes with students who range in age between 14 and 18. These students have various drawing abilities, and many struggle with starting a drawing. I created

three specific drawing assignments woven into the normal Art 1 curriculum to show how my instruction can affect how they draw certain tasks.

With the Art I students, the first assignment used for my study focused on drawing a tree, where a “before” sketch idea of a tree and an “after” instruction drawing of a tree were made from utilizing several instructional techniques. Participants drew trees with branches from living trees, and from images of trees from photographs and artist-rendered drawings. The second assignment I focused on involved perspective, specifically how to draw a house. Again, a “before” instruction house image was made by my students, followed by a lesson on one-point perspective and looking at images for observation for an “after” drawing sample. Progressing further into the semester, the third and last assignment I used for my study concentrated on drawing the face. As with the previous two assignments, students once again drew a “before” face, and then an “after” face, where participants learned simple math delineations in proportion. By using three “before” and “after” drawing assignments as a visual data method, I anticipated I would be able to show evidence of how instruction impacts naturalistic drawing.

The second group of participants was a group of self-proclaimed “non-artistic” adults. These adults are teachers from varying subjects from my high school, who volunteered to see if they, too, can be taught to use technical and observational skill to improve the naturalism of their drawings. Over the course of three after-school sessions, adults were asked to do the same three assignments of the tree, house, and face. Additionally, the adults filled out a questionnaire that asked both quantitative and qualitative questions to understand the participant’s relationship to drawing in the past.

After the collection of drawing artifacts and questionnaires, two independent judges scored the “before” and “after” drawings based on a rubric measuring how much naturalism is

evident in both samples. Using independent judges removed my bias as an educator to observe in what ways instruction affected the original student samples.

Significance of the Study

Adolescence, the age between childhood and adulthood, is often a time when teenagers are subject to peer pressure and can find themselves facing a lack of confidence and motivation in educational disciplines (Gardner, 1980). I have witnessed a similar attitude also within drawing, where the frustration of learning how to depict images realistically competes with original creative expression (Gardner, 1980; Lowenfeld, 1957; Piaget, 1951). Therefore, this age group is an ideal population to study the effects of instruction on learning how to draw.

This study aims to address the structure and development of drawing as language, understand how emulation and observational skills can affect the preconceived notions of drawing, how learners build visual fluency, and how teacher-led instruction can influence participants' drawing skills. These factors are the puzzle pieces of understanding how visual art develops similarly to other types of language. This study may lend credence to the belief that humans have the ability to become more proficient drawers if certain factors are in place.

Findings

In this study, I discuss and present: similarities in the “before” drawings of each assignment and if symbolic images were used; responses to teaching through multiple instructional strategies; the ease or struggle of sketching examples; the variety in “after” drawings; the judges' scores of the comparisons of “before” and “after” drawings; and the results from the adult questionnaires. I also report how adolescents as a group performed as compared to the adult group, and if there were any significant similarities or differences.

Measuring differences in the sample drawing artifacts contribute to findings on how fluency is developed, and if instruction and observational skills have any impact on student and adult work. My definition of fluency includes: learning how to draw more naturalistically, constructive drawing (scaffolding, or building upon previously learned steps), observational (from life) drawing, drawing from memory, drawing from imagination, demonstrating successful emulation, using knowledge of materials skillfully, and understanding composition, perspective, and proportion. Using shading and color theory is also necessary, but not addressed in this study.

Limitations of the Study

There are a few key limitations of this study. First, this is a small, one-time study that would need repeated future trials to validate the findings. Secondly, there may be shortcomings within the original study: participants could have been cued into what the targets were or what was expected through word of mouth from older siblings that have taken me as an art teacher in previous years, or adult (teacher) participants could have seen and remembered drawings hung up on the walls from years past. Also, it is important to consider the work by students who were absent during the period of teacher instruction. These students were instructed individually, and it cannot be guaranteed that the instruction was the same as that given to the larger group. Additionally, drawing assignments for the student participants were staggered throughout the first semester, with other non-related assignments in between. This may have impacted the progression of drawing assignments and the abilities of the adolescents participating. A third limitation may be an unintended result of replacing one symbol for another for the adolescent or adult to fall back on. As there were some similarities among the “before” drawings for each assignment, after instructing the class on the necessary technique (or skill), the new drawing may

become a symbolic image to replace a previous symbolic image, learned memory over observation.

Suggestions for further research

There are several different avenues that could be explored from my research. If my study is replicated, there could be different variables that may or may not have an effect on a similar outcome. For instance, the researcher could use different drawing assignments; children could be participants rather than adolescents; and the researchers could examine different group dynamics such as socio-economic or gender-based contributing factors, or location in an urban or international setting. Additionally, while my study focuses on acquiring skills through instruction and attaining drawing fluency, exploring creativity and expressionism within the sample drawings could be another facet of measuring drawing development.

Conclusion

Through my research, I present how drawing is built like a language, and how with instruction, motivation, and practice, attainment can be achieved. In my study, I show how adolescents and adults demonstrate a grasp of learning drawing fluency to different degrees as a result from multiple modes of instruction. Participants have shown this process of learning effectively in improving drawing fluency within these particular assignments. From this, I extrapolate that drawing fluency in all three assignments could lead to fluency with other types of drawing. By employing action research, I uncovered what types of instruction a person might benefit from to in order to improve their drawing skills.

Chapter 2

Literature Review

Drawing is a visual and graphic language that is not solely an aesthetic skill or expressionistic device, but another avenue for conveying concepts, communication, and cognition. Humans communicate information verbally (spoken word or by creating sounds), physically (moving our bodies including hand and facial movements), and through the use of drawn images (writing is the transcribed verbal into visual) (Cohn, 2012). This paper aims to address the structure and development of drawing as language, how learners build visual fluency, and a means of studying visual development. These factors are the puzzle pieces of understanding how visual art develops similarly as a verbal language, and that humans have the ability to become more proficient drawers in adolescence and adulthood.

Drawing as Language: Structure and Development

In developmental progression, children will attempt and experiment with communication physically and verbally by gesturing and babbling (Wilson & Wilson, 1977). They also express themselves graphically by scribbling. At 2-3 years of age, children develop a foundation for a representational system of symbols that depict actions through basic shapes such as dots, lines, curves, circles, squares, etc. (Cohn, 2012; Gardner & Winner, 1982; Jolley, Fenn, & Jones, 2004). This early memory set of graphemes begin to form a working syntax children can call upon to create progressively more complex drawings. At 5-8 years of age, a shift occurs from representation of actions to objects (Cohn, 2012; Gardner & Winner, 1982). As children grow, their recall of this object representation, called visual memory, expands their skills in articulating perceptions graphically (Cohn, 2012; Gardner & Winner, 1982).

Verbal language is formed from individual phonemes, morphemes, words, idioms, schematic construction, leading to whole sentences (Cohn, 2012; Goldberg, 1993; Jackendoff, 2003). According to cognitive scientist Neil Cohn (2012), visual vocabulary is similar wherein graphemes (like phonemes), are the building blocks used in conjunction with a graphic syntax. Syntax, or grammar, refers to the rules governing sentence structure in a verbal language; therefore, graphically, it refers to how to create an icon, image or symbol. The conceptual structure, or graphic schema, is the particular meaning and outline of the icon (image/symbol) that was made of all the smaller parts (Cohn, 2012; Jackendoff, 2003). Schemas combine to form images like combining letters to form words, and the human brain stores all this information as a graphic lexicon, or visual vocabulary and image bank, in long term memory for later recall (Cohn, 2012; Goldberg, 1993; Jackendoff, 2003). Thus, an individual attempting to draw an image from memory goes through a certain order of operations. Cohn (2012) suggests that drawers: (1) Have an intent to draw a certain object or image and hold a mental picture of it. This is the individual's graphic lexicon, subject to inaccurate recall of how an image looks exactly. (2) Plan and problem solve how to depict the mental image using remembered rules. This graphic syntax would govern specific drawing principles, such as size constancies, spatial relationships, depth, and so on. (3) Utilize a "production script," (p. 174) which is an encoding process that specifies the order of drawing operations, is then employed. The individual decides which part of the mental picture they would draw first. (4) Strike a balance between fine and gross motor skills to attempt to recreate the mental picture, and adjust accordingly.

Drawing as a language follows the characteristics of other symbol systems, such as those derived from speech or numbers. A language system "provides the symbols that individuals adopt, place in combinations, and sometimes extend... [and] the graphic configurations of a

culture are as conventional, regular, and predictable as the words of a given language” (Wilson, 2003, p. 27). In visual art, these graphic building blocks are added upon to create more complex drawings. Cohn (2012) illustrated the graphic lexicon process of drawing a stick figure: graphemes would be a circle and lines; the syntax would be the relationship of those graphemes to each other. The production script would be the steps taken to construct the stick figure, and the conceptual structure would be the whole recognized by being made of the parts (Cohn, 2012). However, stick figures are not universally drawn as the symbol for ‘human.’ Wilson (2003) observed in his research that the majority of children aged 9-12 in Middle Eastern countries made “rectangular shaped torsos with fused necks” (Wilson, 2003, p. 27). I can corroborate these assertions through my own observations of early Native American rock art glyphs, and notice that not all depictions of humans are the same, but have recognizable enough characteristics to identify the image intent.

By understanding the developmental steps of how verbal language is formed, art educators can see parallels of how drawing becomes another type of communication known as graphic language. When visual vocabulary, graphic syntax, a production script, and motor skills work together, an individual will be able to draw a desired image. Once an individual can articulate an image successfully, they may want to expand and elaborate on their creation, by building artistic skills and creating through expression.

Developing Fluency in Drawing: Expression, Technique, and Observation

When a person is fluent in a verbal language, they are able to speak effortlessly and have the ability to articulate themselves easily. In regards to drawing, I use the phrase ‘fluency in drawing’ to describe a person who has practiced enough to become proficient; a person adept in expression and skill without struggle. In the process of building fluency, children, adolescents,

and adults experiment with different techniques, available materials, subject matter, influences, artistic styles, ideas, thought processes, and creative approaches at problem solving.

The motivation behind having children make drawings falls into two theories: the necessity of image-making through expression, and drawing as learning and acquiring technique (Duncum, 1988). Proponents of the former ‘art for art’s sake’ approach see mimicking another’s image as not the point of art, and “*Never let a child copy anything!*” was Lowenfeld’s battle cry (1957, p. 14). This position holds that all forms of copying and graphic influence should not be used in children’s drawings, is detrimental to self-expression and creative and mental growth, and creates dependency and a lack of confidence in their own art making (Arnheim, 1974; Duncum, 1988; Lowenfeld, 1957). Some educators, however, are against older children copying, but are permissive of younger ages doing so (Arnheim, 1974) or believe children can use copying as a strategy so long as they do not continue indefinitely (Lark-Horovitz, Lewis & Luca, 1967).

In visual language development, Wilson and Wilson (1977) claim there is a “universal maturation pattern for drawing” that children follow (p. 6). Beyond the development of motor skills in toddlerhood, scribbling and then the beginning formation of symbolic drawings dominate young childhood, called the “pre-schematic stage” by Lowenfeld (1957, p. 115), and the “pre-operational stage” by Piaget (1951, p. 272). Schematic symbols become more solidified during lower-middle childhood (around ages 7-9 for Lowenfeld, 7-11 for Piaget) and form the “schematic stage” (p. 138) and the “concrete operational stage” (p. 105), respectively. This “convention-acquiring process, which becomes more predominant and obvious from the age of eight or nine onward, is ... the most important of any in artistic development, for this is the process which will remain operational for a lifetime” (Wilson & Wilson, 1977, p. 5). It is at

upper-middle childhood (categorized as ages 9-11 for Lowenfeld, ages 11+ for Piaget) where a “dawning realism” (Lowenfeld, 1957, p. 182) or “formal operations stage” (Piaget, 1951, p. 167) exists, which is characterized with the need to draw realistically through representation (Lowenfeld, 1957; Piaget, 1951). At this time, children begin to unfavorably compare their image making to the sophistication of images made by adults, thereby losing confidence in their abilities as competent drawers (Gardner, 1980). Lowenfeld (1957) stressed during this period of growth, children should avoid the temptation of realistic representation and not be diverted from original creative expression. Kozlowski and Yakel (1980) refuted Lowenfeld’s belief, stating

...realism is a natural part of this [the developmental stage] sequence, then to deny this will have serious implications arresting the child's creative potential. The contradictions imbedded [sic] in the Lowenfeldian approach have had detrimental effects in the field of art education. Instead of helping the child pass through this natural phase of development, we have instead retarded his creative growth (p. 25).

From the age of 11 until adulthood, Piaget maintains the formal operations stage, but Lowenfeld adds another: “the pseudorealistic stage”, categorized as ages 11-13 years old (Lowenfeld, 1957, p. 182). Here, adolescents grasp the ability of drawing naturalistically, and is the bridging stage for the potential of continuing drawing into adulthood (Lowenfeld, 1957).

As reported by Duncum (1988), the second position on children’s drawings suggests copying is an acceptable learning strategy and part of the drawing process (Eisner, 1972; Kozlowski & Yakel, 1980). Furthermore, copying is seen as a helpful tool in building confidence, developing technique, and improving hand-eye coordination (Gardner, 1980; Lark-Horovitz et al., 1967). Kozlowski and Yakel (1980) argued copying is a “direct line to creativity” (p. 26) by opening up the child to a “new dimension for expression” (p. 26) once

learned skills and methodologies are employed. Some claim the most important part of learning, typically explored in middle childhood, is the acquisition of cultural symbols, which may be reinforced through imitation (Duncum, 1988; Pariser, Kindler, & van den Berg, 2008; Wilson & Wilson, 1977). Likewise, Kozlowski and Yael (1980) regard copying as “a form of reproduction which is an inherent characteristic of man. The process of reproduction is essential to the propagation and transmission of culture” (p. 25).

According to this second view on technique building, direct copying and drawing by interpreting a copy, or synthesizing several copies, are necessary components of learning how to draw because all drawing is based on previously acquired schemas (Duncum, 1988; Wilson & Wilson, 1977). Arnheim (1974) supports a widely held belief that drawings are representations of reality, based on observing objects in the world. Abstract mental equivalences are then invented for those objects, and then reproduced as visual images representing the original perception of the object. In other words, “the child draws what he knows rather than what he sees” (Arnheim, 1974 p. 164). The Wilsons (1977) take issue with this process however, believing that children learn to draw by making signs, referring to this learning strategy as graphic “configurational sign making” (p. 6). They illustrate this concept through an example of a cloud: a child would draw a *depiction* of a cloud - not a representation or imitation. The word “cloud” itself is an arbitrary name assigned to the actual object of the cloud. A child recognizes how to identify a cloud by its associated word through learned language, and the Wilsons claim that children likewise are taught to draw signs of their own by learning and observing others’ drawings. These signs are influenced by the reasons, situations, and diversity of forms found in the child’s culture (Wilson & Wilson, 1977). Imitating, modeling, and borrowing within or outside one’s culture allows for a wider variety of informational schemas to be shared, resulting

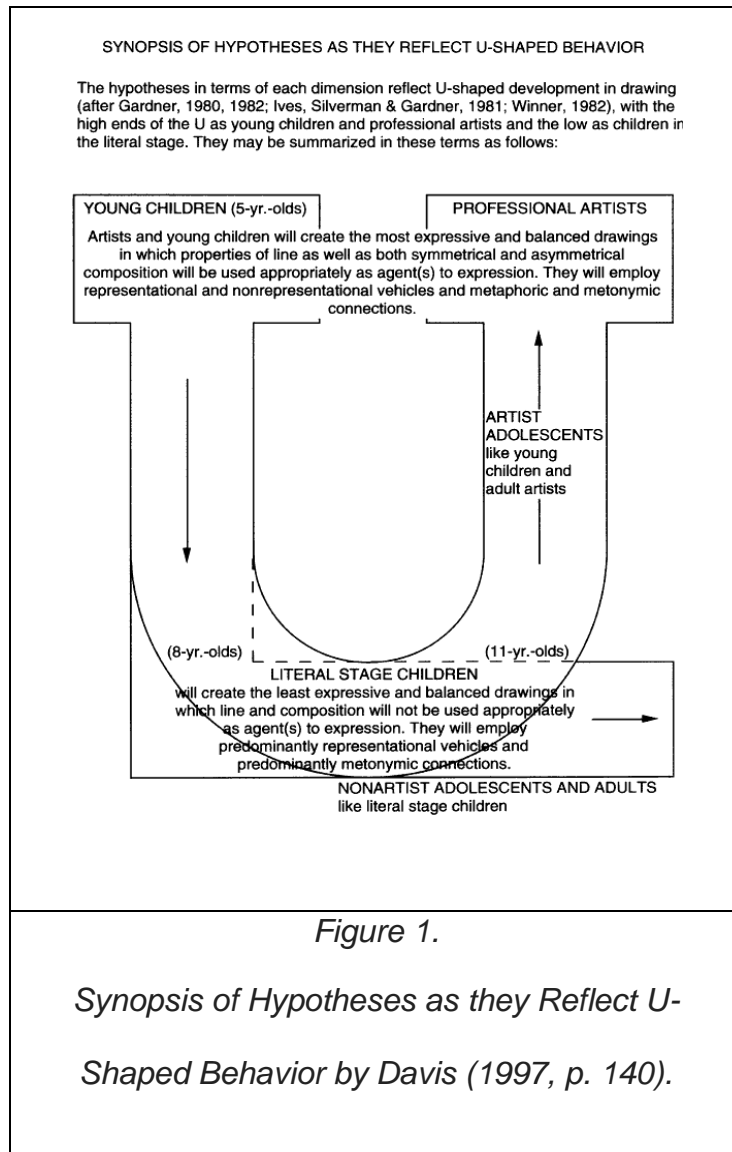
in “mutations and permutations,” elaborations, and invention of new visual forms (Wilson & Wilson, 1982, p. 63).

It is my opinion that expression and learning technique do not need to be opposed to each other, instead, to become fluent in the visual language of drawing, one must utilize both devices, as well as knowing how to ‘see.’ Observational drawing is useful in obtaining essential drawing knowledge by studying objects in the natural world (Smith, 1983). Noticing form, color, texture, placement, proportion, composition, value, shadow, and a myriad of other intricate and often subtle details are often lost on the untrained eye. This ‘discovering’ of these smaller parts add to our visual knowledge, which in turn, allows an individual to look upon a subject and understand what it is that is seen (Cohn, 2012; Smith, 1983). Drawing from observation, however, differs from memory drawings in that the latter lack fine details, but with observation, these types of drawings are rich in data (Smith, 1983). Feedback and constructive criticism from others more fluent in drawing and seeing may help in this process of learning. Understanding how to draw from observation goes beyond copying a model or still life, and instead, informs the critical decisions on what to include in a drawing, what to leave out, what to exaggerate to add interest, and what to play down that detracts from the overall idea of the picture. These decisions are what make the drawing unique to the drawer, contributing to the individuality and vision of the artwork (Smith, 1983).

Studying Theories of Visual Development

Besides the technical formation of drawing as language, much research has been devoted to the analysis of representational aspects and expressionism in children’s drawings. One of the leading university-based cooperative research groups in aesthetic education is Harvard’s Project

Zero, where Nelson Goodman and Howard Gardner, among others, have been instrumental in understanding the development of artistic growth. Using zero as a starting point, as art education research was minimal in 1967, Project Zero was developed to integrate cognitive theory, developmental psychology, semiotics, linguistics, philosophy, education, and the arts (Gardner, 1989; Rush & Lovano-Kerr, 1982). Within Project Zero, Gardner developed a U-shaped curve model to illustrate the development and decline in aesthetic drawings produced by children and adolescents (*see Figure 1*).



Through sample work given to age-specific groups, Gardner concluded that the resulting data could be charted as a 'U'. The top left of the U represents *metaphorical* aesthetic value in drawings done by 5-year old children, at which point drawings demonstrated playfulness, directness, expressiveness, and without inhibition (Gardner, 1980). In the downward slope and trough of the U, 8-11 year-old adolescent children strive to acquire *literalism* through realistic or cartoon drawings imitated from adults. If adolescents or adults progress in the arts, they ascend up the right side of the U. If they do not continue with graphic art, the U forms an L, where literalism is the end result (Gardner, 1980; Haanstra, Damen, & van Hoorn, 2011). A U-model would indicate a similarity between products of normal young children and of adult artists in measuring aesthetic *expression* through use of symbols. The use of line, color, shape or composition was also found to be absent in middle childhood. These adolescents who did not display symbols used shapes to literally represent objects, showing no expression or emotion (Haanstra et al., 2011).

Several subsequent researchers have tested the U-curve's validity, including Davis (1997), who compared artwork from children ages 5, 8, 11, 14-year-old adolescents, non-artist and artist adults. In the study, each individual in the target group was given the task to draw happy, sad, and angry examples. The drawings were then judged on four criteria: *symbolic vehicle* (a precise graphic symbol, the representational or non-representational meaning of a drawing), *composition* (placement of symbolic vehicle within parameters of space), *balance* (symmetric or asymmetric weight of symbol), and *expression* (metaphoric emotion being conveyed). Results corroborated Gardner's hypothesis regarding equal expressivity amongst 5-year-olds and artistic adults, who typically illustrated abstract forms for each graphic prompt, for example, dark, heavy scribbles to denote anger. The 8 to 11-year-olds showed decline in

expressivity and the 14-year-old adolescents showed the least and continued to do so into adulthood, often illustrating stereotypical literal representations: balloons, birthday parties, and rainbows for 'happy', rain and funerals for 'sad', fire for 'anger'. The 14-year-old artistic adolescents progressed upwards, toward expressivity as originally hypothesized (Davis, 1997; Haanstra et al., 2011).

An alternative approach for studying expressive drawing development is through a more objective, quantitative approach, where the focus was on the number of expressive cues or techniques in aesthetic drawings. Picard and Gauthier (2012) developed a study that charted children and adolescents' ability to produce expressive drawings of human and nonhuman topics, where literal and/or metaphoric aesthetics were analyzed. Here, a large sample of data was collected from participants aged 5-15 who produced expressive drawings of a tree, house, and a person, but in three different versions: normal, happy and sad. The study included symbolic vehicle prompts to differentiate between literal (such as a person crying, to denote a sad person) and metaphoric (such as a tree with a broken limb and use of dark, heavy colors for a sad tree) expressions. In judging between the two, literal criteria showed expressive drawings that featured facial expression cues, and nonhuman topics were personified. Metaphorical examples yielded expressive drawings featuring abstract elements, such as thickness of line, size comparisons, shapes, color or contextual clues, which included drawing aspects that indicated environment, emotion, and social states. Findings from this study indicated that young children predominantly demonstrated literal expression, but showed decline between ages 5-10, then stabilized at ages 11-15. Countering the decline, an increased application of a combination of literal and metaphorical expression was noted the older the children became. Metaphorical expression application likewise increased with age (Picard & Gauthier, 2012).

