

POTENTIAL IMPACTS OF ART EDUCATION LEARNING ENVIRONMENTS FOR
STUDENTS WHOM EXPERIENCE SPECIFIC LEARNING DISABILITIES IN THE
DEVELOPMENT OF EXECUTIVE FUNCTIONING:
A CASE STUDY OF THREE INDIVIDUALS

A Master's Degree Thesis by

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to

Moore College of Art & Design

In partial fulfillment of the requirements for the degree of
MA in Art Education with an Emphasis in Special Populations

Philadelphia, PA

August 2018

POTENTIAL IMPACTS OF ART EDUCATION FOR STUDENTS WHOM EXPERIENCE ii
SPECIFIC LEARNING DISABILITIES IN THE DEVELOPMENT OF EXECUTIVE
FUNCTION: A CASE STUDY OF THREE INDIVIDUALS

Abstract:

This study was designed to understand the potential for gained Executive Functioning through an Art Education learning environment by students whom experience a Specific Learning Disability at the High School Level. The author actualizes a limited case study of three students to understand if students whom experience Specific Learning Disabilities are gain Executive Functioning in Art Class. LDA America states that almost all students with Specific Learning Disabilities have an Executive Functioning Deficiency (LDA America, 2017). The resulting information from this case study may be successful in determining that not only some Specific Learning Disabilities are a non-static in their diagnosis, but also that Art Class has existed as a type of interventional therapy for Students with Specific Learning Disabilities all along. Per Harvard's Center for The Developing Child (Center on the Developing Child, 2017), "Children are not born with these skills, they are born with the potential to develop them." This study will attempt to surmise how, if any, Executive Functioning skills are developed for students with Specific Learning Disabilities, under an Art Education Specialist's prevue.

Keywords: Executive Function, Specific Learning Disability, Art Education, Working Memory, Mental Flexibility, Self-Control, Skill Development, Co-Morbidity, Toxic Stress, Auditory Processing Disorder, Dyscalculia, Dysgraphia, Dyslexia, Language Processing Disorder, Non-Verbal Disabilities, Visual Perceptual Deficit, ADHD, Dyspraxia, Hard Skills, Economic Health

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CHAPTER I:

INTRODUCTION

Background to The Problem

Students whom experience Specific Learning Disabilities frequently do not have adequate opportunities to develop key Metacognitive Learning strategies that are required for student success. Many of the classes that students are required to take simply do not offer an opportunity for students with SLDs to do so. For a student to develop Executive Functioning skills, a vastly important form of metacognition for use in learning, they must be given adequate opportunity. That student than can proceed to learn at more prolific rates in all subjects.

Executive Function can be viewed in three basic categories. In accordance with Harvard's Center for the developing Child three key areas of Executive Function can be noted. These three key areas of Executive Function are Working Memory, Cognitive Flexibility and Inhibitory Control (Center on the Developing Child, 2017). Working Memory Pertaining how well the student follows directions, Cognitive Flexibility pertaining to how creative and accepting the student can be and Inhibitory Control pertaining to how well the student can stay focused on the task at hand.

These executive Functioning skills are like muscles, they must be exercised, built upon and grown in order to address the increasingly complex learning processes presented to students as they proceed through each grade. Art Education may offer a place to grow Executive Functioning skills for Students with Specific Learning Disabilities. It is moreover possible that Art Class has been offering an opportunity to grow Executive Function for students with Specific Learning Disabilities for quite some time. This research case study will follow three high school students whom experience Specific Learning Disabilities through the creation of two art projects

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to determine if Art Class does assist in the building of Executive Function in those students, or if it does not.

Many students are recognized by educators and councilors as having different learning needs, or as learning differently due to certain Specific Learning Disabilities. Specific Learning disabilities, in accordance with the re-authorization of IDEA in 2004 (National Research Center on Learning Disabilities, 2007), can be "generally described as a disability category that includes individuals with severe underachievement in academic areas due to a neurological delay or dysfunction." It is moreover important to recognize that specific learning disabilities are not due to environmental factors, being intellectually disabled, or more severe disabilities that frequently require the assistance of para-educators, separate special education support rooms, or other *more restrictive* specialized learning environments.

Specific Learning Disabilities are an Umbrella Group determination that manifest as neurological delays or disfunctions in the students, learners or adults whom experience them. The varying diagnoses of Specific Learning Disabilities are (LDA America, 2017) Auditory Processing Disorder, Dyscalculia, Dysgraphia, Dyslexia, Language Processing Disorder, Non-Verbal Learning Disabilities and Perceptual/Visual Motor Deficits. There are additional related disorders that may be considered Co-Morbidities, in accordance with LDA America (2017), these are ADHD effecting 30 to 50 percent of children with SLDs, Dyspraxia; a frequent comorbidity of dyslexia, Dyscalculia & ADHD and finally the overall recognition of Executive Functioning Deficiencies in Students whom suffer from Specific Learning Disabilities.

What is interesting regarding Specific Learning Disabilities is that the varying scope of, and at times interwoven diagnoses of Specific Learning Disabilities, is in a way analogous of the beautiful tendencies and problem-solving capacities that are stimulated by a rich Art Education

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learning environment. The differences in learning styles of students whom experience Specific Learning Disabilities can easily manifest in varying ways of solving problems in art class. These different ways of solving problems, the processes or techniques that students whom experience SLDs create in Art Class enriching not only their experiences as creative learners, but also the experiences of their peers as they learn from one and other.

It is the theory of the researcher that the concept of inclusion, specifically in the instance of Art Class and SLD, is for the benefit of all students, not just those whom may have been otherwise excluded to differences in their learning profiles. That better different ways of learning may manifest in different and interesting art projects or in their final iterations. That the more diverse an art class is, the stronger the experience of making art in that context will be for all students whom are present.

Art classrooms provide a variety of scope in problem solving choice-based opportunities for the students they serve. This variety, this choice and opportunity to create art in each student's individual ways, is plastic. Art education's inherent plasticity offers a means of directly addressing a multitude of learning styles and needs in the children whom take art education classes. Students with specific Learning Disabilities and respective Executive Functioning Deficits are of particular interest in this study because of this choice-based opportunity that is offered.

A student whom experiences dyslexia and respectively struggles with spelling may have trouble developing executive functioning skills in an English class. The Dyslexic student may struggle to become more cognitively flexible in an English class for instance. While as in an Art Class the Dyslexic student can create and solve problems on a variety of levels, with a variety of

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colors and a variety of mediums. In art Class the dyslexic student can develop cognitive flexibility.

Arts education is on some level inherently adept at assisting students with certain alternative learning methods. In a true art learning environment under the art specialist's prevue, there is no one solution to any given art project. While art lessons frequently embrace core strategic accomplishments and evaluation processes for grading purposes never the less. Art lessons have criteria for grading, but they also have plasticity and creative breadth that exist principally for the learners to use them in their own idiosyncratic fashion and in accordance with their own Learning Needs.

It is arguable that there are moments when Accommodations and Modifications are accomplished in art class through the students own intrinsic motivators, rather than what would be otherwise extrinsic motivators pushed by the educators whom are administering the lesson. Evidence of this can be seen in the way that each students project arrives in their final iteration, in an idiosyncratic way, true only to the budding art makers (students) whom made the art project.

A contrast and comparison to the equally important learning environment of an English class provides some interesting details when considering a hypothetical learner whom experiences Dyslexia, a Specific Learning Disability that effects the ability to comprehend reading and writing. A student whom has Dyslexia in an English class whom is expected to learn will experience difficulties in literacy and comprehension, and more importantly in the development of metacognition and/or Executive Function when a Specific Learning Disability is present. Dyslexia in a Language Arts Class is like a road block to learning Executive Function. Whereas Dyslexia in an art class has a much less apparent impact on learning the Art Lesson.

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In a true art learning environment, there are seemingly endless answers to any given problem or art assignment. Each student's individual creative capacities are moreover a key focus in academic development.

It is important in this recognition to not only understand the potential for mainstreaming in art education specialist environments, for the inclusion of students with Specific Learning Disabilities, but also to understand the potential for students in developing the tools to think. In art class there is potential for students to not only learn, but for students to learn how to learn itself.

The development of Hard skills and Life skills exist as clear possibilities that are moreover empirically documented through the manifestation of endless awesome art projects that have been created by students with Specific Learning Disabilities in Art Class. But what is arguably of greater importance, is the process of building metacognition itself. Executive Function, the process of learning to understand a student's own working memory, cognitive flexibility & inhibitory-control (Center on the Developing Child, 2017) is a profound learning process that not only impacts Art Learning, but also impacts K-12 learning at Large. The development of Metacognition, or Executive Function in Art Classes is a process that may be occurring on substantial levels in art learning environments already. Executive Function and the process of developing meta-cognitive strategies for and by students whom suffer from Specific Learning Disabilities may even be occurring through art learning without many art specialists being aware that the profound process of learning how to learn in general is taking place.

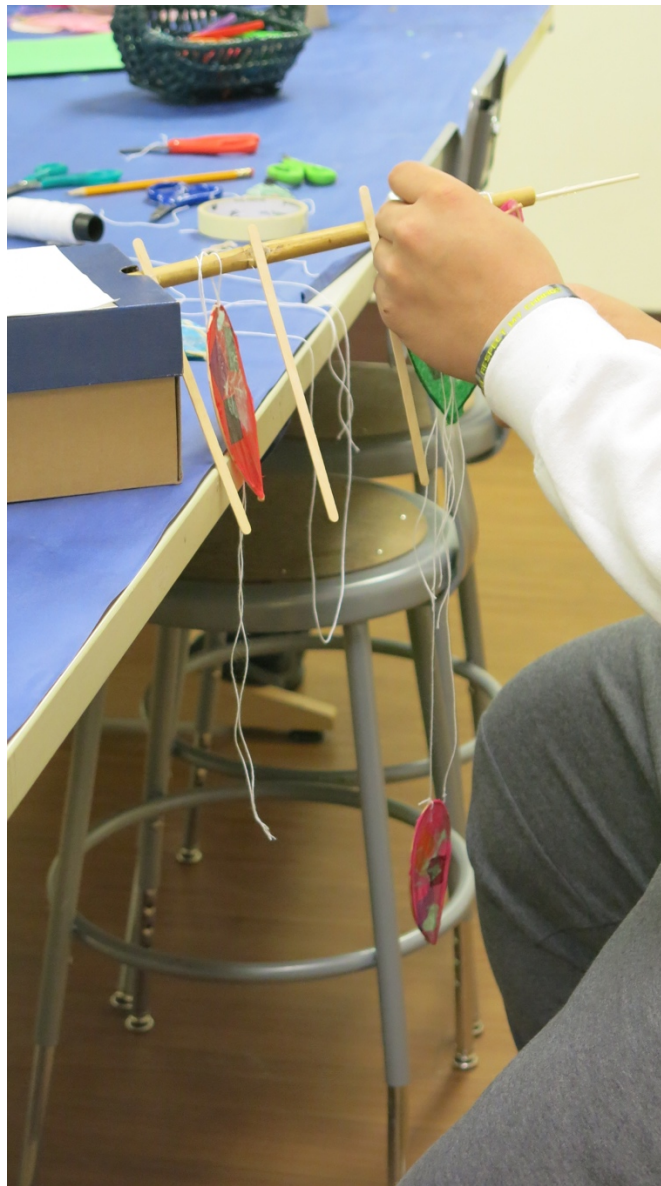


Figure 1. Case Study “T” Assembles his Mobile.
- Here a student case study whom struggles with
Inhibitory Control sits focused on finalizing his project.

Problem Statement

This research study is aimed at understanding the presence, or lack thereof Executive Functioning Skill development through Art Education in students whom experience Specific Learning Disabilities. Disability as a static construct is a problematic conjecture and subject to

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rigorous debate according to Kliewer, Bilken & Henderson (Kleiwier, 2006). The resulting possibilities regarding education discourse for students with Specific Learning Disabilities in the development of metacognition, and/or Executive Function (working memory, cognitive flexibility & inhibitory control) are explored respectively in this research.

The research will be conducted at the Secondary School Level. Specific Learning Disabilities as defined by LDA America (LDA America, 2017) will be determined to be present by the principal investigator through the understanding of varying diagnosis listed in students Individual Education Plans and otherwise clear learning disadvantages that students experience. Specific Learning Disabilities (LDA America, 2017) are known as significant disadvantages for learners at all levels, they are moreover known to related to Executive Functioning Deficiencies in almost all students whom have them (Center on the Developing Child, 2017). Humans are moreover not born with executive function, rather they are born with the ability to develop them (Center on the Developing Child, 2017). To find out what, if any effect, Art Education Specialist Environments, or Art Classes have on the development of Executive Functioning Deficiencies, certain individual case studies of students will be undergone. This will more clearly understand and unpack importance, or lack thereof, that art classes have for developing minds with Specific Learning Disabilities that moreover manifest the frequently co-morbid state of Executive Functioning Deficiencies as a result of a present Specific Learning Disabilities.

Research Question

The various forms of Specific Learning Disabilities have a variety of setbacks for learners. Students whom have Specific Learning Disabilities listed in their Individual Education Plans, frequently have access to a multitude of support structures in Public Educational Environments.

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But what is frequently left unquestioned, is what effect Art learning environments have, specifically ones that harness intrinsic motivators in learning. Can Art education have a positive impact on Executive Functioning Deficiencies for students whom suffer from Specific Learning Disabilities?

Per the Learning Disabilities Association of America, “different patterns of weakness in executive functioning are almost always seen in the learning profiles of individuals whom have specific learning disabilities or ADHD” (LDA America, 2017). The center of the developing child at Harvard University (Center on the Developing Child, 2017) states that student children are not born with Executive Functioning Skills, but they are born with the capability to learn them. They go on further to explain that three main types of executive function can be considered, these are working memory, cognitive flexibility and inhibitory control. All three of these meta-cognitive concepts contribute greatly in the development of vocational/hard skills, the understanding of how to navigate complex social systems, understanding of other educational subjects and moreover assist in each student's process of learning in general.

Arts based learning, that actively stimulates learning through doing, may have the potential to stimulate the growth of Executive Function and negate what are otherwise recognized as executive functioning deficiencies. In art class students learn through doing, rather than understanding. Art projects/problems hold the capacity for many solutions, in contrast to mathematical problems that may frequently be solved in more than one way, but almost always have singular answers.

It is moreover important to recognize that disabilities are not static constructs. While at the same time recognize that the diagnosis of a disability has a significant importance as an identifier and qualifier for supportive services pertaining to those whom have the diagnoses. As

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a western society that is conceptually wrought through the way that diagnoses function medically and beyond, we must recognize the importance of those diagnosis but also be aware of the potential learned helplessness that can occur in those whom have them.

Kliwer goes on to explain that disability is frequently recognized as a static construct in the world today (Kleiwer, 2006). Kleiwer states that "According to definition and convention, the degenerate and the defective could not function as full and literate citizens of society." In the recognition of children whom experience learning disabilities and their poor organization, poor self-control, and general Executive Functioning Deficiencies, the diagnosis appears important but also at times limiting. Art class may serve in ameliorating this clear disparity.

Theoretical Framework

The understanding, weight of diagnoses and respective *Response to Intervention* Models for Students whom have Specific Learning Disabilities is increasing in scope. But what continues to be a primary concern for educators, students and parental figures are the weight and social stigmas of the diagnosis themselves. While it has been clear in many cases that disabilities are not a static construct there remains a certain resistance to the process of diagnosing Specific Learning Disabilities in general.

While in theory, respective to the social stigmas of being Diagnosed with Specific Learning Disabilities certain exercises can assist in the development of Executive Function. Executive Functioning deficiencies being a primary and recognized occurrence in students whom are diagnosed with Specific Learning Disabilities (LDA America, 2017). Focusing on Executive Function specifically for students with SLD is a primary actuator of this study respectively.

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The relationships and framework of Specific Learning Disabilities in conjunction with the students whom have Arts Education that have Specific Learning Disabilities listed in their Individual Education Plans or otherwise experience Specific Learning Disabilities is theoretically interdependent. The cause and outcome of the Specific learning disabilities and educational structure that may or may not have impact in the ameliorations Executive Functioning deficits should be understood with a variant amount of structure due to the metacognitive basis. Residing vocational outcomes regarding the development of Executive Function for students whom have SLDs in Art Learning environments is of significance but can only be speculated upon. And outcomes of vocational proficiency and EF skills are to be determined based on various assessment that determine whether or not students in art learning environments can make progress in the development of Executive Function.

The three larger categories of importance in the development of Executive Functioning Skills for Students with Specific Learning Disabilities being Working memory, Cognitive Flexibility and Self-Control (Center on the Developing Child, 2017). The three categories of Executive Function, operating more as an organizational grouping, than limiting definitions.

These categories of executive function are in theory stimulated on some level through the creation of every art project. Eisner states (Eisner, 1999) that "Student's should acquire a feel for what it means to transform their ideas, images, and feelings into an art form." The process of transforming ideas of self into art, is a process that develops self-awareness and requires self-control to do so. Student made art works are moreover a proponent of the type of stimulation that requires self-control. Per Eisner, "One could argue that at the core of Art Education is the development of the student's ability to create art" (Eisner, 1999). What is of more importance to this research study is the act of creation. To create anything takes follow through, project

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management, materials management, self-control, significant meta-cognition and a level of Executive Functioning Proficiency.

An art students' success in every incidence of art making will be assessed on personal progress. For students whom have Specific Learning Disabilities (LDA America, 2017) there is no exception. Aside from the introduction of appropriate modifications, adaptation and modifications, making the problem arguably *compound*, progress can be mapped for students with SLDs in similar ways as the other students. The progress being a tangible, actual manifestation of the students beginning to grasp Executive Functioning Skill Sets that are in theory manifestations of the struggling students own learning needs. Here the flexibility and possibility of the art learning environment begins to prove itself as an incredibly valuable aspect of all learning and educational environments today.

CREATIVITY PROCESS GAINS FOR STUDENTS WITH SPECIFIC LEARNING DISABILITIES

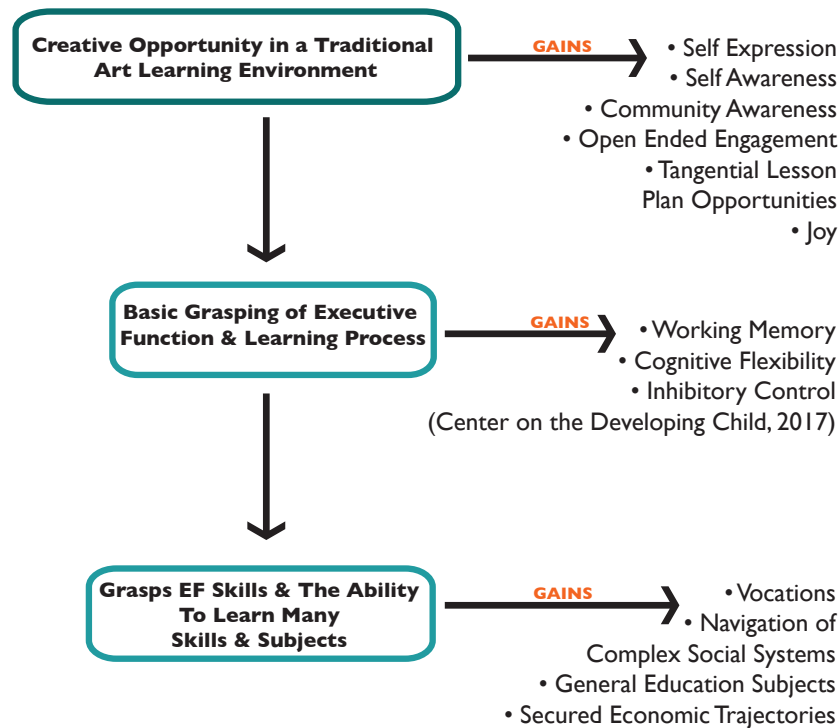


Figure 2. Theoretical Progressive Learning Flow Chart for Students with Specific Learning Disabilities in Art Class; How They May Gain Metacognitive Skills.

-Above we can see the creative process first for all students, second for students with Specific Learning Disabilities whom are begging to Executive function in key areas and third for students whom have successfully grasped EF Skills and con now learn a variety of vocations, skills and navigation processes. The argument being that creative opportunity is already inherent of the development of Executive Function for students whom present with Specific Learning Disabilities.

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ART LESSON PLAN PROCESS

*Focusing on the STIMULATION of
 EF Skills for Students with SLDs*

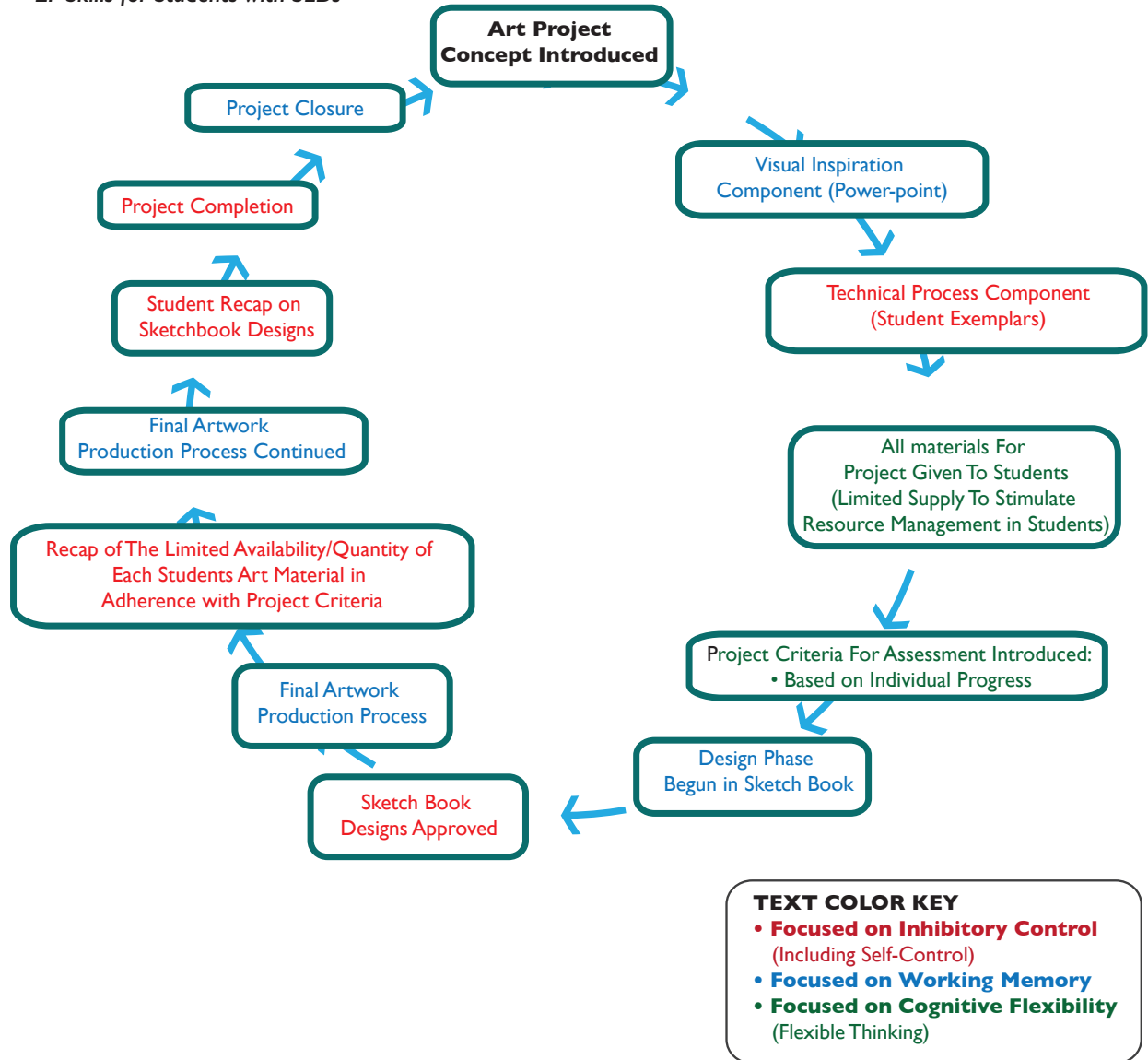


Figure 3. Emphasizing Executive Functioning Facets Throughout the Art Lesson Plan Learning Process.

