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DESIGN THINKING PROCESS: VISUAL ART CURRICULUM DESIGN TOOL FOR STUDENTS WITH SEVERE AND MULTIPLE DISABILITIES

by

KENDALL SIDDIQUI

Under the Direction of Dr. Kevin Hsieh, PhD

ABSTRACT

All students enter the art room and deserve the opportunity to participate in learning about and creating art. Planning for students with severe and multiple disabilities can be difficult because there is a lack of training and exposure before becoming an art educator. The design thinking process centers the student in the art educator's research and planning. The design thinking process as a curriculum tool could be a clear path for art educators to plan for success for this population of students.

INDEX WORDS: Design thinking process, Curriculum design, Students with severe and multiple disabilities

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by

KENDALL SIDDIQUI

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

Master of Art Education

in the College of the Arts

Georgia State University

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2023

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May 2023

DEDICATION

I want to thank my husband, Imran, for supporting me through this program. Thank you for encouraging me and supporting my time to complete this higher education degree and all the time spent on writing this thesis.

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1 INTRODUCTION

As an art educator, like many of my colleagues, I have taught students from different grades who have a wide range of artistic abilities. My teaching experience includes different grade levels, in both public and charter schools. During my undergraduate study in Art Education at the University of North Carolina at Pembroke, I attended and successfully completed multiple art pedagogy classes and general education classes. My undergraduate program was much like others; it included a survey class focusing on the policies and laws related to students with disabilities. The course provided a brief overview of the various disabilities I may encounter during my teaching career. Although the course prepared me in some ways, I still found many challenges working directly with students with special needs after I became a classroom teacher.

After six years of teaching, I started my teaching position at an elementary school that serviced students with severe and multiple disabilities, as well as moderate disabilities mixed into the general population. I realized then, I have very limited knowledge and pedagogies for teaching students with various learning skills. This new teaching environment was the first time in my career I was expected to teach students who could not speak and could not hold a writing tool on their own. During the first two years of working with this group of students, I felt like my students did not make any art or choices in their art-making. Instead, the adult assistants helped and created the artwork for the students and then just wrote the students' names on it. I struggled to find appropriate art lessons for this group of students. I relied heavily on the adult paraprofessionals because I believed they had knowledge of the students' capabilities. While that was true, the paraprofessionals did not have art pedagogical knowledge to guide the students. I later found that even the paraprofessionals' knowledge of the students' capabilities was also

limited. The class format of mixing all different levels of students was a struggle for me. I had to teach a full class of second graders while I was also trying to reach and teach my students with special needs. It left me feeling like I had to abandon working with these students individually, so that I could manage the other 22 students in the classroom. I saw a group of students not having their needs met by that format. I wanted these students to have choices and opportunities for experiencing making art just as all my other students did. However, I lacked the knowledge and skills to work with this population of students and make art accessible to them.

1.1 Statement of Research Interest

At my current school, which is a certified STEM (Science, Technology, Engineering and Math) school, I knew I needed to understand how art could be a part of the STEM landscape at my school. As an art educator and a lifelong learner, I value professional development connected to my content area, and I seek to grow myself continually. I have consistently attended the Georgia Art Education Association (GAEA) conferences. I have found the information and pedagogical knowledge I gain from these experiences in professional development grows my understanding of current teaching practices and skills.

In seeking to grow my professional knowledge, I had the opportunity to attend the 2017 National Art Education Association's (NAEA) *Summer Studio: Design Thinking for Equity* session. It was my introduction to the design thinking process and how it could be applied in various education and business situations. I spent a week learning from educators to CEOs about utilizing the design thinking process to drive their success, for example designing a nursing building at a college that met the specific needs of that program and its students. I saw educators using design thinking to solve their local school problems and within their school system. One attendee was a Fine Arts Coordinator for her school system, she was seeking to strengthen the

system-wide support of arts programming and professional development of arts educators. Her final solution was the development of an arts center for her school system, which has since been built. Another attendee worked at a new charter school, he was looking for ways to build a better school that supported the needs of his students while also increasing the use of art throughout the school. With the user-centered design thinking process, he was able to start with the students at the center of planning while also gaining knowledge from educational experts that participated in the session. Throughout the week, we worked with large groups, small groups, and individually on each of our problems. I was looking for how visual art fits into my school's STEM focus. Where did art fit? How could I connect art and STEM for myself and my students? These were the questions I was working on during the 2017 NAEA Summer Studio.

During this experience, I found clarity in linking the art-making process to Engineering is Elementary's "age-appropriate structured engineering design process (Ask, Imagine, Plan, Create, Improve)" (Cunningham et al., 2019, p. 426). The clarity was that the artmaking process mirrors the engineering design process: as artists we first imagine, we plan through sketching and/or research, we create art, we step back and make improvements. Through this connection, I began incorporating design thinking process vocabulary as my students were creating art. Lessons and projects were structured to encourage imagining and planning before creating. Design thinking focuses on the user, which in my case is the student, and how to design for that student. During the session, the focus was on creating equity using design thinking. For me this manifested as discovering ways to make each step of the artmaking process accessible to all my students. I began incorporating group brainstorming as a part of most projects, allowing students to build off each other's ideas and even use another person's idea if they were stumped. Group brainstorming began to level out access to ideas for students across the academic spectrum.

Despite sharing initial ideas, students always created different outcomes. The structure of the design thinking process left no students guessing about what to do next. Our sketchbooks became vital to the process of creating a work of art. In their sketchbook students take part in design thinking through planning and reflection. That takes shape as students write questions, sketch ideas, list potential materials, make color choices, make mistakes, start again, set goals and reflect on the entire art-making process. Design thinking requires planning and I have emphasized planning with all of my students, including my kindergarteners. Now they are more intentional with their choices after learning more about design thinking. This has been successful because students are familiar with the language of the design thinking process from their experience with the engineering design process in their STEM and general education classes.

While my students who existed in the general education population were finding success with the design thinking process in creating art, my students with significant disabilities were being left behind and left out. Many of them cannot speak to express their thought and feelings, so it is challenging for them to communicate their ideas and thought process with me. These students were left with perfunctory lessons like cutting shapes and gluing them, matching colors, and creating stamped images. Many factors contributed to this failure to teach these students adequately. I felt I was doing the best I could with the skills I had. I was content enough with how these students were being serviced in the art class. I continued to teach this way for the next year as well. I knew I wasn't doing enough for these students, but I did not know how to go about changing it.

Two contributing factors lead me to dig into how I could better teach this group of students. One was a change in the class set-up. I spoke to my assistant principal and expressed my frustration and failure in reaching this group of students in their current class set-up. They

were attending my art class with the other twenty-two second graders. With that many students in my classroom and the restrictions of space with my old cafeteria-style tables, there was an issue of where to comfortably position my students in wheelchairs and accommodate their paraprofessionals. There was also the issue of my attention, while managing behaviors and materials, to attentively assist and help the students and their paraprofessionals. Through discussion with my school administration, we changed my schedule and created an Adaptive Art class time. My students with severe and multiple disabilities were no longer coming with other general education classes. Instead, a specific course for my students with severe and multiple disabilities. Even with a particular time for Adaptive Art, I still found myself struggling to come up with lessons that were more than what they had been doing.

The other contributing factor was entering the Master of Art Education program at Georgia State University. After nine years of teaching, I was asked to evaluate and reflect on why and how I teach art. In one of my graduate classes, I took on a research project to grow my understanding of working with students with special needs in art class. I knew this was one of my deficits in teaching. I was both shocked and not surprised to find the limited research into teaching art to students with disabilities, despite students being included in the public school art room for decades. There was a very limited framework researched to develop lessons and curriculum. I found many examples of tasks that had been taught but little information on how to develop a curriculum for this population of students. I discovered a, new to me, idea that art educators need to work in collaboration with special education educators and specialists to develop an understanding of resources and student needs (Guay, 1994). Through the Speech-Language Pathologist, I learned that many of my Adaptive Art students used communication devices but did not bring them to Art. This tool could potentially give my students the ability to

make choices and express their thoughts. I advocated for these communication devices to be brought to art class. Through conversation with the special education teacher, I learned more about the individual goals that each student had.

I knew I lacked a clear framework for planning and working with a student population with multiple and severe disabilities. While there are books and articles about teaching art to students with special needs (Anderson, 1978; Cramer et al., 2015; Gerber & Guay, 2006; Naughton, 2020; Nyman & Jenkins, 1999), the research still feels like an ambiguous landscape of project ideas, fundamental understandings of diagnosis, and hobbled together curriculum.

1.2 Need for the Study

To successfully develop a lesson with meaningful learning outcomes and adapt tools suitable for all skill levels of learners, art educators need to be equipped with adaptive art knowledge, best practices, and direct student experience (Cramer et al., 2015; Kraft & Keifer-Boyd, 2013). However, many art education programs give merely an overview of possible disabilities and few options for adapting and modifying for those students. In a survey of 79 art educators, Cramer et al. (2015) discovered that “only 19 of 77 (24.6%) teachers reported being highly knowledgeable and prepared to work with this population of students” (p. 17). These teachers reported having an overview of related knowledge in either an art education class and/or a special education survey class (Cramer et al., 2015; Kraft & Keifer-Boyd, 2013). In evaluating the textbook used in my undergraduate elementary art course, I found 5 pages addressing working with students with special needs and only two paragraphs on students with physical impairments (Horton-Lopez, 2004). With this lack of pre-service education, art educators have been left to find more information by learning on the job.