The U-curve model used to examine artistic development is one approach in measuring aesthetic quality of expressive drawings. Some researchers have criticized the model for reflecting preference of Western expressive modernist art styles over an aesthetic that demonstrates technical skill and naturalism (Duncum, 2003; Haanstra et al., 2011). Here, the U-curve's 5-year-old group drawings were considered to have a higher aesthetic value than that of middle childhood based on criteria that favored "expression, spontaneity, abstraction, and the abandonment of perspective space characteristic of modernist painting" (Haanstra et al., 2011, p. 18). Comparisons have been made of this type of children's art to work done by Picasso, Miro, Klee, and Kandinsky (Fineberg, 1997; Jolley et al., 2004). Theorists have also disagreed on the actual age period of decline, the exact features judged in work (Haanstra et al., 2011), cultural assumptions, and values (Jolley et al., 2004; Picard & Gauthier, 2012).

Researchers hold different paradigms on drawing and artistic development. In response to the expressive-based U (modernist) model, other assessment patterns have emerged, including the inverted U (anti-modernist view), the linear upward slope (a view where exposure in addition to age, over time, results in increased artistic development) and the flat line model (no aesthetic preference view) (Haanstra et al., 2011; Jolley et al., 2004). One must keep in mind that Project Zero researchers were primarily psychologists rather than teachers or artists, so research was based more on psychological and philosophical models over pedagogy and technical skill (Rush & Lovano-Kerr, 1982).

Whether or not the U-curve is a correct representation of studying childhood drawing advancements --or an alternative model is more accurate-- is a matter based on what an art researcher values most. Expression versus technical skill in artwork and in the art classroom has

been a topic debated over in my experience. The notion that one is more desirable than the other denies the budding drawer artistic choices that they may utilize to communicate effectively.

Conclusion

In artistic development, children frequently employ a graphic symbol system to make drawing a form of language. It only has to begin with a purposeful mark that an individual makes to create a visual statement to relay their intention. Depicting feelings, memories, goals, ideas, inspirations, concepts, observations, and attempts at accurate renderings may all be a part of this visual communication process. When drawing becomes proficient, a visual fluency is attained.

The desire and ability to draw expressively and with skill sharply declines once adolescents leave high school --or middle school if no art classes are taken during their secondary education. Yet adults who have the ambition to continue their art through building visual memory and practice can be highly successful visual communicators. It is when expression and technical skills are employed, and a growth of observational drawing skills through practice, may cause an individual to realize that they are capable of a deeper understanding of their immediate environment, and how that person relates to their world, allowing anyone, including the reluctant artist, to learn how to draw.

Chapter 3

Methodology

This study sought to find examples of drawing fluency from two groups of participants after they were exposed to teacher-led instruction, and also investigated how the findings impact my future teaching practice. By using my students and adult educators in my research, I wanted to see how each group responded to my lessons and how their drawings changed as a result. Adolescents crave a realistic or naturalistic quality to their artwork, which may be lacking, causing frustration (Gardner, 1980). When this age group reaches adulthood and no motivation, instruction, or continuation of drawing is present, drawing ability remains the same or stagnates (Duncum, 2003; Gardner, 1980; Haanstra, Damen, & van Hoorn, 2011). Key components in learning how to draw more naturalistically require attention to detail through different teaching methods, such as observation, or learning how “to look;” and the fundamental instruction of drawing rules, such as perspective and proportion, among others. By using “before” and “after” drawing samples, participants demonstrated a baseline of their known drawing skills that can be compared to drawings reflecting newly acquired skills. It is the hope of this researcher this study gave students and adults confidence in their drawing ability, which hopefully leads to participants wanting --and being empowered-- to continue drawing in the future.

Background to the Study

Teaching is a never-ending journey where the educator is responsible for molding young minds, challenging students to think critically, and preparing them for the future. The set of tools and strategies at the educator’s disposal is ever changing and flexible to meet students’ needs. To help students achieve their best, educators must not only know their subject

thoroughly, but learn how to engage students through adaptive lessons to make them relevant and impactful. Because teaching strategies are many in breadth and scope, classroom challenges become learning opportunities for both students and educator. In this quest of continual teaching practice improvement, educators must study what strategies work and identify what is not effective for the benefit of the learner. Sometimes trial-and-error, sometimes a targeted, methodological approach, educators know what works by *doing*. The body of research educators collect informs their practice, and ultimately, makes a more successful learning environment. As an educator myself, I constantly take stock of what tools and strategies I can utilize, and how I can help students build on their strengths, overcome weaknesses, and achieve their goals in my class. By reexamining how I use instruction to teach drawing skills, I intended to identify my own strengths and weaknesses, and to become a better educator through this study.

Methodological choice and suitability. Using constructivist theory as my base, I chose action research to conduct my study because this approach was a natural fit to my general teaching practice. Action research is an approach to inquiry that defines a problem, explores its context, analyzes its component parts, and theorizes and develops strategies for resolution (Klein, 2012; Stringer, 1999). This Plan-Act-Observe-Reflect spiral of informed learning were guiding principles in my research. By following this approach, I interacted with participants in a way where I actively sought how to improve their understanding in how to draw more naturalistically, and participants learned what teaching strategies work best for them. By working together, participants became more fluent drawers, and my teaching practice improved.

Relevant literature on methodology. The process of planning, acting, observing, and reflecting are the hallmarks of any actively engaged classroom educator. Action research, therefore, sets a plan for teacher and student accountability, and is a conduit for curricular reform

and change (Klein, 2012). Seminal texts on action research methodology within the field of education include Lewin's (1946) dissemination of the action research process, and Corey's (1953) fieldwork of mainstreaming action research into the classroom.

Documented art education research on drawing instruction and drawing fluency in adolescents and adults, is surprisingly minimal. In my literature research, I have found several studies on art appreciation or criticism, but few drawing studies, especially in a high school setting. I have also found that drawing research is almost always shown through case studies, whereas action research in the visual arts classroom is still emerging. Several researchers have noted that "very little cumulative work has been done in visual arts research" (McKay, 2006, p. 49), that "there is a small body of research on art learning and even less on art teaching. There is little agreement between researcher and teacher on the relative values of basic and applied research" (Rush & Lovano-Kerr, 1982, p. 11), and concerning drawing related to age groups, "research to date has focused primarily on subjects ranging from five to seven years of age" (Park & I, 1995, p. 54).

There are a few classroom-based drawing studies relevant to my research found in the literature. Arthur B. Clark's (1897) case study involved 429 children ages six through sixteen to observe and draw two perspective challenges. The first test object was of an apple with a hat pin stuck through it turned at an angle, the second object was of a book, side down and at an angle. The resulting drawings fell into categories of symbolic, pictorial (naturalistic), or mixed. The apple study was repeated by Lewis (1973) to compare work of contemporary children with those of an older generation, and similar results which were found. Park and I's (1995) study reviewed thirty-four empirical studies from 1967 to 1992 of children's observational drawings of three-dimensional objects. The studies researched representational drawing development,

focusing on common objects that took on spherical, cylindrical, cubic, conic, and prismatic forms. The studies themselves “fell into three categories: how children represent the spatial relationships within an object, those which looked at how children represent relationships between two objects, and those studies which examined both kinds of representation” (Park & I, 1995, p. 42). Gilbert Clark (1993) discussed his development in 1989 of Clark’s Drawing Abilities Test (CDAT) on testing gifted children in the visual arts. This test was meant to serve as a screening and identification instrument and has been given at elementary and middle schools across the United States. In it, the CDAT presents four drawing tasks and a scoring procedure that is used when grading drawings. The tasks include “(a) draw an interesting house as if you were looking at it from across the street, (b) draw a person who is running very fast, (c) draw a picture of you and your friends playing in a school yard, and (d) make a fantasy drawing from your imagination” (Clark, 1993, p. 74). Clark chose these specific tasks to demonstrate child drawing ability in (respective of the task order): perspective, differential and meaningful details, shapes and sizes; the portrayal of a human figure in action and in body proportion; composing receding space and the spatial relationships of those figures; and imagination. Drawings were then scored on a 1-5 scale from four categories that are used to identify artistic elements. The categories used are “(a) sensory properties (line, shape, texture, value), (b) formal properties (rhythm, balance, unity, composition), (c) expressive properties (mood, originality), and (d) technical properties (technique, correctness of solution)” (Clark, 1993, p. 75). It should be noted that observational drawing is not a part of the test, but rather all drawing comes from the child’s interpretation and memory.

Outside of the adolescent classroom, there have been drawing studies conducted by artist, researcher, and teacher Betty Edwards (1979), outlined in her landmark book, *Drawing on the*

Right Side of the Brain. Based on the Nobel Prize-winning work of neuropsychologist and neurobiologist Dr. Roger W. Sperry, whose work focused on examining brain function, Edwards built a drawing program for adults to improve drawing skills (Edwards, 1979). According to Edwards, Sperry discovered that, although individuals use both sides of their brains in tandem, most operate verbal, analytic, and sequential functions mainly in the left hemispheres of their brains, and visual, spatial, and perceptual functions mainly operate in right hemispheres (Edwards, 1979). Applying this revelation, Edwards focused on the shift from dominant everyday linear thinking to creative problem-solving through drawing exercises. Specifically, her instructional techniques have participants practice and understand learning how to see and draw *edges* (contour drawing), *spaces* (spaces between things), *relationships* (perspective and proportion), *lights and shadows* (shading), and focusing on *the whole* (called the *gestalt*, the essential nature of the observed subject, which is the spontaneous result from the previous four component skills). Two additional skills, drawing from memory and from imagination, are addressed in her book and in her drawing workshops (Edwards, 1979). Supporting evidence for these two modes of thinking is found in Warren's (2003) study of a seventh-grade student who performs above average on academic tests, but performs poorly on drawing studies. The author claims that special education in schools fail to examine the seldom-addressed topic of NLD (non-verbal learning disorder), where individuals with an imbalance of linear-verbal focus to visual-spatial focus think in words, not with pictures. The author employs certain drawing example exercises that Edwards developed, such as drawing upside down, in order to temporarily suspend the logic-oriented interference that seems to hinder normal observational drawing skill development (Warren, 2003).

A unique historical study conducted by Duncum (1985) examined youthful drawings, personal memoirs, and biographies of thirty-five well known artists who drew prolifically from the years 1724-1900 and reported the frequency of drawing strategies and images used. Duncum (1985) found the artists as youth employed multiple methods of learning how to draw, including copying from other images or from popular culture, self-instruction through drawing manuals, tracing, observation and drawing from objects, observing and copying from peers, formal instruction, and verbal instruction. Practice and modelling strategies were not discussed in this study, nor were the ages of the artists listed when learning how to draw. Cultural factors such as an interest in naturalistic representation may have influenced the children's choice of learning strategies, as naturalistic art was popular at that time.

Three notable visual arts-based action research studies can be found in the British Berkshire Study (as cited in Bresler, 1993) where teachers investigated assessment practices. These teacher-researchers specifically wanted to explore how student artworks were assessed for quality and aesthetic judgement according to a particular model of aesthetic theory, and how relevant, appropriate, and sufficient the theory was in regards to their own grading practices. Through self-observation, examination, and reflection, these educators analyzed how their attitudes and actions impacted how students learn, how they fostered social relationships within the classroom, and the flexibility required within the process of teaching and learning.

Design of the Study

After completing the IRB (Institutional Review Board) process to obtain permission for the study using human participants, I obtained permission from my school's principal, superintendent, and school board to conduct this study. Three drawing assignments were given to my Art 1 adolescent students --drawing trees, houses, and faces-- over the span of three

months (with other art and art history lessons of the normal curriculum interspersed). For each assignment, students drew a “before” example of what they believed the objective looked like, and then produced an “after” drawing once observation and instruction were introduced. Students were given approved assent and consent forms after the three-month process to use their drawings for this action research project.

A second group of self-identifying “non-artistic” adult teacher participants repeated the three assignments where a “before” and “after” drawing was made. Adults additionally were given questionnaires that were filled out anonymously and comprised of qualitative and quantitative questions. The three drawing assignments for the adults were spread out over three weeks, each lesson being approximately 90 minutes in length.

Students and adults were both given blank paper at the introduction of each assignment and asked for their interpretation of the assignment. For the first lesson, participants were asked “draw what you think a tree looks like,” with no clarifying instructions offered. Participants used 2HB pencils for all work, and had no time limit for these “before” drawings. Once completed, they were then asked to stand and walk around the classroom, observing how their peers interpreted the assignment. When participants returned to their seats, I discussed with the group what commonalities were found and they brainstormed why they think they drew what they drew. Afterwards, I had the group look at live potted fruit trees to look at branches where they sketched in sketchbooks, then showed the group related examples that included artist-rendered depictions of trees, then photographs of different types of trees on a projection screen. The students and I examined the group of images for what particular traits they shared and what was different. Next, I demonstrated how to draw tree branches based on observing these traits. Both adolescents and adults then practiced drawing from my modeled drawing example and

from observation of both real trees and photographs of trees, and then they moved on to a final drawing. Final drawings were displayed on the art room wall and we conducted an informal class critique on the artistic process. These “after” drawings later were taken down and labeled by number for anonymity along with their “before” drawings for scoring by the two independent judges.

This same process was similarly repeated with the next assignment for houses. Here, participants drew their “before” house drawing, and then we discussed as a group. We followed up by looking at examples of artist-rendered images and photographs of houses. Then participants drew one-point perspective house exercises while I modeled drawing with them. For the final assignment, my students drew five houses/buildings in a landscape, using their new knowledge of perspective and inspiration from any house images found on the internet. The adult group, while taught the same techniques, only drew one house in the interest of time. Final drawings that were created by participants were then displayed, critiqued, taken down, and evaluated.

For the face drawings, participants again drew their “before” example, followed by looking at artist-rendered images and photographs of people's faces. Participants drew along with me as I modeled drawing a proportional face, also pointing to my face for different measurements. I had participants also touch different parts of their faces and look at their neighbor to see how measurements compared. Participants then practiced drawing individual facial features in their sketchbooks from a packet of artist-rendered famous portraits. The final project was a naturalistic face redrawn from a photograph of a person’s face of their choosing, whether a relative or of a celebrity. Drawings were subsequently hung, critiqued, and evaluated.

Participants and location of the research. This study was set in my high school art classroom located in a small rural Virginian county about 40 minutes east of Richmond, the state capitol. The high school is home to 722 students, as of 2019. The ethnic makeup is 73.3% White, 17.5% Black, 3% Hispanic, 2.8% American Indian, 2.5% identified as two or more races, and 1% Asian (Virginia D.O.E., n.d.). Other statistics include: 32.7% of students are economically disadvantaged, 1.2% are English Language Learners, and 11.6% are students with disabilities (Virginia D.O.E., n.d.). I have been employed at the school for fourteen years, teaching all of the Art 1-5 classes and at times, Graphic Arts.

Participants in the study included thirty-eight Art 1 students, ranging from age 14-18, and spanning grades 9-12 but predominantly freshmen, with a comparable mix of students that reflect the overall ethnic, socio-economic, and students with disabilities populations in the school. I chose this group because many of them either had limited exposure to Art in middle school or had “gap” years where they had not taken an Art class; are at an age between childhood and older adulthood; and they were already taking my class where we developed rapport in a positive learning environment. A second group of participants included eight adult teacher participants, from the same high school and the middle school in the county, who were recruited via email. Participants were all female, one being of African American decent, the other seven, Caucasian. This group attended three 90-minute classes after school that I facilitated, and I taught the same lessons as I did to the adolescent group.

Methods of data collection. Because this data was used in an educational setting, where the lessons were a part of the normal curriculum, drawings were collected as a secondary data source. There were four specific data points I collected for analysis. The first set of data points were the physical drawings made by the adolescent and adult participants. The second set was

the scoring of the drawings completed by the two independent judges. The third set included the questionnaires the adult participants completed. The fourth set summarized personal reflection notes of the critiques and studies. This study was completed over five months spanning November 2018- March 2019.

Physical drawings. Student and adult participants began each assignment by drawing the intended object how they believed it looked like. No outside material was introduced to guide or influence how the participants drew a tree, house, or face: drawings were solely based on participant memory or interpretation. Participants drew the object a second time after discussion, instruction, modeling, practice, and observation of similar examples, spanning the course of several days of class periods for adolescents and one 90-minute class per subject for adults. Both sets of drawings of the “before” and “after” instruction attempts were collected, and then assigned corresponding randomized numbers in place of participant names for anonymity. They were all then stored in a locked filing cabinet in my office for security from outside tampering. Only participants who granted permission of use via consent and/or assent forms had their drawings used as a part of the study.

Scoring scales. I had two independent judges --one art teacher and one self-identified “non-artistic” person-- rate each “before” instruction and “after” instruction drawing artifact from each participant using a rubric I developed. Using independent judges removed my bias as an educator to observe in what ways instruction and observation affected the original student samples. Names were removed before the judges viewed the artifacts and judging was based on a Likert 1-5 scale for naturalistic accuracy. The rubric for the judges included sample drawings made by students of years past of various degrees of completeness to act as a guide in scoring drawings appropriately.

Adult questionnaires. Adult participants were given a questionnaire in addition to the required “before” and “after” drawing assignments. Comprised of qualitative and quantitative questions, questionnaires were based on information about adult perceptions of art and drawing. By asking specific questions, I looked at the attitude and receptivity of the participant in regards to the potential for growth in their drawings. Adolescents did not receive questionnaires because all of those participants had art within the past 1-4 years, and I already knew them and their attitudes toward art after beginning the study two months into the school year. With the adult participants, on the other hand, I had no base knowledge of their art experience and little interaction with them prior to the study.

Reflection notes. Throughout the study, I kept notes about each of the three assignments, for both groups of participants. In the notes, I recorded what teaching strategies worked well, what could have been improved upon, participant reactions, critiques, and general flow in the classroom. Also mentioned are my feelings and what I did differently from previous years of teaching these lessons.

Data Analysis Plan

When searching the literature for drawing studies and action research, I was struck with how incomplete the data is in the art education field. Drawing studies were largely case studies that utilized observation as the sole teaching strategy. There was no reflection on the part of the teacher or student, and there appeared to have been no follow up on what to do with the data. It is because of the lack of depth in the case studies, lack of breadth of strategies used, and paucity of action research used in the art education classroom, I was determined to create a more all-encompassing study that analyzed multiple data points about drawing. By using these particular four sets of data points, I was able to produce an overall picture of how the participants learned

and improved their drawing skills and attitudes, as well as reflecting upon my own teaching methods.

When in a classroom setting, one teaching strategy is rarely enough. From years of teaching experience, I decided the most effective means of teaching these three particular assignments would have to be through several instructional techniques, which included initial experimentation, modeling behavior, oral direction, teaching observational skills, emulation, class discussion to check for understanding, working one-on-one, practice and repetition. Often left out of the literature of drawing studies is the rich dialogue that takes place in the larger group setting during instruction and critique, and the personal attention between teacher and participant. Building relationships is key to motivate both student and adult alike.

When scoring the drawings, the two independent judges critiqued drawings objectively using a rubric based on a definition of naturalism and sample drawings depicting a range of naturalism. Judges selected a number between 1-5 --1 being a poor level of displayed naturalism, 5 being high level of displayed naturalism-- for each drawing sample. To code the subsequent scores, I took each drawing, which was labeled with a randomized number for the judges, and matched it to the corresponding student, displaying the score for the “before” and “after” from each judge in an organized list. The adult data scores included an extra list of “self-judged” marks of naturalism attainment. From these lists, I tallied the amount of scored 1s, 2s, 3s, 4s, and 5s for each assignment of each group and presented this information in bar graphs. Finally, adolescent growth and adult growth are presented using pie charts, indicating how many participants improved after instruction and to what degree.

By using questionnaires from the adult participants, I developed a baseline to become familiar with the adults whom I did not know as well as my students. I asked questions to have

participants reflect on if they considered themselves a skilled artist in their own opinion, where they believed their drawing skills were, and how challenging they originally found drawing naturalistically to be. I also wanted to know if art is used in their adult life, when they last took an art class, what they found challenging about drawing, what they enjoyed about art, and if they believed anyone can learn how to draw. The information gathered from the questionnaires I grouped by question and charted responses using bar graphs and pie charts, showing how many similar or dissimilar answers were amongst the adult group.

My personal notes on the four-month progress of my action research is the fourth vital component to my study. Physical drawings and calculating numbers show demonstrable results, but this component is the reflection I use as an educator to improve my practice. To analyze my notes, I coded, or grouped, them by themes to gain an understanding of what patterns started to emerge, a technique discussed by Buffington and Wilson McKay (2013). With this data, I bridge the gap between hard data and how the experience affected me, the participants, and how to use it in the future. This information not only is relevant to my instructional habits, but may be of use to other educators that wish to chart and reflect on their own practice.

Conclusion

This study was born from a desire to document the process of how drawing may be taught successfully, and how learners grasp drawing concepts in demonstrable ways. As drawing is built like other language constructions, charting improvement is not only relevant and supportive of my profession, but these specific drawing lessons give participants tangible evidence of their growing artistic knowledge. By utilizing four data points in this study, I covered a large range of information that all contribute to an overarching understanding of how to obtain and measure drawing improvement and best teaching practices.

Chapter 4

Significance of the Study

This chapter presents the findings based on four sets of data collected: drawing samples, independent scoring of drawings, questionnaires, and teacher reflection notes. This study is unique from other studies because it focuses on and measures how instruction impacts drawing skills of two different age groups, considers adult reflections of how they perceive drawing, and includes my own notes on my interactions with students and how the lessons progressed. This is a holistic approach to examining lessons taught within the art classroom through action research. From this study, I offer my findings and reflections to be used not only to improve my teaching practice in subsequent years, but also as data for others to utilize with their own drawing and teaching practices, and to add to the literature of drawing as a visual language.

Findings and Analysis

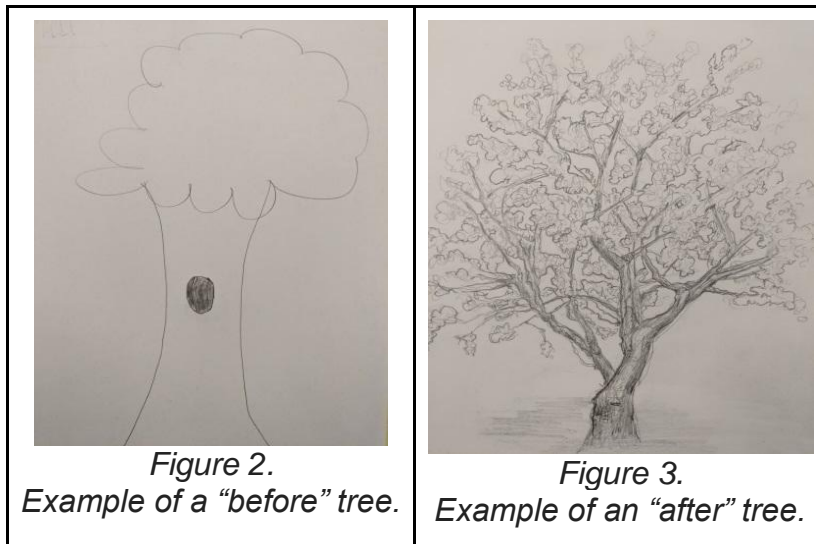
Having multiple sources of data is useful in presenting how drawing can be taught and improved upon over time. In order for someone to improve their drawing skills --at whatever age-- a learner must be motivated, engaged, take ownership, practice skills, and accept challenges along the way. Drawing fluency is strengthened when a teacher fosters trust and rapport, and the learner is encouraged to step outside of their comfort zone. This study shows just that: many different strategies and dialogic discourse coming together.