- The Above chart focusses on the theoretical framework of an art lesson plan process. This chart takes the steps of the art lesson format and focuses on the three primary categories of Executive Function and furthermore how they are or may be stimulated through the art learning process. The three primary categories of executive function being Inhibitory control, Working Memory and Cognitive Flexibility.

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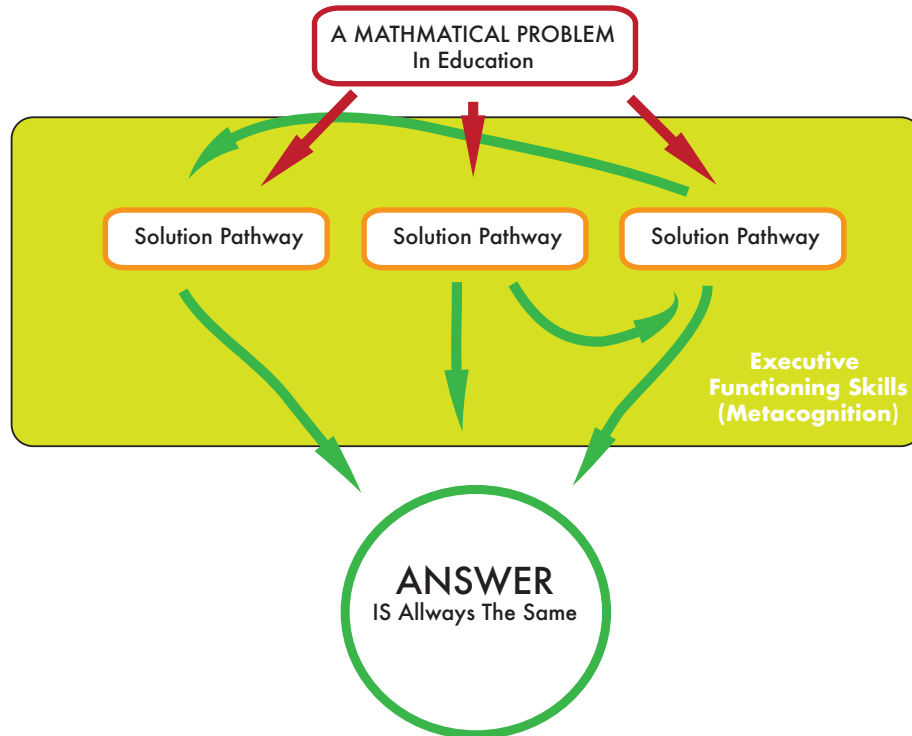


Figure 4. A Way of Considering a Mathematical Problem-Solving Process.

- Above we see a problem-solving process for a mathematical problem. Engineers use mathematics to do things like understand the tensile strength of materials that are used in the construction of Automobiles. The result of the process is a safe transportation method that has, in an ideal situation the same outcome every time. The importance of mathematical foundations and its capacity for empirical data is clear. But what is also clear is that students with Specific Learning Disabilities, Dyscalculia (LDA America, 2017) for instance, cannot intrinsically solve what are sometimes the simplest mathematical problems. A student with Dyscalculia for this reason cannot build Executive Functioning Skills in a Mathematics class in an efficient manner. While an art class may be different. How can a student build self (inhibitory) control in Math Class if they are incapable of understanding mathematical languages in their simplest form?

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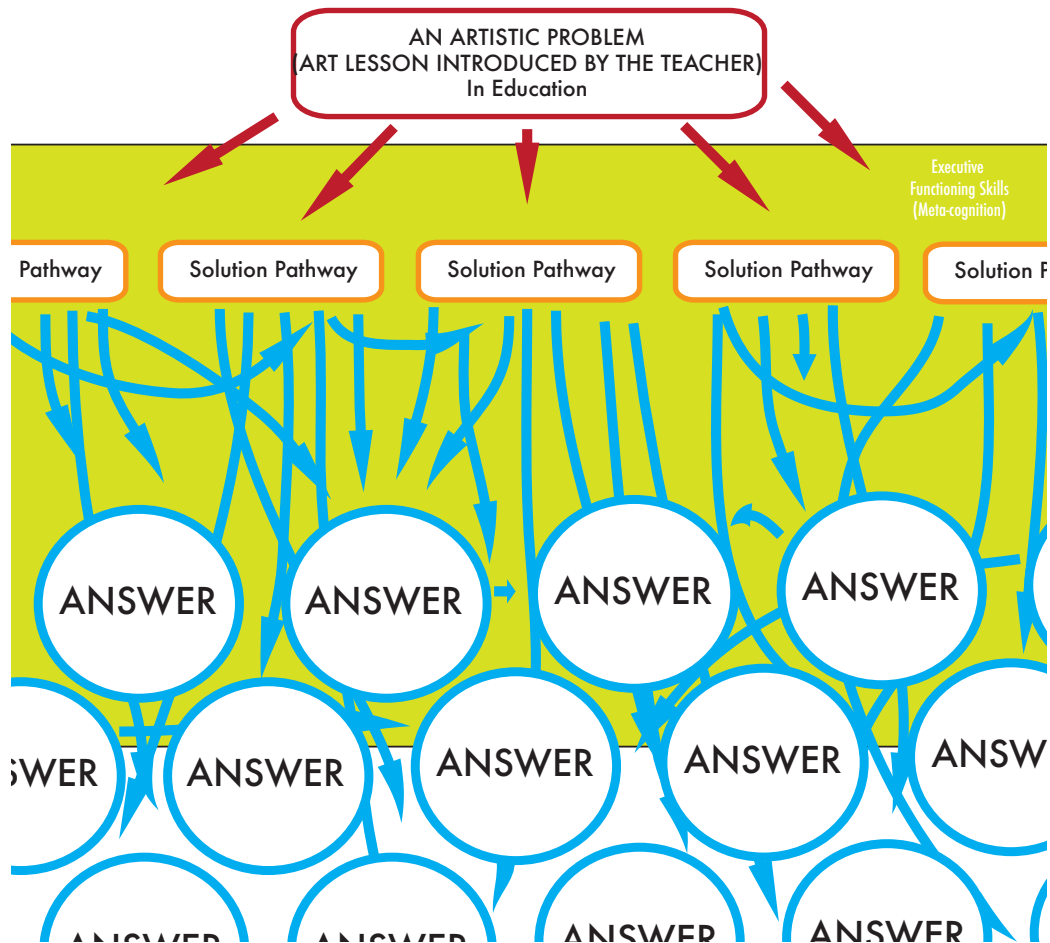


Figure 5. A Way of Considering an Artistic, or Art Problem Solving Process

- This chart shows the theoretical capacity that art education holds for students whom have specific learning disabilities. Per Harvard's Center for the developing child (Harvard University, 2017), students are not born with Executive Functioning Skills, but they are born with the capacity to learn them. The LDA moreover states that EF deficiencies are present in almost all students whom have SLDs (LDA America, 2017). For this reason, it can be surmised that a student whom possess a learning disability that quite directly interferes with learning in a subject (i.e. dyscalculia in math class) it will be significantly difficult to learn to develop Executive Functioning Skills. For a student whom is dyslexic it will be difficult to practice and learn executive function in an English class.

Whereas for a student with an SLD and respective EF deficiency in an Art Class, there are seemingly endless opportunities to learn to grasp Executive Functioning skills. In art class, there is no one answer to any given problem administered by the Art Teacher. In art class, there is moreover not any given solution pathway. There are both multiple ways of solving problems (making art), and multiple, seemingly endless, potential solutions to a problem presented by an art teacher. There are many, many ways for a child to decide to make an art work.

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Significance of Study

A primary hope is that the findings of this research will benefit students whom suffer from Specific Learning Disabilities and respective Executive Function Deficiencies. Moreover, this study is poised at understanding certain interdependent and co-morbid situations, or toher variables that effect learning in Art Education environments. The participant students case studies may be subject to suffering from economic disparities, lack of income mobility, unstable home environments and other hardships. The development of EF skills and/or "hard Skills" (Doyle, 2017) has significant potential to secure more stable economic trajectories in the long term. It should also be noted that Executive Functioning Skills are a foundation of learning strategies that allow students to learn all subjects in efficient manners. Hard skills moreover can not be attained until a student has learned how to learn, thye can not be attained until a student has a solid comprehension of the metacognitive learning strategies that are defined in terms of Executive Function.

Executive Functioning Skills being grasped by lesser advantaged students whom have Specific Learning Disabilities as a result of their state of living or as a result of unknown factors is also of significance. As the definition of economic health becomes increasingly defined as existing interdependent with social and emotional well-being. Certain methods for denying manifestations of "toxic stress syndrome" and urban hardship in youngsters need to be devised. In education, today, it is important to understand the conundrums presented by Specific Learning Disabilities and respective Executive Function Deficiencies and moreover to understand common patterns of *Co-Morbidities* that manifest in student whom experiances SLDs and respective EF deficiencies. It is arguable that Art Education is and always has been a method

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for the amelioration of the difficulties presented by SLDs and EF deficiencies. This study is poised at uncovering the how, why and what it is that Art Education *does* in a clearer formatting and research-based approach. This approach respective to the significance that Art Class may have or already have to offer students whom experience SLDs and respective EF skill deficiencies.

Rooted in the theory that Art Education possesses the capacity to assist students with the development of Executive Functioning Skills, and furthermore the development of technical making and/or "Hard Skills," lies the goal of eventual economic stability for those students whom present Specific Learning Disabilities or otherwise clear disadvantages. For students, teachers and public-school administrators, these findings may potentially have significant implications for educational methodology, technique and direction.

The art classroom itself may be intrinsically subject to availing learning modalities other than typical wrote learning styles, and in this intrinsic motivation can be utilized by students that in other learning settings such as math class, are inaccessible. Rather than a math lesson that is subject to a specific answer directive, art lessons have no specific answer. Art lessons are by nature more subjective experiences for learners, rather than objective experiences. In this they are lessons that explore critical problem-solving skills in a flexible and fluid way. This fluidity that is present in art lessons is in theory capable of addressing all Specific Learning Disabilities and sustaining the development of Executive Functioning Efficiency. Respectively, this qualitative research study is poised at understanding more clearly how Art Education effects the development of EF skills for students whom present SLDs.

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Art class teaches students to start and stop on projects in the given time allotted. They are lessons that assist in the basic understanding of project management, materials handling and quality control. Art class can be considered in the corresponding areas of science, technology, mathematics, history and chemistry. And more than this, Art classes are particularly good at Human Enrichment. In many cases, students may even learn what emotional contentedness means.

For students, emotional contentedness is a thing that should be sought after in economically unstable environments but knowledge of what emotional well-being is may not be a clear prerogative for growing minds. The arts and human enrichment are capable of explaining what emotional contentedness is through intrinsic motivators that proxy Executive Functioning Skills. Accomplishment and pride being just two of the possible outcomes of art creation through Art Education environments today. The exercising of a student's creative operation, or flexibility, within any art projects specific criteria, may be an inroad to an economically healthy lifestyle and the harnessing of Executive Functioning Skills.

Limitations of Study

While this study is poised to understand the effectiveness of Art Education on students whom are Executive Functioning Deficit and present with Specific Learning Disabilities, it is not a study of pedagogy. The art education lesson planning utilized in the creation of the study does not present any learning methodologies that are un-recognized as being effective in the educating of youngsters in Public Education today. Respectively the lesson planning is somewhat

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standardized by Student Learning Objectives, National Education Standards and furthermore commonly accepted assessment strategies there will no questioning or research to the possible changing thereof. The lesson plans used in the research respective of Specific Learning Disabilities and an Executive Functioning Deficiencies herein exists not as a questionable format. The lesson plans in this study exists as a viable and legitimate method of educating students in public schooling environments today by art education specialists. There is nothing unusual about the Art Lesson Plans used in this research.

Furthermore, the parameters of the case studies participants are determined by the inclusive setting that is embraced by the public schooling system. This is a research project to be completed in a public-school setting that is inclusive of all types of learners. Some of these learners are more severely disabled than this research projects focus, while others will be less so. It is moreover difficult to understand in clarity the compound nature of the case studies participants due to their yet to be determined status in regards to this research. The grouping of Specific Learning Disabilities is a large manifestation in the realm of disabled student populations that public education is legally responsible for serving today. And while there are several Specific Learning Disabilities, the students of this group of special needs are the focus for this research study for several reasons.

The reasons that students whom present Specific Learning Disabilities whom are moreover Executive Functioning Deficit are of primary focus to this research case study are many. Primarily they are of focus for the possibility that students whom experience SLDs and EF-deficiencies may be capable of positive change through the exposure Art Education. In this it may become clear that Specific Learning Disabilities are by no means a static condition. But

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that those disabilities can change, go away, persist or diminish in Art Education learning environments. These students may or may not possess the capacity for establishing the significant thought functions or meta cognitive skills known as Executive Function.

Through the exposure of adequately presented art education lesson plans this research study aims to understand if Executive Functioning Skills can be grasped through Art Education for students with SLDs. This research study is an attempt to understand if students with SLDs and respective EF deficiencies cannot just learn in Art Class but Learn how to learn itself.

Understanding how to learn being the crux of Executive Function. It's three primary categories of Cognitive Flexibility, Working Memory and Inhibitory Control being necessary to understand not just art class, but all classes and all subjects. The resulting blockage or incapacity experienced by students whom have SLDs in certain subjects, renders those students unable to build executive function. A student with dyslexia cannot build inhibitory control in Math class, while he be capable of building inhibitory control in an Art Class. The resulting significance being a stronger sense of self-control that may in turn open an inroad to the comprehension of Mathematics for the student whom was formerly noted as experiencing the SLD of dyslexia. The SLD having manifesting in a codependent and respective Executive Functioning Deficiency .

Executive Function skills in general aid significantly in students capacities for long term economic wellbeing and self-security. In this, Art Education may in theory aid these students in securing and owning their own futures. The opportunity for students with SLDs to build Inhibitory Control, Cognitive Flexibility and Working Memory through Art Education being unparalleled by other general education subjects which present clear and understandable

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difficulties for students whom experience Dyslexia, Dyspraxia, Dysgraphia, Dyscalculia or other Specific Learning Disabilities of significance.

Definitions of Terms

Executive Function & Self-Regulation - Skills that are the mental processes that enable us to plan, focus attention, remember instructions, and juggle multiple tasks successful. Just as an air traffic control system at a busy airport safely manages the arrivals and departures of man aircraft on multiple runways, the brain needs this skill set to filter distractions, prioritize tasks, set and achieve goals, and control impulses. (Center on the Developing Child, 2017)

Working memory - Governs our ability to retain and manipulate distinct pieces of information over short periods of time. (Center on the Developing Child, 2017)

Mental flexibility - Helps us to sustain or shift attention in response to different demands or to apply different rules in different settings. (Center on the Developing Child, 2017)

Self-control - Enables us to set priorities and resist impulsive actions or responses. (Center on the Developing Child, 2017)

Learning Disabilities - Learning disabilities are neurologically-based processing problems. These processing problems can interfere with learning basic skills such as reading, writing and/or math. They can also interfere with higher level skills such as organization, time planning, abstract reasoning, long or short-term memory and attention. It is important to realize that

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learning disabilities can affect an individual's life beyond academics and can impact relationships with family, friends and in the workplace. (LDA America, 2017)

Auditory Processing Disorder (ADP) - Also known as Central Auditory Processing Disorder, this is a condition that adversely affects how sound that travels unimpeded through the ear is processed or interpreted by the brain. Individuals with APD do not recognize subtle differences between sounds in words, even when the sounds are loud and clear enough to be heard. They can also find it difficult to tell where sounds are coming from, to make sense of the order of sounds, or to block out competing background noises. (LDA America, 2017)

Dyscalculia - A specific learning disability that affects a person's ability to understand numbers and learn math facts. Individuals with this type of LD may also have poor comprehension of math symbols, may struggle with memorizing and organizing numbers, have difficulty telling time, or have trouble with counting. (LDA America, 2017)

Dysgraphia - A specific learning disability that affects a person's handwriting ability and fine motor skills. Problems may include illegible handwriting, inconsistent spacing, poor spatial planning on paper, poor spelling, and difficulty composing writing as well as thinking and writing at the same time. (LDA America, 2017)

Dyslexia - A specific learning disability that affects reading and related language-based processing skills. The severity can differ in each individual but can affect reading fluency, decoding, reading comprehension, recall, writing, spelling, and sometimes speech and can exist along with other related disorders. Dyslexia is sometimes referred to as a Language- Based Learning Disability. (LDA America, 2017)

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Language Processing Disorder - A specific type of Auditory Processing Disorder (APD) in which there is difficulty attaching meaning to sound groups that form words, sentences and stories. While an APD affects the interpretation of all sounds coming into the brain, a Language Processing Disorder (LPD) relates only to the processing of language. LPD can affect expressive language and/or receptive language. (LDA America, 2017)

Non-Verbal Learning Disabilities - A disorder which is usually characterized by a significant discrepancy between higher verbal skills and weaker motor, visual-spatial and social skills. Typically, an individual with NLD (or NVLD) has trouble interpreting nonverbal cues like facial expressions or body language and may have poor coordination. (LDA America, 2017)

Visual Perceptual/Visual Motor Deficit - A disorder that affects the understanding of information that a person sees, or the ability to draw or copy. A characteristic seen in people with learning disabilities such as Dysgraphia or Non-verbal LD, it can result in missing subtle differences in shapes or printed letters, losing place frequently, struggles with cutting, holding pencil too tightly, or poor eye/hand coordination. (LDA America, 2017)

ADHD - A disorder that includes difficulty staying focused and paying attention, difficulty controlling behavior and hyperactivity. Although ADHD is not considered a learning disability, research indicates that from 30-50 percent of children with ADHD also have a specific learning disability, and that the two conditions can interact to make learning extremely challenging. (LDA America, 2017)

Dyspraxia - A disorder that is characterized by difficulty in muscle control, which causes problems with movement and coordination, language and speech, and can affect learning.

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Although not a learning disability, dyspraxia often exists along with dyslexia, dyscalculia or ADHD. (LDA America, 2017)

Executive Functioning Deficiency

An inefficiency in the cognitive management systems of the brain that affects a variety of neuropsychological processes such as planning, organization, strategizing, paying attention to and remembering details, and managing time and space. Although not a learning disability, different patterns of weakness in executive functioning are almost always seen in the learning profiles of individuals who have specific learning disabilities or ADHD. (LDA America, 2017)

Co-Morbidity - Can be described as the presence of multiple distinct conditions in a person.

Conditions that can co-occur include disorders, diseases, illnesses, or health problems. (Jose M. Valderas, 2009)

Human Enrichment - Enrichment can be defined as the provision of novelty and complexity to a given situation or environment to make it more stimulating. (Singleton, 2010)

Hard Skill - Hard skills are part of the skill set that is required for a job. They include the expertise necessary for an individual to successfully do the job. They are job-specific and are typically listed in job postings and job descriptions. (Doyle, 2017)

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Assumptions Not to Be Debated

The Existence and understanding of Specific Learning disabilities as a categorization validity is a certain valid defining characteristic of this study. Specific Learning Disabilities are in no way going to be questioned through meaning or validity. While there are more ways to consider what it means to learn differently the tact and defining viewpoints of western diagnosis will be embraced as a dominant ideology in terms of meaning and definition.

The existence of multiple types of learning is important to recognize. Teaching methods are oriented in a Universal Design concept relative to the vast capacity that is necessary for an inclusive public education setting for this reason. Inclusive settings that have many types of learners can be a difficult challenge at times. A relative breadth and depth of learning methods must be utilized for the different learners. And this breadth and depth of teaching and learning will remain as a mainstay of educational methods.

Art education is undervalued for its possibilities of breadth and depth of learning methods. Many students with different learning styles, frequently identified as learning disabled and at a disadvantage because of the lack of educational methods that address these different learning methods will not come into question. While the principal investigator and moreover participant researcher of this study is of certain importance for the teaching tools, lesson plans and curricular methods already in use.

The primary issue at hand is the development of executive Functioning or Executive Functioning Deficiencies. In the art education classroom, how can Executive Functioning Skills be taught to students through the process of art project creation and problem solving? This study

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will investigate the possibility of the Development of Executive Functioning Skills in art education for students with “Specific Learning Disabilities,” if and how this impact learning capabilities. Through the development of Executive functioning.