While there has been research done on the topic of disability studies and its relation to art education, the element of curriculum development is limited. Some books and articles address the superficial and low levels of creating art and craft. There is a lack of a clear framework that could be applied to classroom pedagogies and curriculum development. In the art education field, we have decades of researched teaching frameworks from Industrial/Mechanical Drawing (Efland, 1985; Saunders, 1976; Stankiewicz, 2001) to Discipline-Based Art Education (DBAE) (Carpenter & Tavin, 2010; Delacruz & Dunn, 1996; Greer, 1984; Stankiewicz, 2001) to Teaching for Artistic Behavior (Douglas & Jaquith 2018; Hathaway, 2013), among many others. These frameworks have given art teachers a format to build curriculum, goals, and lessons for decades. A framework is needed to equip art educators with clear and attainable steps to successfully adapt, modify, and plan to provide art-making independence and choices for students with moderate to severe disabilities.

After participating in the NAEA's Design Thinking Summer Studio, I now believe the design thinking process could contribute as a framework. Due to the individual nature of teaching students with special needs, the design thinking process is specific and can be focused on individual settings and populations. It could be used as a way of curriculum planning that looks more closely at what an individual teacher needs to meaningfully serve their students with disabilities. Design thinking offers a plan to make the teacher's thinking more visible and encourages the idea that no final "product" is complete and can continually be improved through testing and reflection (Gallagher & Thordarson, 2018; Lee, 2018; Luka, 2014).

1.3 Purpose of the Study

Art teachers consistently engage in curriculum planning for their students. In my experience, the two most common ways art teachers' curriculum planning is to start with the

standards or start with an end/final project. Both of these methods leave out the students, which is contrary to design thinking and its focus on the user (students). Excluding the students in planning is increasingly problematic when planning for students with severe and multiple disabilities. In the art classroom, a clear format or process for planning with these students at the center is necessary. If educators utilize the design thinking process to plan art experiences for this population of students then they will have a clear outline of how to plan and prepare. Intentional curriculum planning through the design thinking process will require stakeholders' involvement, a focus on the students' needs, and an emphasis on reflection and iteration. Following this process will prompt art educators to ask questions, such as: What can these students do? What are they able to do? What resources are available? Who are the stakeholders and gatekeepers? How did this work? The purpose of this study is to explore how the design thinking process can be applied to the creation of a student-centered curriculum for students with severe and multiple disabilities and potentially have a tool that can be used by other art educators.

2 LITERATURE REVIEW

2.1 Working with Students with Severe and Multiple Disabilities

Disability labels are a spectrum within the educational field. From students with mild impairments, such as speech impediments, to students with multiple disabilities, such as intellectual and physical. An understanding of what qualifies a student as one with severe and multiple disabilities is necessary for this research. Severe disability can be defined as students who have multiple disabilities related to learning ability, personal and social skills, and development (sensory and/or physical) (Browder, et al., 2020; Jackson, 2005; Westling, et al.,

2015). The spectrum of disability labels is wide with each student requiring specific instruction and strategies. These individual needs led to educators and parents advocating for legislation to support and fund teaching students across the disability spectrum.

Since the early 1900s, access to public schools for all students began to open up albeit slowly. Despite public education being available since the mid-1800s, it was not accessible to girls, racial minorities, and children with disabilities for many decades later (Smith, et al., 2008). Prior to the passing of legislation, many schools lacked programs for students with disabilities. “In fact, in 1970, only 20 percent of all children with disabilities were served in public school programs” (p. 4). Some residential or special schools were available to families but often at their own cost.

With the passing of Public Law 94-142 in 1975, students with disabilities gained access to public schooling and learning supports (Cleek et al., 1978). Schools were required to assess and provide the “least restrictive environment” (p. 9) for students based on their specific disabilities and the support services required. The development of an “Individualized Education Program (IEP)” (Smith et al., 2008, p. 16) for each student with disabilities by a team of parents, educators, and specialists was one of the mandates of P.L. 94-142. The IEP defines each student with special needs is an individual with specific impairments that will need individualized instruction and will need access to the general education curriculum (Smith et al., 2008). P.L. 94-142 was reauthorized in the 1990s and the name was changed from “Education for All Handicapped Children to the Individuals with Disabilities Education Act (IDEA)” (Nyman & Jenkins, 1999, p. 7). A new emphasis on the inclusion model was reinvigorated with the reauthorization. Previous to the original law, students with disabilities were typically placed in a self-contained classroom for the entirety of the day, almost never interacting with their peers.

The years following the reauthorization saw a rise in students being served in general education classes and a decline in the self-contained classroom model (Smith, et al., 2008).

The self-contained classroom model is when students with disabilities are taught in a separate space from the general population of students by only the special education teacher. In this setting, students do not interact with other students or teachers outside their classroom (Smith, et al., 2008). In some schools, students in the self-contained setting attend specialized classes outside their designated classroom such as music, physical education, and art (Schieff, et al., 1979). The self-contained model had its highest instance of use before the passage of PL 94-142, between the 1950s to mid-1970s. The preference for this model was rooted in the belief that general education teachers were uncomfortable and not equipped to work with this population of students (Anderson, 1978). Instead, it was believed they need specialized teachers who focused on practical curriculum. This model created a silo for both the students and the teachers by limiting interaction with their general education peers and colleagues (Smith, et al., 2008). With the mandate of PL 94-142 to educate students in the least restrictive environment, students with disabilities begin to be included in the general education settings for the majority of their day. This model is called inclusion or mainstreaming. By 1998, “only 20.4 percent of all students with disabilities were served outside the general education classroom, in separate classes, compared to nearly 100 percent of students with disabilities prior to the passage of PL 94-142” (p. 23). The reduction in the self-contained model made space for the inclusion model, initially called the “Regular Education Initiative” (p. 26).

The pendulum of placement options swung in the opposite direction with groups like The Association for the Severely Handicapped (ASH) calling for full inclusion for the entire day despite students’ level of disability. The more common understanding of inclusion is students

with disabilities remain in the general education classroom for the majority of the day. Students may be pulled out for time in a separate or resource classroom or have a qualified special education teacher in their general education classroom as a co-teacher (Smith, et al., 2008). Like the self-contained model, the inclusion model has advantages and disadvantages. Some advantages are opportunities to access the general education curriculum, social interactions, and engagement with teachers. Disadvantages listed by Smith et al. (2008) are a lack of training and preparation for general education teachers to effectively meet their needs, including limited data on the effectiveness of inclusion, staffing, and funding. A common concern is an impact on the abled students, who are at risk of losing time with their teacher and a lack of quality education. To counter that point, Kauffman et al. (2020) argue that all students benefit from individualized instruction and a learning environment that is set up to meet all students' needs. In the current education climate, there is a continuum of placement based on the specific students' needs and disabilities. Some argue that there is a benefit to students with severe and multiple disabilities to be included in general education settings for portions of time. While the students may not be able to complete the same work as their grade-level peers, there is still value in experiencing the curriculum and the environment for both the student with disabilities and the abled students (Kauffman, et al., 2020).

Initially, I was teaching in a superficial inclusion model for my students with severe and multiple disabilities. The student entered my classroom with a group of second graders. My lack of understanding and training created a separate learning environment within the general education class. My students with disabilities were sat all together at their own table and had limited interactions with their peers. The inclusion model shifted to a self-contained class, where the students came only with students like them. This setting allowed me to deepen my

understanding of the students, their needs, and how to best serve them in the art classroom. I have grown in confidence and understanding through the self-contained model. After reading research, I see the benefits of my students with severe and multiple disabilities joining in a general education art class. “(S)ome students with severe disabilities have access and benefit from—to differing degrees based on individual needs—general education environments, including the general education classroom. (Kauffman, et al., 2020, p. 30). For my class to shift back to an inclusion model, it would require significant planning and preparation to be successful. “(T)o indiscriminately implement such an educational model [inclusion] without adequate preparation is definitely not recommended and could result in placing students disabilities at risk for adverse consequences” (Smith, et al., 2020, p. 30).

2.1.1 Historical Perspective in Art Education 1950-1990s

“Art educators have a history of interest in the education of people experiencing disabilities” (Blandy, 1991, p. 140).

Before students with disabilities were widely included in public schools, they were typically placed in residential facilities (Anderson, 1978; Blandy, 1991). Some facilities had art programs but art was typically viewed as a therapeutic activity, not educational. The idea of art-making as therapy persisted through the early 1900s (Blandy, 1991; Lowenfield, 1982). The usage of residential facilities continued into the 1970s.

As students with disabilities began showing up in art class, art teachers have been looking for ways to best serve these students. References to art educators teaching students with “intellectually dull” “physical handicaps”, “mental health and emotional confidence” can be found in the National Art Education Association’s journal, *Art Education*, as early as 1950 (Howell, 1950, p. 4-5). In this early article, only two paragraphs are devoted to teaching students

with disabilities. There is little direction for how to best serve these students, instead “patience and sympathy” (p. 5) are offered as suggestions for dealing with muscular control issues and emphasized exposing students to the beauty of the world around them. There is no direction on *how* to plan or prepare. Books and articles increased in the 1940s-1960s “related to art education and people experiencing disabilities. This literature largely addressed the influence of a given disability on art-making or the remediation of a given disability through art-making” (Blandy, 1991, p. 135).