Drawing samples. The first semester of my Art I classes are always drawing-heavy so students can become familiar with drawing skill building. In these lessons, students touch upon the Elements and Principles of Art exploring the use of line, shape, form, value, and other fundamentals. Lessons are scaffolded, progressing in difficulty and complexity once prior knowledge is mastered. Amongst these art projects are three specific drawing lessons: the tree,

the house, and the face. Each object is familiar to the students, and very likely were drawn at some point when they were children. By using physical drawings collected as secondary data, I observed clear changes in drawing technique and attainment of naturalism from drawings before and after introducing drawing strategies. This applies to the adult group of participants as well, and I have seen similar growth with these older participants.

Adolescent drawings. My beginning Art I students were a mix of drawing skill strengths when I first met them in September. This group, with the exception of one 18-year-old student, were all adolescents spanning 9-12th grades, but primarily first year high school students. Their prior artistic exposure was from middle school, where they generally took art for one semester, every other day. These classes focused on material exploration and largely ignored drawing skill building, as explained by current students and a colleague who was formerly a middle school teacher. In the high school, they took my Art I as a yearlong course, every other day.

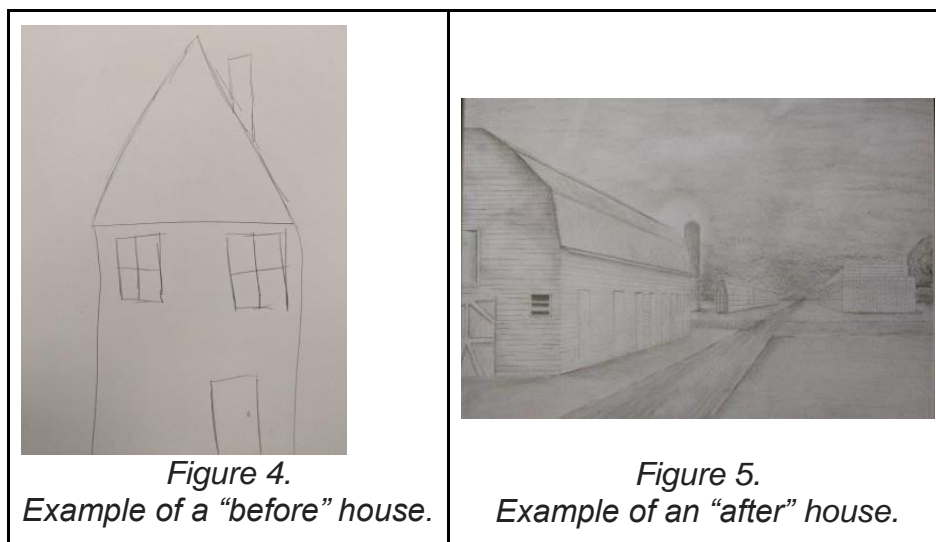
After a month into the new school year, I introduced my Art I class to the first lesson this study addressed: the tree. For the “before” instruction drawing, the majority of students (but not all) drew a simplistic tree, similar to *Figure 1*, where a trunk (with or without a darkened hole in the center) sprouts a curly cloud-like bush of leaves. Participants were told that these “before” drawings would not be graded, and a time limit was not imposed. Students completed these drawings within 5-10 minutes.



After students completed the initial assignment, we discussed as a class what kind of tree this could be, and they speculated it could be an oak, a maple, or an apple tree --without the apples of course. I inquired to my students “if you lived in California, Siberia, or the Caribbean, would your tree drawings have changed?”, “Does your tree look like any trees outside this classroom or in your neighborhood?”, and “What could be missing from this tree (like in *Figure 2*)?” Students enthusiastically responded back with their thoughts and comments. I pulled up photographs and artist renderings of trees that were common to rural Virginia and talked about branches, roots, and leaves. I then brought out a dead potted fruit tree with several well-defined branches forking into “v”-like formations. Students took out their sketchbooks, practiced drawing the dead fruit tree from observation, and then they went on their laptops to find three different tree photographs to draw. When those tasks were complete, the class watched me draw an example tree on the Smart Board where I modeled how to start with the trunk, then to fork off into branches and roots, and how to make clumps of leaves. I also introduced the idea of shading a tree trunk according to a light source. After my lesson, students were instructed to draw their own trees on a separate piece of paper. Some students chose to find a tree to use as a reference, some tried to recreate my modeled example from memory, and some drew a tree from their own

memory, but influenced by what they observed in class (see *Figure 3*, above, from one student's example). I circulated around the classroom, reminding students how branching works and reassured more unsure students not all trees look the same. The completed tree was used as a part of a larger project on addressing a complete environment to include a background, middle ground, and foreground.

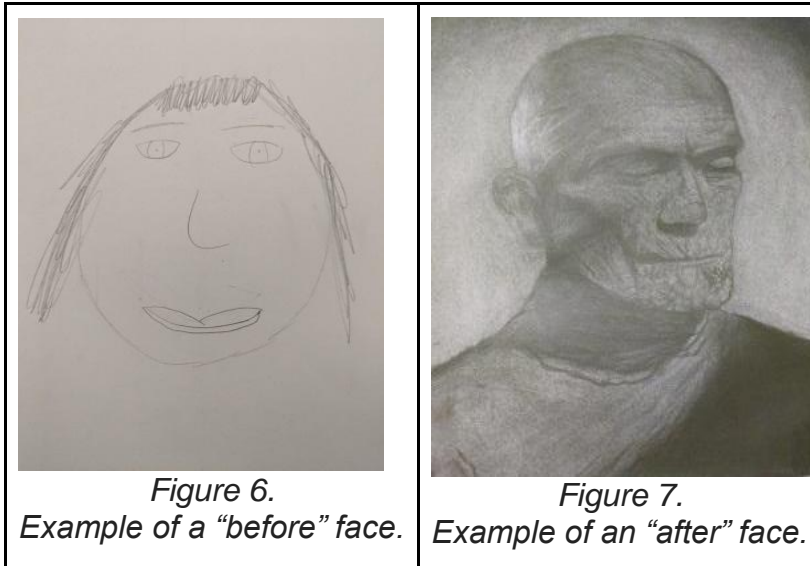
Around a month after the tree study, with a few art projects in between, the second study-related drawing assignment was introduced: the house. The majority of students drew a simplified outline of a house (see *Figure 4* for an example), that depicted a rectangle with a triangle on top, two windows, a door, and sometimes a chimney, were the norm. Again, participants were told that these "before" drawings would not be graded, and a time limit was not imposed. Students completed these drawings within 5-10 minutes.



To the class, I asked "Does this look like your house?", "Have you seen a house that looks like this before?", and "What location do you think you would find this house?" Students again responded with enthusiasm to my questions. I showed photographs and artist renderings of houses, and we discussed what made these images look "more real," or naturalistic. Students

noticed houses had different shaped roofs, different siding materials, variance in size and shape, and other features such as balconies and bay windows. I then modeled a drawing of several rough outlines of houses using one-point perspective. Here, I introduced a horizon line and a vanishing point so houses or buildings could be shown with more than one side, giving the illusion of depth. Students afterwards sketched rough outlines in their sketchbooks too, using one-point perspective. Then students were given the opportunity to draw on their own. I set a requirement of drawing five buildings, using one-point perspective, to demonstrate an understanding of the concept (student example in *Figure 5*, above). Some students chose to make up what their houses and buildings looked like from imagination influenced by what they learned, others used images found on their laptops for reference material. I circulated amongst students to meet one-on-one to check for understanding.

The third and final drawing used for this study occurred one month after the previous drawing: the face. The typical “before” drawing of the face (*Figure 6*, an example) placed eyelid-less eyes high up into the forehead, some had lips or a slash for a mouth, most had an “L” nose, some had hair, rarely were necks or ears included. Participants were again told that these “before” drawings would not be graded, and a time limit was not imposed. Students completed these drawings within 5-10 minutes.



During class discussion, students were given mirrors and also asked to look at their neighbors seated at their tables. We agreed these drawings represented human faces, but were not naturalistic. To practice drawing, students drew in their sketchbooks, following along to my modeled drawing. We drew an 8” x 5” head and I used my face to emphasize where proportions would follow. As a class, we drew proportional faces, but each face appeared different through the artist’s personal choices, like eye shape, lip thickness, hairstyle, etc. We also practiced drawing eyes, noses, and mouths from a packet of artist-rendered famous faces. Then students chose a face to draw from a packet of simplified famous faces from which to practice. Lastly, students drew on larger paper a final face of their choosing, emulating from a visual reference printout of either a relative or celebrity (example, *Figure 7*, above). Students used shading techniques, and I circulated around the room to troubleshoot any problems students had.

When students completed all three drawings, I removed the names and gave them corresponding numbers, and then two independent judges, one self-described artistic, one self-described non-artistic, scored the drawings. I discuss the scoring sheet and process below. Once all the data was obtained, “before” drawings were returned back to students. We critiqued all of

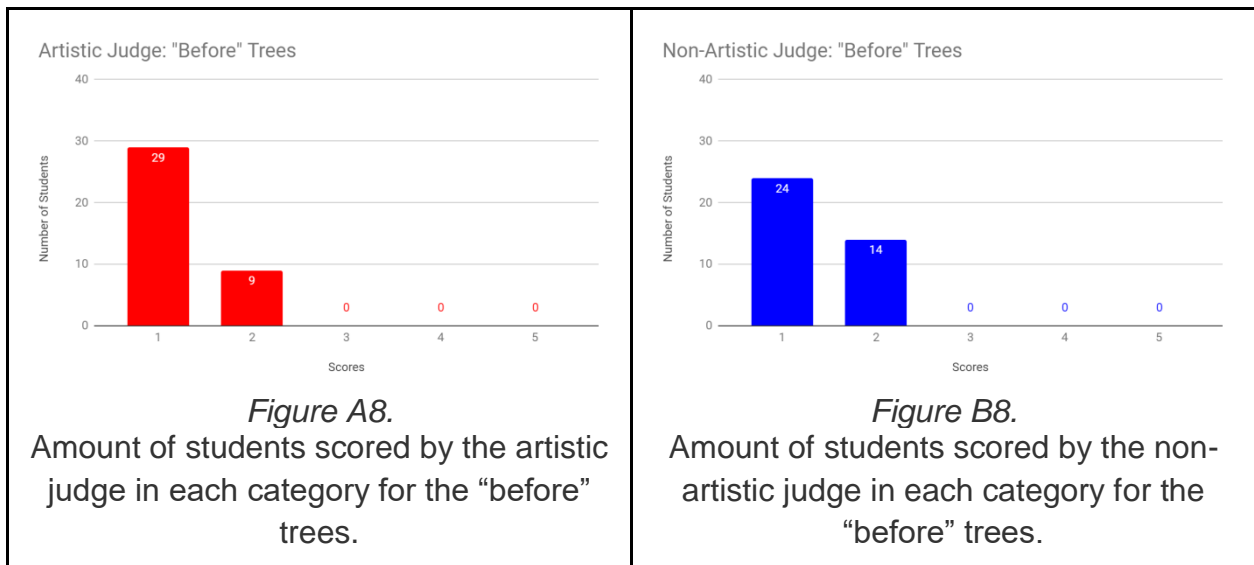
the “after” drawings, individually by subject, as a class, where students participated in sharing their thoughts of the artistic process that they had participated in.

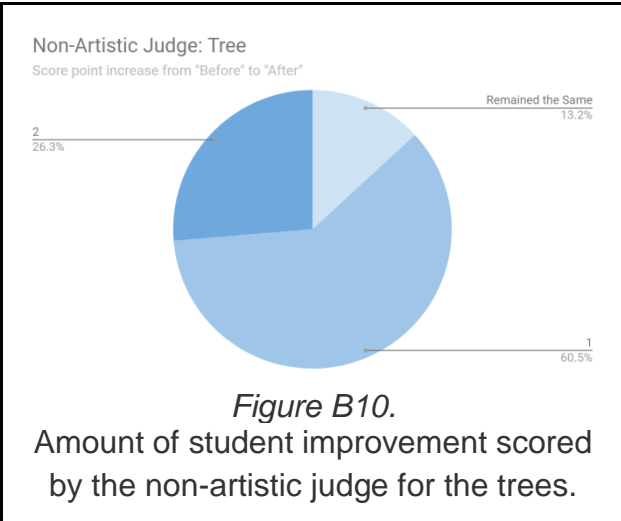
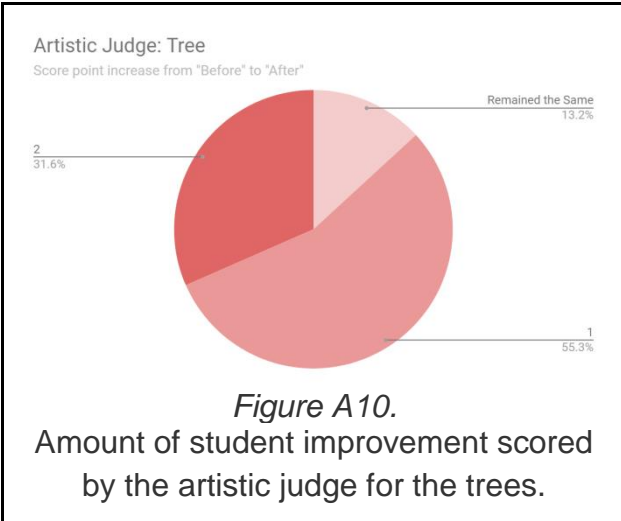
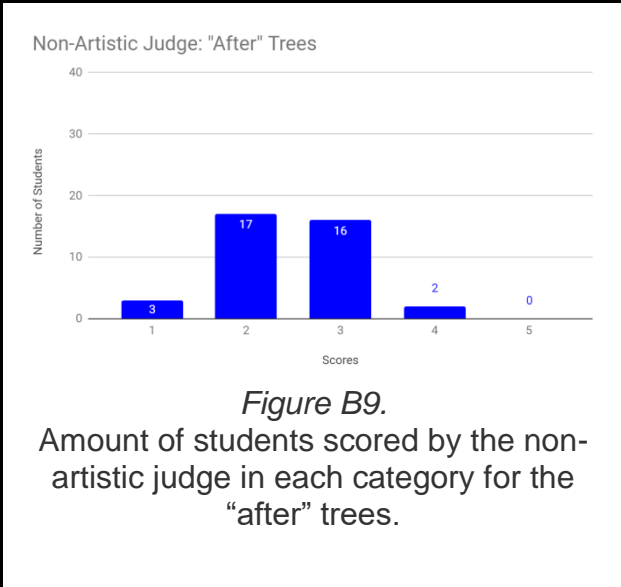
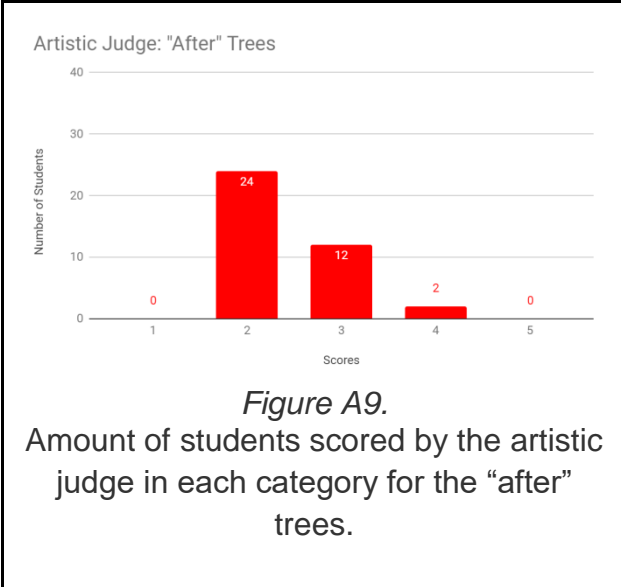
Adult drawings. The adult participant group ran similarly to the adolescent group, but met for a shorter amount of time. Students worked on a project over the course of a few days, whereas the adults introduced, practiced, and created a final drawing within the span of one and a half hours. Because of these time constraints, not as many practice drawings were conducted with this group but the same assignments were recreated.

Scoring of drawings. Two independent judges scored the adolescent and adult drawings, one being an experienced art teacher and thus labeled the “artistic” judge, the other judge had no artistic background, and thus self-identified as “non-artistic.” Both individuals were tasked with recording their scores between 1-5, 1 being “least naturalistic,” and 5 being “highly naturalistic.” The judges had sample drawings from Art I classes of previous years to reflect on what would be considered appropriately rated drawings for each of the five categories. I presented the drawings to the judges in random order, mixing the “before” and “after” drawings together to obtain a fair rating on all drawings. I subsequently matched the randomized order of drawings, which I labeled by number, to the alphabetical order of participants of their respective groups, then generated a corresponding list of the judges’ scores. Coding followed where I tallied the amount of scored 1s, 2s, 3s, 4s, and 5s of the “before” instruction and “after” instruction trees, houses, and faces. For these, I displayed the results in a bar graph for each judge and included the self-scored results made by the adults (see *Figures A8-B9, A11-B12, A14-B15, A17-C18, A20-C21, and A23-C24*). Furthermore, I tallied the amount of scored points between each “before” and “after” drawing to measure the amount of improvement of each drawer, displayed in pie charts (see *Figures A10-B10, A13-B13, A16-*

B16, A19-C19, A22-C22, and A25-C25). By measuring improvement points, I created a larger understanding of how much the participants grew in their portrayal of naturalism through drawing.

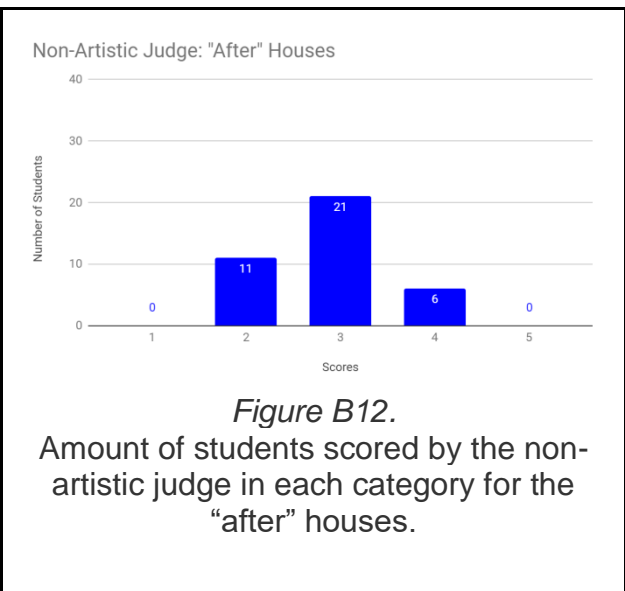
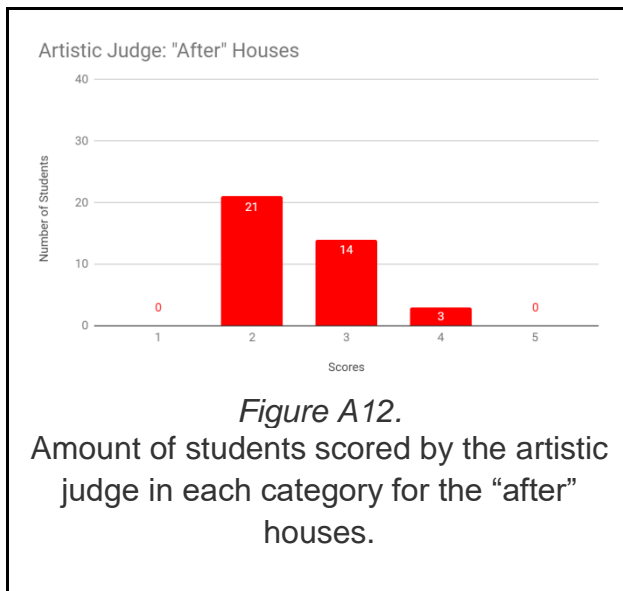
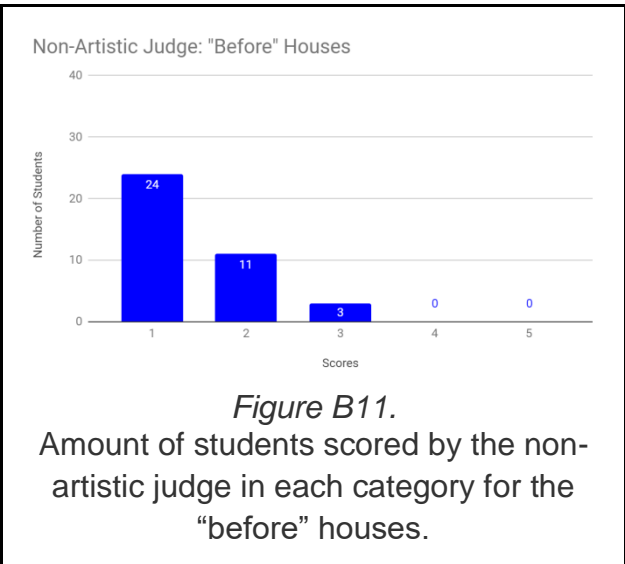
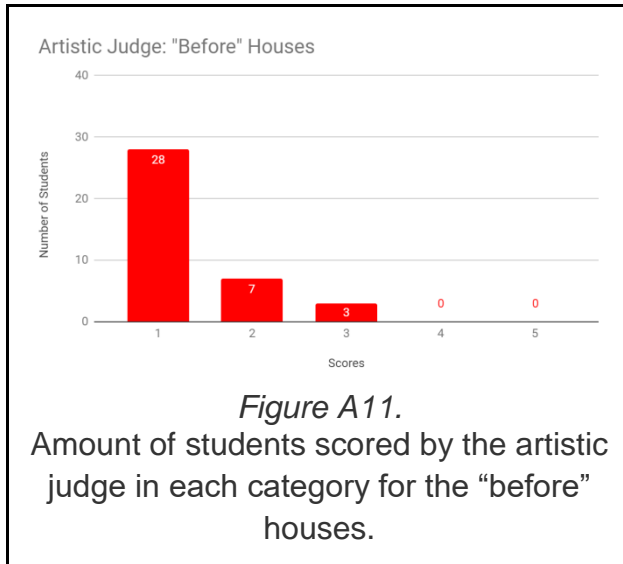
Adolescent drawings. For the tree assignment (see *Figures A8-B10*), the artistic judge found that out of the 38 students, 29 students scored a 1, and 9 students scored a 2 for their “before” drawings; there were no 3, 4, or 5 scores given. The non-artistic judge gave 24 students a 1, 14 students a 2, and likewise there were no 3, 4, or 5 scores given. For the “after” tree drawing, the artistic judge scored 0 students for 1, 24 students for 2, 12 students for 3, 2 students for 4, and 0 students for 5. The non-artistic judge gave 3 students a 1, 17 students a 2, 16 students a 3, 2 students a 4, and 0 students a 5. In charting improvement scores, the artistic judge found that 5 students remained at the same level of skill, 21 students improved by one point, 12 students improved by two points, and 0 students improved by three or four points. The non-artistic judge found that 5 students remained at the same level of skill, 23 students improved by one point, 10 students improved by two points, and 0 students improved by three or four points.