It is possible to learn and teach yourself the technical skills that are necessary to stimulate adequate and secure economic trajectories. This will not be a research on pedagogy or educational methods but will instead focus on learning and learning possibilities. While the educational methods and pedagogy that are utilized will be clearly defined.

Possible solutions to the difficulties presented by “Specific Learning Disabilities” for learners in inclusive public-school environments exist in project-based art making in the Art Specialist Setting. This will not be a study that is based on Co-Curricular activities or general education integration, while some of the supporting literature used to compile the research pertaining to the subject of Executive Functioning Skills in the Art Room will be utilized.

Executive Functioning and the organization of thought is a thing that occurs in an almost natural way for most learners. Those students with “Specific Learning Disabilities,” are notably at a disadvantage for the development of Executive Function. Many educators have experienced students that have trouble starting, stopping, organizing, breaking down processes, understanding how to manage time, understanding why they think the way they do, developing of self-identity and understanding general metacognition. Every art project, even the most discipline-based touches on at least some of the above.

The existence of Specific Learning Disabilities is recognized widely as being associated with Executive Functioning Deficiencies. This study has come to recognize the potential of

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project-based arts education and learning in the circumstance of SLDs and the possibility of additional Co-Morbidities.

Several case studies will be utilized to show how Art Lessons can be harnessed to stimulate the understanding of executive functioning in students with specific learning disabilities. These studies will be conducted on no more than two to four students in inclusive settings. These students with SLDs will be paid attention to in detail for the development of key Executive Functioning Skills that they are lacking, one of the following three, Working Memory, Cognitive Flexibility, inhibitory Control.

The art lesson, materials and requirements will be controlled carefully as always is done by the principal investigator in other situations to stimulate; attention, metacognition, memory, effort, emotional regulation and management. Specific cues and questions will be asked pre-assessment and post-assessment to clearly understand gains or lack of gains of Executive Functioning Skills through qualitative analysis. Each student will be observed to understand if they gain Executive Function Respectively.

The methods used to collect data will be clearly defined and presented in the thesis. These methods will be available for use in further study along with a supporting bibliography for research reinforcement. Art classes nationwide address issues of inclusion almost constantly. The presence of Executive Function Deficiencies in the populations of students with SLDs are already being addressed in many cases. This may or may not be occurring within the awareness of the other respective art educators. Entering an Art Education environment with students whom have SLDs will inform first hand any doubt and/or open opportunities for opposing views

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on the research. This study will be done with little monetary resource. A reasonable and earnest amount of study will be done in the time and with the resources present. The main effort being to understand in more depth Specific Learning Disabilities and respective Executive functioning deficiencies and if art can or cannot change what is at times viewed as a static construct of disability. This research will attempt to surmise if students with SLDs can in fact learn how to learn in Art Class.

Summary

Through the recognition of clear disadvantage in students whom present Specific Learning Disabilities it is almost always the case that there are Executive Functioning Deficiencies present in those same students. Art education is in many ways pre-disposed as a potentially powerful dynamic motivator in the development of Executive Functioning Skills for students with Specific Learning Disabilities, while at times ignorant to the fact. The formats of Executive Function that may be harnessed by students with SLDs are primarily three-fold. These Three forms of executive function that may or may not be stimulated through art Education Classrooms are Working Memory, Cognitive Flexibility and Inhibitory Control. (The Understood Team, 2017) Students need to build these three areas of executive function to learn how to learn. And with them they may be able to go on to learn some really amazing things previously thought to be unattainable by a student with an SLD in there learning profile.

CHAPTER II:
REVIEW OF THE LITERATURE

Concepts, definitions and theories regarding the Impact of Art Education on Executive Functioning and hard skill development for Students with Specific Learning Disabilities are rare. Relative co-morbidities for students with SLDs create additionally complex variabilities in the learning process. These variabilities make the research of the effect of Art Education for students with SLDs and EF deficiencies a complex process. But what does exist documented in clarity are multiple research studies based in varying environments. These studies take into consideration the metacognitively productive aspects of education environments other than Art in the growth and development of Executive functioning skills. Some of them focus furthermore on students whom struggle to grasp them.

These studies that are relative to this study in some way, shape or form span from areas that are much more concerned with the development of literacy in K-12 environments, to undergraduate pre-medical students experimenting with humanities-based learning to promote concepts of emotional intelligence. Many major organizations have moreover identified definitions, subsets and focal points of that collapse the complex network of definitions regarding Executive Function and Specific Learning Disability to some manageable categorized definition sets. This research study, that focuses on Executive Functioning Development for students whom experience Specific Learning Disabilities through Art Education, borrows from the following literature sources. This study uses some of the following sources definitions in addition to borrowing other methodological, practice and meta analytical research methods.

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For this reason, the following reference materials relative to SLDs and EF deficiencies in Art Ed environments are categorized into three major areas in an effort to support this research study. These categories are one; Sources of Information in Executive Function and Specific Learning Disabilities, two, Sources of Research Structure & Information Gathering Design, And three Sources of Theory Basis and Relative Conceptual Analysis.

Sources of Information in Executive Function and Specific Learning Disabilities are noted for their value in the reinforcing of conceptual analysis based around pre-existing definitions of Specific Learning Disabilities and relative Executive Functioning deficiencies in learners. The purpose of these definitions is moreover to aid in the understanding of what is already a readily available discourse. And moreover, the purpose of these definitions is that of oriented sources that bring what is already a rich discourse of the consideration of EF skills and SLD into another rich discourse of the Art Education learning environment.

Sources of Research Structure and Information Gathering Design are sources that are poised at the analyzation of previous studies that first recognized the potential links in learning environments between executive function and Specific Learning Disability. Studies that have been executed in certain inclusive learning environments are moreover of Signiant potential as learning environment has importance in the consideration of learning aptitude, style and capacity.

The settings of learning environments where EF skills and SLDs are researched effect the outcomes of not only learning, but also of learning outcomes. For this reason, sources of Research Structure and Information Gathering Design in reference format are focused more primarily on inclusive public education environments.

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Sources of Theory Basis and relative Conceptual Analysis probe at why there are relationships between executive functioning abilities and Specific Learning Disabilities are of importance for the research that has already made the relationships between Specific Learning Disabilities and Executive Functioning Deficiencies are linked discrepancy in learning styles. While few of these theory-based outcomes have already come to the recognitions of art educators, the pre-existing studies that have delved into the theoretical frameworks and relationships of learning styles in any learning environment are taken into consideration in this study for their potential as existing in parallel analysis. While art education is a unique and important learning environment, many things remain in common in an art learning environment with other learning environments such as a math class.

Sources of Information in Executive Function and Specific Learning Disabilities

The following supportive literature is based in the reinforcement of conceptual analyses through specifying categorization details relative to Executive Function Deficiencies and respective Specific Learning Disabilities. They are cited structural frameworks that are predetermined by outside researchers and organizations. The learning disabilities association of America, is one of the foremost recognizers of Learning Disabilities in student populations today.

Learning Disabilities are a complex set of learning needs that effect learning. According to LDA America (2017) many types of Specific Learning Disabilities are prevalent in inclusive learning environments. A compendium detailing the various learning differences associated with Specific Learning Disabilities (SLD) and/or Learning disabilities (LD) can be found by accessing

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the online platform. Per the LDA “In federal law, under the individuals with Disabilities Education Act (IDEA), the term is “Specific Learning Disability,” one of 13 categories under federal law.”

The LDA (LDA America, 2017) goes on to state that “Learning Disabilities” is an “umbrella” term describing several other, more specific learning disabilities, such as dyslexia and dysgraphia.” All the following definitions for Dyscalculia, Dysgraphia, Dyslexia, Language Processing Disorder, Non-Verbal Learning Disabilities, Visual Perceptual/Visual Motor and/or related disorders such as ADHD and Executive Functioning Deficits.

I find this to be a pertinent source and introductory analyzation for this research project. It is a primary, commonly accepted compendium of terms. But the definitions for specific learning disabilities are not common knowledge in many cases. Several questions moreover are poignant for this research study in the recognition of these commonly accepted terminologies.

What are the best methods to use for students with these SLDs to assist them in overcoming their boundaries? What approaches are effective? What approaches are appropriate? How do Emotional Differences and other co-morbidities in the greater picture?

What is of additional interest to this research study are the varying ways of analyzing and defining what Executive Function is. Harvard University’s Center on The Developing Child has clear way of defining it. The Center on The Developing Child moreover understands in clear detail what the impact of hardship at home can cause. The organization states that "Children are not born with these skills, they are born with the potential to develop them." And Moreover that "If Children do not get what they need from their relationships with adults and the conditions in their environments - or (worse) if those influences are sources of Toxic Stress their skill development can be seriously delayed or impaired." (Center on the Developing Child, 2017).

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The implication of this clear relationship seemingly guides an undeniable relationship between Executive Function Deficiencies, the cause of certain specific learning disabilities and additional co-morbidities, such as toxic stress.

The organization as a whole touches base on certain Executive Functioning categories. These categories of executive function are broken down into understandable concepts and terms. Executive functioning and self-regulation are the skills that allow us to plan, focus attention, remember instruction and juggle multiple tasks successfully. These skills are crucial to learning and development and allow us to make healthy choices for ourselves and our families. Executive functioning skills depend on three types of Brain function, working memory, mental flexibility & self-control. Community research and greater organizational support assisted in the gathering of this base set of definitions. Moreover, the focus on life and daily situations and assistance thereof for students with SLDs by instructor's aides in gathering an understandable set of definitions.

The categorization details in more simple terms allow for an easily assessed detail to be determined by student, staff and teacher. Per the Center on the developing child three types of Executive Functioning/ Brain Function (Center on the Developing Child, 2017). "Working memory governs our ability to retain and manipulate distinct pieces of information over short periods of time." "Mental flexibility helps us to sustain or shift attention in response to different demands or apply different rules in different settings." "Self-control enables us to set priorities and resist impulsive actions or responses." They moreover go on to state that. "Children are not born with these skills, they are born with the potential to develop them." The intrinsic motivators of art education environments appear to be an inroad of possibilities.

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This is a valid response that meshes a basic and understandable framework of Executive Functioning with the realities of learning. Moreover, it points to the basics of three different types of brain function that allow for a successful learning process to take place. Moving forward it is important to consider how the co-morbidities of toxic stress may or may not come into play regarding the study of students whom have executive functioning deficiencies. What is the potential impact of "Toxic Stress," on students whom are diagnosed with Specific Learning Disabilities?

Sources of Research Structure & Information Gathering Design

Sources of Research Structure & Information Gathering Design are poised at the creation of a carefully designed and calibrated method of research in this study. These sources of literature are geared towards Specific Learning Disabilities, whether certain educational and learning models can affect the development of Executive Function for students with SLDs. More specifically how Art Education can affect EF skills for learners diagnosed with SLDs. While few research studies based around SLDs and EF skills in the art classroom are present to date. Some do hint at the possibilities of increased EF skills within the spectrum of arts based educational models.

At times, social justice *gearing* can moreover be placed in the focal point of the relations between EF skills and SLDs for growing minds. It can be surmised that the educational resources needed to assist in the development of EF skills for students with SLDs are frequently not available to learners in lesser funded district systems. Moreover, with the consideration of

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Co-Morbidities in the picture of SLD certain considerations such as toxic stress may or may not play a role in the impact of learning for impoverished or otherwise at-risk K-12 students.

Kleiwer, C., Biklen, D., & Kasa-Henderson, C., Pay attention to the realities of class, social well-being and systematized seemingly wicked problems (Kleiwer, 2006). Moreover, they leverage these realities with what appears to be a systemic lack of literacy in disabled populations.

Biklen, D., & Kasa-Henderson, C. (Kleiwer, 2006) explore the relationships between SLDs; EF skill development, and income equality/class disparity, they moreover leverage the realities of today with the Supreme court rulings found in the 1954 Supreme court rulings of Brown Verse the Board of Education.

Systemized racial and economic disparity is explored and its relationship with literacy rates, the impacted addressing of SLDs is documented in Biklen's (Kleiwer, 2006) exploration of learning today. Key points are explored such as "the rendering of the literate possibility invisible," "Disability as a static construct," "Literate Accomplishment censorship" and "methods of proving literate competence."

The opposing viewpoint that is stated and explored in this article is also of some importance. Provided by the Lawyer whom represented the Board of education pertaining to the supreme court case; Brown Versus the Board of Education, several of his statements have resounding influence on the contemporaneous discourse of educational ethos today. Bilken (2006) pays attention to the opening defendants statement in Brown V Board. "John W. Davis, opened his oral arguments by linking the end of segregation for African American children to the possibility that other marginalized groups of children might also find equal protection before the law." Moreover, that "Per definition and convention, the degenerate and the defective could not function as full and literate citizens of society." Some of these definitions from going on 60

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years ago may or may not be valuable to contrast with the realities of learning in public schooling environments today.

Contemporary discourses are moreover of importance in a way. Per Bilken (2006) "DSM Characterization of literate (im)possibility and the dominant worldview it represents may be less a biologically based actuality and much more akin to social impositions historically ascribed to children outside the circles of educational privilege." and "In contrast to a traditional form of interpretivist, with focus on exposing a deeper understanding of the social constructions under scrutiny, a critical framework resisting traditional institutions and social practices that marginalize and dehumanize particular groups." For this study to be an accurately calibrated research study both statements may or may not need to be taken into consideration. Various key quotations of Bilken relative to the relationships between SLD and Executive function skill development, and whether art may assist in the amelioration of systemic barriers are various.

This well-constructed study is based in valid information. A single counterpoint being that the arguments exist as a relatively one-sided leaning reality or understanding of the issues at hand in the contemporary educational discourses of today. This study is on some level a pathway into the understanding of certain co-morbidities that exist for at risk urban populations of young learners. What is more interesting on some level are the examples of organization that exist in this argument/study's formatting itself. They begin to show alternative methods of developing skills, both Executive Functioning Skills and Hard Skills. The process of shifting Bilken's ideas to an art-based lesson planning or research model is not very far reaching. There is importance in questioning what forms of literacy exist and in what formats? And which of these are present in this specific article?

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Helen A. Robinson conducted a research evaluation based around the related subject of Arts Integration and the Success of disadvantaged Students. Robinson (Robinson, 2013) produced a quantitative analysis of what arts integration does. Arts integration is defined, categorized and grouped into varying sets and subsets by Robinson to determine if methods used by the American Education System countrywide are having an empirical effect in ameliorating the tensions experienced by students whom are disadvantaged.

In this study, disadvantaged students are defined by Robinson as living with disabilities, with economic disadvantages, or as being English language learners. Four different types of arts integration styles are found to be present in the 453 articles that Robinson analyzed. Within these forms of arts integration many executive functioning skills that were appeared to be educated to students where isolated in a quantitative analysis. Here there are the overlapping themes of Specific Learning Disabilities, Executive Functioning Skills and Arts Education environments.

The studies that Robinson analyzed included outcomes that where be classified under the four following categories: 1. Cognitive Outcomes, 2. Affective Outcomes, 3. Social Outcomes and 4. Academic Achievement Outcomes. Cognitive outcomes included critical thinking, creativity, memory, attention, and imagination. Affective outcomes included attitude (general and toward specific subjects), self-efficacy, self-esteem, identity, motivation, perseverance, and risk-taking. Social outcomes included engagement, listening skills, cooperation, language development, empathetic behavior, attendance, communication skills, and school readiness. Academic achievement outcomes included subject-specific achievement scores, teacher reports of gains in content knowledge, student grades, performance assessments, number and type of credits taken, writing quality, and phonemic awareness. School environment outcomes included

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increases in collaboration, inclusive attitudes, school organization, roles of teachers, school culture, authentic instruction, and community partnership development.

While the bases for defining disadvantaged students in Robinson's study is an umbrella, catch all like approach, the study that I will be conducting will not be. Robinson (2013) defines disadvantaged students as follows, "*disadvantaged students* were defined as students with disabilities, economically disadvantaged students, and English language learners. Since there is an overrepresentation of economically disadvantaged students and/or English language learners who are classified as having a disability" Robinson moreover defines arts integration as follows, "Arts integration can best be understood, because of the lack of consensus on any one definition, as being defined by three categories: arts integration as learning *through* and *with* the arts, arts integration as a curricular connection process, and arts integration as a collaborative engagement." "The co-equal cognitive arts integration approach seamlessly merges art standards with the core curriculum to build connections, provide engaging context, and differentiate both the processes and products of learning."

While this work is somewhat dry and does not focus on the exact Executive Functioning Skills that I am interested in analyzing as being possible provided in arts education settings to students with Learning Disability, it does present a powerful set of definitions to pick though and re-orient in a way that better suits my research goals. To me arts integration is something that occurs regardless of any type of Co-Equal approaching the art classroom. There are mathematics, science, geometry and history in the art room to state just some. But it is a provocative notion to consider that a Co-Equal approach could and would in the minds of students push for more educational development across the board.

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The data gathered by Robinson leaves me curious about, how closely I can use the terminology that was gathered from these 450 some studies of empirical data? What type of Executive Functioning Skills are present here? How do they translate into Technical making skills and how might this lead to economically healthy futures?

Rather than defining an umbrella term to lump all "disadvantaged" students under I am more interested in working with specified case studies. For the study, I will be conducting the participants will be student whom have been diagnosed with Specific Learning Disabilities, whom exhibit Executive Function Deficiencies and are immersed in an Art Specialty learning environment. The specifics of the study I will be conducting in contrast to the broad sweeping information gathering that a research evaluation of this scope is a powerful contrast that defines the boundaries of my study further. Moreover, Robinson's recognition of the potential of art learning environments is of significance.

SOURCES OF THEORY BASIS AND RELATIVE CONCEPTUAL ANALYSIS

The following sources of theory are directed towards meta-analysis. They are incorporated into this study to aim to understand larger thematic influences based around the relationship between Executive Functioning Skills and Specific Learning Disabilities. Larger themes of learning and interdependent theories of learning styles in the art education classroom are key in the exploration and research model. These theoretical relationships between art education, executive functioning and specific learning disability are key in understanding where

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to look in the understanding and categorization of qualitative research data in the inclusive art education classroom.

It is important to consider not only the possibility of assisting students with Specific Learning Disabilities to develop Executive Function skills, and in this case through an art specialist setting. but more importantly to consider the speed at which it is possible to do so. What kinds of methods can be used to assist students whom have learning disabilities to catch up with the general student population in short time? Progress is a significant consideration for students that struggle to learn at rates comparable to their counterparts.

The proficiency of students with Learning disabilities is a thing that should be carefully considered. Jean A. Schumaker and Donald D. Deshler (2009) conducted a research project to assess not only student need but progress. They then proceeded to develop a theoretical framework for use in the education of students at a more rapid pace in order to assist them in catching up with their peers. In Scumaker's study, the proficiency of students in with Learning Disability (LD) is measured in terms of the general education population. What gains that needed to be made was then extrapolated from the difference. Methods of educating children with these problems where devised through several different models and quantitative research was executed.

The *Response to Intervention* Model that is present in this research study is to the addressing of student with Learning Disabilities in the broadest sense. Schumaker (2009) introduces three strands. One, a Strand of instruction for teaching student's information. Two, a Strand of Instruction for teaching students to store, transform, and manipulate information. And three a strand of instruction for teaching students to manipulate information.

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Moreover, the *Response to Intervention* model in this study proposed that for students whom are struggling with LDs eight stages should be used to assist in their gaining of competencies that are comparable to the baseline of learning capabilities that are assessed and measured from the general education populations. These eight stages are as follows; 1. Pretesting the student's skills, 2. Describing strategy to students, 3. Modeling the strategy to students, 4. Conducting practice activities that enable students to name the steps of the strategy so that they can self-instruct as they apply the strategy, 5. Having students practice the strategy in relation to easy tasks so they can focus on learning the steps of the strategy, 6. Having the students practice the strategy on tasks that are in relation to tasks that are comparable to what they will face in their grade levels, 7. Post-testing the student's skills, and 8. Teaching the students to generalize their use of the strategy to their use of it in general education classes throughout all their school years.

The respective outlook of this research studies' determination has some interesting implications for the understanding of Executive Functioning Skill development in students whom are diagnosed with Specific Learning Disabilities. Schumaker states (2009) "The reason for these writing problems range from difficulties with executing and regulating the process underlying proficient composing." The respective meta cognition associated with these writing problems is a clear marker of an executive function deficiency in the students of concern.

It is also notable to consider how and why certain patterns of emotional resistance develop in students whom suffer from Lds of SLDs. Per Schumaker (2009) "Because of these severe deficits adolescents with LD often refuse to write at all when they are given writing assignments." Moreover, the author goes on to note that, Students with LD entering secondary school had very little time before they might drop out of school around the 10th grade level, so

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we wanted an intervention that would “close the gap” as quickly as possible. Here certain co-morbidities become a certain and clear reality in the complex and compound nature of students whom are diagnosed with SLDs in public institutions.

This article poses a fair and adequate approach to research possibilities in the Art Education Classroom. These approaches may function well in a parallel focus that would be about visual literacy, rather than general literacy. Arts education can possess a certain justification with intrinsic motivations and multitude of solutions to any one given problem. While untimely on some level it is unclear what may or may not need to be adapted to an arts education setting using the models that were created here?

Contrasting a study that is designed to create solutions for students with Learning Disabilities by addressing directly their executive functioning deficiencies through carefully designed Response to Intervention models, is a study designed to assist students whom have effective learning strategies already. Here we can see the possible and positive effects of Humanities based learning strategies in the development of self-awareness.

Caeiro, Cruze & Pereira (2014) Create contrast with a study that asks if activities typically associated with practices in the Humanities enhance the narrative problem-solving skills of students in Physiotherapy programs on the undergraduate level? Here we see older student in a hard science that have identified a clear need for skill development through the emotional intelligence development that is associated with Art Education Learning methods.

Narrative reasoning skills are needed in Physiotherapy classes, so students can better understand how to undergo a patient’s treatment and diagnosis. The arts are used in this instance to educate students in need of acquiring this skill. Narrative reasoning, is a valuable skill for

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individuals in the medical field do to the frequently complex and shrouded problem of diagnosis and treatment of the afflicted. Empathy is a huge part of this process.