In an attempt to create a resource of projects for art teachers, a federally financed study was done in 1960-1961 in Arlington, Virginia (News in Education and Art, 1960). Even in this study, students with lower Intelligence Quotients (IQ), determined by testing, were addressed and there is no mention of students with severe and multiple disabilities. The study started informally in 1957 as three art teachers were given self-contained classes of students with low IQs and began conferring with each other about how to best teach these students. Through experience and observation, these teachers recognized that this population of students needed activities and strategies outside of the typical art class (Wiggin, 1961). The teachers and their supervisor compiled a list of art activities and began measuring the students’ preference and engagement with the activities to create a list of “36 Popular Art Activities” (p. 94). From that list, they identified characteristics of the more successful and least successful projects. This list is meant to equip art teachers with a guide for what types of projects would be successful with this population of students. Wiggins (1961) identified eight key components of a teaching process were:

- The principal objective of the teaching process should be to maintain and enhance the individual student’s sense of security...

- In the introductory phase of a new lesson, sample finished products should first be shown and each sequential step in product execution briefly outlined
- The teacher should give thorough and visually clear directions preceding each succeeding step of the art process
- Individual daily growth should be clearly visible to the student...
- Students should be free to move within the work area
- Only simple and obviously easy choice should be offer to the student...
- Students should be given advanced warning before being asked a question
- Tool storage should be on an individual basis, and should be fixed and unchanging. (p. 92 & 100)

Wiggins' initial study was done with junior and senior high school age students and in the second phase of the study, the method was repeated for elementary age students. Some key components of the project characteristics changed for the elementary "yardstick" (p. 100). While this study certainly provided necessary guidance there is a gap in strategies and curriculum planning tools. As stated previously this study did not deal with students with severe and multiple disabilities.

Through the 1960s and early 1970s, the limited classroom experiences with students with disabilities continued until the passage of PL 94-142 in 1975. The Least Restrictive Environment mandate led to the inclusion model for an increasing number of students in public schools. "The definition of *inclusion*, stated simply, consists of including all children in activities of the mainstream environment" (Nyman & Jenkins, 1999, p. 9). The art classroom was no exception. Art educators were now expected to, like the general education teachers, consistently service students of all ability levels often within the same class. In the early years after the passage of

P.L. 94-142, art teachers were not prepared to teach students with disabilities, called handicapped at the time (Anderson, 1978). Many art educators looked to the format of the residential programs and leaned on art therapy as a basis for reaching this population of students (Dalke, 1984).

In the book *Art for All Children a Creative Sourcebook for the Impaired Child*, Dr. Frances Anderson (1978) provides basic information on the diagnoses of that time: learning disabled, behaviorally disordered, hearing impaired, mentally retarded, visually impaired, and physically handicapped. Even in the beginning stages of inclusion, students' individual needs were seen as important and would require the art educator to focus more on them with their planning. However, at the time there was a resistance to falling into the same trap as special education in creating completely separate activities and programs (Gair, 1978). Materials and supplies needed to be adapted for use. Anderson (1978) recommended simple adjustments with available materials, such as cutting a plastic container and adding rocks to the bottom for a student to use as a water bowl for cleaning a brush or simply allowing students to choose the location/body position that works best for them.

The NAEA convened a mini-conference in the Fall of 1975 called Art Education and Special Education. "Over 150 art educators, special educators, and general educators, representing 29 states, the District of Columbia, and Canada, participated in the two-and-one-half-day conference" (Alltruz, 1975, p. 4). The structure of this conference was around a large group session and action sessions. There were two topics of focus and an action session for each "curriculum and instruction, and personnel preparation" (p. 4). Within the curriculum action group, there was a call for short and long-term research. Other recommendations were an increase in pre-service education for both art educators and special education educators, local

schools to allow for collaborative planning between art and special educators, the need for developing sensitivity on the part of the educator to impact attitude positively, and an increase in communication between all stakeholders (Barlow, 1975). In another action group, educators gathered their concerns and questions. The list was long and overwhelming (Lisneco, 1975). From the initial list, concerns were grouped into four categories “curriculum, teacher, children and community” (p. 18). During a panel of special education teachers, a panelist expressed the prevailing viewpoint on arts education: “...art as a manipulative skill rather than as possessing expressive qualities in itself” (p. 19). The conclusion of this action group was thirteen recommendations ranging from an NAEA publication on Art and Special Education, more art courses for art education majors, a position paper, sharing resources, and highlighting successful programs. Another major conference took place three years later in conjunction with the National Committee (Gair, 1978). Many of the recommendations and suggestions continue to be called to action into the present day.

In response to these conferences articles and books were written in an effort to fill in the gaps (Minar, 1985). However, historic research and literature regarding the education of students with severe and multiple disabilities in the art classroom is limited.

2.1.1.1 Historical Instructional Frameworks

Task analysis is an approach to teaching students with disabilities that breaks down major skills into simplified sequential steps (Morreau & Anderson, 1986; Spencer, 1992; Gerber & Guay, 2006). The focus of task analysis is on mastery of art-making skills. There is an emphasis on the teacher planning portion of the art lesson. The steps for task analysis as outlined by Morreau and Anderson (1986):

1. Observe/ perform the behavioral sequence.

2. Record all of the behaviors that occur in observable, measurable terms.
3. Review the behaviors to ensure that they have been recorded sequentially.
4. Test the sequence with an individual learner.
5. Modify the sequence as needed (p. 53).

While the process of creating a task analysis has similarities to the design thinking process, in that there is a plan step and an iteration step. The largest contrast is that the task analysis includes the individual student only at the test portion, instead of starting with the student in mind. An art educator can benefit from preparing a task analysis. However, without emphasis on the student at the center and keeping in mind the students' needs and abilities, they may find themselves still struggling to find success in their lessons and with their students.

The model for instructional delivery and art creation continued to change with the rise in paraeducators in the art room. There is a long history of paraeducators in education as far back as the 1900s. However, the role has shifted as legislation was passed (Guay & Gerlach, 2006). "In the 1980s and '90s, paraeducators assumed the responsibility to implement learning strategies that were identified, designed, and assessed by classroom teachers" (p. 190). The presence of paraeducators in the art room allows for the partial participation model. How partial participation is executed can look different but ultimately the student is creating the artwork with the paraeducator's help (Clements & Wachowiak, 2010; Guay, 2003; Loesl, 2006). One method is where the student works until a task is too challenging and then the student passes the work to the paraeducator who will eventually pass it back to the student (Loesl, 2006). "Another version of partial participation is when the student makes the choices about the next part of the task and directs or observes as the paraeducator follows through" (p. 111). Another model of partial participation is "hand over hand" (p. 111). Hand over hand may be needed for students with a

weak grip and art strength. It is vital that the art educator and paraeducator are aware of the student's abilities and is cautious to not over-help. It is important that the art teacher give the paraeducator clear direction and limitations on their participation. The art educator must work as a team leader with paraeducators to build their understanding and purpose in the art room (Guay, 2003). The student should be guiding the artmaking with the paraeducator stepping in to bring the students' choices and ideas to fruition (Clements & Wachowiak, 2010; Loesl, 2006).

There continues to be a need for information and assistance to support art educators in inclusion settings. Sourcebooks became a resource for learning about disabilities and proposing lessons based on the limitations of each disability. In a sourcebook from 1978, Frances E. Anderson writes brief descriptions of impairments and acknowledges that while a diagnosis can not be the primary lens of viewing a student, it also can not be fully disregarded (Anderson, 1978). In 1984, Claire and Robert Clements from the University of Georgia wrote a book together called *Art and Mainstreaming: Art Instruction for Exceptional Children in Regular School Classes*. It combined Clair Clements' experience as a professor of Education of Exceptional Children and Robert Clements' experiences as a professor of Art Education. This book would be classified as a sourcebook but was utilized by the university to train pre-service art educators (Minar, 1985). In a book review Minar (1985) criticizes this book for not including how an art educator is supposed to plan for mainstreamed students on top of planning for general education students. Even as sourcebooks become a resource for the pre-service and professional art educators, many of them have limited information on working with students with special needs. For example, in *Children and their Art* (Gaitskell, 1958), only 29 pages address working with students who are "slow learners" (p. 289) and many of them are full-page images and diagrams. In the seventh edition of *Children and their Art* (Hurwitz & Day, 2001), there are

fewer pages devoted to working with this population of students, but the emphasis of the chapter is on diagnosis and proposing potential projects connected to diagnosis. Sourcebooks miss the mark on equipping educators to plan their own lessons. Upon closer inspection, they offer product-based projects somewhat connected to specific disabilities. Again, the art educator is left to rely on the sourcebook for ideas that may or may not fit the student population they are teaching.

2.1.2 Current Perspective and Challenges in Art Education 2000-Present

Despite the impact that IDEA had on the frequency in which art teachers interacted with students with disabilities, it took until 2001 to officially create an interest group in the National Art Education Association (Special Needs Issues Group, 2015).