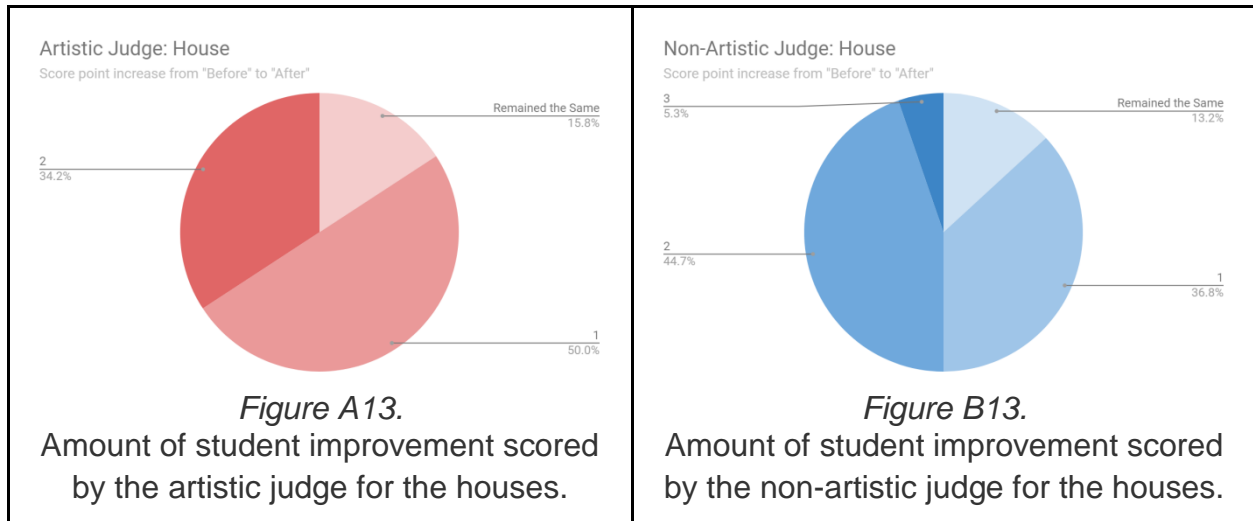




For the house assignment (see *Figures A11-B13*), the artistic judge found that 28 students scored a 1, 7 students scored a 2, and 3 students scored a 3 for their “before” drawings; there were no 4 or 5 scores given. The non-artistic judge gave 24 students a 1, 11 students a 2, 3 students a 3, and likewise there were no 4 or 5 scores given. For the “after” house drawing, the artistic judge scored 0 students for 1, 21 students for 2, 14 students for 3, 3 students for 4, and 0 students for 5. The non-artistic judge gave 0 students a 1, 11 students a 2, 21 students a 3, 6 students a 4, and 0 students a 5. In charting improvement scores, the artistic judge found that 6

students remained at the same level of skill, 19 students improved by one point, 13 students improved by two points, and 0 students improved by three or four points. The non-artistic judge found that 5 students remained at the same level of skill, 14 students improved by one point, 17 students improved by two points, 2 students improved by 3 points, and 0 students improved by four points.





For the face assignment (see *Figures A14-B16*), the artistic judge found that 30 students scored a 1, 7 students scored a 2, and 2 students scored a 3 for their “before” drawings; there were no 4 or 5 scores given. The non-artistic judge gave 26 students a 1, 11 students a 2, 1 student a 3, and likewise there were no 4 or 5 scores given. For the “after” face drawing, the artistic judge scored 0 students for 1, 14 students for 2, 19 students for 3, 4 students for 4, and 0 students for 5. The non-artistic judge gave 0 students a 1, 10 students a 2, 19 students a 3, 6 students a 4, and 3 students a 5. In charting improvement scores, the artistic judge found that 3 students remained at the same level of skill, 16 students improved by one point, 18 students improved by two points, and 1 student improved by three points, and 0 students improved by four points. The non-artistic judge found that 2 students remained at the same level of skill, 15 students improved by one point, 16 students improved by two points, 4 students improved by three points, and 1 student improved by four points.

Artistic Judge: "Before" Faces

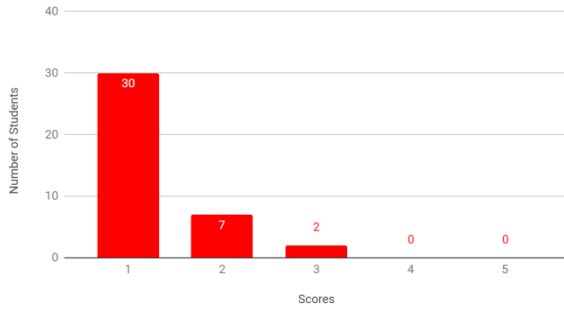


Figure A14.

Amount of students scored by the artistic judge in each category for the "before" faces.

Non-Artistic Judge: "Before" Faces

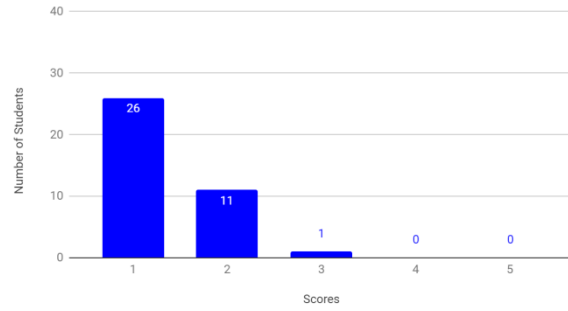


Figure B43.

Amount of students scored by the non-artistic judge in each category for the "before" faces.

Artistic Judge: "After" Faces

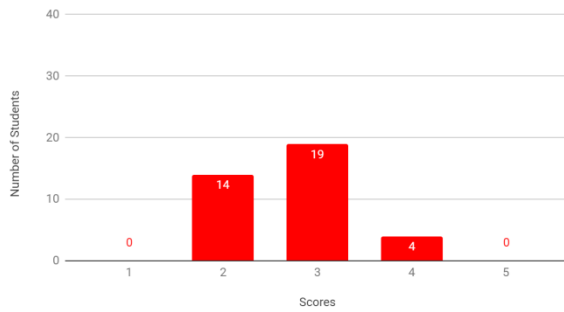


Figure A15.

Amount of students scored by the artistic judge in each category for the "after" faces.

Non-Artistic Judge: "After" Faces

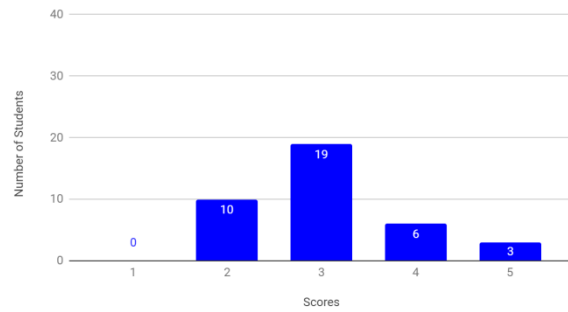
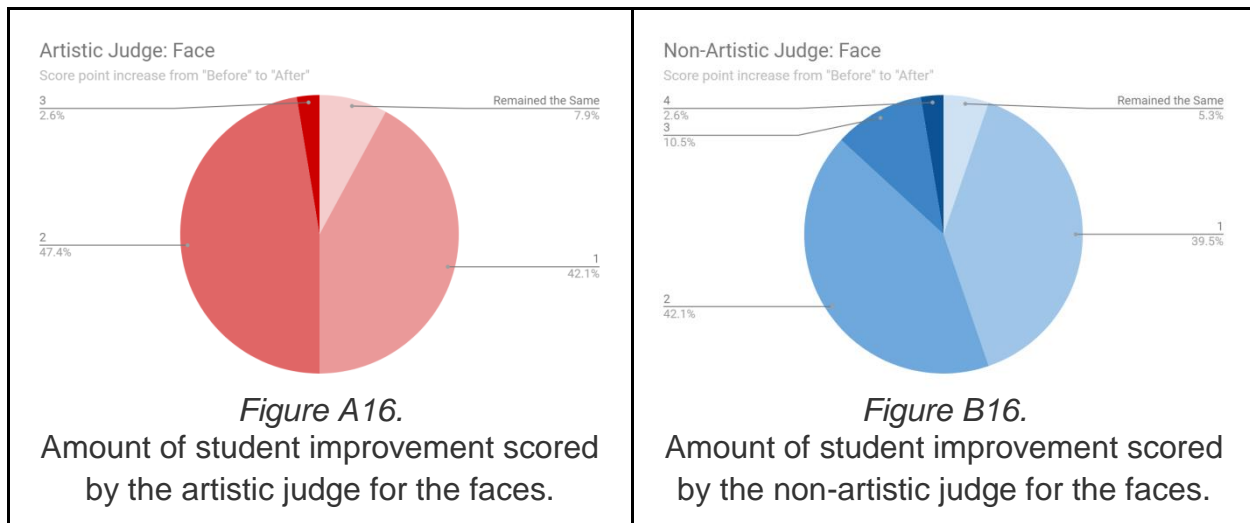


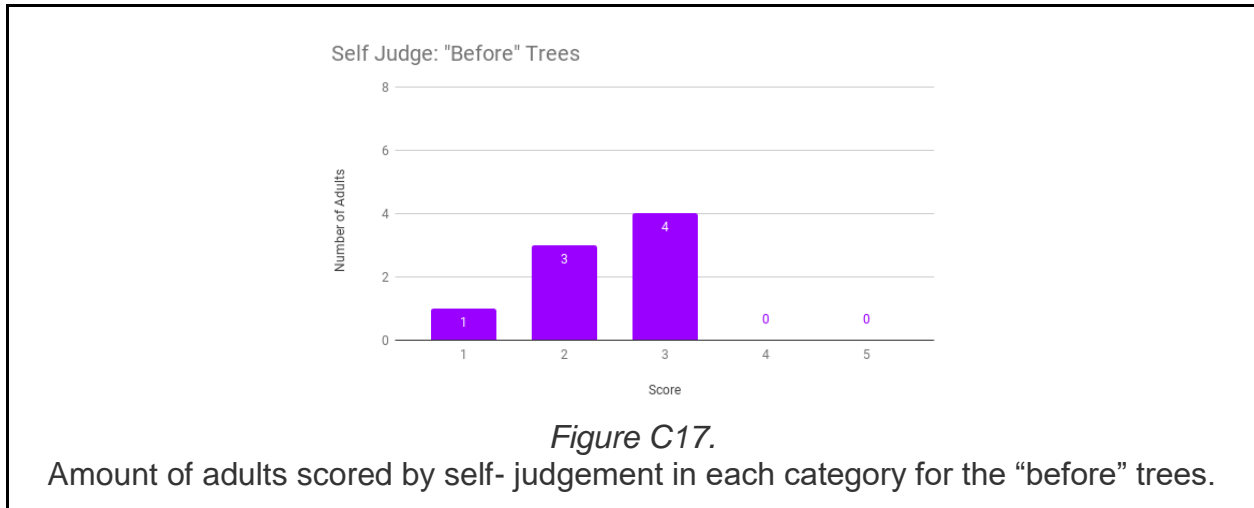
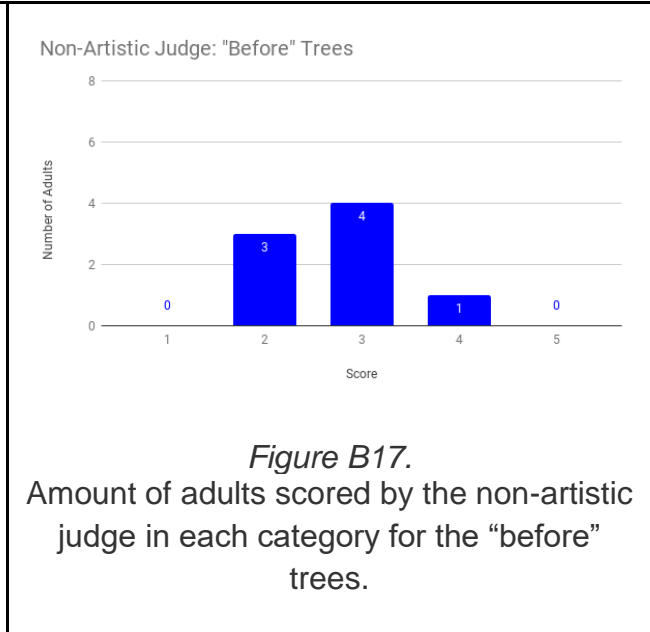
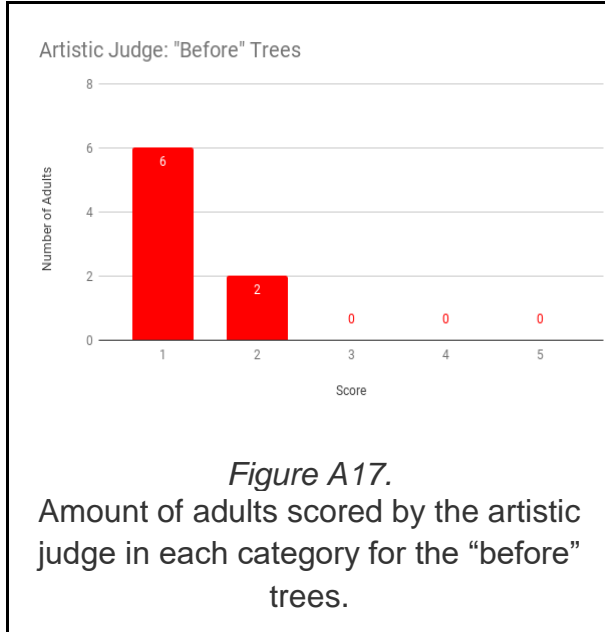
Figure B15.

Amount of students scored by the non-artistic judge in each category for the "after" faces.



Adult drawings. For the tree assignment (see *Figures A17-C98*), the artistic judge found that out of the 8 adults, 6 adults scored a 1, and 2 adults scored a 2 for their “before” drawings; there were no 3, 4, or 5 scores given. The non-artistic judge gave 5 adults a 1, 3 adults a 2, and likewise there were no 3, 4, or 5 scores given. For the “after” tree drawing, the artistic judge scored 0 adults for 1, 3 adults for 2, 4 adults for 3, 1 adult for 4, and 0 adults for 5. The non-artistic judge gave 1 adult a 1, 3 adults a 2, 3 adults a 3, 1 adult a 4, and 0 adults a 5. In charting improvement scores, the artistic judge found that 0 adults remained at the same level of skill, 5 adults improved by one point, 2 adults improved by two points, 1 adult improved by three points, and 0 adults improved by four points. The non-artistic judge found that 1 adult remained at the same level of skill, 5 adults improved by one point, 2 adults improved by two points, 0 adults improved by three points, and 0 adults improved by four points. Additional data was collected by the adults themselves, where they were asked to self-score their “before” and “after” drawings. There was 1 adult who gave them self a 1, 3 adults a 2, 4 adults a 3, and 0 adults a 4 or 5 score on the “before” tree drawing. For the “after” drawings, there were 0 adults that gave themselves a 1, 0 adults a 2, 2 adults a 3, 6 adults a 4, and 0 adults a 5. In charting improvement scores, the self-judged group found that 0 adults remained at the same level of skill, 5 adults

improved by one point, 3 adults improved by two points, and 0 adults improved by three or four points.



Artistic Judge: "After" Trees

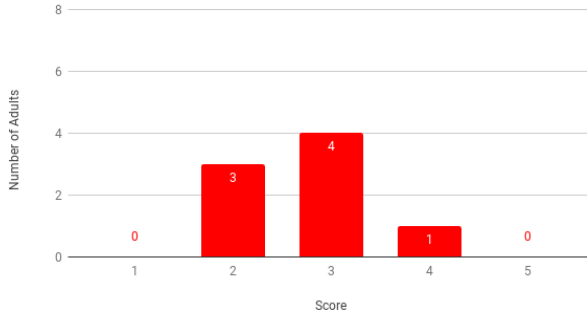


Figure A18.

Amount of adults scored by the artistic judge in each category for the "after" trees.

Non-Artistic Judge: "After" Trees

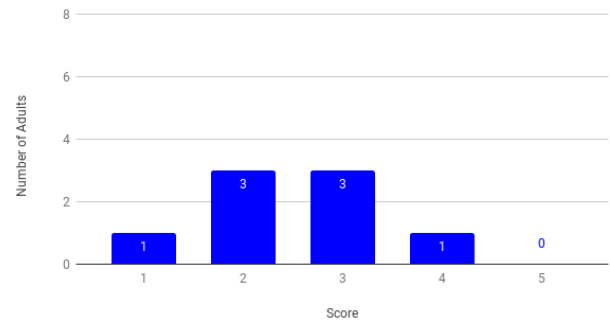


Figure B18.

Amount of adults scored by the non-artistic judge in each category for the "after" trees.

Self Judge: "After" Trees

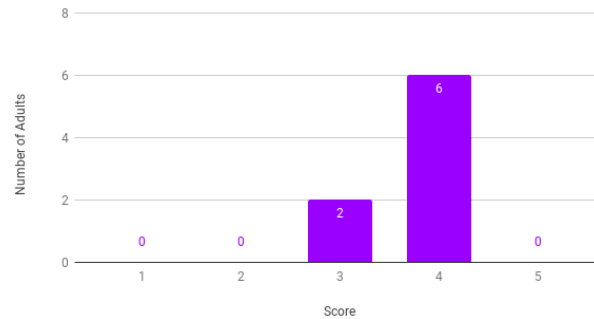


Figure C18.

Amount of adults scored by self-judgement in each category for the "after" trees.

Artistic Judge: Trees

Score point increase from "Before" to "After"

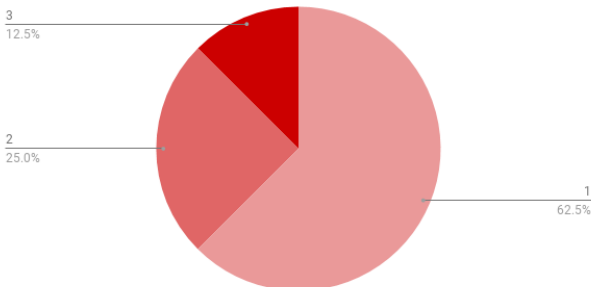


Figure A19.

Amount of adult improvement scored by the artistic judge for the trees.

Non-Artistic Judge: Trees

Score point increase from "Before" to "After"

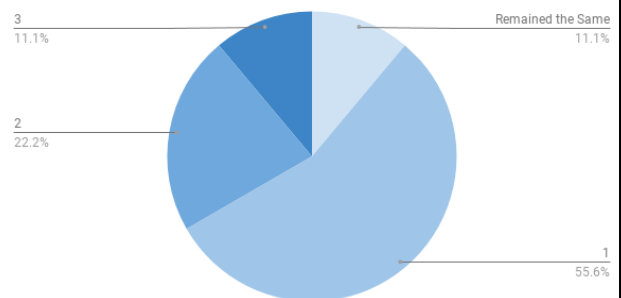
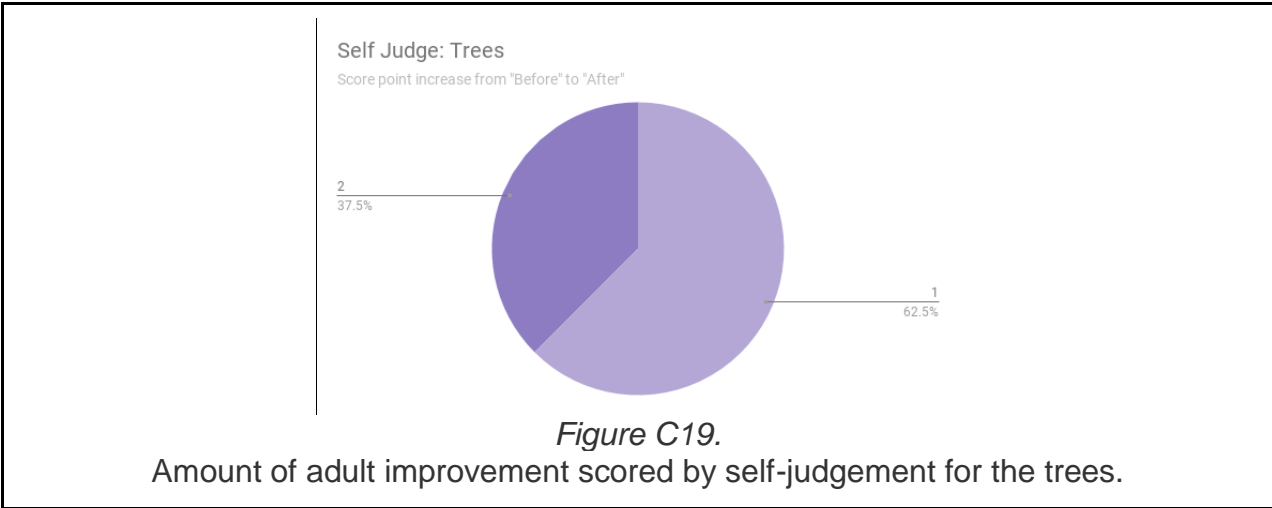


Figure B19.

Amount of adult improvement scored by the non-artistic judge for the trees.