Amidst this study and through reflective writing, students were challenged to reflect about their clinical practice. Self-questioning is an ideal model for practice. It is noted that creative activities that allow for this type of action to take should be sustained in education programs for Physiotherapy. “The incorporation of educational strategies to enhance narrative reasoning capabilities, such as the use of arts, literature and reflective writing in a developmental transformative learning framework seem to offer useful ways of developing a wide range of professional skills (2014)”

It is interesting to consider what arts education means on the undergraduate level. Here it appears that the arts integrative model is one that is subservient in nature. The students here are not making actual art. They are producing creative actions that directly feed into a professional skill, in this case narrative, that must be developed to become better creative professionals. Regardless it is art at the root of human and self-enrichment which continues to be a beautiful thing to myself.

In contrast to this clear understanding of the potentials of humanities-based education for individuals that are organized for the better, it is interesting to question how furthering this dialogue and respect for the humanities may or may not intersect with other aspects of executive functioning skills. Where is the intersection and what are the primary differences between Executive Functioning Skills? How do they impact each other and how do they exist as interdependent factors?

Students who have chosen to pursue a career path in the arts are also of importance to this study. By analyzing effective strategies and set backs of students whom have pursued a life in

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the arts yet suffer from one or more of the various forms of Specific Learning disabilities, certain successes can be paid attention to. These students may or may not have overcome Executive Functioning Deficits. Boeltzig, Hasnain & Sulewski, (2008) quite directly consider "effective career development strategies for young artists with disabilities." They consider the difficulties and triumphs of disabled students whom are students that remain adamant about art making.

For Artists with disabilities many carrier paths may exist, while these can unfortunately become confounded with federal support for disability programs such as Social Security Income and otherwise. Can Artists sustain viable career paths in the economic climate today? Per the Bureau of labor statistics between 2006 and 2008 the arts field grew by 10,000 jobs. But what does this mean? And what kind of jobs? Several effective courses in career and traditional art education are studied, one case at a time.

Case studies of two students are explored and some ideas for proceeding forward towards more economic security for young adult artists are explained. These are but not limited to Working in art studios, studying under particular artists and gaining public exposure. At the same time the authors move to reassure students with disabilities have a support structure. "For artists with disabilities, their financial situation is exacerbated as their disability benefits may be affected by other sources of income (2008)." These young artists with disabilities may at time intentionally not seek success due the clear social benefits of having a diagnosed disability.

Some student artists with diagnosed disabilities peruse dreams of greater success regardless. One students recounting, "To make a living, and to be able to continue doing my art, I have to do other things. No one's going to come and buy your work right away; no one's going to pay you to do what you love. So, you have to make a need for yourself. So, I had this idea which I pursued, and, as a result I am both an artist and a business woman. (2008)"

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This is an excellent study to contrast the attitudes of creative individuals whom have undergone traditional art school educations and find themselves turning to their allotted creative art skills to become entrepreneurial. But this article is also in a way beside the point. I am foremost interested in assisting students with learning hardships to develop the mental governing skills that they need the most to be successful in our capitalist economy. The specifics of technical skill and direct action are important to my study. But in a way, secondary.

CHAPTER III: RESEARCH METHODOLOGY

Setting:

The setting for this study will be an inclusive art education environment of no more than 24 students, 3 of which will be case studies whom participate in this research. This environment will be a secondary school. It is moreover important that this research setting be an art learning environment *inclusive* of many types of learners in addition to those whom experience Specific Learning Disabilities as a primary facet of this research.

The research setting being an educational environment that emphasizes *Inclusion* is important for many reasons. It is the experience of the researcher that many types of learners in any art class setting, create an intrinsic classroom culture that leads to the exposure of multiple solutions to any given art problem. An art problem, in this case pertaining to the specifics of the lesson plan criteria for a student to be successful. In simple terms an art problem may defined by requiring the students to use 5 colors, 6 shapes and 15 attachment points, being creative within the projects stated parameters and staying on task.

An art project's solution is a finished art project. An art project's problem is there for the lesson plan presented by the Art Educator. The art project's end or goal embracing many solution iterations within its lesson plan context due to a diverse and *Inclusive* art learning environment. A research setting with a comprehensive group of learners leads to an in-classroom manifestation of multiple solutions to any art projects. The art project's problems becoming solved comprehensively by the varying students in inclusive the art learning

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environment. This multitude of art problem solutions in the research setting, in this case Art Classroom, will have the potential of being recognized by, or invented by; students whom struggle due to Specific Learning Disabilities.

The apparent existence and manifestation of multiple creative solutions, by multiple types of learners, to the art project presented by the Art Educator, or problem, is key in the creative learning emphasis in all Art Classes. Moreover, this key in this research study as to exemplify ideas to the learners and create a standardized constraint of art learning culture that is not unlike other Art Education learning environment.

The art room where this research is to take place will be standard to the art educational settings particular to the secondary school level. There will be art materials, art directions, inspirational objects, art work examples, a library and everything that is necessary for students to learn how to, and why to make works of art. It will on some levels emphasize the age of decision (Brittain, 1982). The age of decision being a pivotal period of impasse in secondary student's development of self.

Participants:

The students whom were chosen to be participants in this study experience an Executive Functioning Deficit in one of three primary areas of Executive Function. These areas are defined as Working memory, Cognitive Flexibility and inhibitory Control. Noting that the center for the developing child at Harvard states that students are born with the ability to develop executive function, but not with executive function (Center on the Developing Child, 2017). These students will be observed making art in art class to determine if the students do develop

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executive function on some in any level. The learning disabilities association of America further details that students with Specific Learning Disabilities almost always have an executive functioning deficit. For this reason, students whom experience Specific Learning Disabilities where also chosen as a criterion for this research. Furthermore, Kleiwer argues that Disability is not a static construct, but that it can change (Kleiwer, 2006).

This will be a case study of 2 to 4 students whom present with Specific learning disabilities and whom additionally have this listed in their Individual Education Plans. Their inclusion or mainstreaming in a traditional art specialist learning environment with many types of learners is also of importance. The participants process, in this case students whom have SLDs, of experiencing peer-to-peer interactions in art learning environments is important because it leads to intrinsic motivators to make art, and potentially to the development of Executive Function in students whom have Specific Learning Disabilities. A multitude of solutions being made clear and possible for students to understand, introduce themselves too, and potentially allow for the Case Studies/students to synthesize their own solutions to the given art problem at the time.

Researcher Role:

The researcher role will be as a participant-researcher. As an art educator and class leader of an inclusive learning environment, the researcher will layer the study process onto the role of an art teacher and art specialist. The research process will be fulfilled in part though standard educational directives, lesson plans and typical classroom assistance. In addition to these typical classroom assistances, a lattice work of research initiatives and tools such as observation

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protocols will be undergone. These research initiative and tools will be layered over the structured classroom process that is already in place. The classroom culture that is sustained with the students, by the Art Specialist and teacher hopefully remaining intact throughout the research process. It is important that the pre-established educational culture remain intact throughout the research process in order to not introduce and conflicting data, intrinsic or extrinsic motivators or other varying influential factors.

Research Procedure:

The Principal investigator is to engage in an Art Specialists role with a class throughout a full lesson-unit as typically executed, and to additionally engage more attentively with 2 to 4 students as case studies in the same art learning environment. The principal investigator will proceed with qualitative research through the use of several informational gathering methods. These methods will be documentation through photography, assessments before, in the middle and after the project is complete, periodic one-on-one mini interviews, and research directive motivated sketch book prompts to later be reviewed by the Principal Investigator.

In addition to this, the language of the lesson planning will be motivated around the development of three key focal points in executive function. Relative data coding to the lessons planning structure to arise as a poignant next step in understanding observing, assessing and generally researching the learning profiles of each case study. And furthermore, how each case study will be unfurled. Respective learning weaknesses will be noted and observed for further change.

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The three key focal points in executive function that will be made to correspond with lesson planning structure, observations, assessments and general research will be Working Memory, Mental Flexibility and Self-Control. The skill sets that each student case study possesses whom is researched by the principal investigator will be notes in each of the three key areas of Executive Function.

Ethical Considerations:

The research-participant chooses to continue in the role as art specialist and educator in this setting for several reasons. Foremost, it will allow the researcher to continue in the role that is most familiar. Continuing in the role of art specialist and art educator will allow the principal investigator to be able to confidently interact with the research participants. Moreover, this role is one that the students know and expect from all educators in arts learning environments and beyond.

I will additionally make all aspects of the study clear a permission slip that will be sent home with the participants in this art education study or signed by themselves dependent on age. Please see appendix B for permission research permission forms. If granted access to IEPs all sensitive information will be kept confidential in accordance with FERPA guidelines. Moreover, video, photo and audio documentation of participants will be done so in accordance with all valid permissions and privacies. \

Research Methods:

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This existence of students whom have Specific Learning disabilities that struggle in the development of Executive Function is contemporaneous to the discourse of all current education. The process of Developing Executive Function is a thing that is moreover in need of more direct attention as differing learning styles are becoming recognized. In the past, the presence of learning disabilities bore negative stigmas as the recognition of difference or learning differences puts certain strains on the emotional lives of the students and respective parents of those students. If there is a parent or guardian that likes to hear that there is something wrong with the way their child learns, I have yet to meet it.

It is still true today that many parental figures do not like to hear that there is something wrong with their child. But what is more interesting and in aversion to this is that students whom have Specific Learning Disabilities may have potential to learn to solve problems in ways that more traditional learners in general education environments do not. Under the Art Specialists prevue and in the art education environment, students have the potential to self-direct through the process of solving an *art-problem*, or to put in another way through the process of completing an art project. Students can self-direct in art learning environments. Educators that are keen to this fact, may be able to learn together with the students they serve how to circumnavigate certain difficult aspect of Specific Learning Disabilities. Art educators may moreover be able to impact the learning trajectories and learning skills of the students they serve for the entirety of their lives.

Today, it is true that the increasingly diverse world of education at large is a thing that continues on some level to project certain burdens and problematic social stigmas on the lives of the disabled students that are served. But in art education more and more frequently para-educators, teachers and administrators are beginning to see the potentials of learning in art

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education environments. It is my hope that all educators see foremost the apparent potential of the different kinds of minds that are present underneath their educational prevue's, rather than the apparent disadvantages of those whom are different. In these situations, the process of not only learning but learning how to learn is important. It should be recognized by not only art educators, but all educators that in learning environments, students whom have Executive Function deficiencies can learn those executive functions that they lack, rather than developing solely technical proficiencies or hard skills.

In Arts Classes, the development of hard skills or technical proficiencies is a thing that has been a clear advantage for students whom struggle with Specific Learning Disabilities. For example, students can learn fine motor skills by cutting paper and gross motor skills by participating in movement and dance classes. But the process of learning how to think is a thing that is frequently overlooked. The process of learning and building Executive Functioning Skills is the process of learning how to think. Executive Functioning Skills are the metacognitive basis for knowing how to learn itself. It is moreover a learning need that not all students have. No humans are born with better executive functioning. But it is the theory of the researcher that some have better opportunities and safer locals to learn to grasp Executive Function than others.

My intention is to do a case study of 2 to 4 students whom have Specific Learning Disabilities whom are additionally executive Function Deficient to understand how, if at all they improve through a controlled art lesson format. This research will be conducted in an art education environment under the prevue of an art specialist. The students whom have SLD and EF deficiencies will be paid attention to, recorded and researched in several ways.

Individual interviews will be a key interest in this process. Students with SLDs and EF deficiency have a tendency to be difficult to keep track of in larger education classes that are

inclusive of different types of students with disabilities. I already as a teacher have a way of focusing on the needier students in my classes but being able to focus more specifically on students in a quiet setting and ask questions will make a tremendous difference in understanding each case study and the learning tendencies that they have.

Photography will be a valuable tool in this process. It will allow myself to take more candid images from the learning environments in order to later analyze exactly what is happening in the classroom. I will use the pictures when doing my later versions of qualitative analysis.

Video documentation of students working may be key in the unpacking of the creative problem-solving process in this study. It will allow myself to adequately analyze the creative tendencies of my study participants by replaying their art making as many times as I need to. It will also serve to emphasize each case study participant's learning needs and how I may tailor the learning process to suit them better.

The final outcome of the art lesson, learning process and solving of any given *art-problem* will be of critical importance. I will take the time to analyze what is relevant in the student's craft to better understand what Executive Functioning Skills are present in the final iterations for the project's final product. The artworks that the students produce will operate as facets in the considering of empirical data from a qualitative perspective.

I am most interested in talking to students one-on-one about the art work processes that they used and about the final products that they create. The process of creating artwork for students with Specific Learning Disabilities is always important to pay attention to. The motivations and organization of project making for students with SLD and how they make their art is frequently unusual. This unusualness on project organization and time management is

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important to understand for the clear alternatives to main stream learners can be a fascinating recognition.

Research can show not only that students with SLD who executive functioning is deficient can create works of art in alternative and interesting way. Research can also show all individuals whom are problem solving or searching for solutions of differing ways to find solutions. This diversity in problem solving methods may be benefited by individuals whom possess clearly different thought tendencies, patterns or styles. Understanding the Specific Learning Disabilities of those case studies (students with SLD in Art Class) may benefit those students and may benefit the researcher by allowing for a differing method of problem solving to be recognized in the creative tendencies of the research participants with SLD and EF deficiencies.

Students with SLD and EF deficiencies frequently have their own ways of solving problems that are unlike the general education population in any given school. These unusual ways can be more clearly analyzed through the understanding of the SLD/EF-deficient student art work and through one on one interviews to understand those same student's methods for making, solving and completing art projects.

VERBAL OBSERVATION IDEA CHARTS

INDIVIDUAL INTERVIEW PROS	INDIVIDUAL INTERVIEW CONS
Will assist in getting to know the students.	Will be time consuming.
For case studies will be necessary to start files.	May affect Rapport in some unexpected ways.
Will help in finding students that this study may benefit.	May take the study in problematic directions or unnecessary digressions.
Will establish a baseline for learning needs.	Will need to be limited to specific questions that may not be helpful
Will establish a starting point.	
ACTIVITY OBSERVATIONS PROS	ACTIVITY OBSERVATION CONS
Can be controlled specific activities.	Can be time consuming.
Operates in a typical art learning environment.	Difficult to Observe more than one participant.
Skill assessments can be integrated in project criteria.	Unsure of how effective controls will be or.
Lesson Plans can be designed to increase executive functioning.	With diverse learning needs in students, it will be difficult.
AUDIO RECORDING PROS	AUDIO RECORDING CONS
Will be an unbiased method of collecting data.	The data will need to be reviewed carefully.
May work with video documentation.	Can be time consuming.
May understand more clearly how students learn	May be recognized by students and become a variable
Are inexpensive way.	Could become a crutch
STRUCTURED ART LESSON PLANNING FOR RESEARCH PROS	STRUCTURED ART LESSON PLANNING FOR RESEARCH CONS
Can Focus of SLD and EF skills Directly.	May not be useful for severe Specific Learning Disabilities.
Can be used as a constant.	Could present specific structure challenges if it is a new lesson plan.
Can be motivated by learning needs and based in research questions.	May present certain types of trouble in technical ways.
Will Take the Form of Art Learning.	Manifests from subjective experience, may not be effective.
Will/May Stimulate Executive Functioning Skills.	
Will Take time to Create a Safe and Supportive Learning Environment.	
Will Function as an In-Process Assessment.	

Figure 6. Research Methods Pros & Cons Chart

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VERBAL OBSERVATION IDEA CHARTS

PRE & POST ASSESSMENTS PROS	PRE & POST ASSESSMENTS CONS
Creates a starting baseline.	May be inaccurate due to bias or student teacher relationships.
Can map progress.	Variants may be hard to categorize.
SKETCH BOOK JOURNALING/SKETCH BOOK CHECKS PROS	SKETCH BOOK JOURNALING/SKETCH BOOK CHECKS CONS
• Creates a structure in class.	• Student Focus may be an issue.
• May be noted for research.	• May be hard to motivate students.
EXTRINSIC MOTIVATORS FOR RESEARCH PROS	EXTRINSIC MOTIVATORS FOR RESEARCH CONS
May helps Students to get things done for prizes.	May Cause students to become dependent of the educator.
• May make data collection easier.	May make data corrupt.
• Helps sustain creative activity and learning without a prize.	
INTRINSIC MOTIVATORS FOR RESEARCH PROS	INTRINSIC MOTIVATORS FOR RESEARCH CONS
Art Class Is Fun for most kids.	Variant depending on learning capabilities.
May make data collection easier	May make data corrupt.

VISUAL OBSERVATION IDEA CHARTS

PHOTOGRAPHY PROS	PHOTOGRAPHY CONS
Create static documentation.	Takes the researcher out of that moment.
Make supporting images for case studies.	Lacks a certain dimension.
Captures students and student working methods.	May not be candid.
Can document student work trajectories.	May create periodic awkwardness.
Allow for a capturing of the moment..	Will need to be carefully organized.
	Static documentation.

Figure 7. Research Methods Pros & Cons Chart

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VISUAL OBSERVATION IDEA CHARTS

ASSESSMENT PROS	ASSESSMENT CONS
Can be administered & Analyzed Later.	May be hard to remember if not analyzed quickly.
Have the potential to track the development of Executive Function.	May not be tailored the best for all learners.
Can possibly address Co-Morbidity.	May not compensate for the variables associated with Co-Morbidity.
Can be administered three times, beforehand, in the middle and after.	Progress that is mapped qualitatively will be focused on individual needs so a single form may not be the best.

STUDENT ARTWORK DOCUMENTATION PROS	STUDENT ARTWORK DOCUMENTATION CONS
Are evidence.	Are static.
Show Effort.	Do not show process.
Have evidence of each student's art working process..	Does not show the steps it took to get to the final artwork.
Communicate the best for arts based thinking..	Do not communicate the best for general education thinking.
Have evidence of craft and attention to detail.	May be difficult to balance between DBAE & CBAE at times.

VIDEO DOCUMENTATION PROS	VIDEO DOCUMENTATION CONS
Are real time footage.	Are huge digital files
Are powerful documentation.	Can be time consuming to parse through
Capture student working memory.	Are purely visual documentation that Lack depth.
May provide earnest visual information.	The presence of cameras could alter student attitudes.
May allow the researcher to carefully review each case study.	
Will allow the researcher to carefully review each case study	
Will allow the researcher to observe mental flexibility & Self-Control.	

Figure 8. Research Methods Pros & Cons Chart

Research Limitations:

For the collection of verbal and visual data I am going to limit certain key interactions with my studies' participants. While others I intend to use intuitively and in the tradition of fine arts making. Qualitative researching lending itself to the visual arts basis of these case studies.

Three paper assessments forms will be used. These assessments will focus on questions about and related to the three main categories of executive function; Working Memory, Mental Flexibility & Self-Control. One assessment will be done before the art lesson plan is started, one assessment will be done mid art lesson plan, and the final assessment will be done after the lesson plan is completed.

As the researcher, I will conduct only two, one on one interviews with the research study participants. These will occur once before the project gets started and once close to the finalized projects completion and closure. The second one on one interview will occur before the last day to work on the project. This will enable myself to understand how the respective research study participant worked through towards the art projects solution.

I will use photography readily and, on a shoot, as necessary basis. Photography will assist me in the daily documentation of students and how they work through the process and project. Taking pictures will assist me better understand each research participants self-directed methods of artistic problem solving.

For audio recording I intend to only use a small amount of recording time and only on specific dates. We will have small reflection sessions to decide what our working processes and understanding of those working methods are like in art class. The students will have the opportunity to think pair share, how their art making is going and to recognize how each different student is finding creative solutions to making their own art making project. We will

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utilize two class sessions to do this. Both art class sessions will be recorded via-audio. This will be the only utilization of audio recording.

Context for This Study

This study will be completed in a secondary school learning environment. The Art Specialist & Art Educator will be the Principal Investigator. And the research will be documented by the Principal Educator.

The fully inclusive public or private school environment will serve to explore and understand further the context of students whom present with Specific Learning Disabilities. It will moreover reinforce the learning capabilities that have been proven to be effective for students with disabilities through mainstreaming.

Data Analysis

The data Analysis methods will be based on each individual case study. In this way, the research participants will be contrasted with the main topical areas of the research study interest. I will start with the type of Specific learning disability that is listed in each students Individual Education Plan. I will then proctor and assessment to gauge what Executive Functioning Skills in those students are the most deficient relative to the general student body at the research sight. The research process will then proceed to understand how the art lesson and art lesson planning may or may not be affecting the development of Executive Function skill development in the student case studies of this research project. I will moreover engage in an inductive analysis of the information gathered as the research process proceeds through its various stages.

CHAPTER IV: RESULTS OF THE STUDY

Introduction to Data Collection Process

In order to further understand the relationships between a few key metacognitive skills that students develop through learning, specifically in the art classroom, data has been collected. Over a period of 4 weeks research has been conducted on 3 students as case studies. The students chosen for this case study are on the upper secondary school level. These learners moreover present certain specific learning disabilities. They have special needs.

The possibility of metacognitive development for students on the secondary school level whom present with specific learning disabilities is a key interest to this study. This research attempts to uncover the Art Education Specialists purview as an actionable capacity to ameliorate learning difficulties associated with Specific Learning disabilities. This research attempts to surmise qualitatively the actionable processes relative the Metacognition building that occur in all Art Education classrooms and that are respectively dynamized by the art teachers whom bring those art education classrooms to life. This research moreover seeks specifically understand how the learning capacities of students whom present with Specific Learning Disabilities in accordance with the Diagnostic and Statistics Manual, may be advanced.

Some common traits of students whom possess Specific Learning Disabilities include the struggling with spelling or mathematical calculations and problems with listening, speaking or reasoning. Specific learning disabilities are moreover understood to have links with the

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condition known as ADHD or Attention Deficit Hyperactive Disorder. The learning disability (ADHD) proving to cause tremendous hardship in students whom exhibit the tendency. Art class is no exception to the hindrance of ADHD. And it remains unclear what effect art class has on these learning setbacks (Specific Learning Disabilities) in general. This is assuming that Art Education has an impact on Executive Function development in students whom present specific learning disabilities on any level.

Certain adjustments were made for this research respective to the initial methodology due to the specificity of the research sight chosen. Most of which adjustments are positive and have allowed for a more concise and accurate research process to occur. While this research sight was initially expected to be a larger classroom with 20 students or more, what actually ended up being researched is a class of no more than 12 students and only 3 case studies within the context of those students.

Because the research sight I chose happens to be a very small class, it allows for a different level of teacher student rapport and understanding. I know each of these students first hand and have had the chance to comprehend their personalities and learning profiles. The small size of the class prompted myself to shift some of the data finding focuses. And in turn the small class size pushed me to seek out to communicate in real time *without audio recording* in the form of one-on-one interviews.