Before the Special Needs Interest Group (SNAE) became a reality, NAEA conference attendees filled the rooms of presenters Peter Geisser (RI), Adrienne Hunter (PA), Susan Loesl (WI), and Doris Guay (OH) to hear about special needs students in art rooms. Since most art educators have had little training in special education there was and is a need for information about students with special needs (Special Needs in Art Education: NAEA Interest Group, n.d.).

Through consistent interest and continued conversation around presentations, the petition to create the interest group began. SNAE was established as a resource, connecting point, and a driver of professional focus for art teachers teaching students with special needs. The SNAE website offers suggested books but other resources are limited to support art educators. SNAE's Facebook page is also limited in both participation and membership with only 3,400 members (Special Needs in Art Education, n.d.). In comparison, as of July 2020 the NAEA's membership was 16,795 (National Art Education Association, 2020). There seems to still be a gap in getting resources and support to a larger audience of art educators teaching students with special needs.

A recent addition to NAEA's issues groups is on the intersection of disabilities studies and art education, established in 2017 (Disability Studies Art & Education, n.d.).

Disability studies is an interdisciplinary field that emerged from the civil rights movement, with the goal of promoting disability rights, identity, and culture.

Unlike other fields or organizations that advocate for disability rights, including special education, disability studies always considers the values and interests of actual disabled people first, ahead of the values and interests of well-intentioned nondisabled people, such as parents, doctors, psychiatrists, teachers, and friends. (Wexler & Derby, 2017, p. 34)

The addition of these interest groups means that there are people ensuring that continued professional development and research are happening in both areas to equip art educators with the knowledge tools and understanding to best work with this population of students. While research in both areas has happened before the development of these groups, their existence is at least a step in the right direction for pre-service and veteran art educators.

2.1.2.1 Current Instructional Frameworks

Current curriculum development frameworks for students with disabilities in the art classroom are Problem Solving Framework (Guay, 1993) and Universal Design for Learning (CAST, 2018; Glass, et al., 2013; Meyer & Rose, 2000). In my research, I have found a lack of emphasis on students with severe and multiple disabilities in these frameworks. The Problem Solving framework presented by Doris Guay (1993) sets up the teacher to respond to five domain question stems that are connected to the needs of the student based on their disability.

“How can I help the STUDENT EXPERIENCING DISABILITY (SED)
to:

How can CLASS PEERS be encouraged to:

How can I create an ENVIRONMENT that:

How can I design CURRICULUM/LESSONS that:

As ART TEACHER how can I:” (Guay, 1993, p. 61)

Guay (1993) acknowledges that designing curriculum and planning for the classroom are individual to the teacher and their population of students. Observation is the initial step to identifying the issues, then the questions lead the teacher to plan. “Systemic evaluation might lead to rethinking and modification, the consideration of other strategies or the reinforcing of observed behaviors” (p. 63). Reflective practice or evaluation is continually needed through the implementation of this framework. The framework and process of working through it share similarities with the design thinking process and could be a valuable part of the brainstorming step.

Universal Design for Learning is a framework for designing curriculum development, teaching strategies, and student learning informed by scientific studies of how humans learn. (Byron, 2008; CAST, 2018; Glass, et al., 2013; Meyer & Rose, 2000) The Center for Applied Special Technology (CAST) has been conducting research for decades on researching ways to increase access for diverse learners. CAST has leaned on the idea of universal design in architecture and product design to apply it to education (Meyer & Rose, 2000) UDL guidelines have three main principles of learning: representation (the why), action and expression (the what), and engagement (the how) (CAST, 2018; Glass, et al., 2013; Meyer & Rose, 2000) Within each principle are check points for teachers to dig deeper into their planning. UDL is responding to the variability that exists within a classroom and within individual students (Byron, 2008) “Just as UDL can provide a structured means for understanding human variability,

the arts can enhance our ability to respond to variability” (Glass, et al., 2013, p 107). Within their article, they repeatedly state in various phrases “arts education has a lot to teach practitioners of UDL” (p. 108). While there are benefits of the art educator using UDL in their curriculum planning, it seems that there are also gaps that make UDL not ideal as a standard for art curriculum planning. Despite UDL being based in the same source of the design thinking process, it has missed key components in the process laid out. UDL is primarily focused on accessibility of learning for all students. It misses the mark in centering a student, or user, as the design thinking process demands. When working with students with severe and multiple disabilities, each student has a unique combination of needs and requires specific understanding of those needs by their teacher for successful art making and learning. Also, UDL leaves out the necessity of revision, which is key to the design thinking process. No product is complete without revision (Brown, 2008). UDL is only one part of the puzzle for curriculum development for students with severe and multiple disabilities in art class.

Sourcebooks continue to persist as a support for teachers. The issues with sourcebooks continues to be the same as in previous decades. As art educators we have moved away from the historical medical model of art education for students with disabilities where we attempt to provide therapy to students with art activities (Derby, 2011). Instead we continue to focus on another historical perspective of the deficit model. This can be seen in various sourcebooks such as *Reaching and Teaching: Students with Special Needs through Art* (Gerber & Guay, 2006), *Preparing to Teach Elementary School Visual Arts* (Horton-Lopez, 2004), and *Emphasis Art: A Qualitative Art Program for Elementary and Middle Schools* (Clements & Wachowiak, 2010). Some stride have been made in decentering a student’s disability through other sourcebooks, such as *Adaptive Art: Deconstructing Disability in the Art Classroom* (Naughton, 2020),

Including Difference: A Communitarian Approach to Art Education in the Least Restrictive Environment (Kraft & Keifer-Boyd, 2013) and *Art for All: Planning for Variability in the Visual Art Classroom* (Byron, 2018). What these sourcebooks lack is a process for curriculum development, concrete steps that can be taken by the art educator.

Issues persist after over 50 years of art educators working with students with disabilities. Challenges in pre-service training, onsite training, and limited collaborative planning time. Issues with pre-service educator training are providing strategies of collaboration, ways of finding curricular resources, and utilizing assistive technologies for students' meaningful learning (Derby, 2011; Byron, 2013; Kraft & Keifer, 2013). Pre-service classes give an overview of the legal aspects, basic information on possible disability, and what information could be learned on an IEP (Cramer, et al., 2015). These classes do not address how to adapt and accommodate students in the art room. Strides have been made in some areas. Such as a class developed for an authentic learning experience,

“[D]eveloped a topics course that provided authentic learning experiences with students who have disabilities. They reported that art pre-service teachers participating in classes addressing the needs of students with disabilities learned to be good listeners, to be more patient and flexible, and to adjust their teaching strategies” (Cramer, et al., 2015, p. 8).

Collaboration between art education professors and special education professors to set an example that can be modeled at the school level. This collaboration at the school level is beneficial for the success of students with physical, visual, severe, and multiple disabilities. (Cramer, et al., 2015; Naughton, 2020)

As time has passed, technology has improved and developed which requires training for pre-service and current art educators. A lack of training combined with a lack of opportunity to plan with other professionals in the learning community creates a barrier to use in the art classroom. Technological advances have created accessibility for our non-verbal communication students. There are Assistive Technology (AT) options now available to make art more accessible.

“In an unpublished study during which approximately 80 art educators were surveyed about their knowledge and experiences teaching students with physical, visual, severe and multiple disabilities – including the use of AT... found that approximately 40% of art educator never received support or training in the area of AT” (Coleman & Cramer, 2015, p8).

Stakeholder collaboration continues to be a vital component of success in working with students with special needs. Collaboration between adult resources housed in the school building is beneficial in engaging students with disabilities (Cramer, et al, 2015; Guay, 1994; Kraft & Keifer, 2013; Naughton, 2020). The in-school Speech-Language Pathologist can share knowledge about what types of AT students use and how to incorporate their use in the art room. “There are four levels of AT (assistive technology): no technology solutions (i.e. accommodations, or modifications), low technology, middle technology, and high technology” (Coleman & Cramer, 2015, p. 7). Another collaborator is the special education teacher who has access to the IEP and the goal the students are working towards, as well as preferences and abilities. Preparing art educators to know who to look for and who to talk to about information and resources is important to the success of students with disabilities in the art classroom (Keifer & Kramer, 2013).

2.2 Design Thinking Process and Students with Disabilities

Design thinking is a process for problem-solving that is human-centered with empathy at the starting point and collaboration as a key (Portnoy, 2020). Design thinking has various formats and vocabulary due to its use in many fields but each version follows a similar format. “The DT (design thinking) process consists of five phases: empathize, define, ideate, prototype and test” (Lee, 2018, p. 24). Design thinkers start with a primary generator, a knowledge base of the field in which the design is happening. Starting with the identification of a problem with input from stakeholders. This will be directly affected by the problem and the eventual outcome. Design thinking is useless without background knowledge to begin the process once the problem is identified, understanding without context could stall the process (Dorst, 2011). The design thinking process never fully ends, there is always potential at the iteration stage to redesign. Coupled with the thought process of design thinking are mindsets that have been identified at crucial for successful design thinking: “show don’t tell, focus on human values, craft clarity, embrace experimentation, be mindful of the process, bias toward action and radical collaboration” (Booth & Baggeeror, n.d., p. 3).