For the house assignment (see *Figures A20-C22*), the artistic judge found that 5 adults scored a 1, and 3 adults scored a 2 for their “before” drawings; there were no 3, 4, or 5 scores given. The non-artistic judge gave 3 adults a 1, 4 adults a 2, 1 adult a 3, and there were no 4 or 5 scores given. For the “after” house drawing, the artistic judge scored 0 adults for 1, 2 adults for 2, 6 adults for 3, 0 adults for 4, and 0 adults for 5. The non-artistic judge gave 0 adults a 1, 2 adults a 2, 3 adults a 3, 3 adults a 4, and 0 adults a 5. In charting improvement scores, the artistic judge found that 0 adults remained at the same level of skill, 5 adults improved by one point, 3 adults improved by two points, and 0 adults improved by three or four points. The non-artistic judge found that 0 adults remained at the same level of skill, 6 adults improved by one point, 1 adult improved by two points, 1 adult improved by three points, and 0 adults improved by four points. For the self-judged scores, there were 3 adults that gave themselves a 1, 2 adults a 2, 3 adults a 3, and 0 adults a 4 or 5 score on the “before” house drawing. For the “after” drawings, there were 0 adults that gave themselves a 1, 0 adults a 2, 2 adults a 3, 5 adults a 4, and 1 adult a 5. In charting improvement scores, the self-judged group found that 0 adults remained at the same level of skill, 2 adults improved by one point, 5 adults improved by two points, 1 adult improved by three points, and 0 adults improved by four points.

Artistic Judge: "Before" House

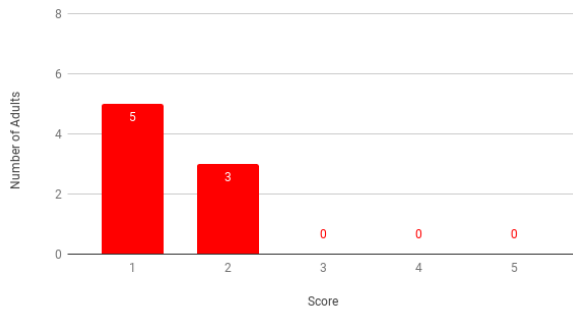


Figure A20.

Amount of adults scored by the artistic judge in each category for the "before" houses.

Non-Artistic Judge: "Before" House

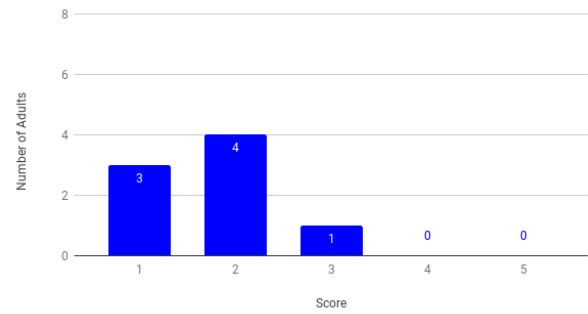


Figure B20.

Amount of adults scored by the non-artistic judge in each category for the "before" houses.

Self Judge: "Before" House

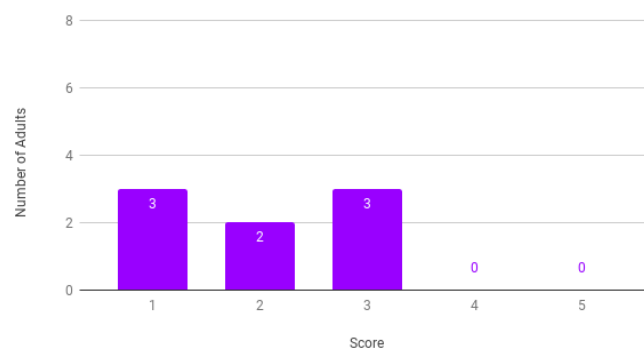


Figure C20.

Amount of adults scored by self-judgement in each category for the "before" houses.

Artistic Judge: "After" House

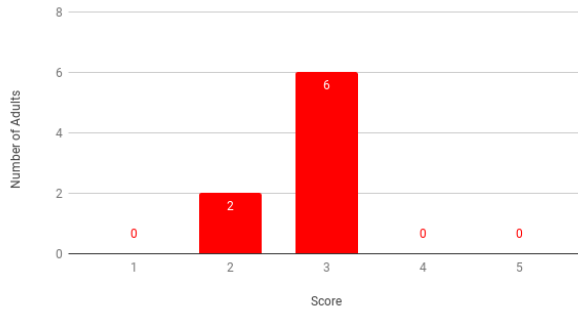


Figure A21.

Amount of adults scored by the artistic judge in each category for the "after" houses.

Non-Artistic Judge: "After" House

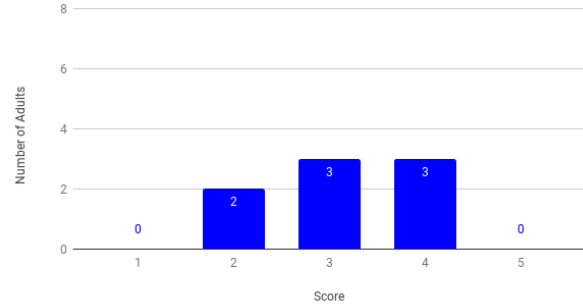


Figure B21.

Amount of adults scored by the non-artistic judge in each category for the "after" houses.

Self Judge: "After" House

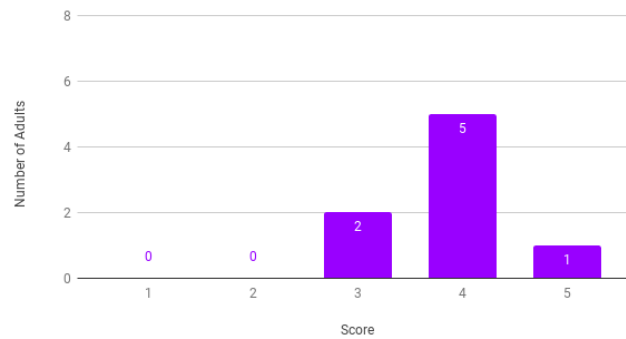


Figure C21.

Amount of adults scored by self-judgement in each category for the "after" houses.

Artistic Judge: House
Score point increase from "Before" to "After"

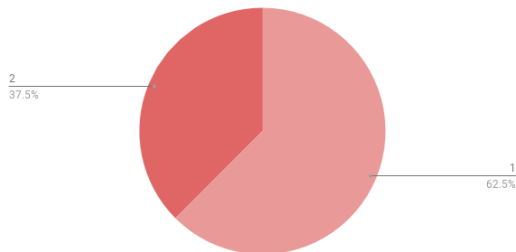


Figure A22.

Amount of adult improvement scored by the artistic judge for the houses.

Non-Artistic Judge: House
Score point increase from "Before" to "After"

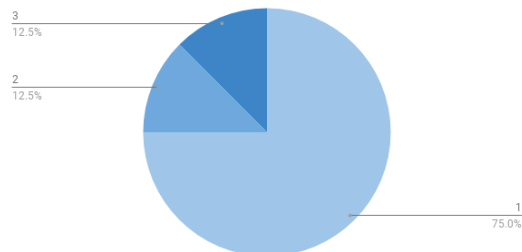
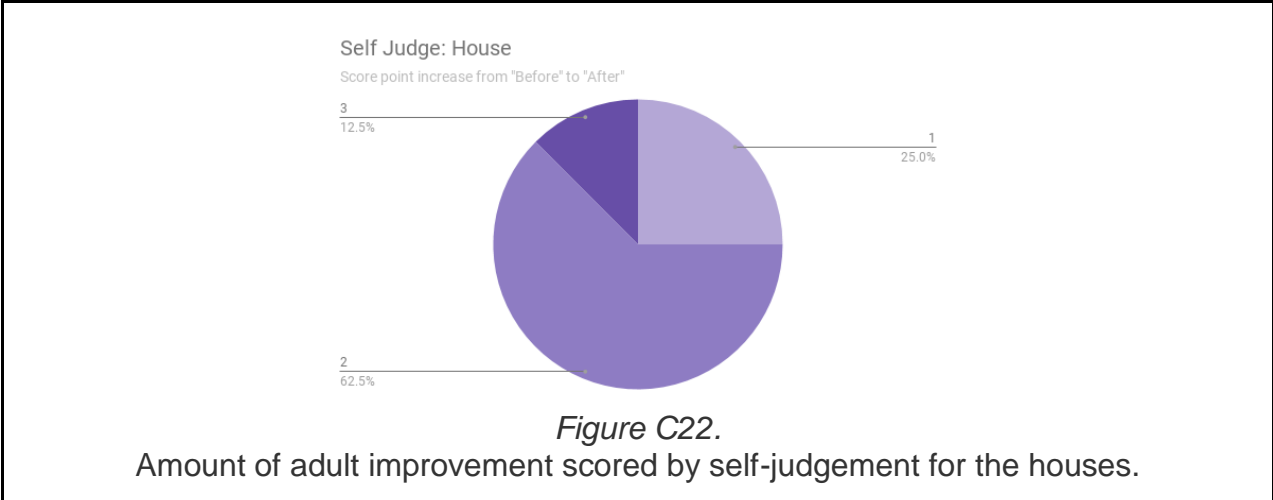


Figure B22.

Amount of adult improvement scored by the non-artistic judge for the houses.



For the face assignment (see *Figures A23-C25*), the artistic judge found that 4 adults scored a 1, and 4 adults scored a 2 for their “before” drawings; there were no 3, 4, or 5 scores given. The non-artistic judge gave 6 adults a 1, 2 adults a 2, and there were no 3, 4 or 5 scores given. For the “after” face drawing, the artistic judge scored 0 adults for 1, 3 adults for 2, 5 adults for 3, 0 adults for 4, and 0 adults for 5. The non-artistic judge gave 0 adults a 1, 2 adults a 2, 5 adults a 3, 1 adult a 4, and 0 adults a 5. In charting improvement scores, the artistic judge found that 1 adult remained at the same level of skill, 5 adults improved by one point, 2 adults improved by two points, and 0 adults improved by three or four points. The non-artistic judge found that 0 adults remained at the same level of skill, 3 adults improved by one point, 5 adults improved by two points, and 0 adults improved by three or four points. For the self-judged scores, there were 0 adults that gave themselves a 1, 5 adults a 2, 3 adults a 3, and 0 adults a 4 or 5 score on the “before” face drawing. For the “after” drawings, there were 0 adults that gave themselves a 1, 0 adults a 2, 1 adult a 3, 4 adults a 4, and 3 adults a 5. In charting improvement scores, the self-judged group found that 0 adults remained at the same level of skill, 3 adults improved by one point, 3 adults improved by two points, 2 adults improved by three points, and 0 adults improved by four points.

Artistic Judge: "Before" Face

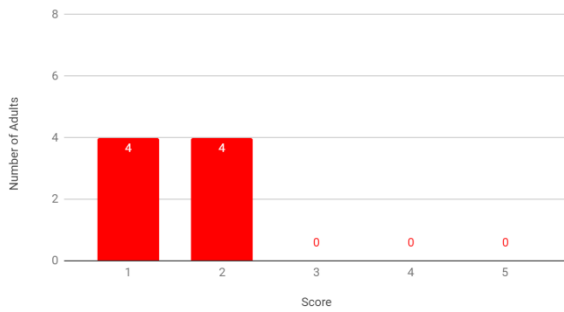


Figure A23.

Amount of adults scored by the artistic judge in each category for the "before" faces.

Non-Artistic Judge: "Before" Face

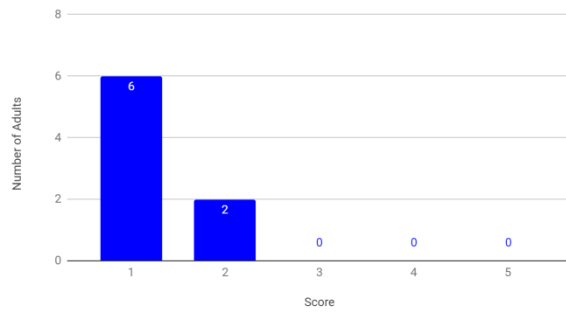


Figure B23.

Amount of adults scored by the non-artistic judge in each category for the "before" faces.

Self Judge: "Before" Face

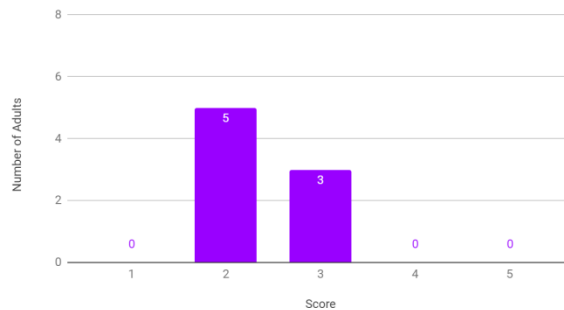


Figure C23.

Amount of adults scored by the self-judgement in each category for the "before" faces.

Artistic Judge: "After" Face

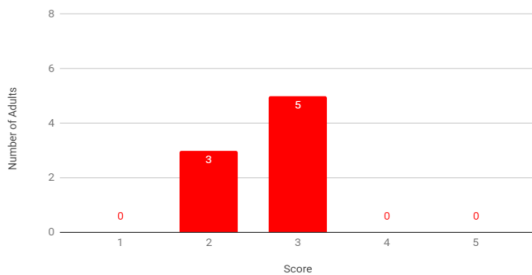


Figure A24.

Amount of adults scored by the artistic judge in each category for the "after" faces.

Non-Artistic Judge: "After" Face

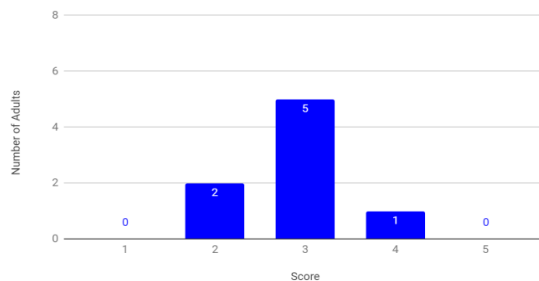


Figure B24.

Amount of adults scored by the non-artistic judge in each category for the "after" faces

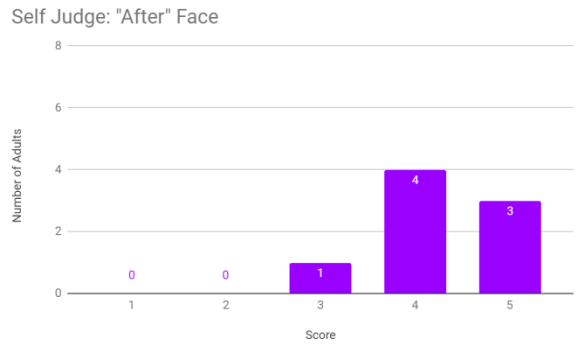


Figure C24.

Amount of adults scored by the self-judgement in each category for the “after” faces.

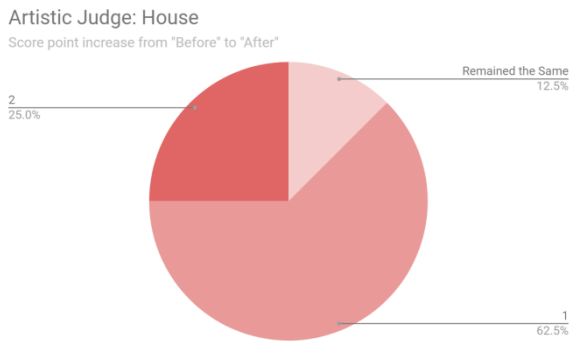


Figure A25.

Amount of adult improvement scored by the artistic judge for the faces.

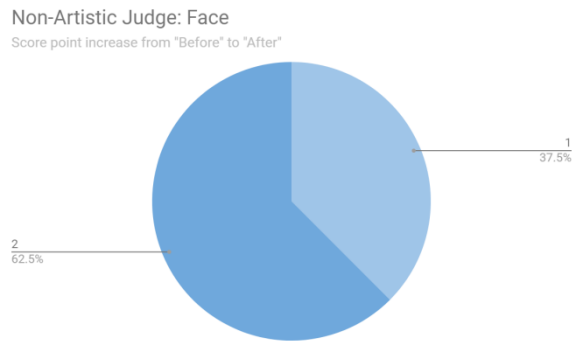


Figure B25.

Amount of adult improvement scored by the non-artistic judge for the faces.

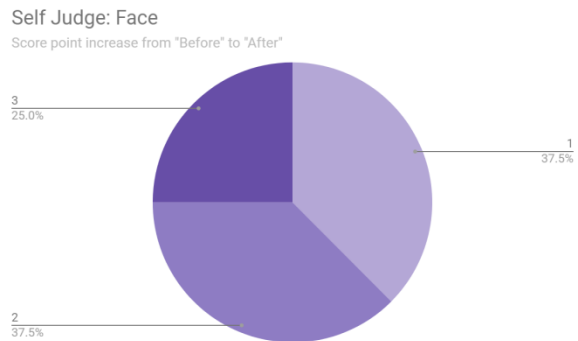
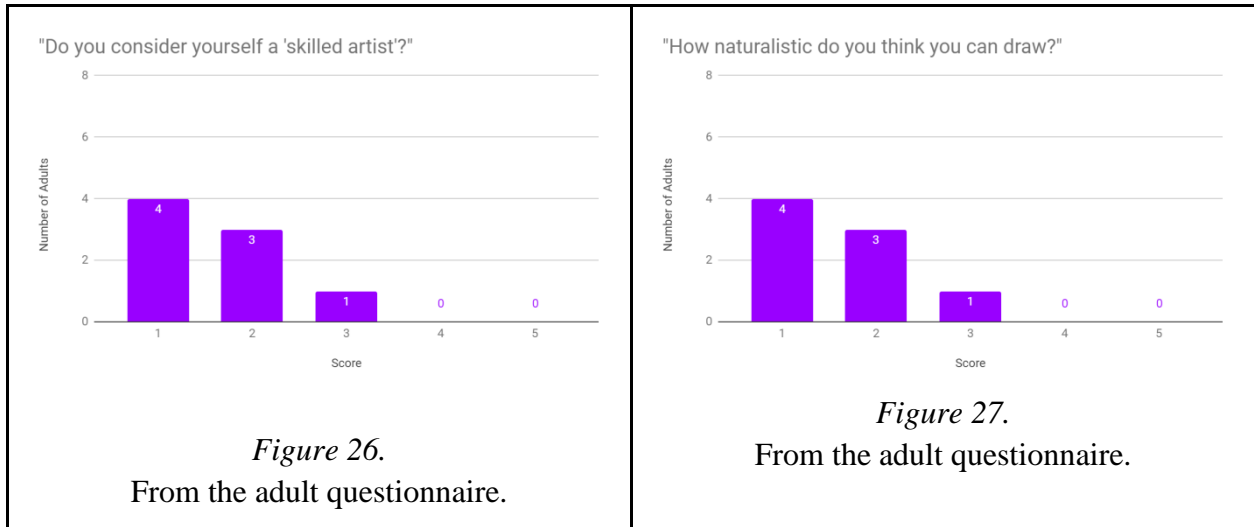


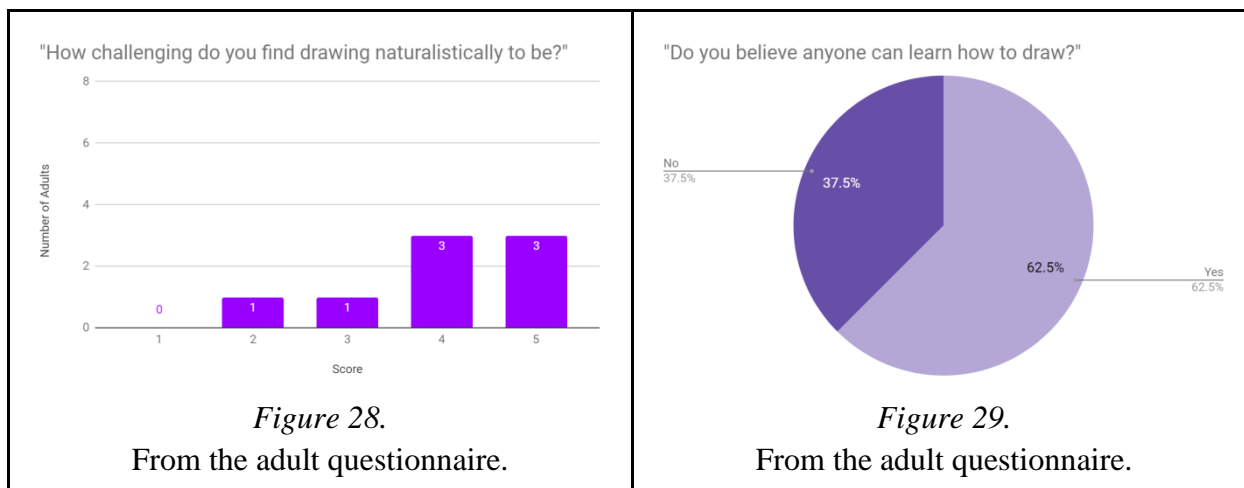
Figure C25.

Amount of adult improvement scored by self-judgement for the faces.

Questionnaires. In order to gauge where the adult group was starting from as an artistic base, I gave the group a questionnaire before instruction began. In it, I asked eight questions (see *Appendix A*), including a mix of both quantitative and qualitative questions. I felt open-ended questions allowed data findings to be more authentic and reflective of the adults' opinions.

The first three questions were based on a Likert scale between 1-5 (see *Figures 26-28*). The first one asked "Do you consider yourself a 'skilled artist'?" as to which 4 adults scored themselves a 1, 3 adults a 2, and 1 adult a 3. The second question "Reflecting on your current ability, how naturalistic do you think you can draw?" received 4 adults scoring themselves a 1, 3 adults a 2, and 1 adult a 3. The third question asked "How challenging do you find drawing naturalistically to be?", where 0 adults gave themselves a 1, 1 adult a 2, 1 adult a 3, 3 adults a 4, and 3 adults a 5.





Question four (*Figure 29*) on the questionnaire asked the adults if they use art in their adult lives, and if so, in what capacity. Out of the 8 adults, 7 responded that they did, in various capacities, 1 adult chose not to answer. Question five sought to identify the last level of art taken as a class, 1 adult responded Kindergarten, 1 was 6th grade, 2 were 9th grade, 1 10th, 1 11th, 1 12th, and 1 college.

Teacher reflections. I chose to use action research as my methodology because this study is much more than just measuring student achievement in drawing by means of instruction. Analyzing and reflecting on my practice as a teacher is just as valuable if I am to improve for next year and the years ahead. What I wanted to record was how successful were each of the teaching strategies I implemented, and if some strategies more effective than others. Were there strategies I tried this year as opposed to past ones that improved participants' learning? What could I have done differently? What were the important conversations that showed participant thinking?

When reviewing my reflection notes, I noticed trends and recurrent responses, which I coded, or grouped, together to see general themes. When working with participants in this study, I paid more attention to how the drawing process could appear through their eyes. Many learners

were not confident in their abilities, so creating a safe, open, and welcoming environment was the primary objective. Establishing a deeper trust and rapport with participants over time allowed them to take greater risks, and respond to guidance and critique when I offered it. Participants soon began to see themselves as collaborators, making their own choices in their drawings, therefore taking ownership and expressing pride in their finished artwork.