In this research there are now four primary modes of data collection; one is in photographs of work in progress and of the students working, one is finalized art works and one is questionnaires that appear as self-assessments. These, in combination with assessment-based protocols that are aligned to the understanding and evaluation of Executive Functioning Skills,

that are moreover quite gradable in any art room, allow for an adequate amount of information gathering.

Pedagogical Emphasis in Lesson Planning

The lesson plans used in this research are not unlike other lesson plans that would be used by myself or others in the fulfilling of the role of Art Educator. They are based in a student-centered learning practice. Effort is made primarily to address student needs and to understand what types of Accommodations or Modifications must be made in order for an adequate amount of learning to take place. Emphasis is placed on the student's capacities to share in decisions and in their capacities to lead in their own experiences as learners. A certain amount of self-direction is certainly encouraged in order to stimulate the value of the subject matter for students. A positive classroom culture is moreover emphasized to create the type of learning environment that allows for students to take artistic chances.

While clear the opportunity for students to be creative is a necessity of learning, structure is also of importance. Clear and apparent criteria is required for students to complete. There is a structure to the lesson plans process and assessments are used to not only grade the student artwork, but to also create an opportunity for the students themselves to reflect upon both the projects creation and its closures.

Explanations of Lesson Plan Steps Used in Teaching

Grade Level: The Grade level that the Art Lesson Was Designed For

Activity: Explanation of the art activity

Materials: Types of Materials Used in Art Making

Tools: Types of tools (non-consumable) used for art making

Objective: prerogative of the art lesson's emphasis accomplishment directive

Development Rationale/Prior Learning: Where the students are in their artistic development & what the students already comprehend as students of mine. Justification based on learning level and developmental phase in accordance with Lowenfeld's (Brittain, 1982) stages of artistic development.

Accommodations/Modifications/Adaptations: How the art plan can compensate for learning disabilities, physical disabilities, English language learners and other types of students with special needs in the Art Room.

National Standards: Arts National Common Core Standards

Spark/Do Now: Lesson plan springboard, how to get the students started making art

Association: The process of students recognizing art works form history, cultural representations or other types of visual and/or artistic media that resonates with the art lesson.

Visualization: The process of students inventing, designing, collaborating or otherwise stimulating their own creative process to attain a level of artistic ingenuity and accomplished in the making of their own art as a result of the lesson plan's/project's introduction and discourse.

Recap: A reminder of the lesson plan's working process and where we as a class are trying to get to for the day, for the unit, or for the lesson. The basis of working for each student reminded.

Transition: Moving forward from the Recap, Spark, do-now, secondary activity, primary activity, or otherwise into either any of the previously stated other than itself or to closure, cleanup or class end.

Clean-up: Putting the materials and tools back where they go in respective containers, closets or otherwise, wiping surfaces and checking floors.

Closure: Reflecting on the art making process.

Assessment (Formative): methods of grading artwork, of student self-assessment or of reflecting on how the project went. Exit tickets may be administered.

Figure 9. Explanation of Lesson Plan Formatting.

- Below *two* lesson plans that were used in research are typed in this fashion.

Art Lesson Plan Alignment with Research Imputes & Assessment Based Protocol

The above phases of the lesson plan criteria that I adhere to for all of my educational efforts have been broken down into several clear steps that adhere to this research imputes and directive as an educator. The lesson plan steps can moreover be viewed as emphasizing the three primary categories of executive function. The three main categories of executive function being Working Memory, Cognitive Flexibility and Inhibitory Control.

Each of the following lesson plan steps, for the sole purpose of this research study, are noted as being successful or unsuccessful on a rate of one though five. Hypothetically, a student may be successful in working phase number two at a maximum rating of 5 but have also been struggling with step one “Brainstorming.” This leading to the conclusion that the student is struggling with certain aspects of Cognitive Flexibility but not with Inhibitory Control.

Here, an executive functioning deficiency can be noted and focused on for research purposes in the art classroom. The question can be then asked, whether or not this student may succeed in the amelioration of an executive function deficiency through traditional art education or not. And in this case the research lens can be focused on the examining of the student’s potential enhancing of Cognitive Flexibility through art learning.

Emphasized Teaching Steps for use in *Research*

While the lesson plan formatting that I use is modular in nature and can be used in various orders as is needed through the usage of a lesson plan, the research Lesson Plan Steps are rigid. The research plan steps, that subsequently exist in situ with the lesson plan steps will be executed in the following linear order. Also, not the color coding respective of each step in the art making and research process.

Step One A– Brainstorming

Step One B – Pre-work and Material Studies

Step Two A – Working phase 1

Step Two B – Working Phase 2

Step Two C – Working Phase 3

Step Three A – Student Self Evaluation & Recap – “What changed?”

Step Three B – Closure, Work Creation Review & Final Assessment

Figure 10. Executive Functioning Color Coding

Concerning the Research Sight

As a researcher I entered this sight primarily to teach art. I have a position that requires I serve students in grades 1 through 12 at a school for students with special needs. The institution where I am teaching was in need of an Art Specialist to run classes through the end of the year. This

corresponded with my research needs. I am in this situation a participant researcher and Art Educator.

Teaching art I am onsite every day from 8:30 AM to 4:00 PM Monday through Friday. This has allowed myself to not only develop a rapport with the students whom I serve but also to become better acquainted with the staff, teachers and administrators. They have been made aware respectively of the research needs I have and of how long I will need to be executing them on sight at this respective academic institution.

Following this introduction are several sets of data that are arranged primarily by case study. Because the existence of specific learning disabilities as a wide umbrella like determination. Research is arranged initially by case study, by each case studies profile as a learner. What each research participant/case studies needs as a learner are noted in the form of Executive Functioning Deficiencies. The Executive Functioning deficiencies clearly determining how each learner may possibly improve. Improvements being potentially made possible through the experiences offered in Art Education are noted. Progress quotients in each step of the “Teaching Steps for Use in Research”

Concerning Pre-Assessment & Base-Line

A short lesson plan was undergone with the entire class (including the research participants) in order to better comprehend the level of each student’s baseline or beginning level of Executive Function. This art exercise was designed as both an introductory exercise for the students to participate in, in order for me to get to know each student and for them to get to know myself. While it also existed as a Pre-Assessment in order to establish a control for research purposes.

Furthered Explanation of Emphasized Lesson Plan Steps for Use in Research

Three Phases of Assessment and Information Gathering will be undergone for this research.

These phases pertain directly to the Three Primary areas of Executive Function. The three primary areas of Executive Function being working memory, cognitive flexibility and inhibitory control.

The three information-gathering-phases are overlaid upon the general art lesson plan formatting that would typically be used in any other Art Educational situation. Respectively, please note the following as being organized into notable research Phases. The general art lesson plans pre-organized structure was used in this research as to not introduce any additional adverse effectors throughout the research project. This art lesson plan was meant to be one that would be used for a typical art education lesson plan without the research component in place. The lesson plan formatting is one that many art educators use moreover.

Part of the motivation of the principal investigator for this research project remains curious about the possible outcomes of Art Education in general. This research seeks to understand what is already going on in most, if not all art learning environments. Specifically, this research is interested in understanding how executive functioning skills are being learned through art-education. For this reason, no unusual aspects have been applied to the art lesson planning that that is otherwise unaltered. Rather the general art lesson plan has been categorized with color coded emphases to more directly apply to three phases of research that are to take place.

Each phase of the lesson plan will be categorized in accordance to the colors. Each phase of the lesson plan will moreover be analyzed for evidence of the three major areas executive

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function. For the three phases of research, Assessment phase one, assessment phase two and assessment phase three colors have been applied. For assessment phase one green has been used, for assessment phase two blue has been used and for assessment phase three orange/red has been used.

Step Zero – Base-Line/Pre-Assessment

- Students analyzed for evidence of Working Memory, Cognitive Flexibility & Inhibitory Control
-

Step One A– Brainstorming

- Will be analyzed for evidence of Working Memory, Cognitive Flexibility & Inhibitory Control
-

Step One B – Pre-work and Material Studies

- Will be analyzed for evidence of Working Memory, Cognitive Flexibility & Inhibitory Control
-

Step Two A – Working phase 1

- Will be analyzed for evidence of Working Memory, Cognitive Flexibility & Inhibitory Control
-

Step Two B – Working Phase 2

- Will be analyzed for evidence of Working Memory, Cognitive Flexibility & Inhibitory Control
-

Step Two C – Working Phase 3

- Will be analyzed for evidence of Working Memory, Cognitive Flexibility & Inhibitory Control
-

Step Three A – Student Self Evaluation & Recap – “What changed?”

- Will be analyzed for evidence of Working Memory, Cognitive Flexibility & Inhibitory Control
-

Step Three B – Closure, Work Creation Review & Final Assessment

- Will be analyzed for evidence of Working Memory, Cognitive Flexibility & Inhibitory Control

Figure 11 How Executive Functioning and Research Has Been Broken Down into Steps

**DATA GATHERING TABLES FOR USE IN RESEARCH BASED ON RESPECTIVE
 EXECUTIVE FUNCTION**

Inhibitory Control was ranked in terms of the following general rules:

Least				most
The student focused for no longer than 5-minute periods per class on the project	The student focused for no longer than 10-minute periods per class on the project.	The student focused for no longer than 20-minute periods per class on the project.	The student focused for no longer than 30-minute periods per class on the project.	The student focused for no longer than 45-minute periods per class on the project.

Figure 12. Inhibitory Control Table

- Students were assessed in the area of inhibitory control based on how long they could stay focused on the project they were making.

Cognitive Flexibility was ranked in terms of the following general rules:

Concept	Least				Most
The accepting of new ideas	The students did not understand or value to new art form.	The student showed some interest in the introduction of the new art form ideas.	The student struggled to understand the value of the new art form but finally did.	The student comprehended the value of the new art form adequately.	The students accepted the new ideas of the newly introduced art form and comprehended it enthusiastically
Creativeness through personalized art creation	The student did not create an original artwork, but the projects parameters did resonate with the student.	The students did an adequate job of creating an art but sometimes was outside of the projects parameters.	The students did an adequate job of creating an art work inside the projects parameters.	The student did an above average job of creating an art work inside the projects parameters.	The student solved the problem of creating their own art form in response to the projects parameters amazingly well.
Technical problem solving	The student did not solve any problems at all.	The student struggled to solve problems but did solve some.	The student solved problems but only with help of the teacher.	The student managed to solve most problems.	The student did amazingly well at solving problems throughout the art projects creation.

Figure 13. Cognitive Flexibility Table.

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Working memory for the Pre-Assessment was ranked in terms of following:

	least				Most
Evidence of Projects inspiration	The student did not consider the projects introductory slide show.	The student barely considered the projects introductory slide show.	The student somewhat considered the projects introductory slide show.	The student considered the projects introductory slide show.	The student carefully considered the projects introductory slide show.
Idea-list concepts (direction following)	The student made a list of 0 to 8 concepts.	The student made a list of 8 to 12 concepts.	The student made a list of 12 to 15 concepts.	The student made a complete list of 15 concepts.	The student completed more than 15 concepts on the list.
Thumbnail Drawings (direction following)	The student made 2 or less thumbnail drawings.	The student made three thumbnail drawings.	The student made 4 drawings that were somewhat incomplete.	The student completed the 4 small thumbnail drawings, with color.	The student completed excellently, 4 small drawings with color.
Large Drawing (direction following)	The student did not complete the large drawing.	The student started but did not finish the large drawing.	The student completed a drawing mostly.	The student completed one large full color drawing.	The student excellently completed one large full color drawing.
Project & Concept linkage and/or correspondence (Synthesizing)	The project did not correspond with what was on the idea list at all.	The project corresponded somewhat with what was on the idea list	The project mostly corresponded with what was on the idea list	The project corresponded visually with what was written verbally	The project corresponded Amazingly well visually with what was written verbally
OVERALL	Below 60%	60% to 70%	70% to 80%	80% to 90%	90% to 100%

Figure 14. Working Memory Assessment for the Base-Line Establishment Lesson Plan
 - The above specifically was established for the Pre-Evaluating of research Case Studies in order to establish a control and base-line to contrast later findings in art class with. The above relative rankings were determined to be of importance to be later condensed into an extrapolation rating of working memory.

While the same charts for Cognitive Flexibility and Inhibitory Control can be used to research and evaluate the process of all art projects, due to the relative nature of Working Memory, each respective research evaluation must be specified in terms of this relative step in the working process or project.

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Working memory From the Primary/Main Art Lesson was ranked in terms of following:

	Least				Most
Evidence of Projects inspiration	The student did not consider the projects introductory slide show.	The student barely considered the projects introductory slide show.	The student somewhat considered the projects introductory slide show.	The student considered the projects introductory slide show.	The student carefully considered the projects introductory slide show.
Design/ Drawing (direction following)	The student did not complete the large drawing.	The student started but did not finish the large drawing.	The student completed a drawing mostly.	The student completed one large full color drawing.	The student excellently completed one large full color drawing.
Number of Completed Mobile Shapes/Elements	The students completed no shapes out of the materials.	The student completed 2 to 4 shapes out of the materials.	The student created 4 to 8 shapes out of the materials.	The student created 8 to 10 very similar shapes out of the materials with.	The Student created 10 or more unique shapes out of the materials.
Usage of Mobile Hanging Dowels	The student did not hand the mobile.	The student hung the mobile with some of the provided dowel bundle.	The student hung the mobile with most of the provided dowel bundle.	The student hung the mobile with all of the provided dowel bundle.	The student hung the mobile with all of the provided dowel bundle and additional components.
Project & Concept linkage and/or correspondence (Synthesizing)	The project did not correspond with what was on the idea list at all.	The project corresponded somewhat with what was on the idea list.	The project mostly corresponded with what was on the idea list.	The project corresponded visually with what was written verbally.	The project corresponded Amazingly well visually with what was written verbally.
OVERALL RANKING	Below 60%	60% to 70%	70% to 80%	80% to 90%	90% to 100%

Figure 15. Working Memory Assessment for the Main Lesson Plan

- While the same charts for Cognitive Flexibility and Inhibitory Control can be used to research and evaluate the process of all art projects, due to the relative nature of Working Memory, each respective research evaluation must be specified in terms of this relative step in the working process or project.

Concerning the Pre-Assessment Project Required Criteria & Lesson Plan

The Students were required to Invent an Urban Mythology after viewing a power point of Urban legends and Mythological creatures. Each student did this on a piece of 8.5in X 11in paper. On one side of the paper they numbered from one to 15. On the other side of the paper they completed 4 thumbnail drawings. The students finalized the project by completing one large, full color drawing on eight and a half by 11inch paper. The following is the lesson plan that was used.



Figure 16. Student Folders for Storing Materials

- They were required to create these for the Main Art Lesson Plan Used in Primary Research. These folders were used on some level to take note of the students working memory. Did they remember where they put their projects components?

PRE-ASSESSMENT ART LESSON PLAN

Grade Level: 10th, 11th & 12th

Activity: Inventing your own Urban Mythology

Materials: Paper, Pencils, Colored Pencils, Erasers

Tools: Pencil Sharpeners

Primary Objective: By introducing the students to the concept of Mythological Creatures &

Urban Legends, the students will grasp an understanding of what an Urban Mythology is

Secondary Objective: Through the gained understanding of what an Urban Mythology could be, students will embark in a process of self-invention and create their own version of Urban Mythology.

Development Rationale/Prior Learning: These secondary students know how to use pencils to draw, but they don't know how to use pencils like an artist. This project will prove to be an excellent opportunity to help these students to learn more about what is possible regarding pencils and drawing. The Urban Mythology project will also allow the students to develop more of an idea of a sense of self.

Accommodations/Modifications/Adaptations: The project will be tiered in accordance with all present disabilities in the classroom. But this project will also be used principally as a way of gauging what the students are capable of in art class metacognitively speaking.

National Standards: Anchor Standard 7; Students will perceive and analyze Artistic Work, Anchor Standard 3; Students will refine and complete artistic work

Spark/Do Now: Students will make a list of 15 things about their Urban Mythologies

Association: A slide show will be shown to students that features Urban Legends & Mythological Creatures

Visualization: Students will make four small thumbnail drawings of Mythological creatures.

Recap: The concept of Mythological Creatures will be reminded to the students as they work through their ideas.

Transition: Pencils and paper will be handed out, the graphite hardness scale will be reviewed

Clean-up: All drawings will be placed into a folder.

Closure: A review will take place of what happened with the students and how they through their ideas.

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Assessment (Formative): Qualitative analysis of work and grading will take place respective to the students work.

Figure 17. Art Lesson Plan Used for Pre-Passement & Baseline Determination of Executive Function.

-This art project was used to determine the level of executive function and if applicable the level of executive functioning deficiencies in Student Participant Case Studies whom experience Specific Learning Disabilities.

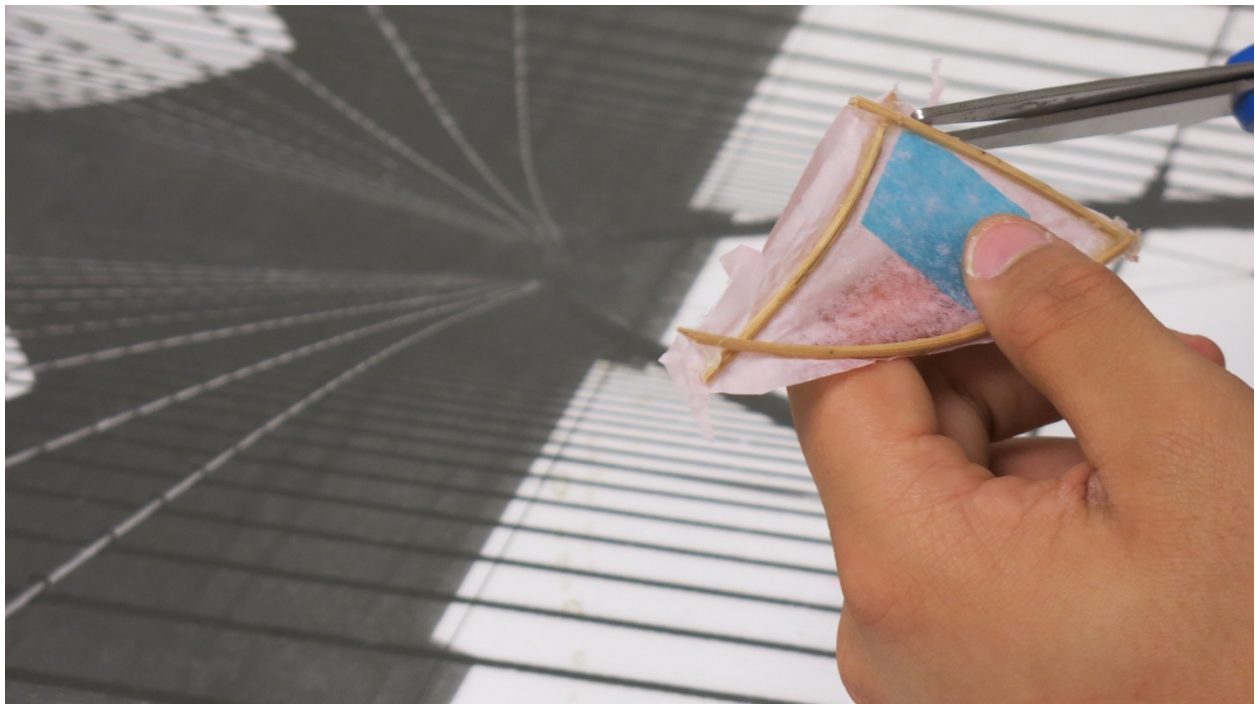


Figure 18. A Student Trims His Mobile Component in Preparation for Putting together the Finalized Project.

ART LESSON PLAN USED FOR MAIN RESEARCH

Grade Level: 10th 11th 12th

Activity: Alexander Inspired Mobile Art

Materials: Weaving Wicker, White Glue, Tissue Paper, Gloss Gel Medium, Thin String or Monofilament, Various Dowels, Hot Glue Sticks, Various Wood Shapes, Drawing Paper, Regular Pencils, Colored Pencils, Large Construction Paper, Masking Tape

Tools: Low Temp Hot Glue Guns, Small Paint Brushes, Scissors

Primary Objective: Through the introduction of the seminal mobile artist Alexander Calder, students will learn to comprehend the beauty of the “mobile art form,” how it moves and never stays the same.

Secondary Objective: By reinforcing several visual examples of Art Mobiles, the difference between abstract and literal art objects will be more clearly Comprehended. Comparisons will be drawn between literal mobiles, that look like fish or solar systems, and the purely abstract art forms created by Alexander Calder.

Tertiary Learning Objective: Through carefully tuned mastery, students will be able to cut, glue, tie, color, balance and assemble their own Alexander Calder inspired mobiles.

Development Rationale/Prior Learning: These students have a basic comprehension of the different types of art drawing mediums that are available. They have frequently done projects that are based principally in drawing, but they have yet to use drawing as a primary facet of their design process. For this project these secondary level students will be able to utilize their drawing skills in a Design Process for the creation of this project respectively.

This project pays particular attention to the excising of fine motor skills and step-based art creation. The steps and nuanced process being intentionally emphasized for the clear manifestations of potential executive functioning throughout the art making process. Gluing tissue paper to 3-inch wicker frames is a difficult undertaking for students whom have trouble paying attention to the details of art making and the details of the directions regarding the art making process.

Accommodations/Modifications/Adaptations:

I will work directly with students whom struggle with fine motor skills to complete certain parts of the project while being sure to keep those students engaged in decision making based in the art creation process.

Questions for students with special needs: Why did you choose this color? What one of these two would you like to get started? Do you understand the next step? Which way do you want to

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do this together? Would you like to look at more pictures? Is there anything that you do not understand?

National Standards: Anchor Standard 7; Students will perceive and analyze Artistic Work, Anchor Standard 3; Students will refine and complete artistic work

Spark/Do Now

Students will work on their design drawings in order to get a better idea of what they want their mobiles to look like and why. They will review their drawings, add to them and recount the projects criteria every day when they arrive in class.

Association

We will look at several art mobiles and establish the difference between literal art objects and abstract art objects.

Visualization

Students will be asked about what kinds of shapes they might make for their own mobiles. They will then make drawings of the mobiles that they want to make.