2.2.1 Origins of Design Thinking

The process of designing has existed in the field of architecture long before it was researched and co-opted by fields, such as Information Technology (IT), Medicine, and Education (Luka, 2014). A historical example of a design thinker is Thomas Edison (Brown, 2008). He designed for more than just a product, instead, he designed for systems that could change the human experience. “In his Menlo Park, New Jersey, laboratory he surrounded himself with gifted tinkerers, improvisers, and experimenters. Indeed, he broke the mold of the ‘lone genius inventor’ by creating a team-based approach to innovation” (p. 86). In 1966, The Design

Research Society (DRS) was organized with the goal “to promote ‘the study of and research into the process of designing in all its many fields” (Design Research Society, n.d.). Eventually, the DRS developed a conference and worked with the US Design Methods group to start a research journal.

Awareness of design thinking continued to rise with the publication of the book *Design Thinking* by Peter Rowe in 1987 (Dorst, 2011). Another major contributor to the collective awareness of design thinking in the business field is Tim Brown, the CEO of IDEO (Lee, 2018). Brown and IDEO partnered with companies to create design teams filled with stakeholders from various levels and designers from their company (Brown, 2008). For example, IDEO worked with Kaiser Permanente to solve the problem of shift change for hospital nurses. “The core project team included a strategist (formerly a nurse), an organizational-development specialist, a technology expert, a process designer, a union representative and designers from IDEO” (p. 86).

2.2.2 Design Thinking and Education

John Dewey’s theory of inquiry is based on the human experience, in the process of human life (Harris, 2014).

“Dewey’s theory of inquiry is to describe the pattern of inquiry in terms of such stages as the emergence of doubt grounded in a problematic situation, observation of conditions that form elements of the nature of the problem (induction), suggestion of a possible solution to the problem, reasoning or deduction and implementation of a solution (with possible feedback loops between the last three stages until the problematic situation is resolved)” (p. 304).

This educational theory influenced many educators, including Donald Schön. Schön was a professor at the Massachusetts Institute of Technology. He “trained as a philosopher, but it

was his concern with the development of reflective practice and learning systems within organizations and communities for which he is remembered” (Smith, 2001/2011, para. 2). Early design education began to develop at the higher education level. Schön is credited with some of the early changes, where he built off of Dewey’s theory of inquiry but incorporated evidence from expert professionals in the field of the problem with reflective practice (Waks, 2001).

“Practical work enters only at the last stage in the curriculum, in the practicum where students are expected to apply the science learned earlier in the curriculum to real-life problems” (p. 39). By exposing students to real-world experiences they would be better equipped once entering their careers. One fundamental difference in Dewey and Schön’s work is how reflection is done.

“For Dewey, it remains akin to scientific thinking, and it is learned by doing – by engaging in scientific inquiries at one remove from the practical problems generating them. For Schon it is the forms of thinking specific to e.g. professional practices, and it is learned in the thick of the professional activity, not at one remove. For Dewey the paradigm site of education is the scientific laboratory; for Schon it is the design studio” (Waks, 2001, p. 40).

Building off the philosophy of Dewey and Schön design thinking pedagogy began to spread into other fields in higher education. In 2005, Stanford University founded Hasso Plattner Institute for Design - the d.school (Roethel, 2010). Stanford’s d.school defines what they do as “We build on methods from across the field of design to create learning experiences that help people unlock their creative potential and apply it to the world” (d.school, n.d, para. 1). The d.school has developed Design Thinking pedagogy documents and professional learning opportunities for K-12 educators. The d.school at Stanford University partnered with the company IDEO to create one of the first Pre-K through 12th grade design thinking education

programs at the Nueva School in California. At the Nueva School students spend "in a given week, 72% of the student body spends time in the I-Lab (innovation lab)" (The Nueva School, n.d., para. 2) solving real-world problems like composting and food waste (Estes & Fucigna, 2013).

2.2.3 Design Thinking and Art Education

There is a history of educators connecting design and art education. Founded by Walter Gropius, The Bauhaus school in Germany focused on the daily intersections of art and design (Lerner, 2005; MacDonald, 1970; Vande Zande, 2017). Vande Zande (2017) points out that, "Gropius wished to tear down the barriers between art, craft, architecture, industry and society, and the barriers between arts in art education" (p. 22). The principles of Bauhaus were brought to the United States by many of the educators that fled Germany during the war. These influences can be seen in the work of leading figures in art education, such as Arthur Efland (Lerner, 2005). Design pedagogy hopes to reach the formative K-12 student to "explore, play, discover, and creatively evolve" (p. 224).

The application of design education lessons in the art classroom is not a far stretch for art educators because the process of creating art lines up closely with the design process. It gives a more formal structure to the informal steps art educators follow in the creation of art: plan/sketch, create, critique, revise, reflect/artist statement. There are various versions of the Design Process teachers choose to use depending on their environment. Watson (2015) uses the STEM Fab Studio Design Process "Ask, Imagine, Design, Build, Evaluate, Refine, Share" (p. 13). Clearly teaching the design process and using it as a model of thinking, solving a problem, and the constraints it presents, teaches students problem-solving and critical thinking skills that go outside of art class and art projects. Watson (2015) interviews his AP high school students,

who confirm that after using the design thinking process in art class, they have applied the same process to problems in other classes and outside of school activities. “[T]he word *design* is both a verb and a noun” (Vande Zande, 2011, p. 28). The thinking is visible as students work to state a problem and then think through solving it. Design Thinking is directly linked to 21st-century skills, such as creativity and innovation, communication and collaboration, and critical thinking and problem solving (Watson, 2015). These skills developed in art class make direct connections to other subject areas and require the development of thinking.

“Literature and discourse in design education often center primarily on design thinking, with little emphasis on how design is envisioned, imagined, and conceptualized in the art education contexts” (Thatte & Rufo, 2020, para. 5). In the context of art education, design is presented as design education and is something to teach students how to do. Books and articles outline what design is and how to create lessons and projects that allow students to participate in designing an object (Lee, 2018; Marschalek, 2005; Portnoy 2020; Watson, 2015; Van Zande, 2011). What if the emphasis in art and design education was not on teaching students how to design, but instead on teaching educators how to design for their students. Creative agency is at the core of art and design education, then it can be assumed that the art educator should also participate with creative agency (Kraehe, 2018; Luka, 2014; Van Zande, 2011). Then utilizing design thinking as a process within the context of curriculum design could be a tool for fostering creative agency for the educator (Thatte, 2017).

I was unable to find connections between design education and thinking and educating students with special needs in the art room. The lack of research in connecting these two well-researched areas is a gap I hope to fill with my research.

3 METHODOLOGY

3.1 Research Questions

In this research study, I draw from the literature research and investigate the use of the design thinking process by the educator to create and evaluate the process of lesson development for students with multiple and severe disabilities. The following questions will direct my study:

- How can the design thinking process be used as a tool for art curriculum development for students with severe and multiple disabilities?
- How can making an educator's thinking visible in the curriculum planning help other educators to reflect, re-design and better serve their students?

3.2 Timeline

The timeline for this research is to take place during the 2021-2022 and 2022-2023 school years. I worked through the design thinking process as curriculum design over the span of two school years. I intend to finish my study by February 2023.

3.3 Data Collection

This is a problem-based action research in a narrative format. "Problem-based research is oriented toward application and practice rather than theory" (Suter, 2012, p. 166). Action research is reflective and is intended to improve not only the researchers teaching but also the profession of teaching. Narrative research is based in storytelling and people's life experience (Suter, 2012). While I was the only human participant, I interacted with fellow teachers, specialists and administrators through the study. I worked through the design thinking process to experience building a lesson plan for hypothetical students with multiple and severe disabilities. Through the process, I documented my thinking and develop a framework based in design thinking.

For this study I followed the design thinking process as laid out by Vande Zande (2017): Define Design Problem, Investigate, Develop Ideas, Create Prototype, Present, Evaluate and Revise (p. 44). There are many versions of design thinking models available. Ultimately each one has the five basic parts or phases as seen in Stanford's d.school model: empathize, define, ideate, prototype, test (Booth & Baggeor, n.d.; Doorley, et al., 2018; Rothel, 2010). I have chosen Vande Zande's (2017) process instead of the d.school model because the language more closely aligns to actions that already take place in the art classroom. Familiar language reduces barriers to engaging with a new thought process, both for me and potentially other art educators. My chosen design thinking process is inspired by "the design process in practice by designers and then adapt it for the application in the classroom (p. 43).