Adolescent group. The beginning of the year brought a new batch of Art I students, the majority of them 9th graders new to the high school and new to a year-long art curriculum. Some students genuinely wanted to be in art class, excited for the year ahead, and others were placed with me because they needed the elective requirement. After a few projects focusing on line and shape, I introduced the tree assignment. When I had students draw me what they thought a tree looked like, some students already exclaimed “but I can’t draw!” I assured them that the reason they were here was to learn how to draw, to express themselves, and to experiment with materials, techniques, and ideas. They were receptive enough, but when asked to walk around the classroom to see other students’ drawings, some tried to cover their work out of embarrassment, or laughed at other’s simplified attempts. I restated that it didn’t matter what the trees looked like now because it was the attempt that mattered. When we discussed the reason as a class why they thought the majority drew similar types and depictions of trees, they didn’t know. I started a dialogue of how that tree was a symbol of a tree recalled from memory, and not necessarily a naturalistic depiction of one. Students agreed that they were never asked to draw trees before, much less from observation. When we drew several practice sketches in sketchbooks based off of live observation, I asked students what they noticed. “Branches fork out” they replied. I drew on the board a tree I modeled, where students could see v-branches repeat forking patterns, and they practiced it. We looked at pictures and artist-rendered trees and

discussed what made it look like a tree. For the final tree drawing, something curious developed: even though we practiced and observed, some students still seemed to struggle with forming branches and were getting frustrated that they weren't "getting it". In these cases, they layered "v"s atop each other instead of recognizing parallel lines to create a branch. For these students, it was necessary to work one-on-one and draw on a separate piece of paper beside them. They needed to see the movements my hand made to achieve branch formation. Once they understood, they appeared more confident to try on their own.

After a couple projects after the tree assignment, we moved onto houses. A similar response occurred to the "before" trees where many looked the same, simplified depictions and some were embarrassed at their work. They all attempted, despite some rumblings of not being able to draw. I reminded them that it's the process, and that they already demonstrated improvement in the tree assignment. As a class, we discussed how their depictions of a house were similar or different than their own homes, and we looked at photos of houses and artist-rendered images. I modeled one-point perspective where students practiced in their sketchbooks. For the final assignment, students generally seemed to have an easier time, but again, a few individuals struggled with the concept of perspective. One-on-one modeling was key in having those students stay motivated and going.

I've found that in my teaching experience, drawing hands and faces are the most challenging for beginning drawers. When I introduced the face assignment, many seemed uncertain if they were able to do it at first. For their "before" drawings, I found the most variation out of the three assignments. Many had eyes placed up in the forehead region, "L"-shaped or rounded "W"-shaped noses, slashes for mouths, and often missing ears and necks. When I asked the class if the other students at their tables looked like their drawings, there was a

resounding “no.” The instruction portion of drawing a proportional face took longer than the previous two assignments as there were more precise steps involved. Students seemed the most eager to learn this assignment, and even though we drew step-by-step as a class, every resulting attempt looked different because of variety of choices and modifications on size, shape, and style. I took pauses between each facial characteristic to make sure students were keeping the same pace, and trouble-shot any individual questions students had. Overall, students seemed to be most proud of this drawing attempt. The final face drawing was to implement their facial proportion knowledge and apply the rules to a face of their choosing using emulation. Students chose either a famous face or a person they knew and spent the most time on this assignment by far, some coming during study hall to work on it. Students wanted to do well on this artwork not for the sake of the assignment or grade, but they were motivated to make something they were proud of.

To reflect on participant effort, I found that students generally seemed to rush on their “before” drawings, spending no more than ten minutes on them. It is my belief that because they knew that they were not going to be graded on these drawings, they may have drawn too quickly. On the other hand, students may not have had the knowledge of how to draw the assignments naturalistically, and drew a simplified schematic because that was what was familiar as a symbol. When students were instructed through several means of practice, they loosened up and seemed to show more confidence once they felt like they grasped the concepts. I enjoyed seeing some students help their peers in discussing how to fix what “didn’t seem quite right” and offering constructive advice.

Critiques are an important element in student and teaching reflection. Instead of doing critiques right after each assignment as I usually do, I elected to do all three critiques after the

completion of the face assignment. Right away, students giggled at their “before” drawings as a collective group. They were quick to point out their own and those of their friends. When asked to reflect about the tree and house assignments, several students voiced that they could’ve done better. When asked about the hardest assignment out of the three, the face drawing was the resounding answer. When asked which the most successful assignment to them was, they also replied “the faces.” When asked why they felt that the third assignment was drawn the best, despite being the hardest, one student commented “because we took our time and we learned how to slow down.” Another said “because I always wanted to learn how to draw faces but could never seem to get it just right.” And several students chimed in that “it’s because of practice!”

Adult group. At first, I was unsure of how much interest I would garner from fellow teachers into committing to a 90-minute class once a week for three weeks after teaching all day. It is a small county and the majority of staff have a 20-40-minute commute to home, small children, coaching, or other activities in their lives. I was lucky enough to receive the interest of eight educators spanning multiple disciplines, and all had an interest in improving their drawing skills. The three assignments given to students were truncated to accommodate the time constraints. Adults were given the questionnaires first, and I noted that all the participants thought poorly-fairly of their initial drawing skills, that they were unconfident in their ability in drawing naturalistically, generally thought drawing naturalistically was challenging, and, surprisingly, nearly 38% of participants believed that not everyone could not learn how to draw.

The adults carried on very similar to the adolescent group in several key ways. There was the initial embarrassment of their “before” drawings, some participants required or desired one-on-one supplemental direction, some showed a lack of confidence and questioned if they

were “doing it right”, but all attempted and tried their best. This group seemed to try for a longer period of time --10 to 15 minutes-- on their “before” drawings, and used their erasers more frequently. Adults generally asked more questions, got more excited about their successes, and wanted to compare their work with others to a greater degree. Adult “after” drawings were more carefully constructed than the student group, and most attempted to shade without being prompted to.

During critiques, the adult group seemed to be more thoughtful and be able to communicate more specifically as to what challenged them and what they could have improved upon. They, too, felt more confident as proficient drawers after the third assignment compared to the previous two.

There was one adult individual that surprised me after the study had been completed. A week after the end of the study, this individual returned to me her tree “after” assignment, but she had reworked the branches and leaves, and added shading. She stated that she wasn’t happy with the original outcome, especially when compared to the two latter assignments. I had a dialogue with her on how she came to make certain decisions with her revised work, and praised her on what she had accomplished. A few days later, she met with me again, this time brandishing a new sketchbook and drawing pencils and several small sketches of trees. I was proud to have this individual show enthusiasm and dedication to continue her drawing practice.

Limitations of the Research

There are a few key limitations of this study. First, this is a small, one-time study that would need repeated future trials to validate the findings. Secondly, there may be shortcomings within the original study: participants could have previously known what the targets were or what was expected through word of mouth from older siblings that have taken me as an art

teacher in previous years, or the adult (teacher) participants could have seen and remembered drawings hung up on the walls from years past. Also, it is important to consider the work by students who were absent during the period of teacher instruction, these students were instructed individually, and it cannot be guaranteed that the instruction was the same as that given to the larger group. A third limitation may be an unintended result of replacing one symbol for another for the adolescent or adult to fall back on. As there were some similarities among the “before” drawings for each assignment, after instructing the class on the necessary skill, the new drawing may become a symbolic image to replace a previous symbolic image, still relying on learned memory over observation.

Conclusion

By using four data points in my study, I have collected enough data to support the claim that drawing is indeed a language, and, combined with practice, several different types of instruction are necessary for motivated learners to become fluent. From the participants’ reactions, both adolescents and adults generally seemed tentative at first, and had low opinions of their drawing abilities. Over time, confidence, improvement of skill in naturalism, and participant-teacher rapport increased. The judges’ scores also reflect that the house assignment had a higher increase in naturalism for the “after” drawings than the tree assignment, and the face “after” drawings scored higher overall than the houses. This is reflected independently in both groups. I firmly believe that because of the different techniques introduced, the multiple teaching strategies used, and several exercises to practice concepts all contributed to higher motivation levels, thus a more confident drawer. Whereas not all participants achieved fluency, all made improvements in their abilities.

Chapter 5

Suggestions for Further Research

“In the tradition of Western art, drawing has, since the Renaissance, been considered to be the basis of education in the visual arts” (Montgomery-Whicher, R. 1997, p. 217). Drawing derives from memory, imagination, experimentation, emotions, copying, and observation, all being important in this phenomenological experience. These different ways to approach drawing develop and define a drawer’s personal style (Arnheim, 1983). Style is “characterized by both constancy and change” (Heard, 1988, p. 223) of vehicle, subject matter, technique, line qualities, or compositional elements of groups, individuals, or time periods. As children, the habitually drawn symbol of an object (schema) can be modified over time with practice to create personal style schemas based on artistic responses of the individual. The deviations from object schemas express the experience which was of importance to the child’s particular drawing due to changes in artistic thinking and feeling (Arnheim, 1983; Lowenfeld, 1957). However, personal style may be rudimentary or absent if a child is confronted with a difficult drawing task and may regress to a more primitive representation, or if a child remains at a schematic developmental stage where no growth is present (Arheim, 1974). Whereas schematic image-making is discussed and observed in this paper, personal drawing style is not, but is an avenue of recommended source material for the reader.

Touched upon in my literature review but not in my study is the concept of creativity. The expressive elements combined with imagination are vital in developing drawing abilities and personal style, but are too broad in scope to be a part of the judged and measured criteria presented here. Narrative drawings, where individuals communicate their stories through

their art via creativity, is also recommended as further reading, specifically Heard's (1988) study of children's narratives being influenced by style.

It is further suggested that readers who are interested in abnormal child drawing development, as found in autistic or gifted children, investigate studies that document these processes. Winner (1993) points out that in the case for giftedness in drawing, Western children are commonly observed to make advanced-seeming work in naturalism, unlike stereotypical childlike drawings found by their peers. These children show advanced visual memory and visual thinking skills and application, grasping the idea of learning to look more rapidly and more consistently. Less commonly known are gifted child artists who make drawings that are still childlike, but advance in their experimentation with form, line, color, and composition. Typically, gifted children "pass through the same sequence of drawing stages as do normal children, but do so more rapidly" (Winner, 1993, p. 33)

Lastly, drawing development is not always consistent around the world. The majority of this research and study focused on the progression of drawing through a Western lens and may have significant differences from Eastern techniques. For instance, the Chinese method of teaching art consists of having children gradually copy additions to simple schemas found in textbooks. This step-by-step model of imitation is similar to children in the West learning how to form letters, as does the East with their calligraphic glyphs, but this formula extends to drawing consistent and identical birds, flowers, fish, landscapes, etc. (Winner, 1993). These objects can and have been drawn by Western children through copying images, but more often students experiment on their own to create more personalized representations.

Review of the study

This study is the cumulation of literature outlining how drawing is built like any other verbal, written, or physical language, built using pictorial images and then processed through different drawing developmental stages using recall of visual memory, practice, and the employment of various learning strategies for improvement in drawing fluency. My study's aim was to demonstrate the attainment of drawing knowledge from teaching instruction by gathering "before" and "after" drawing data from adolescent and adult participants. Those drawings then were scored on attainment of naturalism by two independent judges. Additionally, I collected qualitative and quantitative data from questionnaires by the adult group and used my reflections on my interactions with the participants to create a holistic view of the drawing process.

Drawing as a research tool requires a carefully curated plan of action to allow participants to demonstrate what they know, what they believe, and how they can change their perceptions when multiple drawing strategies are introduced. I focused on memory, modeling, emulation, observation, dialogue, one-on-one instruction, practice and repetition to address multiple ways of learning. Because learners work at different speeds and grasp concepts at different depths, differentiation as the instructor was key. Using appropriate art vocabulary, clarifying concepts and expectations, keeping participants motivated and on task, and creating dialogue were all parts of the puzzle needed to be fit in order to have a successful study.

In the dialogic process between myself and the participants, drawers verbalized why they drew the drawings they made, the way they had chosen to, and they saw their own process change over the course of multiple class periods. Although I was the authority figure by default of being the teacher, participants still took ownership of their artistic decisions. When some asked for one-on-one guidance, they recognized they were invested enough to want their images

to turn out in a certain way that their mind's eye held, and adjusted accordingly. By presenting different learning strategies, it allowed drawers to become active problem solvers and decision makers who had multiple tools at their disposal. By asking them questions, I was inviting participants to provide meaningful feedback so I can refine my teaching practice, and also reflect on their drawing journeys. So, although this study sought answers, it also set the stage for a rich experience for all.

Conclusions

When I first began this study, I thought I knew all the answers. Instead, I had the puzzle pieces but didn't know how they all fit. I knew everyone could learn to draw because that was the attitude of a determined art teacher, but I never delved deep as to why, how, or what that looked like. By understanding how learning to draw is built as a language, acknowledging adolescents crave naturalistic drawing skill attainment, consciously practicing scaffolding and multiple teaching approaches, and witnessing adults timid in their abilities rise to the challenge have all shaped how I see and communicate teaching drawing.

Drawing samples. By using three specific assignments based on objects familiar to participants since childhood, I wanted to create an approachable and not overly daunting study. Both groups of participants easily came up with "before" drawings, but some were ashamed to share their drawings with the larger group, going so far as covering their drawings up. Discussion was useful in understanding why schematic drawings were common, and how similar they were to each other. Instead of more naturalistic depictions, these simplified schemas the participants used were easier, whether as a type of shorthand, or as an underdeveloped visual memory of the actual object. The adolescent and adult "before" drawings I collected span the characteristics of typical "schematic stage" (Lowenfeld, 1957, p. 138) and "concrete operational

stage” (Piaget, 1951, p. 105) images to “dawning realism” (Lowenfeld, 1957, p. 182) or “formal operations stage” (Piaget, 1951, p. 167) images. I noticed the slightly more complex “before” drawings of the latter characteristic stage assessment came from students who took more of an interest in Art class and were known to draw or doodle on their own. As for the “after” assignments, again, both adolescent and adult similarly demonstrated either the dawning realism/formal operations stage or moved into the “pseudorealistic” (Lowenfeld, 1957, p.182) or a continuation of the “formal operations stage” (Piaget, 1951, p. 167). From this, I can conclude practice, motivation, and instruction creates experience and a habit of the mind to learn how to look quickly and grasp drawing concepts more readily. Early success seemed critical, especially with the adolescents, in order to convince them they could learn and improve, and that it wasn’t, in their words, “hopeless.” Students, from years of teaching experience, can quit in frustration at the slightest problem in their artwork and learning new skills may invoke anxiety or avoidance. These students seek validation more than focusing on competence. Because of this, scaffolding is an important process when learning how to draw because it builds confidence which enhances progress. Self-reflection is also a valuable learned skill giving the learner pause in their situation long enough to define the problem, propose solutions, try the solutions, and evaluate the results.

Scoring. My original intention when collecting data included my own scores on my participants’ drawings, and the inclusion of my grading rubric I use in the classroom. I quickly realized extra data would be biased on the account of I recognize which drawings belong to who, and could influence my scores. On the reverse end, judges didn't have access to the process of artifacts, only the product, not seeing how a very low achiever may have had great personal success but superficially improved by one scored point.

Both judges were fairly consistent to each other with regards to their scoring of participant drawings, but the non-artistic judge seemed to give slightly higher marks on average. This may be that the artistic judge is more accustomed to having a critical eye in the art classroom, or perhaps the non-artistic judge unknowingly compares his abilities to the sample drawings and is more forgiving of certain elements. Neither judge found that participants drew “after” pictures less naturalistically than their “before” pictures, and the majority of participants improved by at least one point on the Likert scale.

Questionnaires. Coming up with a short list of questions to ask my adult participants proved somewhat challenging as I wanted to ask too many questions. In the beginning, I wanted to ask additional questions pertaining to the process of creativity and what that looked like. As this paper and study addressed more of the skills developed to focus on naturalistic drawing, creativity and expression, while fascinating and a vital component to the visual art conversation, was far too much to get into here.

Reflections. Learning to see is not automatic. I took it for granted when learning to draw, learners do not always see the curve of a line or the shape of a shadow the way I perceive it. Referring back to Edward’s (1979) research on activating the more visual-spatial areas of our brains, prompts and instruction that encourage creative problem solving is critical to individual experience and growth in more than one mode of thinking. Practice with initial exploration, instruction, modeling, emulation, observation, one-on-one help and repetition are all components to understanding drawing. Even when using a visual reference, the teacher needs to emphasize instruction for specific parts, going so far as to demonstrate on a separate piece of paper for the participant, like redrawing a specific nose so the learner can observe how the hand moved. Mimicking hand movements along with the desired resulting image was one aspect of

teaching I had not previously realized the importance of. When learning how to see, participants immersed themselves in seeing lines, shapes, forms, angles, proportions, relationships, which is often very challenging when the student does not have a history of using this practice.

Observational drawing is also not a static view: it can change dramatically depending on, our vantage point and can only be learned by actively doing it. Because of this, a drawing practice is a constantly evolving experiment.

Besides the physical practice of image-making, participant reflection is an important in becoming more observant and drawers as evidenced through critiques and class dialogue. The artistic choices they consciously make contribute to a personal sense of style and ownership. Listening to another person in the group can be more useful than expressing opinion in some cases, as understanding more intently develops in a community of learners, with partners in the learning process, engaging opportunities, construction of their building, and motivation for engagement, choice, and ownership of the process. When applying directly to my teaching priorities, I found action research can foster awareness, describe situations, clarify concepts, define issues, test assumptions, and contribute to theory development.

Teaching and conducting action research are entwined living practices vital to me as an art educator in the classroom, and even more so now after this study. I recognize the practice of inquiry between the different drawing strategies I introduced, and the phenomenological research I observed and collected, both illuminating and informing the other. Although the surroundings were familiar, this experience and journey of living practice was one that I have shared with both my students and fellow educators that we created together, and like in observational drawing, this kind of research was about relearning how to see.

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Appendices

Appendix A: Questionnaire

Drawing as Language Research: adult study-Whitson

If you would like to participate in my research, please complete the following questions.

Survey questions:

On a scale of 1-5, 1 being “not very” and 5 being “very much,” please circle the appropriate category.

Not Very Somewhat Very Much

Do you consider yourself a “skilled artist”? 1 2 3 4 5

Reflecting on your current ability, how realistic/naturalistic do you think you can draw?

1 2 3 4 5

How challenging do you find drawing naturalistically to be?

1 2 3 4 5

How useful is art in your adult life?

What was the last school grade level do you remember participating in art class? Have you taken any art classes in your adult life?

What do you find challenging about drawing?

What do you enjoy about art?

Do you believe anyone can learn how to draw?

Thank you for your participation. Your feedback is greatly appreciated!

Drawing as Language adult questionnaire results

1. Do you consider yourself a “skilled artist?”

2, 2, 3, 1, 1, 1, 2, 1

2. Reflecting on your current ability, how naturalistic do you think you can draw?

3, 1,1,1, 2, 1, 2, 2

3. How challenging do you find drawing naturalistically to be?

3, 5, 4, 4, 4, 5, 2, 5

4. Do you find yourself using art in your adult life? If so, in what capacity?

Yes, somewhat as a paraprofessional in special ed.

I like to decorate and I paint abstractly for fun (but I’m not good at it).

I create painted and hand lettered signs with inspirational quotes

Yes, bulletin boards, scrapbooking

Yes, I go to the art museum all the time

Yes. Choosing colors to paint my walls, decorating my house.

(no answer)

Yes, in my teaching, but limited

5. What was the last school grade level do you remember participating in art class? Have you taken any art classes in your adult life?

6th grade

9th, I take some occasionally for crafts and abstract painting currently

11th grade

Kindergarten

In college

10th grade ceramics

9th grade

12th grade pottery

6. What do you find challenging about drawing?

Making my drawings

I can't draw naturally. I can't get the likeness

Shading and detailing to look naturally

All of it

It's a challenge making it look real

Everything

(no answer)

Perspective and proportions

7. What do you enjoy about art?

Adding color

It's expressive, and making it can be therapeutic.

It allows me to escape my own brain

Being able to create projects, using a different part of my brain, interpreting various forms of art

A person can express his/herself with art. Art can brighten up a room.

(no answer)

It can be an escape into a new world

Can be relaxing

8. Do you believe anyone can learn how to draw?

Yes, to a certain extent

No, sometimes people just can't learn certain skills

Yes

Yes

No

No

Yes

Yes, with the right frame of mind and the right teacher

Appendix B: Post reflection- Adult study

Using the following definition of naturalism, please answer the following questions:

Naturalism: drawing representation based on the accurate depiction of a real object.

Reflecting on your “before” drawing, how naturalistic do you believe your:

	<u>Not Very</u>		<u>Somewhat</u>		<u>Very Much</u>
Tree is:	1	2	3	4	5
House is:	1	2	3	4	5
Face is:	1	2	3	4	5

Reflecting on your “after” drawing, how naturalistic do you believe your:

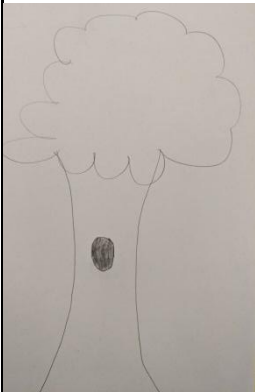




	<u>Not Very</u>		<u>Somewhat</u>		<u>Very Much</u>
Tree is:	1	2	3	4	5
House is:	1	2	3	4	5
Face is:	1	2	3	4	5

Appendix C: Independent Judges Form, Tree

You have been chosen to judge student and adult “before” and “after” drawings of trees, houses, and faces. For each “before” and “after” drawing shown to you, please rate using a Likert scale, “1” being poor example of naturalism, “3” being a good example of naturalism, and “5” being a high example of naturalism, according to your discernment, the definition of naturalism, and samples of “poor,” “good,” and “high” levels.