Recap

At the beginning of each work day, students will be reminded about what they are working on.

They will be reminded that they need:

- 10 Shapes
- 1 full color drawing
- 1 DIY Folder to keep your parts in

A google image search will be motivated towards identifying the difference between abstract and literal mobiles.

Students will be asked:

Is this image literal or abstract? While pointing at several different art mobiles compiled from online image searches.

Transitions to Work:

Each progressing new step will be introduced at the beginning of each work day.

- Day One (**Research Step One**): Students will make a folder, do material studies and start on their drawings
- Day Two (**Research Step One**): Students will start to make shapes out of the wicker with the hot glue gun

Data Collection Assessment One Complete at the end of Step One

- Day Three (**Research Step Two**): Students will continue making shapes out of wicker
- Day Four (**Research Step Two**): Students will begin covering their shapes with tissue paper
- Day Five (**Research Step Two**): Students are to finish covering their shapes with tissue paper and begin to clear coat them in order to hang them on the dry line.
- Day Six (**Research Step Two**): Students will tie string to their completed mobile shapes/elements and begin gluing the dowel rods to hand their mobiles with

Data Collection Assessment Two to be Completed at the end of *Step Two*

- Day Seven (*Research Step Three*): Students will finish hanging their mobiles
- Day Eight (*Research Step Three*): Students will reflect about the process of making the art.
- Day Nine (*Research Step Three*): Students will complete self-assessments

Data Collection Assessment Three Complete at the end of *Step Three*

Clean-up:

Students will be required to create their own DIY folders and put their name and room numbers on them. They will put their work in progress inside their folders at the end of each class
Small extrinsic motivators, rewards will be given to students whom are very good at cleaning up.

Closure

A class wide review will be conducted to see what worked the best. The students whom completed this project will be encouraged to examine all of the solutions that manifested as a result of this art projects introduction.

Assessment (Formative)

Students will be required to have made:

- 10 tissue paper covered shapes
- 1 full page full color design drawing
- 1 Do It Yourself folder

Having had used all dowels that where given to them in their bundle

Their level of mastery in hot glue usage

How well the tissue paper was use, how many holes where in them

How well the student's final mobile iteration adheres to the drawings they made.

Particular attention will be payed to:

1. Working Memory
2. Cognitive Flexibility
3. Inhibitory Control

Figure 19. Art Lesson Plan Used in Primary Research and leverage against the Baseline pre-assessment art lesson plan

-Please Note the color coding for its correspondence with different parts of the Lesson Plan that were used to assess the presence of different types of executive function, at different phases in the art creation process. Please refer to figures 10 and 11 (Above) in doing so.

PRESENTATION OF DATA

Concerning Redirection:

Please note that *Redirection Codes* are marked in moments where the respective step in the lesson plan process is recognized as being ranked as low functioning and in respective to this typical educational structure as 2 or less. Here the students are redirected to other parts of the lesson plans order. Opportunities are repetitively given to students on work days to return to earlier or otherwise unfinished portions of art projects in accordance with the lesson panning

Presentation of Data *Key* for **OBSERVATION ASSESSMENTS**

Productivity Quotient Level:

1. The Student showed no sign of the Executive Function
2. The Student Showed a small sign of the Executive Function
3. The Student Showed some intermittent sign of executive Function
4. The Student Showed an Adequate Amount of Executive Function
5. The Student Showed an excellent amount of executive function

RD: The Student was re-directed to another phase in the art lesson plan working process.

Figure 20. Data Key

- How productivity quotient levels are rated in all Three main areas of Executive Function. Level one being the lowest, level five being the highest.

INTRODUCTION TO CASE STUDY “T”

General Description

Case study “T” was chosen to participate in this project due to clear deficits in the executive functioning area of Inhibitory Control. Of the three primary areas of executive functioning that this study focuses on, Working Memory, Cognitive Flexibility and Inhibitory Control. Student case study “T” was found to be the most deficit in Inhibitory Control. Please see the definition of terms in Chapter 1 for further explanation if required.

This student research participant has a great deal of trouble focusing. The student is a 10th grader whom has been attending this institution for some time. The student exhibits a constant stream of energy in art class that inhibits his working process. It appears difficult for the student to stay at his seat for more than 10 minutes. When the student appears to be concentrating it is difficult to tell if there is any retaining of information taking place. Frequently external motivators are the primary reason why this student works. Grades, and token economies acting as rewards for the student’s actions. The holistic learning, retaining of information and quality of internal question/educational discourse seems to fall short.

Returning to the student to attempt to understand what the student remembers regarding the concepts/inspiration for the lesson planning of this case study at times falls short. There is an undeniably clear difficulty in assessing how the student learn, what the student retains and how best to confront and educate the student apparent lack of concentration skills, organization and otherwise educational motivations.

The student has an aid that he is with for every visit to the Art Room. She appears on some levels to be motivated to get the student to make work. But at times ends up doing allot of the art work for him. It seems to be a somewhat delicate balance between the One-on-ones

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motivations to do her job and case study T’s general efforts to actually obtain the criteria for any given project associated with getting a good grade.

The student has been observed exhibiting behaviors such as:

- Spoken Aloud Frustration
- Asking questions about the time
- Asking how long the class period is
- Getting out of his seat
- Pacing the room

Noted Executive Functioning Deficiencies

- Inhibitory Control
- Working Memory

OBSERVATIONS ASSESSMENTS FOR CASE STUDY “T”

Relative to Lesson Planning and potential Executive Functioning Deficiencies/Development

BASE-LINE/PRE ASSESMENT:

Introductory Exercise

(ONE “X” Provided Per Class)

Step 1A	Most				Least
Evidence of Cognitive Flexibility			X		
Evidence of Working Memory				X	X
Evidence of Inhibitory Control					X

Table 1.1. Pre-Assessment Data for Case Study “T”

-This Table represents a condensed extrapolation of the pre-assessment used in creating a control to establish a start to understanding where the case study curtly resides in the area of Executive Functioning Skills.

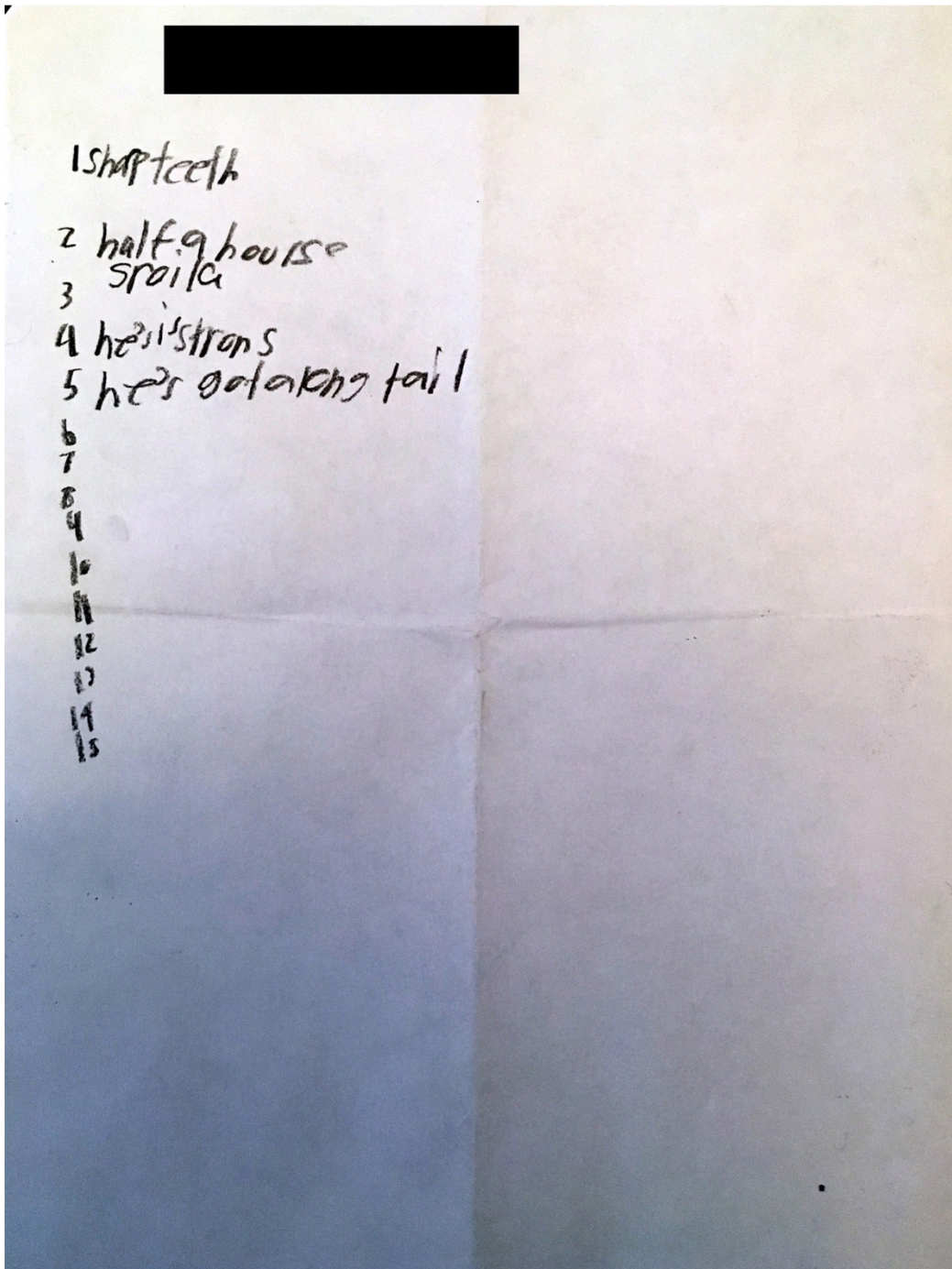


Figure 21. Case Study "T's" Pre-Assessment Art Project

- The above image is an Artifact from Case Study "T." This image is from the pre-assessment. This image is a documentation of the, One through 15 concepts requirement in the creation of the respective student case study's art project.

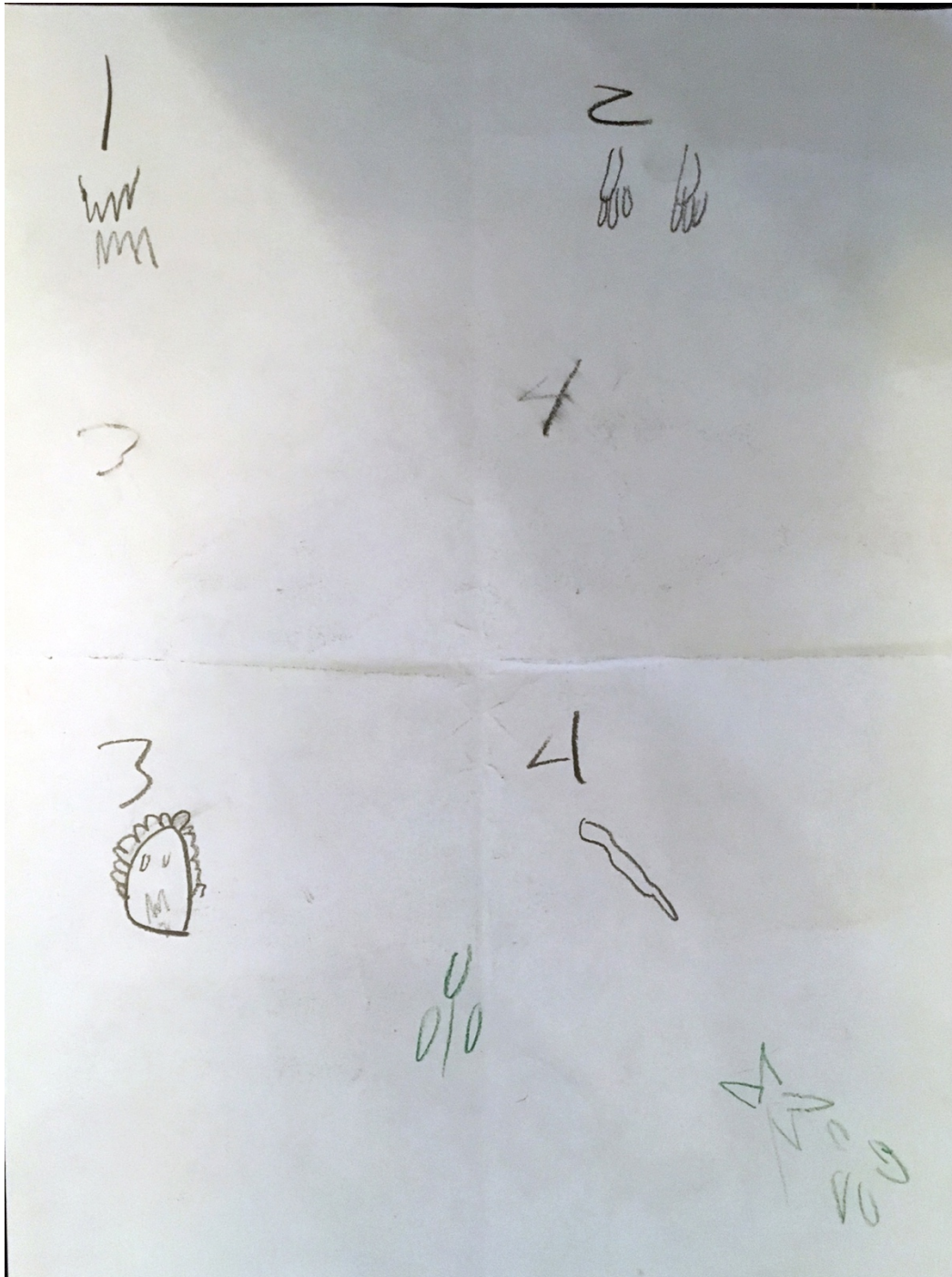


Figure 22. Case Study "T's" Pre-Assessment Art Project

The above image is an Artifact from Case Study "T." This image is from the pre-assessment phase of this research study. This image is a documentation of the, four thumbnail drawings requirement in the creation of the respective student case study's art project.



Figure 23. Case Study “T’s” Pre-Assessment Art Project

The above image is an Artifact from Case Study “T.” This image is from the pre-assessment phase of this research study. The image is a documentation of the, full page color drawing requirement in the creation of the respective student case study’s art project.

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Lesson Plan Step One, Case Study “T”

BRAINSTORMING:

In this case Design Drawing

(ONE “X” Provided Per Area)

Step 1A	Most				Least
Evidence of Cognitive Flexibility			X		
Evidence of Working Memory					X
Evidence of Inhibitory Control					X

•••• Redirection Zone ••••

PRE-WORK AND MATERIAL STUDIES:

In this case Demonstrations, Experimentations & Art Medium Introduction

Step 1B	Most				Least
Evidence of Cognitive Flexibility		X			
Evidence of Working Memory	X				
Evidence of Inhibitory Control				X	

•••• Redirection Zone ••••

Table 1.2. Condensed Research Information for Case Study “T”

- Certain senses of clear frustration were present in the student through the drawing phase for this project. The student exhibited tendencies in this way that were similar to those found in the pre-assessment phase. Some differences in working style manifested as other options for creating work and experimenting were made available. The hot glue station for example is across the room from this student’s seat. He is required to get out of his seat to use it.

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Lesson Plan Step Two, Case Study “T”

WORKING PHASE ONE:

In this case Wicker Frames and Hot Gluing

Step 2A	Most				Least
Evidence of Cognitive Flexibility		X			
Evidence of Working Memory			X		
Evidence of Inhibitory Control		X			

•••• Redirection Zone ••••

WORKING PHASE TWO:

In this case Tissue Paper, gluing & Gloss Gel Medium Clear Coating

Step 2B	Most				Least
Evidence of Cognitive Flexibility	X				
Evidence of Working Memory		X			
Evidence of Inhibitory Control		X			

•••• Redirection Zone ••••

WORKING PHASE THREE:

In this case Mobile Assembly

Step 2C	Most				Least
Evidence of Cognitive Flexibility	X				
Evidence of Working Memory			X		
Evidence of Inhibitory Control				X	

•••• Redirection Zone ••••

Table 1.3.

Increased Executive Function was found to be evident in the working process. While concentration (Inhibitory Control) remains clearly deficient in this student, other opportunities for working and making seem to be better for the student.

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Lesson Plan Step Three, Case Study “T”

STUDENT SELF EVALUATION & RECAP:

Step 3A	Most				Least
Evidence of Cognitive Flexibility			X		
Evidence of Working Memory		X			
Evidence of Inhibitory Control			X		

•••• Redirection Zone ••••

CLOSURE, WORK CREATION REVIEW & FINAL ASSESSMENT:

Step 3B	Most				Least
Evidence of Cognitive Flexibility		X			
Evidence of Working Memory			X		
Evidence of Inhibitory Control			X		

•••• Redirection Zone ••••

Table 1.4. Case Study “T” Condensed Research Information for Lesson Plan Step Three
 -While the student was successful in creating the overall project, little evidence remained that
 allowed for the reflecting upon of the projects initial inspiration, in this case Alexander Calder.

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 SPECIFIC LEARNING DISABILITIES IN THE DEVELOPMENT OF EXECUTIVE
 FUNCTION: A CASE STUDY OF TREE INDIVIDUALS

Participant Code: T
 Date: N/A

FINAL SURVEY

<i>Questions based in:</i> COGNITIVE FLEXIBILITY		<i>Student Notes:</i>
Have you used all the materials that where given to you at the beginning of this project, how?	YES or NO	-
Where you able to fulfill the project criteria with all the materials given to you?	YES or NO	I had to do it over.
Did problems arise through the art making proses? how did solve those problems?	YES or NO	By doing it over I was able to deal with the tangle.

<i>Questions based in:</i> WORKING MEMORY		<i>Student Notes:</i>
Have you been thinking about the visual inspiration for this art project in the creation of your own art project?	YES or NO	Shapes and Circles
Did this project's visual inspiration (PowerPoint) impact how you designed your project?	YES or NO	-
Upon the completion of this project, does it compare to the designs that you drew in your sketchbook? How?	YES or NO	-

<i>Questions based in:</i> INHIBITORY CONTROL		<i>Student Notes:</i>
Have you been able to follow through with the technical process?	YES or NO	Somewhat
Did you complete a design before completing this project? If so, how does it compare to the work of art you made?	YES or NO	-
Where you able to work with and keep track of the materials given to you throughout this art project?	YES or NO	Yes and No

Figure 24. Final Exit Survey for Case Study "T"

INTRODUCTION TO CASE STUDY “J”

General Description

Case study “J” was chosen to participate in this project due to clear deficits in the executive functioning area of Working Memory. Of the three primary areas of executive functioning that this study focuses on, Working Memory, Cognitive Flexibility and Inhibitory Control, student case study “J” was found to be the most deficit in Working Memory. The Base-Line/Pre-assessment art project used in this research study confirming this. Please see the definition of terms in Chapter 1 for further explanation if required.

The student is high school aged. He is typically a few minutes late and is frequently pre-occupied with the goings on of other students. He exhibits a nervousness periodically that causes a certain difficulty in focusing. When the student is in class he sometimes appears to be somewhat unsure of himself. He has trouble identifying shapes, sizes and drawing and re-drawing specific geometrical shapes. These geometrical shapes include triangles, rectangles and circles.

Case study J at times seems to be pre-occupied with what may be hardships. The student could be experiencing a hardship or troublesome emotional state. His emotional realities extending far beyond that of the class. His ideas are always very interesting, intricate and involved. His ideas and inspiration theoretically being a principal manifest of the experiences he has in life. Art class in this instance could be an emotional release point for this student.

Observed Frequent Student Behaviors

The student has been observed exhibiting behaviors such as:

- Getting Lost in Thought
- Lacking in follow Through
- Unsureness of Self

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- Daydreaming
- Genuine care and asking for help
- Forgetting the directions
- Frustration in technical processes

Noted Executive Functioning Deficiencies

- Working Memory
- Cognitive Flexibility

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**OBSERVATIONS ASSESSMENTS FOR CASE STUDY “J”
 regarding art making process steps relative to Lesson Planning and
 Pertaining to potential Executive Functioning Deficiencies/Development**

BASE-LINE/PRE ASSESMENT:

Introductory Exercise

(ONE “X” Provided Per Class)

Step 1A	Most				Least
Evidence of Cognitive Flexibility			X		
Evidence of Working Memory				X	X
Evidence of Inhibitory Control	X				

Table 2.1. A condensed version of Case Study “J’s” Executive Functioning Performance in the Base Line/Pre-Assessment” Phase of this research.

- An established basis to be leveraged against findings in later phases of this research study.

Lesson Plan Step One

BRAINSTORMING:

In this case Design Drawing

(ONE “X” Provided Per Area)

Step 1A	Most				Least
Evidence of Cognitive Flexibility		X			
Evidence of Working Memory		X			
Evidence of Inhibitory Control		X			

•••• Redirection Zone ••••

PRE-WORK AND MATERIAL STUDIES:

In this case Demonstrations, Experimentations & Art Medium Introduction

Step 1B	Most				Least
Evidence of Cognitive Flexibility			X		
Evidence of Working Memory		X			
Evidence of Inhibitory Control	X				

•••• Redirection Zone ••••

Table 2.2. Condensed observation data coding for case study “J” During Art Lesson Plan Step One used in primary research observation.

- The drawing that this student made corresponded with the working path of mobile creation/construction. But periodically the student seemed to find himself unsure or unconfident of what steps should be taken next.

Lesson Plan Step Two

WORKING PHASE ONE:

In this case Wicker Frames and Hot Gluing

Step 2A	Most				Least
Evidence of Cognitive Flexibility		X			
Evidence of Working Memory		X			
Evidence of Inhibitory Control	X				

•••• Redirection Zone ••••

WORKING PHASE TWO:

In this case Tissue Paper, gluing & Gloss Gel Medium Clear Coating

Step 2B	Most				Least
Evidence of Cognitive Flexibility			X		
Evidence of Working Memory	X				
Evidence of Inhibitory Control	X				

•••• Redirection Zone ••••

WORKING PHASE THREE:

In this case Mobile Assembly

Step 2C	Most				Least
Evidence of Cognitive Flexibility	X				
Evidence of Working Memory		X			
Evidence of Inhibitory Control	X				

•••• Redirection Zone ••••

Table 2.3. A condensed representation of Executive Functioning for Case Study “J,” During Lesson Plan Step Two

- During this case studies work path it seemed to frequently be the case that he was more pre-occupied with getting the work finished and out of the way that the actual process of Art Creation. While periodically, it did appear that he had work flow and deep artistic consideration.