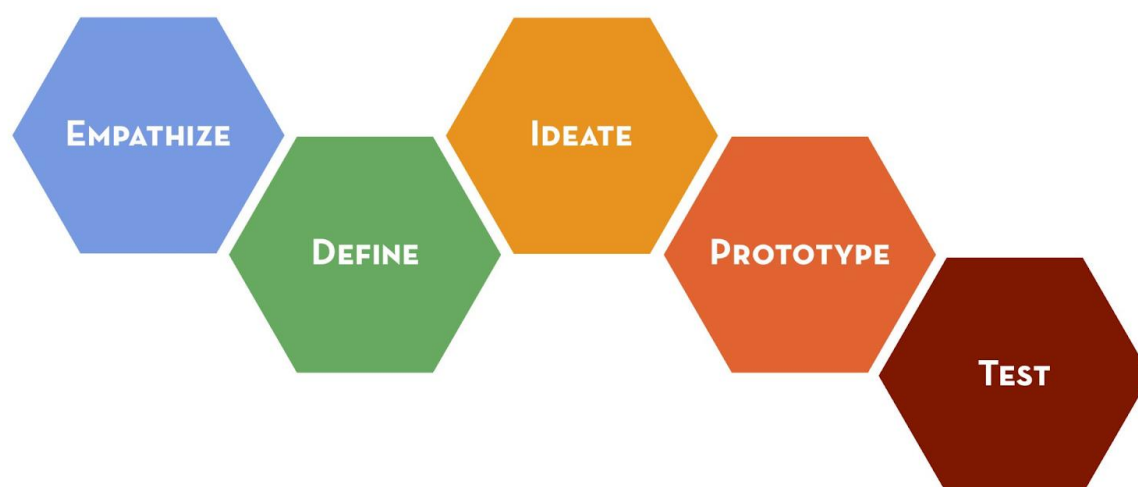


Figure 3.1 *Components of Design Thinking Note*. From Booth, T., & Baggeor, D. (Eds.). (n.d.). *d.school bootcamp bootleg*. Institute of Design at <https://dschool.stanford.edu/s/METHODCARDS-v3-slim.pdf>

Through narrative reflection, I developed a curricular framework tool to be used to develop lesson plans. The emphasis will be on planning for and educating students with multiple

and severe disabilities. The curricular framework tool will be created based on my questions and insights through experiencing the design thinking process. The framework I develop will not be tested on real students, I only reflected on how I would teach the lesson and how I would plan to revise it with the intention of making it more successful. My thought process, questions I generated, and the lesson outcomes contribute to both the curriculum development and to a tool that can be used by other art educators who service this population of students.

3.4 Limitations

Due to the nature of this personal narrative case study, there are limitations on the outcome based in my individual experience and bias. There is also the limitation of not being able to accurately evaluate the lessons due to lacking authentic student work and experience. The design thinking process requires a user to focus the process on, however I will not be focusing on an individual student. This lack of actual student investigation is a limitation that I reflect on throughout the research.

4 DESIGN THINKING AS CURRICULUM DESIGN TOOL

Design thinking is a process that creates space for the designer, the teacher, to come up with creative responses that are informed not only by the designer's knowledge (Vande Zande, 2017). Instead, it requires collaboration and empathy. Teachers may not see themselves as designers, but the design thinking process can give them the language and the next steps to be one (Brown, 2019; Thatte, 2017).

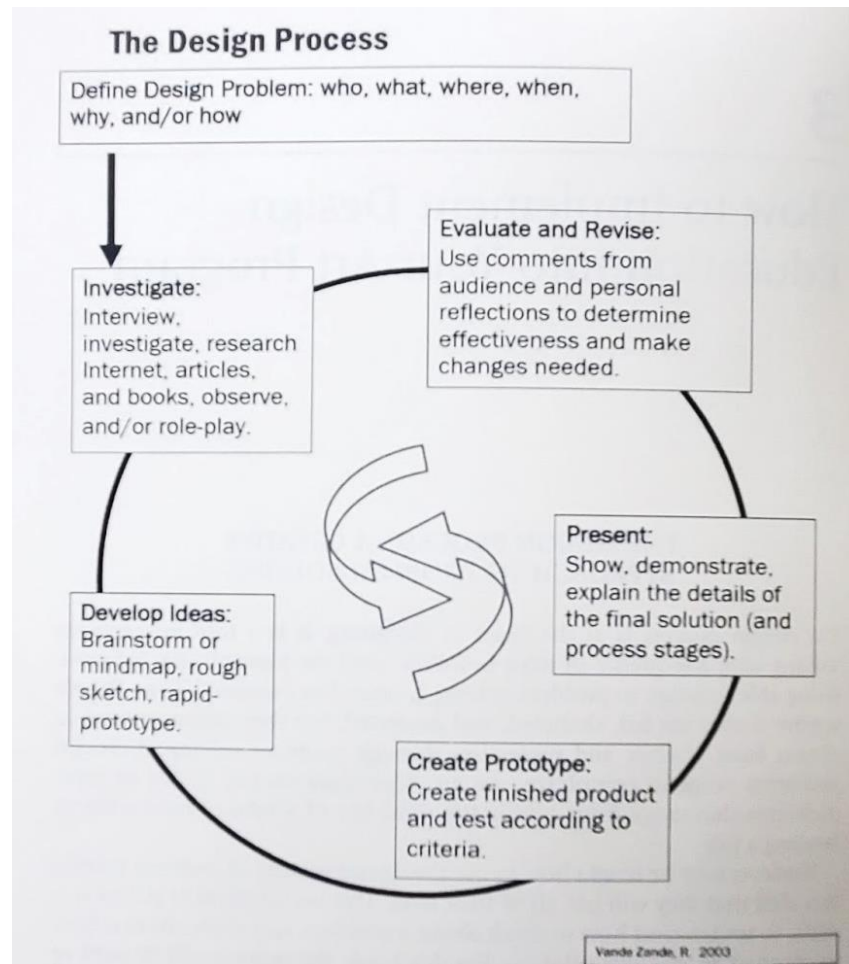


Figure 4.1 *Stages of The Design Process*. Note. Diagram from Vande Zande (2017). *Design education*. p. 44.

4.1 Define

The first step in the design process is called many different names: ask (FAB Foundation, n.d); the brief (Brown, 2019); design problem (Rowe, 1987); empathy(ize) (Lee, 2018; Portnoy, 2020; Van Zande, 2017); understand (Portnoy, 2020); look, listen, learn (Spencer & Juliani, 2016); wonder and question (Gallagher & Thordarson, 2018). The starting place of design thinking is to identify the *who, what, when, where* of a problem. Once some definition has been developed then the problem solving can begin (Brown, 2019).

For my research, the designer is identified as the educator, myself, in collaboration with other colleagues and resources. The *who* is students with severe and multiple disabilities. The *what* is art experiences and lessons. The *when* is during art class time. The *where* is the art room. Once the basic information is identified, I need to dig deeper to define each of these elements.

4.1.1 The Who

The *who* is students with severe and multiple disabilities. According to Westling, et al. (2015), “individuals with severe disabilities have weaknesses in general learning abilities, personal and social skills and/or sensory and physical development” (p. 3). While this broad terminology is helpful it is also limited in defining each individual student's abilities and needs (Browder, et al., 2020). The starting place for this process is identifying the student's diagnosis, which can be found in the school district database. From the database, I had access to the student's documentation through their Individualized Education Plan (IEP) form. It is multiple pages long and can be confusing. The Georgia Department of Education (GADOE) publishes an IEP form that is completed by a student's IEP team directed by the assigned special education teacher. The members of the team are listed in the ‘Required Members’ section. The first page of this document (see Figure 4.2) will identify basic diagnosis information about the student. Key sections to look at are the students' eligibility category in the first table and the section labeled ‘I. Present Levels of Academic Achievement and Functional Performance’ (Georgia Department of Education, 2011, p. 1). These two areas will begin to help teachers to empathize and understand the student on a basic diagnostic level. It can be tedious to look through multiple students' documentation but, the information found on the IEP is valuable when getting to know a new student. For example, when I entered my school, I had never worked with students who could not hold traditional materials. This was a new experience, and if I had known what to look for in

the IEPs and who to talk to, I would have been better prepared for them instead of scrabbling as they entered the room. A student is more than their diagnosis (Westling, et al.,2015). However, a diagnosis is useful baseline information that can be built upon through the next steps in the design thinking process. It is important to go past the diagnosis and dig deeper into students' individual strengths and areas of growth.

Figure 4.2 *Individualized Education Plan Sample Form* provided by the Georgia Department of Education Note. From Georgia Department of Education *Sample Special Education Forms*. p. 1.
<https://www.gadoe.org/Curriculum-Instruction-and-Assessment/Special-Education-Services/Pages/Sample-Special-Education-Forms.aspx>

From the first page of the IEP, I began to compile a list of colleagues and resources to deepen my understanding of the student. The people who actively participate in IEP meetings have direct contact with the student. The ‘Team Members in Attendance’ section lists the student’s main Special Education teacher and the ‘Additional Members’ lists who administers additional services, for example Speech-Language Pathologist, Occupational Therapist, Physical Therapist, etc. Once a list is compiled, I reached out to these colleagues by email to set up a time to meet and discuss the student(s). These colleagues have a different insight into the students that goes far beyond just students' diagnosis. They should be a good resource for providing information on assistive technology being used by the student and potential modifications for tools and materials. The parents/guardians can be a good resource, too, for discovering what interests a student outside of an academic setting. Potential questions are listed in Figure 4.3. Some of this information may be in on the first page of IEP in the ‘Parental concerns regarding their child’s education’. However, individual interests are outside of educational concerns. For example, I have had students who are drawn to particular items for comfort. This information would not be in this section of the IEP. Learning this information can help with preparation for tool modification and project planning.

4.1.2 What, When, Where

The *what* is art experiences and lessons. Identify materials available and if any adaptive tools are already available either in the art room, from the special education teacher or to be ordered. There will be further development of the lesson in the following design thinking steps.

The *when* is during art class time. Is this population of students taught in an inclusion setting? Is this population of students being taught in an adaptive art class time separate from the general education students? In my current situation these students are being taught in an adaptive

art class. This allowed me to really tailor activities for these specific students. I hope to shift to including this group in a general education class with other students. For the purpose of this research, I focused on the *when* as the adaptive art class time.