Naturalism: drawing representation based on the accurate depiction of a real object

Independent Judge Samples

 <p>1 Simple outline, few extra features. Often lacking branches, if leaves are present, they are often cloud like”</p>	 <p>2 A couple branches present, may have a few details</p>	 <p>3 Multiple branches present, if leaves are present, less cloud like, details on trunk and/or leaves.</p>
 <p>4 Significantly more branches, leaves less cloud like, shading may or may not be present</p>	 <p>5 Many varied branches, if leaves are present, attached more naturalistically to limbs, shading present</p>	

Student number	Artistic judge	Non-Artistic Judge
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1	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
2	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
3	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
4	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
5	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
6	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
7	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
8	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5

9	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
10	before	1	2	3	4	5	1	2	3	4	5

	after	1	2	3	4	5	1	2	3	4	5
11	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
12	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
13	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
14	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
15	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
16	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
17	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5

18	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
19	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
20	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
21	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5

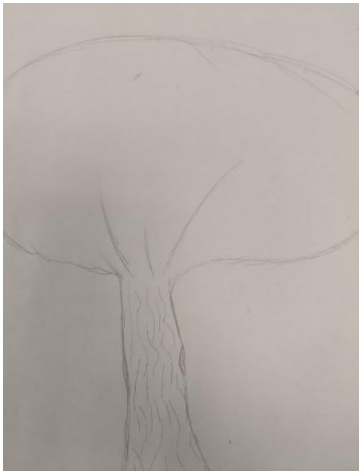

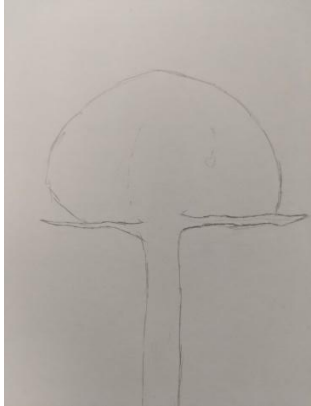
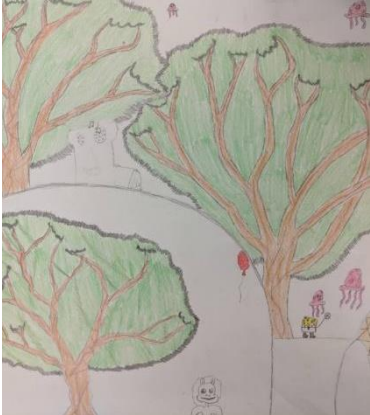
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	after	1	2	3	4	5	1	2	3	4	5
23	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
24	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
25	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
26	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5

27	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
28	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
29	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
30	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
31	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
32	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
33	before	1	2	3	4	5	1	2	3	4	5

	after	1	2	3	4	5	1	■	3	4	5
34	before	1	2	3	4	5	1	■	3	4	5
	after	1	2	3	4	5	1	2	■	4	5

35	before	1	2	3	4	5	■	2	3	4	5
	after	1	2	3	4	5	1	2	■	4	5
36	before	1	2	3	4	5	■	2	3	4	5
	after	1	2	3	4	5	1	■	3	4	5
37	before	1	2	3	4	5	■	2	3	4	5
	after	1	2	3	4	5	1	2	■	4	5
38	before	1	2	3	4	5	■	2	3	4	5
	after	1	2	3	4	5	1	■	3	4	5

Appendix D: Student Tree Drawings

"Before"	"After"
 <p data-bbox="204 821 358 852">Student #11</p>	 <p data-bbox="722 821 876 852">Student #11</p>
 <p data-bbox="204 1320 342 1352">Student #5</p>	 <p data-bbox="722 1329 860 1360">Student #5</p>



Student #29



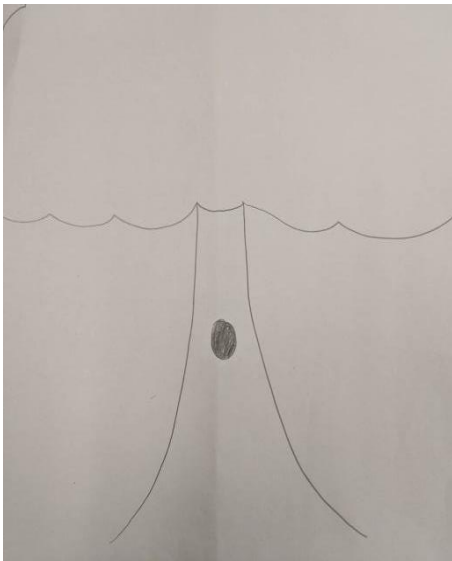
Student #29



Student #12



Student #12



Student #8



Student #8



Student #18



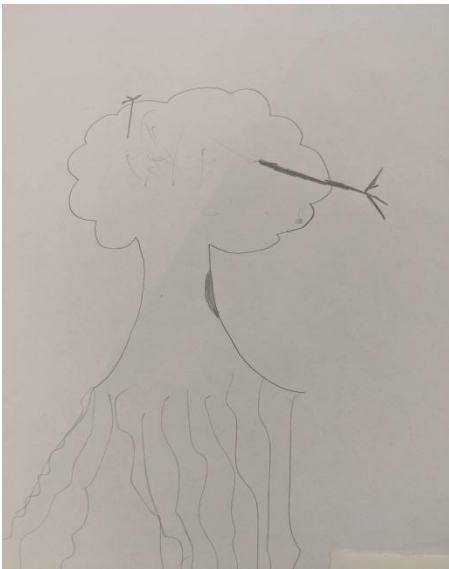
Student #18



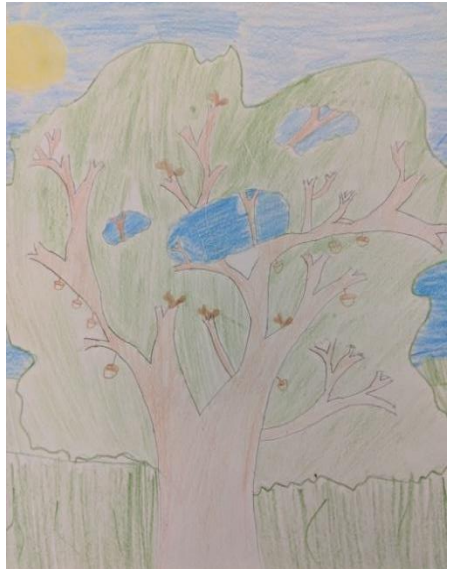
Student #33



Student #33



Student #14



Student #14



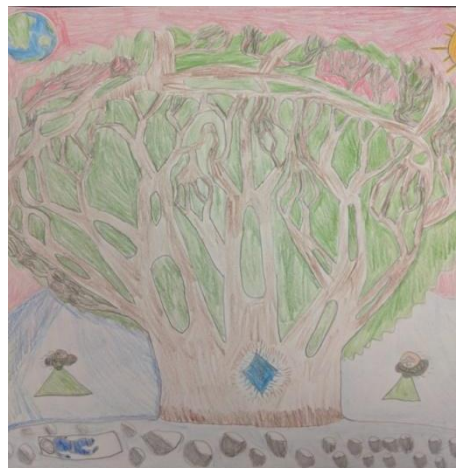
Student #9



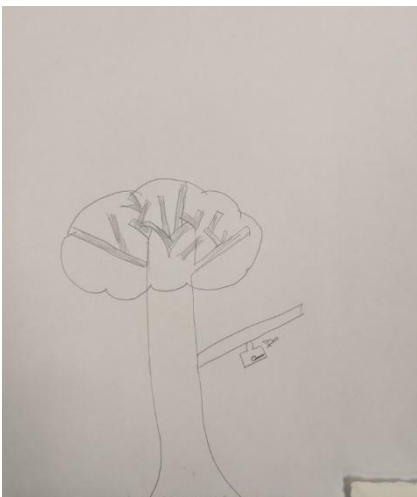
Student #9



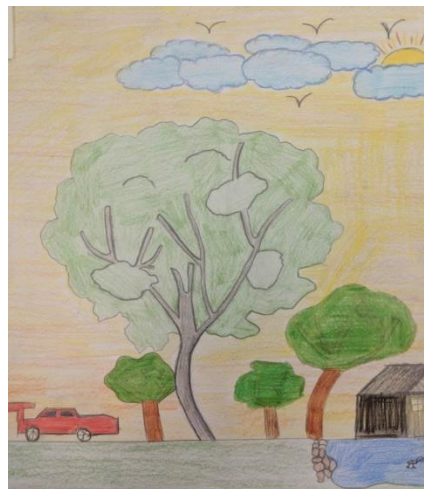
Student #37



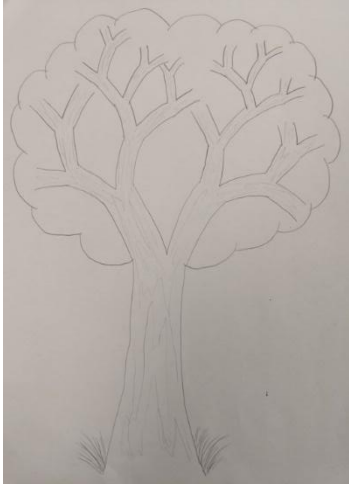
Student #37



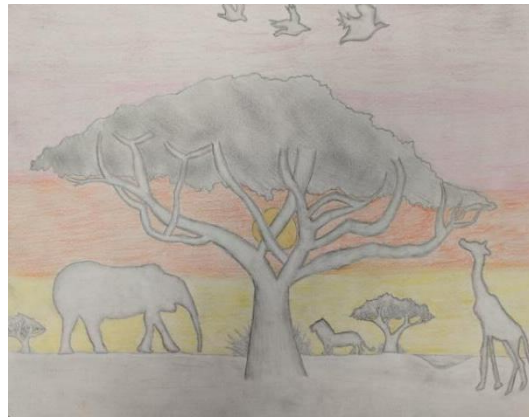
Student #7



Student #7








Student #3



Student #3

Appendix E: Independent Judge Samples, House

		
<p>1 Simplistic features</p>	<p>2 Attempted perspective</p>	<p>3 Perspective used, more details</p>

	
<p>4 Perspective used, shading may/may not be present, unique details</p>	<p>5 Perspective used, shading, unique details</p>

Student number	Artistic judge	Non-Artistic Judge
----------------	----------------	--------------------

1	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
2	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
3	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5

4	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
5	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
6	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
7	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
8	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5

9	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
10	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
11	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
12	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
13	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
14	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
15	before	1	2	3	4	5	1	2	3	4	5

	after	1	2	3	4	5	1	2	3	4	5
16	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
17	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5





18	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
19	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
20	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
21	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
22	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
23	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
24	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
25	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
26	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5

27	before	1	2	3	4	5	1	█	3	4	5
	after	1	2	3	4	5	1	2	█	4	5
28	before	█	2	3	4	5	1	█	3	4	5
	after	1	2	3	4	5	1	2	█	4	5
29	before	1	2	3	4	5	1	█	3	4	5
	after	1	2	█	4	5	1	2	3	█	5
30	before	█	2	3	4	5	█	2	3	4	5
	after	1	2	█	4	5	1	2	█	4	5
31	before	█	2	3	4	5	█	2	3	4	5
	after	1	2	█	4	5	1	█	3	4	5
32	before	1	2	█	4	5	1	2	█	4	5
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33	before	█	2	3	4	5	█	2	3	4	5
	after	1	2	3	4	5	1	2	█	4	5
34	before	█	2	3	4	5	█	2	3	4	5
	after	1	2	█	4	5	1	2	3	█	5

35	before	█	2	3	4	5	1	█	3	4	5
	after	1	2	3	4	5	1	█	3	4	5
36	before	█	2	3	4	5	█	2	3	4	5
	after	1	2	3	4	5	1	█	3	4	5
37	before	1	2	3	4	5	1	█	3	4	5
	after	1	2	3	4	5	1	2	█	4	5
38	before	█	2	3	4	5	█	2	3	4	5

	after	1	2	3	4	5	1	2	3	4	5
--	-------	---	---	---	---	---	---	---	---	---	---

Appendix F: Student House Drawings

"Before"	"After"
 <p data-bbox="203 867 358 898">Student #19</p>	 <p data-bbox="760 867 915 898">Student #19</p>
 <p data-bbox="203 1402 358 1434">Student #11</p>	 <p data-bbox="760 1402 915 1434">Student #11</p>



Student #21



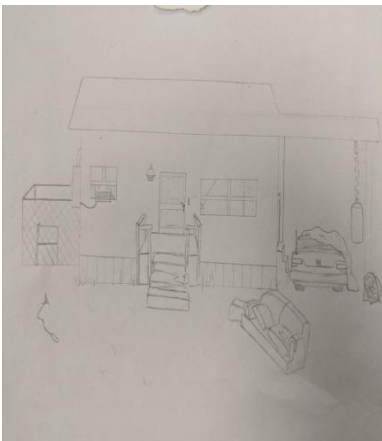
Student #21



Student#6



Student#6



Student #34



Student #34



Student #27



Student #27



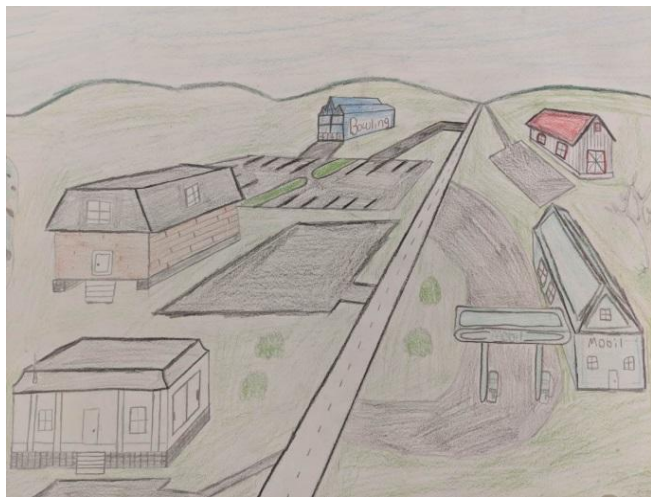
Student #20



Student #20



Student #18



Student #18



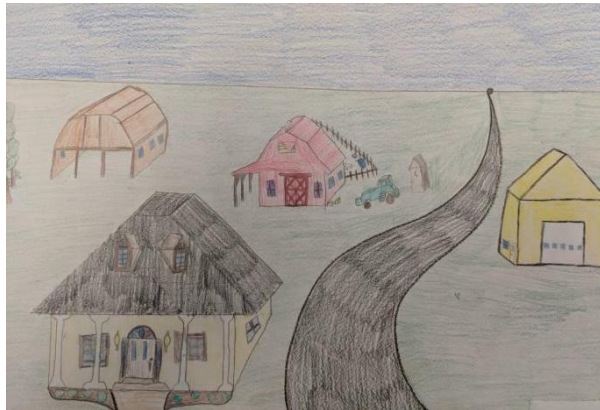
Student #32



Student #32



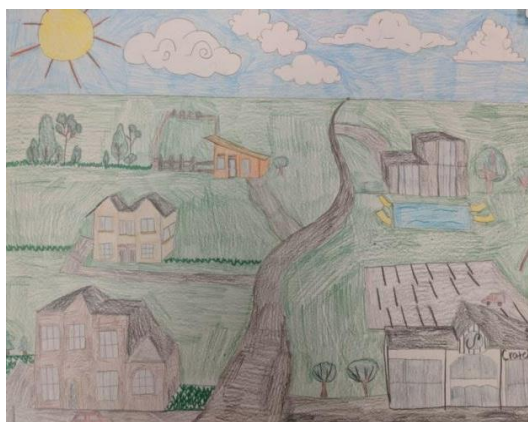
Student #33



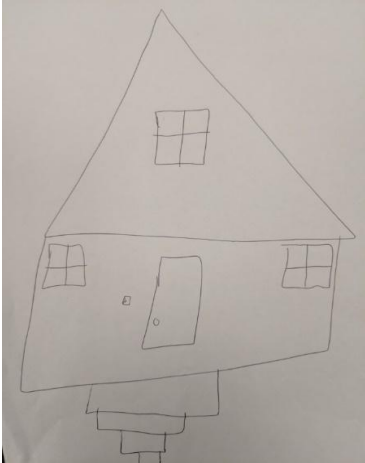
Student #33



Student #10



Student #10


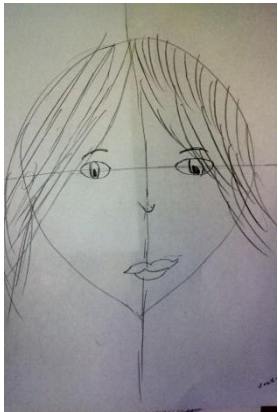




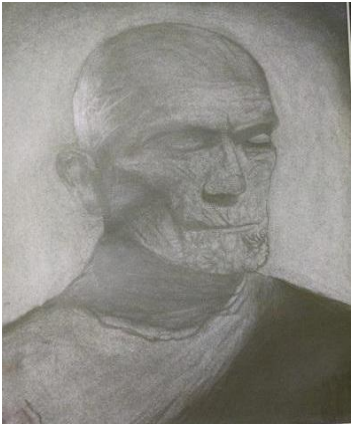
Student #25



Student #25

Appendix G: Independent Judge Samples, Face

		
<p>1 Basic facial parts, inaccurate representation of parts and/or proportion</p>	<p>2 Some attempt at accurate proportion, some facial parts not accurate</p>	<p>3 Proportion present, some facial parts not naturalistic</p>

	
<p>4 Accurate facial proportion, detail, may or may not have sense of emotion and/or shading</p>	<p>5 Accurate facial proportion, sense of emotion, fine detail, shading</p>

Student number	Artistic judge					Non-Artistic Judge					
1	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5

2	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
3	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
4	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
5	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
6	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
7	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
8	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5

9	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
10	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
11	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
12	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
13	before	1	2	3	4	5	1	2	3	4	5

	after	1	2	3	4	5	1	█	3	4	5
14	before	1	2	3	4	5	█	2	3	4	5
	after	1	2	3	4	5	1	█	3	4	5
15	before	1	2	3	4	5	█	2	3	4	5
	after	1	2	3	4	5	1	█	3	4	5
16	before	1	2	3	4	5	1	█	3	4	5
	after	1	2	3	4	5	1	2	3	█	5
17	before	1	2	3	4	5	█	2	3	4	5
	after	1	2	3	4	5	1	█	3	4	5

18	before	1	2	3	4	5	█	2	3	4	5
	after	1	2	3	4	5	1	2	3	█	5
19	before	1	2	3	4	5	█	2	3	4	5
	after	1	2	3	4	5	1	█	3	4	5
20	before	1	2	3	4	5	█	2	3	4	5
	after	1	2	3	4	5	1	2	█	4	5
21	before	1	2	3	4	5	█	2	3	4	5
	after	1	2	3	4	5	1	█	3	4	5
22	before	1	2	3	4	5	█	2	3	4	5
	after	1	2	3	4	5	1	2	3	█	5
23	before	1	2	3	4	5	1	█	3	4	5
	after	1	2	3	4	5	1	2	3	█	5
24	before	1	2	3	4	5	1	█	3	4	5
	after	1	2	3	4	5	1	2	█	4	5

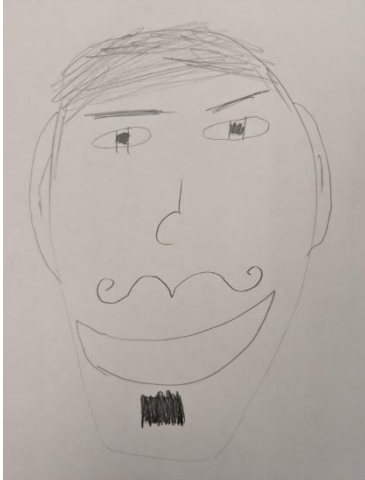

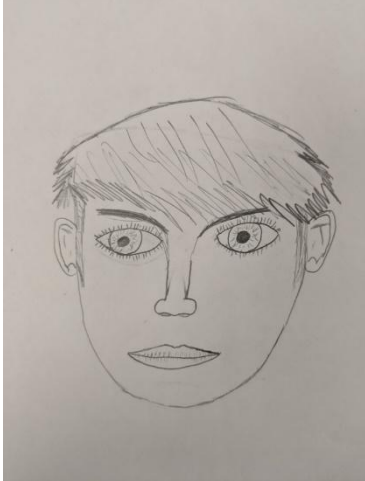

25	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
26	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5

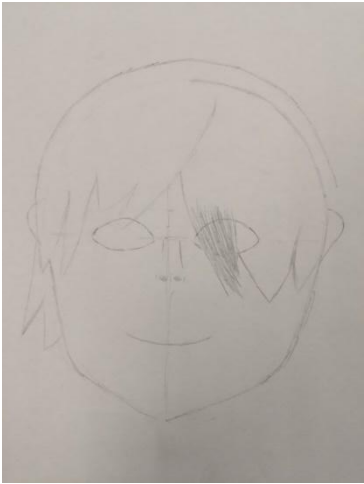
27	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
28	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
29	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
30	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
31	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
32	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
33	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
34	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5

35	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5

36	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
37	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5
38	before	1	2	3	4	5	1	2	3	4	5
	after	1	2	3	4	5	1	2	3	4	5

Appendix H: Student Face Drawings

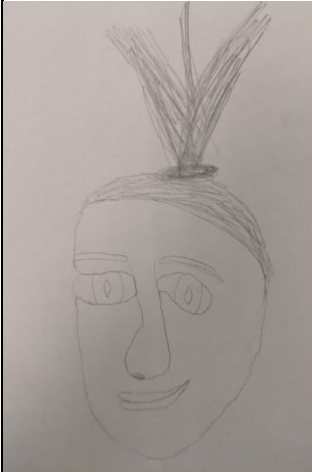
"Before"	"After"
 <p data-bbox="203 835 344 865">Student #8</p>	 <p data-bbox="792 842 933 871">Student #8</p>
 <p data-bbox="203 1392 360 1421">Student #22</p>	 <p data-bbox="792 1388 950 1417">Student #22</p>