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Figure 25. A Student Works on His Mobile
 Case Study “J” in deeper contemplation of his Mobile Assembly

Lesson Plan Step Three

STUDENT SELF EVALUATION & RECAP:

Step 3A	Most				Least
Evidence of Cognitive Flexibility			X		
Evidence of Working Memory	X				
Evidence of Inhibitory Control	X				

•••• Redirection Zone ••••

CLOSURE, WORK CREATION REVIEW & FINAL ASSESSMENT:

Step 3B	Most				Least
Evidence of Cognitive Flexibility	X				
Evidence of Working Memory	X				
Evidence of Inhibitory Control	X				

•••• Redirection Zone ••••

Table 2.4. A condensed representation of Case Study “J’s” Executive Functioning Skills during Lesson Plan Step Three and its associated closure exercises.

- The student overall excelled at this art creation project in a way that was not entirely evident in the first art making pre-assessment.

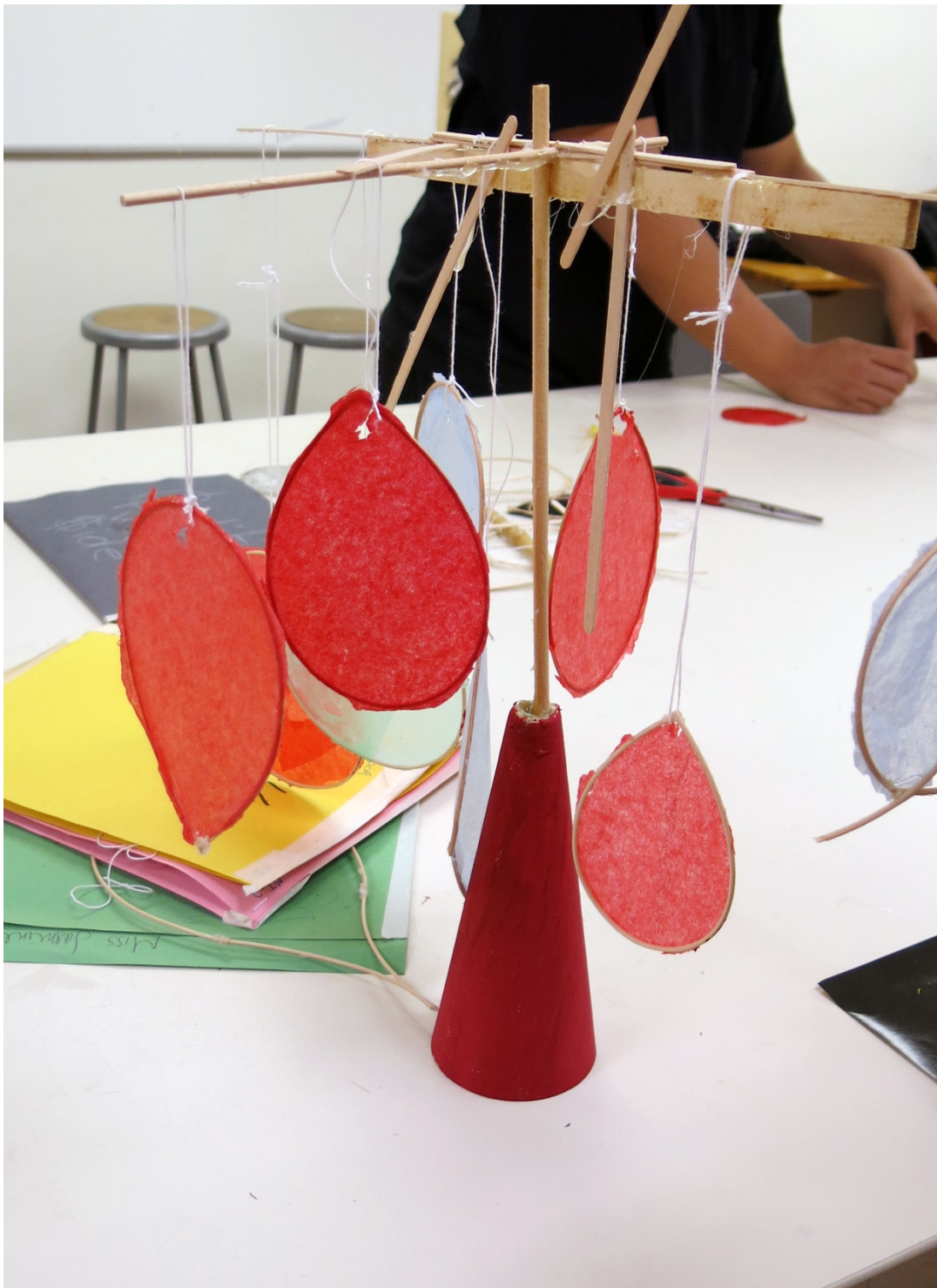


Figure 26. Image of Case Study “J’s” Complete Art Project
- A close to complete image of Case Study J’s project. Note the way that this student chose to place it on the table, rather than hang it from the ceiling.

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Participant Code: J

Date: N/A

FINAL SURVEY

<i>Questions based in:</i> COGNITIVE FLEXIBILITY		<i>Student Notes:</i>
Have you used all the materials that were given to you at the beginning of this project, how?	YES or NO	I built all of my pieces and glued them.
Were you able to fulfill the project criteria with all the materials given to you?	YES or NO	I put them all together and fixed them.
Did problems arise through the art making process? how did solve those problems?	YES or NO	

<i>Questions based in:</i> WORKING MEMORY		<i>Student Notes:</i>
Have you been thinking about the visual inspiration for this art project in the creation of your own art project?	YES or NO	How the parts of the mobile move and spin.
Did this project's visual inspiration (PowerPoint) impact how you designed your project?	YES or NO	The final project was not as good as I expected it.
Upon the completion of this project, does it compare to the designs that you drew in your sketchbook? How?	YES or NO	No, because I drew it and when I put it together it looked different.

<i>Questions based in:</i> INHIBITORY CONTROL		<i>Student Notes:</i>
Have you been able to follow through with the technical process?	YES or NO	I used everything I was given.
Did you complete a design before completing this project? If so, how does it compare to the work of art you made?	YES or NO	Yes, but it didn't come out like it was supposed to.
Were you able to work with and keep track of the materials given to you throughout this art project?	YES or NO	I kept everything in my folder.

Figure 27. Case Study "J" Final Survey

INTRODUCTION TO CASE STUDY “F”

General Description

Case study “J” was chosen to participate in this project due to clear deficits in the executive functioning area of Cognitive Flexibility. Of the three primary areas of executive functioning that this study focuses on, Working Memory, Cognitive Flexibility and Inhibitory Control, student case study “J” was found to be the most deficit in Cognitive Flexibility. The Base-Line/Pre-assessment art project used in this research study also confirming this. Please see the definition of terms in Chapter 1 for further explanation if required in the area of Executive Function and how they related to Specific Learning Disabilities.

This student research participant is a 10th grader, is new to this school and shows true enthusiasm to learn. He is an early arriver in class. The case study has gotten ahead in class by keeping it safe, finding quick ways to fulfill the projects specific grading criteria and executing it. He is good at searching for quick solutions and at repeating simple process. But I have sensed the student is in some ways being unwilling to take risks.

Creative risk can exist as a daunting thing for the student. The possibility of failure availing itself as a roadblocked as the student attempts to complete bare minimum tasks.

Observed Student Frequent Behaviors

- Attempting to rapidly finish projects
- Acting overly friendly with educators
- Struggling take artistic chances that may result in failure

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- Not taking enough time to share genuine investment in the project

Noted Executive Functioning Deficiencies

- Cognitive Flexibility



Figure 28. Parts of the Mobile carefully hung in order to dry
- The students must take care to pay attention to the clamping surface of the Clothespins. This reinforcing a certain type of cognitive flexibility needed to complete the process.



Figure 29. A Student Hangs His Mobile Pieces to Dry

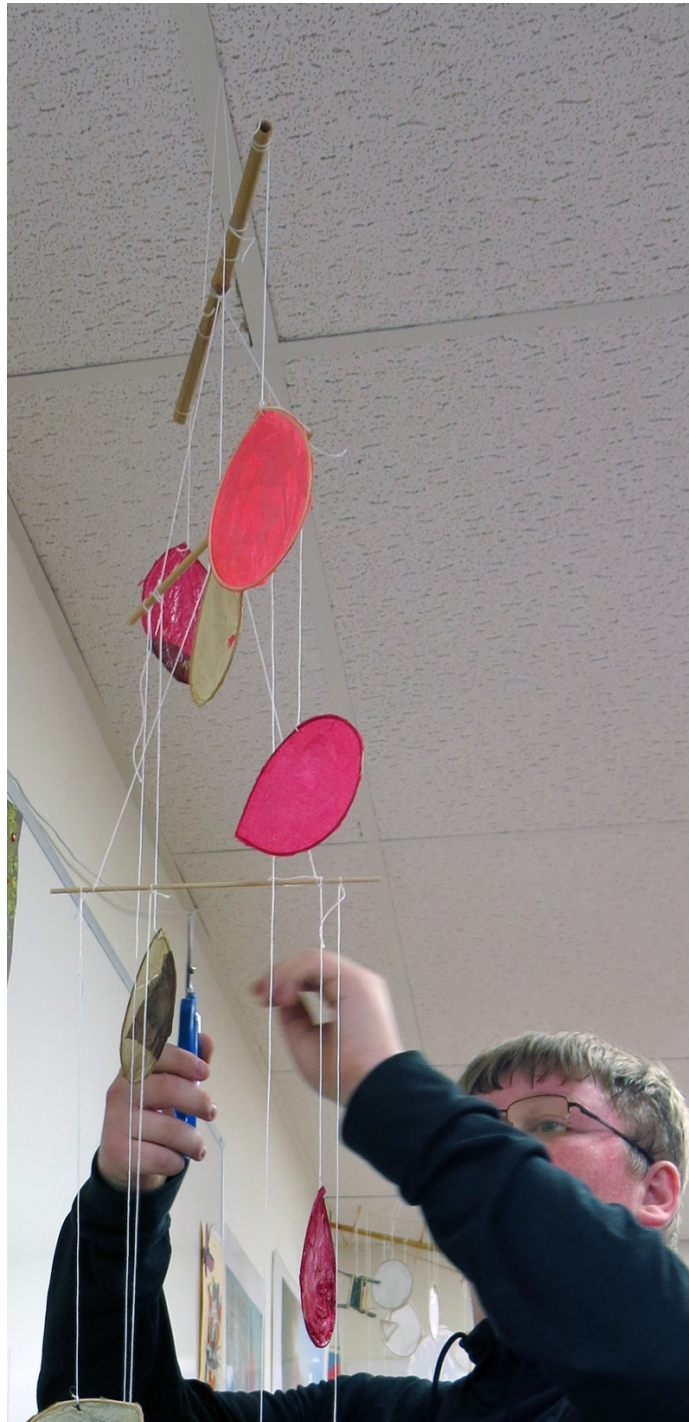


Figure 30. Image of Student Creating Mobile
-Case Study “F” in the process of finalizing the art
project in the fashion he chose. Notice the
contemplative aspects of his follow through relative
to the projects initial design

OBSERVATIONS ASSESSMENTS FOR CASE STUDY “F”
regarding art making process steps relative to Lesson Planning and
Pertaining to potential Executive Functioning Deficiencies/Development

BASE-LINE/PRE ASSESMENT:

Introductory Exercise

(ONE “X” Provided Per Class)

Step 1A	Most				Least
Evidence of Cognitive Flexibility			X		
Evidence of Working Memory	X				
Evidence of Inhibitory Control	X				

Table 2.1. A condensed version of Case Study “F’s” Executive Functioning Performance in the Base Line/Pre-Assessment” Phase of this research.

- An established basis to be leveraged against findings in later phases of this research study.

Lesson Plan Step One

BRAINSTORMING:

In this case Design Drawing

(ONE “X” Provided Per Area)

Step 1A	Most				Least
Evidence of Cognitive Flexibility			X		
Evidence of Working Memory		X			
Evidence of Inhibitory Control	X				

•••• Redirection Zone ••••

PRE-WORK AND MATERIAL STUDIES:

In this case Demonstrations, Experimentations & Art Medium Introduction

Step 1B	Most				Least
Evidence of Cognitive Flexibility				X	
Evidence of Working Memory		X			
Evidence of Inhibitory Control		X			

•••• Redirection Zone ••••

Table 2.2. Lesson Plan Step One and Noted Executive Function in Case Study “F.”

- This student continued to exhibit the need to rush in order to find a rapid and positive solution in order to solve the problem presented by the art projects requirements for completion.

Lesson Plan Step Two

WORKING PHASE ONE:

In this case Wicker Frames and Hot Gluing

Step 2A	Most				Least
Evidence of Cognitive Flexibility			X		
Evidence of Working Memory	X				
Evidence of Inhibitory Control	X				

•••• Redirection Zone ••••

WORKING PHASE TWO:

In this case Tissue Paper, gluing & Gloss Gel Medium Clear Coating

Step 2B	Most				Least
Evidence of Cognitive Flexibility				X	
Evidence of Working Memory		X			
Evidence of Inhibitory Control	X				

•••• Redirection Zone ••••

WORKING PHASE THREE:

In this case Mobile Assembly

Step 2C	Most				Least
Evidence of Cognitive Flexibility			X		
Evidence of Working Memory		X			
Evidence of Inhibitory Control	X				

•••• Redirection Zone ••••

Table 2.3. Condensed Research on Case Study F Lesson Plan Step Two

- The working phase was positive, productive and completed rapidly. The only negative connotations being a continued focus on the project's completion, rather than a deeper motivation of self-exploration relative to art and art making in general.

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Lesson Plan Step Three

STUDENT SELF EVALUATION & RECAP:

Step 3A	Most				Least
Evidence of Cognitive Flexibility				X	
Evidence of Working Memory		X			
Evidence of Inhibitory Control	X				

•••• Redirection Zone ••••

CLOSURE, WORK CREATION REVIEW & FINAL ASSESSMENT:

Step 3B	Most				Least
Evidence of Cognitive Flexibility		X			
Evidence of Working Memory	X				
Evidence of Inhibitory Control	X				

•••• Redirection Zone ••••

Table 2.4. Condensed Information on Case Study “F” Lesson Plan Step Three

- Some level of genuine reflection appeared to be present in the student’s reactive aptitude. Upon the completion of the project, it appears that a level of safety has been found for this case study. Here and in this level of completion, a certain level of riskiness appeared to be undergone by this student. It seemed to be the case that experimentation was within the capacity of this student case study. But it only manifested upon his recognition of the apparent accomplishments that had been notable after completing the artwork.

Participant Code: F

Date: N/A

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FINAL SURVEY

<i>Questions based in:</i> COGNITIVE FLEXIBILITY		<i>Student Notes:</i>
Have you used all the materials that were given to you at the beginning of this project, how?	YES or NO	"No, because I had to throw stuff away that broke."
Were you able to fulfill the project criteria with all the materials given to you?	YES or NO	"I put them all together and fixed them."
Did problems arise through the art making process? how did you solve those problems?	YES or NO	"Damaged and destroyed some stuff."
<i>Questions based in:</i> WORKING MEMORY		<i>Student Notes:</i>
Have you been thinking about the visual inspiration for this art project in the creation of your own art project?	YES or NO	"Falling Leaves."
Did this project's visual inspiration (PowerPoint) impact how you designed your project?	YES or NO	"Very Little at that."
Upon the completion of this project, does it compare to the designs that you drew in your sketchbook? How?	YES or NO	"It does but modified."
<i>Questions based in:</i> INHIBITORY CONTROL		<i>Student Notes:</i>
Have you been able to follow through with the technical process?	YES or NO	With some error, yes.
Did you complete a design before completing this project? If so, how does it compare to the work of art you made?	YES or NO	I had to draw it fast.
Were you able to work with and keep track of the materials given to you throughout this art project?	YES or NO	I kept it in a folder.

Figure 31. Final Exit Survey of Case Study "F"

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SPECIFIC LEARNING DISABILITIES IN THE DEVELOPMENT OF EXECUTIVE
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CHAPTER V
Conclusions & Implications

Introduction to Findings

Overall there were some continuous themes in researching these student case studies through the process of art making under my purview as an Art Educator. As a researcher, emphasizing the basis of Executive Functioning Development had some complexities. This research proved some initial conclusiveness relative to the effort of understanding if and how students whom experience Specific Learning Disabilities build Executive Function in art class. This research additionally made clear that more careful observation of students whom have Specific Learning Disabilities should be undergone in Art Class. Additional research should be conducted to understand not if Students whom experience Specific Learning Disabilities build Executive Functioning Skills through the process of creating art in art class, but to what intensity they do. This research process may be further understood through the comparison of executive functioning development in other subject areas to Executive Functioning Development in Art Class moreover.

On a daily basis throughout this research, certain student made positive progress in certain areas of executive function while other students seemed to stifle in the rigmarole of school and life. School and life rigmarole for a teen being a notable undertaking when considering the ramifications of “The Age of Decision” in accordance with Lowenfeld and Brittain (Brittain, 1982). Teens as a specific research group present their own certain challenges. Teens are in a way starting to decide for the first time in their life who they really are. This process of decision creates periodic adverse effectors in the research process that should be noted in the consideration of designing an additional research project based on similar subject matter to

POTENTIAL IMPACTS OF ART EDUCATION FOR STUDENTS WHOM EXPERIENCE 103 SPECIFIC LEARNING DISABILITIES IN THE DEVELOPMENT OF EXECUTIVE FUNCTION: A CASE STUDY OF THREE INDIVIDUALS

Executive Function, Specific Learning Disability and at the same time Art Education.

Respective on this determination, a younger group of learners, whom are more static in their identities as children (unlike secondary schoolers), may be of further interest as more stable research participants in the future.

For this group of participants, certain student made exceptional progress on certain days, while on other days those same students remained preoccupied. The varying impactors and adverse influences on the student's experiences, energy and commitment to learning having to do with the school culture at large, experiences in the student's personal lives and a general air of self-development typical of the age group.

Presentation of Findings as Researcher and Self-Practitioner: Conclusions That Impacted Educational Style

Reflecting upon the undertaking of this research it is apparent that the generalized impact of pre-existent educational culture and how a school may expect art to function in its larger community is of great importance. How a school may expect art to function dictates the role that art has to play for a school's students, its teachers, its administrators and its support staff.

Impact of respective school cultures as larger institutions influence the learning of all the students they serve. In this, if what is present during learning is a school culture that sees the arts as fodder, rather than the depth and breadth of academic exploration it can be, this will diminish the potential of gains that Art Class has to offer. Executive Functioning being no exception in this determination of the potential impact of Art Education on learning and/or learning skills.

POTENTIAL IMPACTS OF ART EDUCATION FOR STUDENTS WHOM EXPERIENCE 104 SPECIFIC LEARNING DISABILITIES IN THE DEVELOPMENT OF EXECUTIVE FUNCTION: A CASE STUDY OF TREE INDIVIDUALS

What becomes increasingly complex is the in-turn education of a school culture at large. Here we can consider who dictates, influences and constructs the meaning of an Art Class to all individuals in a school. Is it the administrators whom decide what the role of Art is in a school? Is it the students? Is it the classroom teachers? Or is it the Art Teachers themselves.?

Knowledge and its relativistic intensities in accordance with subjective self is something to be trifled with. If any individual, teacher or staff member in a greater school culture believes that they understand what an art class encompasses and presents. That they understand the art classes potential and value. But in that understanding have a specified recognition of value that is in direct contrast to the art educator and the art classroom itself, there is bound to be a significant disconnect and a certain misunderstanding. It is here where the art teacher must engage in self advocacy in order to preserve what they believe to be of greatest values of an Art Class and of the Arts in general.

Through the process of educating students and through the process of art teacher self-advocacy other individuals become more understanding of the value and potential of art class. The compounding factor in the conundrum of art self-advocacy for any art teacher being that not all art classes are the same. Most individual's value art class in some way that is frequently respective to their own experiences in Art Class and in this all current Art Educators owe a certain debt to the Art Educators whom came before them. But it is frequently the case that those individuals with a basis in their individual art class experiences are not aware of the breadth of the Arts. Nor are those individuals aware of the breadth of Art Educators, their style and varying applications of pedagogies.

Art is a complex thing. Art is a world in itself. Metaphorically speaking Art has valleys and mountains, it has ghettos and conglomerates. Art Education, is moreover subject to this

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reality of the larger art world. While popular and time-tried lesson plans exist for years and continue to be mainstays of art educators everywhere. The educational styling of each teacher is a thing that impacts how varying lesson plans are implemented. This remains true; even in classic and time tried art lesson plans. The varying Art Teacher teaching the same lesson at times embracing drastically different directions in the art education discourse in their classrooms.

Returning to the idea of building Executive Function, differences in pedagogical approaches should be taken seriously if any educator is considering the possibility of metacognitive learning strategies in their own classroom. While it may be the case that Executive Functioning can be built and strengthened in all Art Classrooms and that Executive Functioning skills were clearly strengthened throughout the process lesson planning during this research. It is most likely the case that particular styles of teaching art are more conducive to the development of Executive Functioning Skills.

Presentation of Findings in The Context of Research Environment

While all students showed themselves to be challenging their own difficulties and needs in the form of metacognitive development during this research project, some adverse reactors in the learning environment were certainly present. Many of the adverse reactors to this research contributing negatively to the learning and Executive Functioning Skill building of the students whom were observed for this research. Furthermore, Executive Functioning development during this research appeared to be impacted a few specific factors.

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Myself as a participant researcher impacted some findings of this research. Because I was both teaching these students and openly researching what and how these students learned in the form of metacognitive development, there was an ever-present bias. I believe that some of this bias, the adverse effect of my continuous presence as a leader and educator of my students, was ameliorated over time and as the students began to know me and each other better. But it remains a significant factor that as educators we are leaders and as leaders we cannot remain a content and neutral researcher.

The school culture was an adverse effector on this research. As a school that was in transition, the students, faculty and staff all felt some level of unsureness on a daily basis. As the art educator, I was at times even questioned by support staff and para-educators as to the validity of my role.