Where is the teaching taking place? Will I be teaching in my art room or pushing into the special education room or will there be a separate space for class? In my current teaching situation, the where will be the art room. I had previously taught the students by pushing into the special education room. However, this is not in line with the least restrictive environment as mandated in IDEA (PL 94-142) and a new special education teacher advocated for a change of teaching environment. Another consideration about environment is furniture and if it is set up to be accessible to all students. This may require some adjusting to seating arrangements and/or removing chairs prior to students entering the classroom. Just as a chair is available to a student who is able to sit in it, without any attention given to that student sitting, a student in a wheelchair need to same access without additional attention drawn to the adjustment. If I am unaware of the physical needs of the student, then I would add this topic to my discussion with the special education teacher and the physical therapist.

This first step of design thinking is focused on building an understanding of the students. They are in the place of the user in traditional design thinking process (Brown, 2008). A key element to this step is accessing other colleagues' expertise. Due to the lack of interaction with a new student, teachers will need to draw on their colleague's knowledge. In the corporate setting, the user helps define themselves and what they need. However often teachers need to start the identification process before meeting the student(s) with severe and multiple disabilities. As an art educator, I am not an expert, but I can gain knowledge from others' expertise. The benefit of

understanding who a student is and gaining information about them will be crucial in the next steps for planning.

Figure 4.3 is the first step in the design thinking curriculum planning tool. I have taken my narrative and distilled questions and resources. The full curriculum planning tool is in Appendix A.

Design Thinking Process	Questions to Answer	Resources
Define Emphathize Understand	1. Who am I teaching? 2. When is the teaching happening? <ul style="list-style-type: none"> • Inclusion or Adaptive Art class? 3. Where is the teaching taking place? <ul style="list-style-type: none"> • In the art room, in the Special Ed room, in an auxiliary room? 	- Individualized Education Plan - List of Additional Services and who administers them

Figure 1.3 Curriculum Planning Tool for Students with Severe Disabilities: Define Step Kendall Siddiqui, 2022

4.2 Investigate

The design thinking process builds upon previous information. With the information gained from the Define step, the investigate step is a more informed one than if the educators started at this step. The next step is called different names: imagine (FAB Foundation, n.d.); define (Booth & Baggereor, n.d.; Gallagher & Thordarson, 2018; Lee, 2018); understand the process or problem (Spencer & Juliani, 2016); investigate and research (Portnoy, 2020; Van Zande, 2017); analysis (Rowe, 1987); inspiration (Brown, 2008). “In this step... research information... through print resources, interviews or surveys, digital resources, observations, role-playing, and/or discussion” (Van Zande, 2017, p. 45). Merely knowing the needs of a student does not provide a solution (Lee, 2018). Instead, educators need insights from a collection of people to reach possible solutions, which in this case would be a planned art

experience. I remember being taught in undergraduate school that the special education teacher would be telling me all about how to modify for a student. That has not been the case, unless I have intentionally reached out to the teacher and asked specific questions. “Art teachers who need information or assistance should seek out their peers and special education teachers willing to share their expertise and visit each other’s classrooms, gather for discussion and support, and learn from each other” (Guay, 2006, p. 11).

From the student’s IEP, I have identified additional services and who administers them. Three main areas of focused information gathering is needed: communication, physical abilities, and academic goals. Along with the parent/guardian information from the define step, I expand my knowledge of a student in these three areas give me a foundation to build appropriate art-making experiences that are accessible by the student.

I would email each of the colleagues from the list created in the Define step and set up a time to discuss the student(s). With busy schedules, I acknowledge that finding time to meet with colleagues can be difficult to arrange. However, accessing these colleagues' expertise and knowledge of a student is vital to making art accessible to every student. If it is possible to attend a student’s IEP meeting, this is beneficial because you will get an update on the progress of the student and clear explanations of the students’ academic goals and the range of services rendered.

Communication is an area of understanding that will allow a student to actively participate in art class. “No student should be without a means to communicate” (Browder et al., 2020, p. 51). The speech pathologist will know the student’s communication skill level. This colleague will share the augmentative and alternative communication (AAC) system(s) being used by the student (Browder, et al., 2020). Questions I would ask the speech pathologist are:

How does this student communicate?

Can the AAC be modified for use during art class?

How do I assist the student in communicating?

What recommendations do you have for working with this student?

Learning how a student communicates allows that student the opportunity to participate in decision making during the creation of their artwork. While they may not be able to complete every step of a project, they can actively participate in the choices made. This colleague can help create a visual communication board as a tool to be used specifically in the art classroom. This student may not be able to express their choice verbally or be able to point at their choice, but they are still capable of making a choice in an alternative form (Van Tubbergen, et al. 2007). Preference may be expressed by a student looking at their choice either with their eyes or by turning their head toward their choice. Showing student images of their choice or holding up the actual choice items themselves is a beginner level of preference expression (Browder, et. al, 2020; Coleman & Cramer, 2015; Van Tubbergen, et al., 2007). It is important for the art educator to remember “limited communication does not mean limited cognition” (Coleman & Cramer, 2015, p. 11). Visual boards can be used for preference and knowledge choice making. The images could be used for student to respond to artwork too. An example would be showing the student an image and then asking them to identify a color from the image by presenting a two or more choices, depending on the student’s ability level. If I engage my general education students in responding to artwork, then I should be able to use the knowledge I am gaining from the design thinking process to adapt activities for accessibility.

Physical modifications for accessibility is the next area to research more in depth. This is an area that many art educators have written about and provided tools to identify and adapt tools

(Gerber & Guay, 2006; Loesl, 2006; Kraft & Keifer-Boyd, 2013; Naughton, 2020; Nyman & Jenkins, 1999; Wiggins, 1961; Zederayko & Ward, 1999). If the student is receiving services from an occupational therapist (OT) or a physical therapist (PT), then these colleagues may have insight into the student's physical capabilities and possible modifications that can be made. They will also know what goals the student is working towards which could potentially be supported in art class. Coleman and Cramer (2015) created a great resource as a checklist for potential AT for art class specifically. The checklist breaks down possible AT into categories: students with physical limitations, fine motor limitations, visual impairments and communication impairments (p.13). Some questions to ask the OT and PT:

- What physical goals is this student working toward?
- What is their grip like?
- What suggestions do you have for working with this student in the art room?

The assigned special education teacher could potentially give you answers to these questions as well. OT and PT colleagues are often shared between multiple schools. Their time at a specific school may be very limited. An email combined with a brief in-person conversation may be the best way to collaborate with these colleagues. The answers to these questions will help in adapting and modifying tools to increase access to art materials.

The special education (SPED) teacher assigned to the student will have a broader insight into the student. They may even be able to answer the questions that were presented to the other experts rendering services to the students. They will be able to give insight into what academic goals the student(s) is working towards. For example, in a previous school year I had a student who was working towards writing straight lines. With this knowledge I was able to incorporate that motor skill into several projects to support the student's growth. The academic goals should

be listed on the IEP but may need further explaining by the SPED teacher. The SPED teacher may also have insights into some of the questions presented to the parent/guardian regarding student's interests and preferences. With this deeper understanding of the student combined with suggestions and support from colleagues, I begin brainstorming possible art making activities.

Figure 4.4 is the distilled narrative into the curriculum tool format. The entire curriculum tool is listed in Appendix A.

Design Thinking Process	Questions to Answer	Resources
Investigate <i>Research</i> <i>Analysis</i>	<ol style="list-style-type: none"> 1. Communication <ul style="list-style-type: none"> • Are any communication devices being used? • Can the devices be modified for the art room? • What additional information can you share about how this student communicates? 2. Physical Modifications <ul style="list-style-type: none"> • What physical goals is this student working toward? • What is their grip like? • What suggestions do you have for working with this student in the art room? 3. Academic Goals 	OT PT SPED teacher

Figure 4.4 *Curriculum Planning Tool for Students with Severe Disabilities: Investigate Step*
Kendall Siddiqui, 2022

4.3 Develop Ideas

After building up a knowledge base and sourcing information from colleagues' expertise, the next step is to take this information and begin developing ideas. This step has been identified in many ways: develop ideas (Vande Zande, 2017); imagine (FAB Foundation, n.d); ideate (Brown, 2008; Gallagher & Thordarson, 2018; Lee, 2018; Portnoy, 2020); navigate ideas (Spencer & Juliani, 2016) synthesis (Rowe, 1987). "It's a transition from identifying and learning about problems to thinking creatively to generate solutions" (Lee, 2018, p. 101).

Idea generation can be done in various formats, either individually or collaboratively. The design thinking literature often leans toward collaborative idea generation through brainstorming and visual thinking techniques, such as mindmapping, sketching, Post-It noting and quick prototyping (Vande Zande, 2017; Brown, 2008; Gallagher & Thordarson, 2018; Lee, 2018; Portnoy, 2020). Portnoy (2020) describes this phase as “communicate to ideate” (p. 101), which encourages divergent thinking. Communication is key when engaging in collaborative brainstorming, Brown (2019) and Lee (2018) suggest that rules are necessary for success. These rules include:

1. one conversation at a time
2. stay focused
3. encourage wild ideas
4. defer judgement
5. build on the ideas of others (p. 107)

Since I am brainstorming as an individual, I used mindmapping and rough sketching as my idea generation techniques (see Figure 4.5). As a visual person, taking the information gained from the previous steps and creating a sorted, connected and grouped mind map could be very helpful.