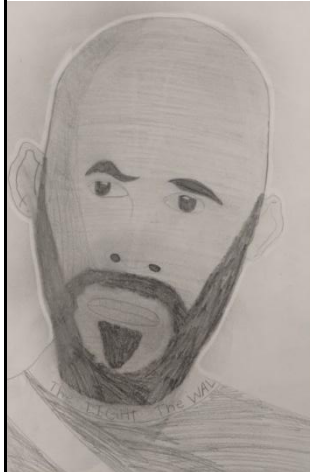
Student #15



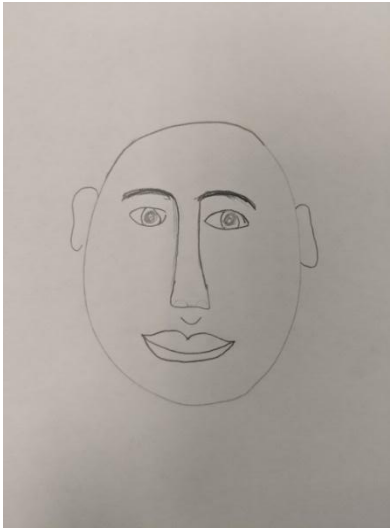
Student #15



Student #24



Student #24



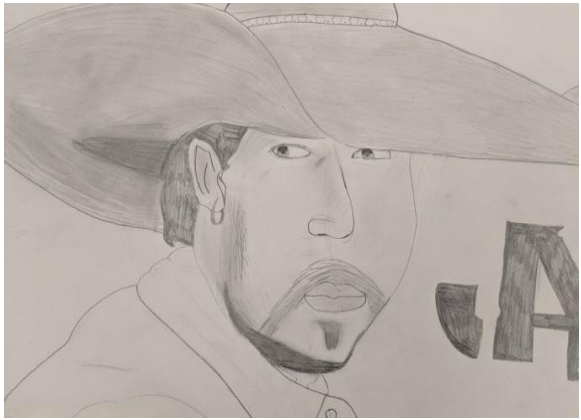
Student #12



Student #12



Student #9



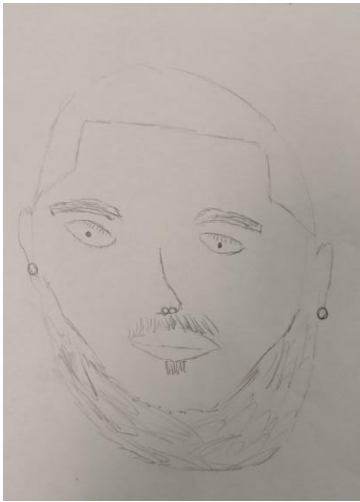
Student #9



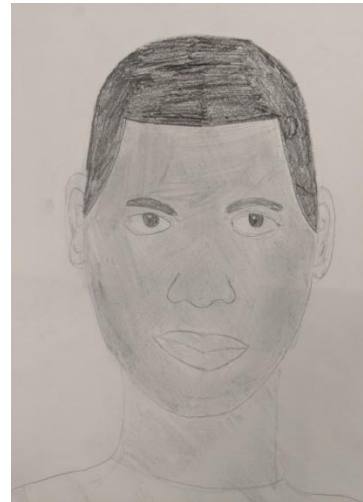
Student #31



Student #31



Student #1



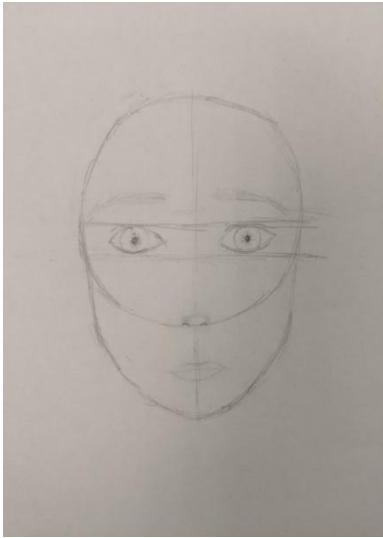
Student #1



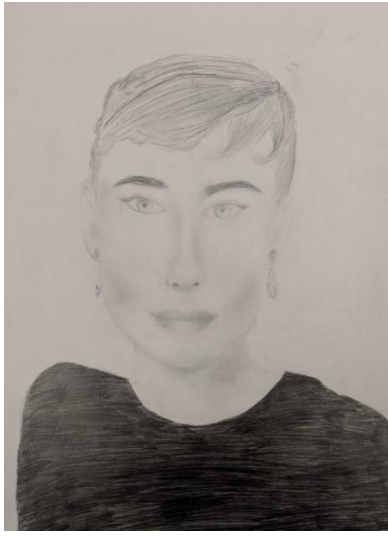
Student #22



Student #22



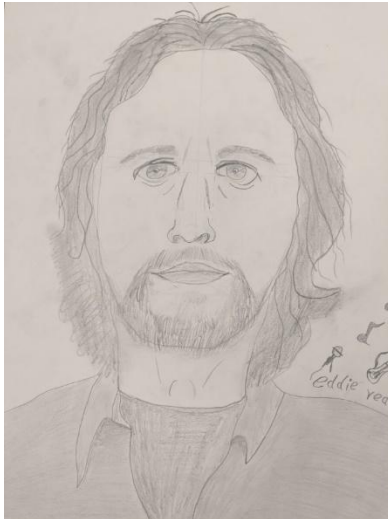
Student #23



Student #23



Student #4



Student #4



Student #30



Student #30



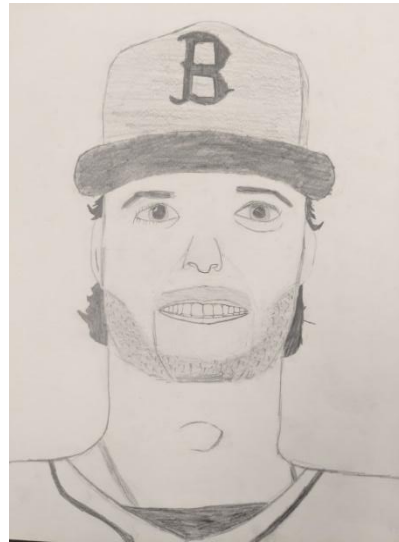
Student #3



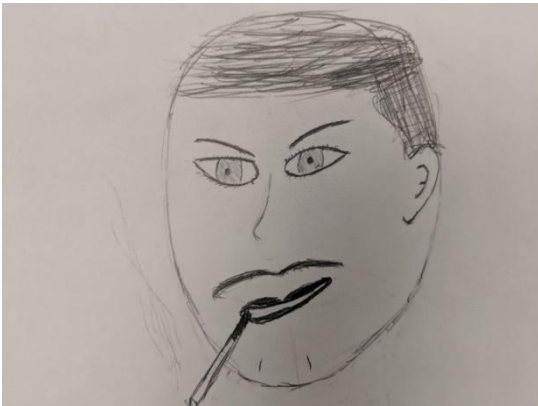
Student #3



Student #27



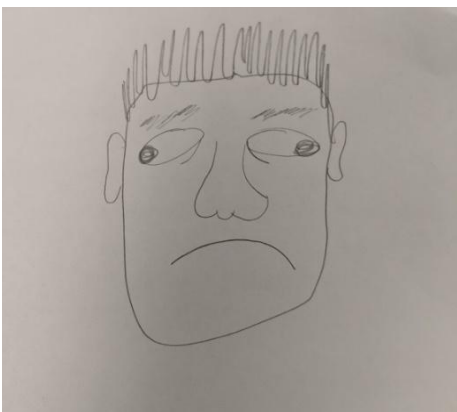
Student #27



Student #2



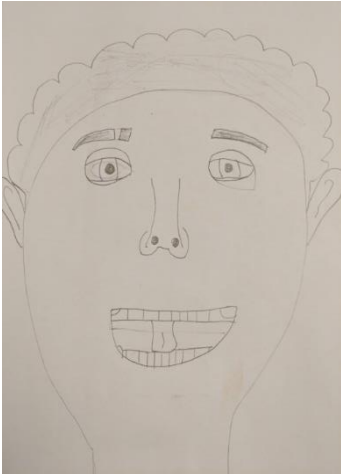
Student #2



Student #29



Student #29



Student #34





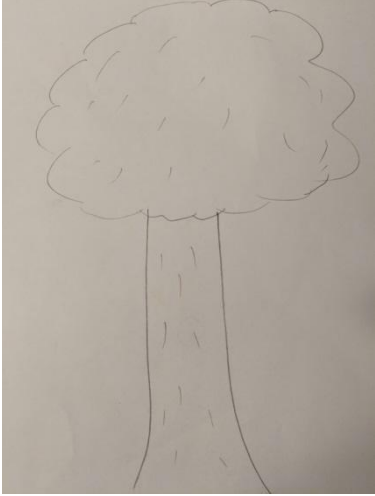
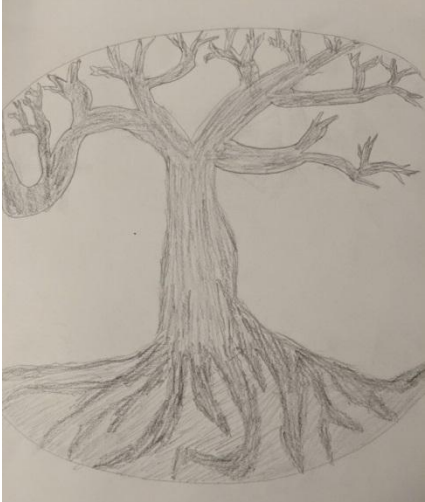
Student #34

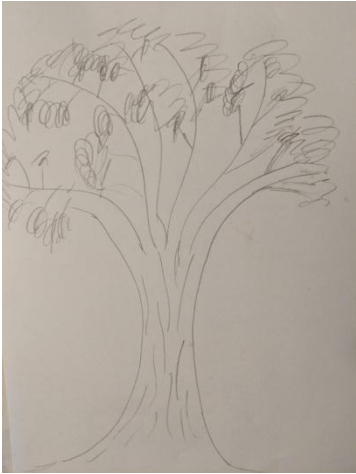
Appendix I: Adult Study Tree Scores

Tree Adult	Independent judge #1	Independent judge #2	Adult self-judged
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1	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
2	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
3	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
4	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
5	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
6	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
7	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
8	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Appendix J: Adult Tree Drawings

"Before"	"After"
 <p data-bbox="204 852 318 884">Adult #2</p>	 <p data-bbox="824 842 938 873">Adult #2</p>
 <p data-bbox="204 1417 318 1449">Adult #4</p>	 <p data-bbox="824 1423 938 1455">Adult #4</p>



Adult #6



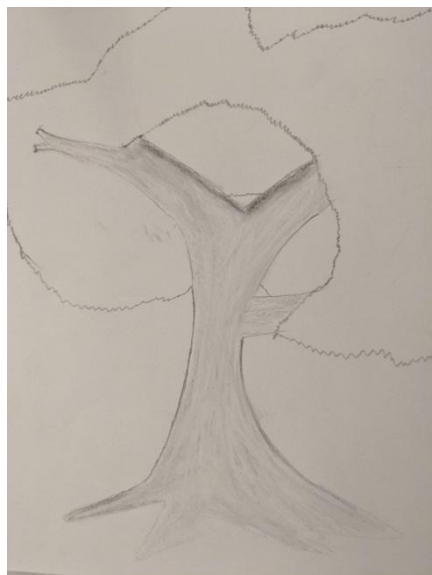
Adult #6



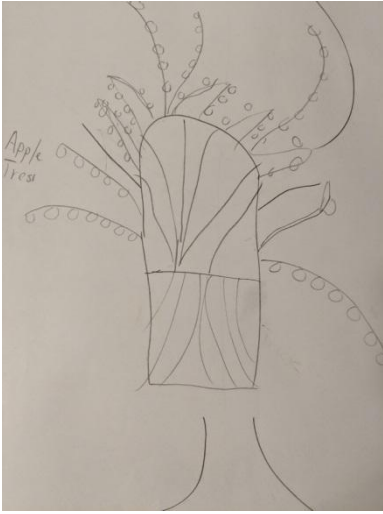
Adult #1



Adult #1

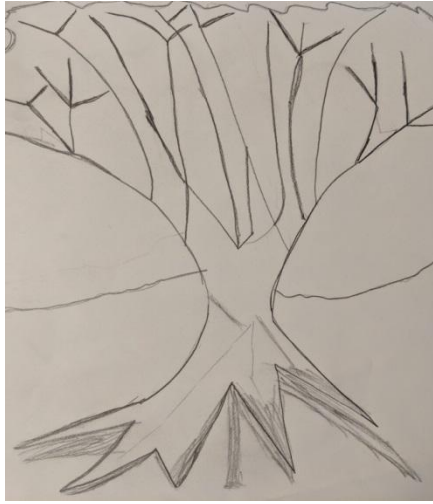


Adult #5

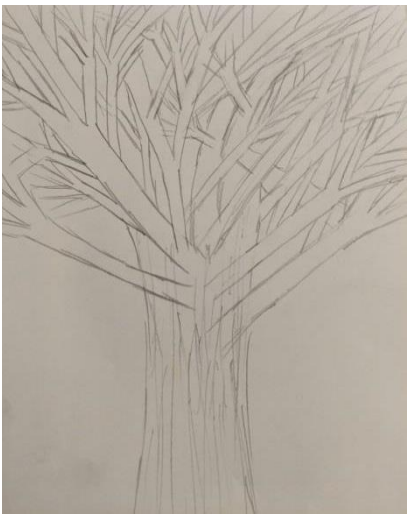


Adult #3

Adult #5



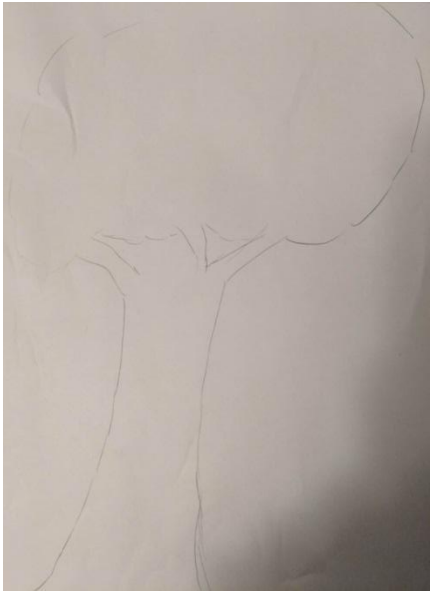
Adult #3



Adult #8



Adult #8



Adult #7



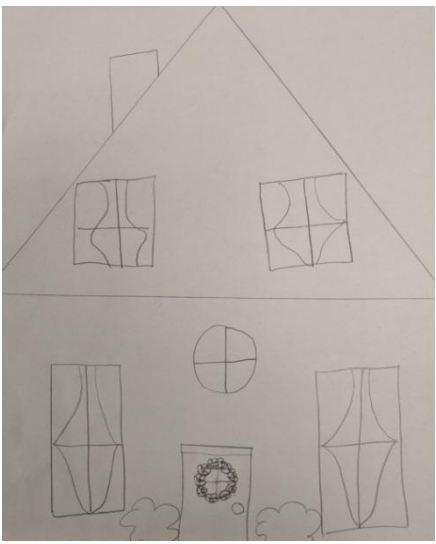


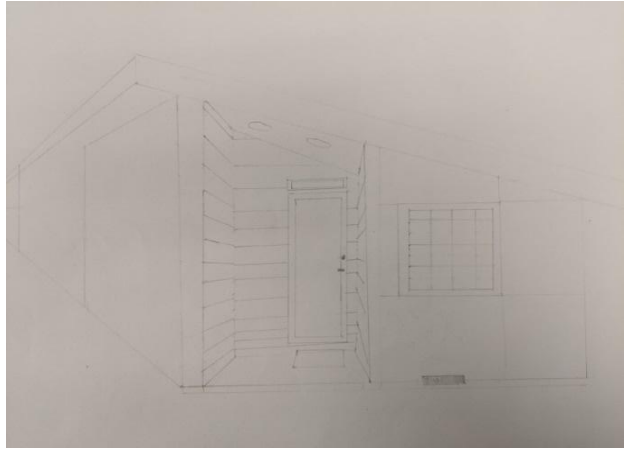
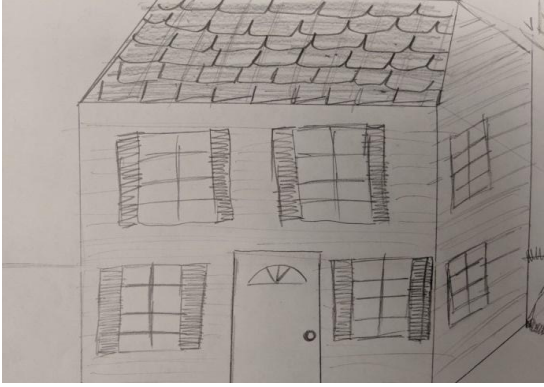

Adult #7

Appendix K: Adult Study House Scores

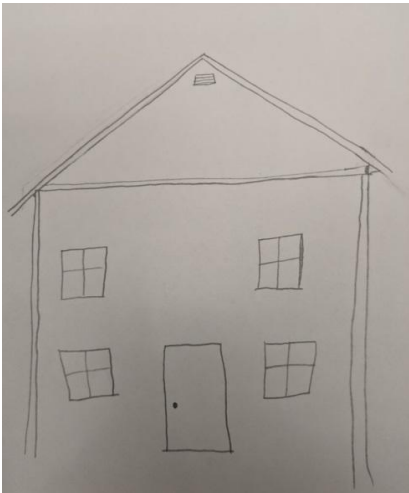
Adult-House	Independent judge #1	Independent judge #2	Adult self-judged
-------------	----------------------	----------------------	-------------------

1	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
2	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
3	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
4	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
5	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
6	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
7	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
8	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Appendix L: Adult House Drawings

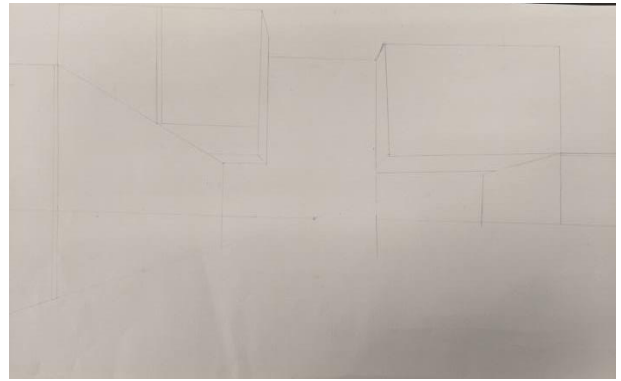
"Before"	"After"
 <p data-bbox="203 886 321 919">Adult #8</p>	 <p data-bbox="824 877 945 911">Adult #8</p>
 <p data-bbox="203 1402 321 1436">Adult #4</p>	 <p data-bbox="824 1402 945 1436">Adult #4</p>
 <p data-bbox="203 1864 321 1898">Adult #4</p>	 <p data-bbox="824 1864 945 1898">Adult #4</p>

Adult #2

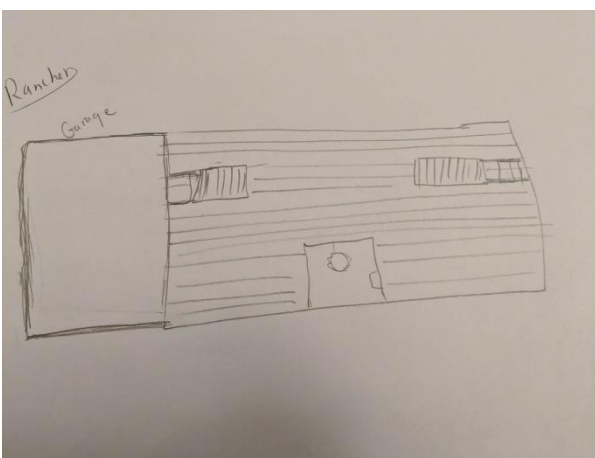


Adult #5

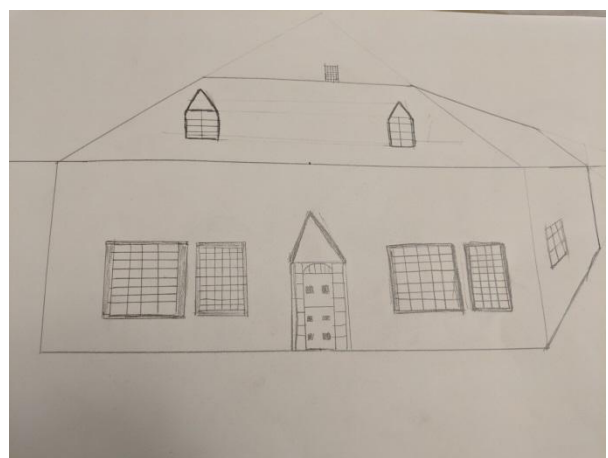
Adult #2



Adult #5



Adult #3



Adult #3



Adult #6



Adult #6



Adult #1



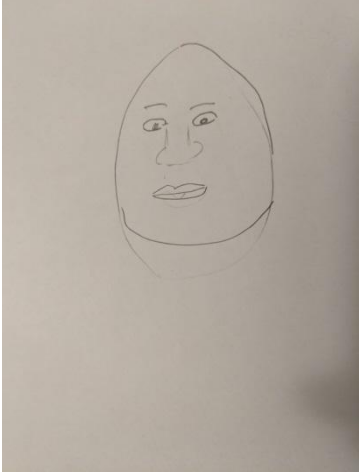
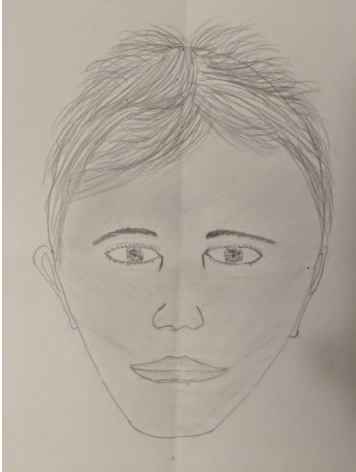


Adult #1

Appendix M: Adult Study Face Scores

Adult-Face		Independent judge #1	Independent judge #2	Adult self-judged
1	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
2	before	1 2 3 4 5	1 1 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
3	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 1 3 4 5	1 2 3 4 5
4	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 1 3 4 5	1 2 3 4 5
5	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
6	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
7	before	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
8	before	1 2 3 4 5	1 1 3 4 5	1 2 3 4 5
	after	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5

Appendix N: Adult Face Drawings

"Before"	"After"
 <p data-bbox="204 850 318 877">Adult #2</p>	 <p data-bbox="808 850 922 877">Adult #2</p>
 <p data-bbox="204 1434 318 1461">Adult #7</p>	 <p data-bbox="808 1434 922 1461">Adult #7</p>



Adult #5



Adult #5



Adult #3



Adult #3



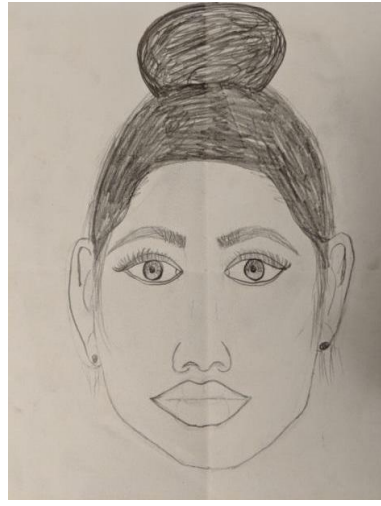
Adult #1



Adult #1



Adult #8



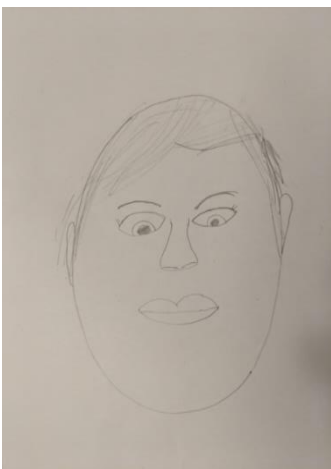
Adult #8



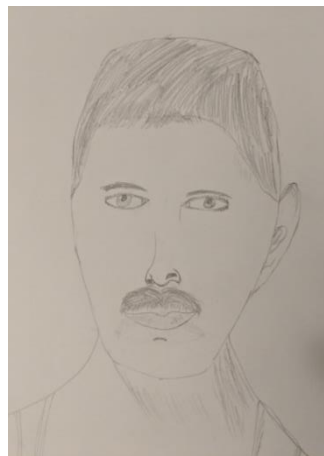
Adult #4



Adult #4



Adult #6



Adult #6