The class culture that I precipitated as an artist and educator into the larger school culture was something that not all present staff members expected. They were more expectant of the type of arts programming that the previous teacher was engaging in. The previous Art Educator being a veteran at the school for 20 plus years.

Presentation of Findings in Reaction to Initial Research Question

The initial research question of, whether or not students whom experience Specific Learning Disabilities can develop or build upon Executive Functioning Skills in Art Class showed some conclusive evidence. Upon the conclusion of the research their where some results. The research indicated a positive result, showing that yes, students with Specific

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Learning Disabilities can indeed develop their Executive Functioning in Art Class. For the six weeks that this research was actively being undergone in my art class, the students whom were identified as experiencing specific learning disabilities were able to develop, or improve upon certain Executive Functioning skills. There was evidence of Metacognitive development. The level of intensity, rate and capacity of that executive functioning development may however be another matter.

Most interestingly, it appeared to be an almost natural discourse for the students whom I researched to make progress in the areas that they were the most lacking in. IN this way, case study “T” made progress in his noted Executive Functioning Deficiency of Inhibitory Control, While Case Study “J” made progress in the Executive Functioning area of Executive Functioning.

Presentation of Findings in Context of Literature Sources

The sources utilized for the purposes of this research were of help in the basic construction of this research methodology, its theoretical basis and its primary research question. No other research study was found that was alike to the research I conducted. For this reason, in the context of this research study, I did little comparison to other studies that were previously made.

Implications for the Field

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All participants in this research process and their respective individual art project creation, made progress. Every one of the research participants showed at least some recognition of the creative processes required by the grading criteria and relative lesson planning. Every case study/research participant completed the art project in their own way. The steps it took, the direction following required, the creativity within the projects criteria; all of these were evident in the case studies/research participants. In this recognition of student success and through the research study results we can surmise that Executive Functioning Skills are developed and built upon in Art Class. However, the motivation of those students in completing the art project and the retention of the skills required to complete the art project may be perhaps another matter.

As with most K -12 learners, varying energy levels relative to creative prowess were questionable in each student on a day to day basis. A foundation of extrinsic motivations derived of grading directive, the student being primarily concerned about his grade, sometimes became the primary concern of the learner and in this case research participant. This implication leading way to the reality that sometimes students just have less productivity to work in Art Class. Reasons for which students have differing productivity levels could easily become an entirely different vein of research.

This is a reality that many educators deal with in my opinion. The emotional baseline of the learners impacting how they proceed on a daily basis. It is a main hope of many educators that art making in itself offers an outlet to the emotional realities of learners. While it is clear that art making does not always create an intrinsically motivated process of self-expression or an otherwise emotional outlet.

Here, the major concerns of Extrinsic and Intrinsic motivations in Arts Based Learning can on some level be reiterated as Choice Based Art Learning and Discipline Based Art

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Learning. Choice based learning harnessing the intrinsic motivators in students, allowing them to make free independent creative decisions and Discipline based learning pushing students to conform to specific steps, project requirements or otherwise external expectations.

In the view of Executive Functioning skills and how one might motivate to build them in an art class, Choice based lesson planning components could potentially stimulate Cognitive Flexibility while Discipline Based learning prerogatives could stimulate Working Memory and Inhibitory Control. Choice Based Art Education could be about learning to be flexible while Discipline based could be about self-control and knowing how to follow the rules.

It is the opinion of the Principal Researcher that upon the completion of this research project, that both of these types of Learning, Choice Based and Discipline Based, are important to utilize for learners to varying degrees. Dependent on student populations and relative Individual Education Plans, the potential of necessitation of modifications, adaptations and accommodations, becoming relative to an art projects completion for a student moreover.

For this research, a general balancing of both Choice Based and Discipline Based was undergone respective of the pedagogical foundation that is ultimately based in the participant researcher's opinion as educator. I continue to believe that it is important to utilize both Choice Based Art Learning and Discipline Based Art Learning.

Variable Impactors in the conclusiveness of this research:

As an educator and researcher there are a few things that I must note in recognizing the conclusiveness of this research project. Regarding the furthered understanding of Potential

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Development of Executive Functioning Skills in students whom experience Specific Learning Disabilities through Art Education, in this instance, there were some things that impacted what otherwise and in a hypothetically neutral learning environment may have not occurred.

In considering the variable impactors on this research; the parameters, the limitations of scope of this research should be noted. The way that I lesson Plan, my individualized focus on assessments should be noted, specifically in comparison to the progression of student metacognitive development. The School culture at large where the research I conducted should be noted as an influential aspect of the education of these three students as case studies.

Where the research was conducted was a somewhat singular location. The larger educational culture effecting the ways that the students learn and what they expect from teachers overall. The length of the study was ultimately shortened moreover, this effecting on some level the educational ark and development of classroom culture within the larger school culture outside of the art room.

The research project was limited to my pedagogical standards. It moreover was limited to existing within the confines of an educational culture that may or may not be of significant variance when comparing its potential to other art education settings. The school wear this research was conducted was significantly supported by staff workers, by Behavioral Health Workers, by Teachers Assistants, by Para-Educators, By “One-On-Ones.”

These individuals (support workers) took time for myself to develop a rapport with. They were at first expecting an education couture that belonged to a previous Art Educator whom instructed students in the same art room. Many of the staff members expected to be able to make their own art projects rather than supporting the learners that they were assigned to. Some of the support staff where rigid, difficult and unconcerned with the value of art making.

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While others were thrilled by the possibility to allow students to complete projects that expand those student's creative horizons.

The school where I researched allowed my assignment to continue on a temporary basis through the end of the academic year. I essentially arrived as a Long-Term Substitute, was coined an Agency Staffer and shuffled into the art space where Art Classes had not been going on for some time. I feel fortunate to have had the opportunity as a recently certificated educator and Concurrent Art Education student to have had the opportunity. The school culture at large had some learning curves to understand regardless.

In the future, I intend to develop handouts for all support staff. To engage on more levels of self-advocacy and advocacy for the arts. To make it clear what my intentions are as a practicing Sculptor and Art Educator. The temporary nature of this previous assignment made it difficult to truly develop a classroom culture and, on some level, I believe that this impacted the potential of the research that I conducted. While I did feel very fortunate to have had the opportunity to work with those students for the time I did.

The nature of Long Term Substituting as an Art Educator I have come to believe is a far more complex assignment than many assume. Each art teacher has a different way of teaching art. The veteran art teachers having much more specific directives in their learning and teaching styles that the younger educators just beginning to enter the full-time world of education. Expectations of working colleagues being adjusted thusly to a Long Term Substitute's role in light of the individuals whom come before them.

My pedagogy regardless remained based around a student-centered learning environment. It engaged with self-questioning and self-guided problem solving. There was an adequate amount of choice-based options and also clear grading criteria for each student to follow in the

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completion of the art project at hand. The lesson plans I utilized were designed to allow for an adequate amount of appropriateness for the age group, a certain amount of skill to be mastered and also a sufficient amount of self-expression to be made possible. This is a type of lesson planning that I am continuing with.

Regarding Assessments in This Research Environment

Also manifesting from this research is a more parsed out assessment program for my art classes. Adjusting the class and grading criteria for expectations of competency and in accordance with certain learning standards in my opinion is a process of complex and fine tuning. Assessment in Art Class is a thing that appears at first glance to have the possibility of going on forever. A learning prerogative regarding Assessment for myself as an art educator, with the added complexity of research in this instance, has on some level become, knowing when enough is enough. It is now my opinion that Assessment of Art can be viewed just like making art, overanalyzing after a certain point can ruin the romance.

As a wood craftsman who periodically has been overcome with a slew of details that may perhaps never become tamed in a process of sandpapering the wood. There is a certain breaking point that I have found myself recognizing in the assessment of adequacy of student learners. The assessment of art is a non-linear process that lends itself to my questioning of adequacy as a teacher. It keeps me honest in a way. This process should be noted furthermore as in no way transferring itself in the form of pressure to my learners. But rather the process of assessing student art works for adequacy should be noted as reinforcing the richness of an Art Lesson.

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As a teacher, recognizing when adequate assessment has been completed can be confounding. I have found myself doing this in three primary ways. I do it through recognizing the operating level of the classroom as a whole, through recognizing the student as an individual (relative IEPs if applicable) and in the completeness of the project's final iteration. I find myself using these ideas to assess not only students with Specific Learning Disabilities, but also in the assessment of students whom have more common profiles as learners.

Has the student exhibited an adequate amount of Self (inhibitory) Control through the projects creation? Has the student utilized a clear level of Working Memory through the end of the project's completion? Was the student Cognitively Flexible in the acceptance of new ideas in the art form and in the creation of the student's own work of art? How does this student work compare to the rest of the class and the work that the other students completed?

Other notes on The Research Sights Educational & School Culture

Returning the consideration of school culture and its impact on the way that students learn in the art room, it is important to note that the type of school, age group, administrative emphasis, general expectations, social and cultural norms, are in any school; a direct impactor on the education of children. Given that the educational environment where I was teaching art and at the same time conducting research was on some level a school for students with special needs, I am sure that it had a significant impact on what the students expected to be experience in art classroom. It impacted the students work drive; their goal orientation and I also believe that it

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impacted what the students accomplished. These students knew what they could get away with.

I as the teacher and in light of this slowly turned up my expectations.

As an art educator it is the case that a great deal of the classroom culture that is in place through my teaching comes from myself, my teaching style, my instinct and my pedagogical approach. While parallel to what I bring into the classroom and for that matter what all teachers bring into the classroom as educators, is the existing additional educational culture that any school has. The ways that other teachers view the needs of the students, what is acceptable in actionable support staff roles, the role of administrators in education settings, and so on; is different to some degree in every school that any art teacher works in.

At this research sight I arrived within the educational style that I believe is best for students to learn through and with. The research was manifest around my lesson planning that I internationally gauged to have a depth and breadth of art learning and self-questioning for the students. For this reason, it may have also arrived with a level of limitation and bias relative to what I believe to be the correct way of giving an art lesson.

And while it is more than apparent that I am not the only teacher that is interested in pushing the discourse of arts-based learning, it's value and awesome possibilities for furthering any students understandings of a multitudes of subjects. It remains important that I and perhaps all educators of the arts remain self-aware enough to respect and check their own educational biases. It is moreover specifically important to address the expectations of those individuals around you in the larger school educational culture whom are enthusiastic about any Art Classroom.

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A Noted Separation Between Art Education & Craft Education

A school culture that motivates children learners principally for the development of art decorations, or decoration like projects is and is not student centered. In the area of Executive Functioning development more pure Discipline Based Arts Education may be only partially effective. It will not assist in the emphasis of art-educating students in a deeper sense that fulfills their concepts of individuality, individually motivated problem-solving, and individualized learning skills. It moreover will not allow students to develop their potential in the areas of creative flexibility. Cognitive flexibility in general falls to the side in Discipline Based art education

While Discipline Based Art, Education may afford a student to learn self-control through the directed creation of a project that is very much a step by step process. Inhibitory control and Working Memory are both arguably stimulated by Discipline Based Art Education. The students follow steps and exercise self-control to complete a craft form that is recognizable for its tradition and has social value for its time told existence in our cultural dialogue.

Experiencing contrasting ideas of art education as first a teaching artist and second and Art Educator has led to some interesting conclusions. Having students in any art class create cookie cutter projects is akin to a process of creating cookies, not art. Cookies are a thing that we recognize culturally that serve a specific pre-recognized role. In a school and in the process of making art-decorations in a school, is not truly a process that grows a type of metacognitive learning but rather it is a process that dictates a certain type of visual culture under the directive of the Art Teacher.

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Art and Art Making in Art class is, in the eyes of the researcher, principally a process that should be embarked upon in an effort of self-exploration. At least on a partial level, the process of art making in a classroom should be done through self-reflection. The art projects final manifestation arriving in the form of a student expression that embodies the student's own agency rather than the agency and creative will of the educator.

Implications for Further Research

I believe more concise conclusions could be drawn if this type of research were conducted starting at the beginning of the school year by an Art Educator. Or there is also the possibility of the researcher remaining neutral and simultaneously doing observations at multiple sites in several schools as a non-participant researcher. These two routes to understanding Executive Functioning Development in Art Classes could be the next steps. If rapport is developed between the student and the researcher because the researcher is the teacher, it should be in a way that is typical of the arc of the school year. And if the research is conducted by a non-teaching neutral party, certain biases could be avoided completely.

What was unexpected on my (the participant researcher) part were the new questions that arose during this research process. It seemed on some level that the more I overturned questions and understanding, the more questions arose as to the validity and implications of this research. Much do to the varying and complex nature of myself as the Participant Researcher and Art Educator working in proximity with the Students as case studies, while they made their art projects, over an extended period of time.

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The consideration of Executive Functioning Development in students whom experience Specific Learning Disabilities should be by all means researched to a deeper extent. Rather than a case study that extends several weeks, there should be observations on the development of Executive Function in Art Class that go on for several months, if not years. This would increase the potential understanding of what is possible for students whom experience Specific Learning Disabilities in the area of Executive Functioning Development in Art Class. If anything, this research project only made clear that more research must be undergone to understand more deeply the possibilities of Executive Functioning Skill Development through art class in student whom experience Specific Learning Disabilities.

There were some positive outcomes in the short time that I had the opportunities to work with these students. The primary outcome arriving as an affirmation that student whom experience Specific Learning Disabilities do develop Executive Function through Art Education. The next logical step now that we understand that Executive Functioning Skills are Developed in Art Class is to understand how Executive Function Developed through art education is, to what extent it is and what factors impact the processes discourse. And furthermore, how the possibilities of arts-based project completion can be exploited to stimulate further the potential of Learners who experience Specific Learning Disabilities in Art Class.

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Conclusion Regarding the Overall Effectiveness of Art Education in the Development Executive Functioning Skills for Students with Specific Learning Disabilities.

As an educator, it is important to recognize the effectiveness, not of this research project directly; but of art education in general, in the development of Executive Functioning Skills in students whom experience Specific Learning Disabilities. It should be noted that there was an effective and actual development of executive functioning skills in students whom Experience Specific Learning Disabilities. Two out of three students observed in this research can be qualitatively noted to have developed Executive Functioning Skills throughout the duration of the two Lesson Plans that were researched and observed.

It is the opinion of the principal researcher that students whom struggle with reading, writing, mathematics, personal organization, and Specific Learning disabilities in general will struggle to develop metacognitive learning strategies in general. More directly, if a student experiences dyscalculia, that student will struggle to develop Executive Functioning Skills in Math class. If a Student Struggles from Dyslexia that student will struggle to develop Executive Functioning Skills in a language class.

According to Harvard's Center for Childhood learning (Harvard University, 2017) Students are not born with executive Functioning Skills, rather they are born with the potential to develop them. In the opinion of the principal researcher Executive Functioning Skills are a set of metacognitive learning strategies that are developed by most children independently. EF Skills are the core of extremely important learning tasks in all learning environments. They are the foundational basis of things like paying attention, focusing, staying on task, keeping our book bag organized, pushing through hard tasks, perseverance, approaching hard to solve problems

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with a personally developed metacognitive strategy individual to each student's own learning strengths to address directly the problems at hand in all learning.

It is the opinion of the principal researcher moreover that Students whom experience executive functioning skill deficiencies have (on some level) not had an adequate opportunity to develop those Executive Functioning Skills. Art Education, Art Class, with its seemingly endless possibilities to develop individualized problem-solving methods presents an exceptional opportunity to develop those EF Skills to students whom otherwise, and in other learning environments struggle to develop Executive Function. The variety of choice in solutions to any art project/problem may perhaps be the pivot point of education stimulation for children whom need to find ways of reorganizing themselves metacognitively.

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APPENDIX A: Observation Protocol

B. A. Thomas

Participant Code:
DATE:

TIME:

MINUTES OF OBSERVATION **5 8 12**

COMPONENTS	Daily Progress Rating: 1. Not Present 2. Below Average 3. Average 4. Above Average 5. Excellent	Daily Notes on Progress:
General Focus		
Cognitive-Flexibility (Executive Function)		
Self-Awareness		
Project Progress		
Inhibitory-Control (Executive Function)		
Working Memory (Executive Function)		
Special Education Interventions		

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APPENDIX B

INFORMED CONSENT & ASSENT FORMS

DESCRIPTION OF RESEARCH: Your child is invited to participate in a research study that investigates the potential benefits of art education in the development of Executive Functioning Skills. Students whom present varying levels of learning differences are known to in some cases have Executive Function Deficiencies. There is potential that in students whom present certain learning differences, Executive Functioning may be increased by the strategies offered in Art Learning environments. For this reason, a closer observation of your child may assist in developing an understanding of the relationships between Executive Functioning Skills and Art Education in general. For your child, this study will take place over 2 to 4 months. The written observations, photographic documentations, & audio recordings will be destroyed upon completion of this research study and/or utilized in a fashion that will in no way expose the identity of your child. And I Brett A. Thomas, will be the sole researcher conducting this study.

RISKS AND BENEFITS: Participation in the study is completely voluntary and it will in no way effect your child's standing or grades if you, or your child decide not to participate. The conversations around art works and the art lessons for the study will be the same for all the students present in the classroom, while only 2 to 4 will benefit from the extra education focus that this study will provide. The 2 to 4 students, including your child if you so choose to participate, will be in no way single out by myself or their peers. Moreover, for all other students present in the Art Classroom who are not participating in the study, no information will be volunteered by myself regarding this research study.

PAYMENTS: No payments will be offered for your child's participation in this research study

DATA STORAGE TO PROTECT CONFIDENTIALITY: All research participants/subject's identities will be preserved. I, Brett A. Thomas am the sole researcher for this study. For the collection, analysis and review of all data associated with this research studies process, appropriate pseudonyms will be used to prevent individuals and their respective learning institutions from being identified. All data that I collect for this project will be either encrypted in a file for digital storage on my operating system or locked in a filing cabinet in my office throughout the course of research.

TIME INVOLVMENT: Your child's participation in this study will last 2 - 4 months.

HOW RESULTS WILL BE USED: The results of this study will be used in the furthered understanding of how students whom present varying symptoms of Specific Learning Disabilities may utilize Arts Education in the Development of Executive Functioning Proficiencies. This study will be reported in the form of a Master's Thesis which serves to fulfill my requirements as a graduate student of Art Education at Moore College of Art and Design.

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Signature of Parent of Guardian:

Date:

Name of Student Participant:

INFORMED ASSENT

DESCRIPTION OF RESEARCH: You are invited to participate in a research study that investigates the potential benefits of art education in the development of Executive Functioning Skills. Students whom present varying levels of learning differences are known to in some cases have Executive Function Deficiencies. There is potential that in students whom present certain learning differences, Executive Functioning may be increased by the strategies offered in Art Learning environments. For this reason, a closer observation of your learning needs may assist in developing an understanding of the relationships between Executive Functioning Skills and Art Education in general. For you, this study will take place over 2 to 4 months. The written observations, photographic documentations, & audio recordings will be destroyed upon completion of this research study and/or utilized in a fashion that will in no way expose the identity of your child. And I Brett A. Thomas, will be the sole researcher conducting this study.

RISKS AND BENEFITS: Participation in the study is completely voluntary and it will in no way effect your standing or grades if you decide not to participate. The conversations around art works and the art lessons for the study will be the same for all the students present in the classroom, while only 2 to 4 will benefit from the extra education focus that this study will provide. The 2 to 4 students, including your yourself if you so choose to participate, will be in no way single out by myself or their peers. Moreover, for all other students present in the Art Classroom who are not participating in the study, no information will be volunteered by myself regarding this research study.

PAYMENTS: No payments will be offered for participation in this research study.

DATA STORAGE TO PROTECT CONFIDENTIALITY: All research participants/subject's identities will be preserved. I, Brett A. Thomas am the sole researcher for this study. For the collection, analysis and review of all data associated with this research studies process, appropriate pseudonyms will be used to prevent individuals and their respective learning institutions from being identified. All data that I collect for this project will be either encrypted in a file for digital storage on my operating system or locked in a filing cabinet in my office throughout the course of research.

TIME INVOLVMENT: Your participation in this study will last 2 - 4 months.

HOW RESULTS WILL BE USED: The results of this study will be used in the furthered understanding of how students whom present varying symptoms of Specific Learning

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Disabilities may utilize Arts Education in the Development of Executive Functioning Proficiencies. This study will be reported in the form of a Master's Thesis which serves to fulfill my requirements as a graduate student of Art Education at Moore College of Art and Design.

PARTICIPANT'S RIGHTS

Principal Investigator: Brett A. Thomas

Research Title: The Impact of Art Education on The Development of Executive Functioning Skills for Students Whom Present Specific Learning Disabilities

- I have read and discussed the Research Description with the researcher. I have had the opportunity to ask questions about the purposes and procedures regarding this study.
- My participation in this research is voluntary. I may refuse to participate or withdraw from participation at any time without jeopardy to future medical care, employment, student status or other entitlements.
- The researcher may withdraw me from the research at his/her professional discretion.
- If, during the course of the study, significant new information that has been developed becomes available which may relate to my willingness to continue to participate, the investigator will provide this information to me.
- Any information derived from the research project that personally identifies me will not be voluntarily released or disclosed without my separate consent, except as specifically required by law.
- If at any time I have any questions regarding the research or my participation, I can contact the investigator, who will answer my questions. The investigator's phone number is: 215 510 6920
- If at any time I have comments, or concerns regarding the conduct of the research or questions about my rights as a research subject, I should contact the Moore College of Art Department of Art Education, 20th Street and the Parkway, 215-965-4000.
- I should receive a copy of the Research Description and this Participant's Rights document.

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- If audio recording is part of this research,
 - I () consent to being audio recorded.
 - I () do NOT consent to being audio recorded.

The written, artwork and audio taped materials will be viewed only by the principal investigator, inter-rater scorers, and members of the program faculty.

- Written, artwork, and audio taped materials,
 - () may be viewed in an educational setting outside the research.
 - () may NOT be viewed in an educational setting outside the research.
 - () may NOT be viewed in an educational setting outside the research.

My signature means that I agree to participate in this study.

Participant's signature: _____ Date: ____/____/____

Name: _____

If necessary:

Investigator's Verification of Explanation

I certify that I have carefully explained the purpose and nature of this research to
_____ (participant's name) in age-appropriate language.

He/She has had the opportunity to discuss it with me in detail. I have answered all his/her questions and he/she provided the affirmative agreement (i.e. assent) to participate in this research.

Investigator's Signature: _____

Date: _____

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