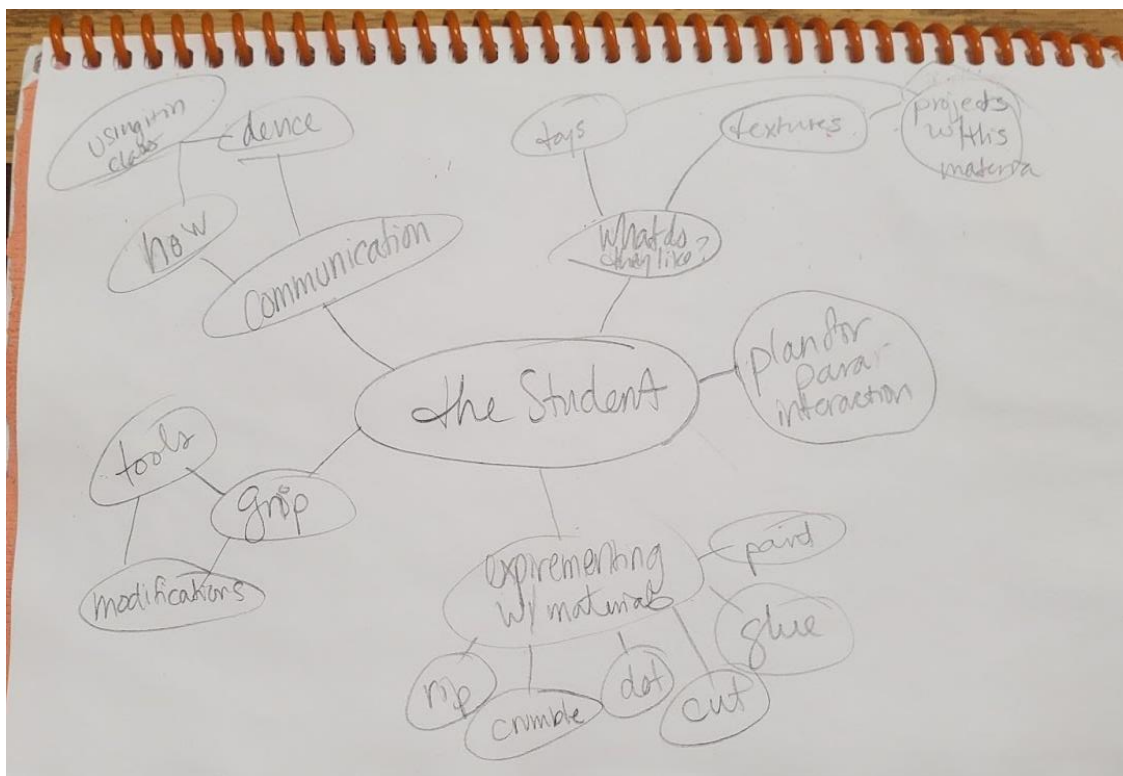


Figure 4.5 *Mindmapping Sketchbook Page Note*. From Kendall Siddiqui, personal sketchbook, 2022

To create a more collaborative brainstorming experience, I could reach out to fellow art educators with a similar population of students. Then together we could share experiences and ideas for best practices with these students. If a local colleague was not available, then social media provides the opportunity to gain collective knowledge from other art educators, such as the SNAE Facebook group.

Another option for the brainstorming step is to break down standards and pull elements from them that can be simplified for access. For example, the standard VAK.CR3.c “Create drawings and paintings with a variety of media” (Georgia Department of Education, 2017, p. 4). In Figure 4.6, I broke down the standard into parts and then mindmap potential materials and ways to achieve this standard for the user.

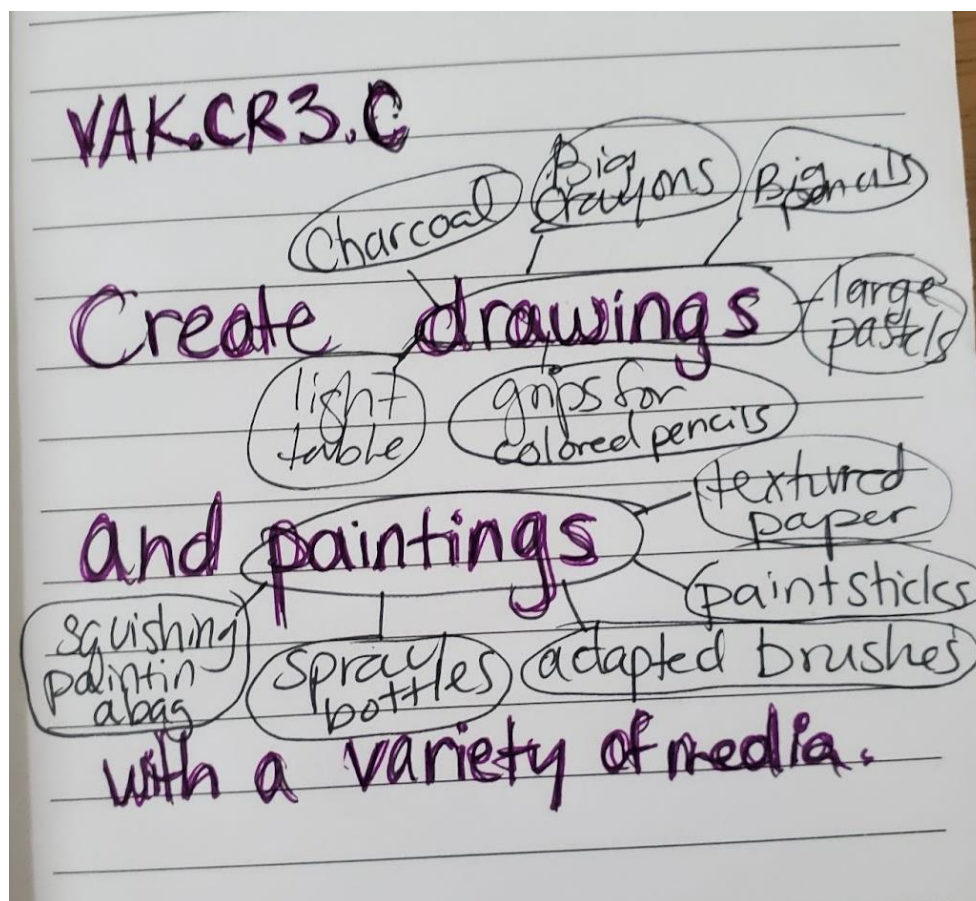


Figure 4.6 *Breaking Down a Standard Note*. From Kendall Siddiqui, personal sketchbook, 2022

Another option for where to start with idea generation is to start with the students' goals from their IEP. Then look for any connections to art skills. An example from a previous year, I had a student who had a goal of writing straight lines. When I was teaching line, I used a cooling rack for cookies turned upside down to guide the student to practice drawing straight lines. Then the rack was rotated so the student drew horizontal and diagonal lines on their paper with a crayon. To complete the artwork the student painted over the lines with watercolor. This connected that student's IEP goal with the standard from above.

At the end of this step, I have more ideas than I could potentially use, which allows me to make choices that best suit the user, my students with severe and multiple disabilities. Figure 4.7

is the distilled narrative research from this design thinking step for the curriculum design tool.

The entire tool can be found in Appendix A.

Design Thinking Process	Questions to Answer	Resources
Develop ideas <i>Imagine</i> <i>Ideate</i> <i>Navigate Ideas</i> <i>Synthesis</i>	1. Where to start? a. The student's IEP goals? b. The standards? c. The student's abilities? 2. Brainstorming individually or collaboratively? a. What colleagues can support idea generation?	-State Standards -Students IEP -Fellow Art Educators -Social Media groups

Figure 4.7 *Curriculum Planning Tool for Students with Severe Disabilities: Develop Ideas Step*
Kendall Siddiqui, 2022

4.4 Create

“The intrinsically human-centered nature of design thinking point to the next step: we can use our empathy and understanding of people to design experiences that create opportunities for active engagement and participation” (Brown, 2019, p. 121).

This is the step where a teacher would take the knowledge gained in the previous steps and build off the informed brainstorming and mindmapping to begin to develop lesson plans. It is important to remember that the create step can lead back to the previous steps. There may be more information needed from the IEP or from colleagues. The create step has been identified by other names such as, prototype (Brown, 2019; Booth & Baggereor, n.d.; Gallagher & Thordarson, 2018; Lee, 2018, Portnoy, 2020) create prototype (Vande Zande, 2017), development (Rowe, 1987) and create (Spencer & Juliani, 2016). “A prototype is a working model of combined ideas from the ideate phase based on what students learned from the users” (Lee, 2018, p. 131). The prototype for this research is a lesson plan.

In my experience, many art teachers plan one of two ways: starting with the standard or starting with then end project. While both can be effective planning methods, they both leave out the student. When an art educator is working with students with severe and multiple disabilities, the student must be at the center of planning in order to create a successful and engaged art making experience for the student. That is why the previous steps are necessary before beginning to develop a lesson plan. I could still start with a standard or an end project in mind. By starting in one of these two ways after all the gained knowledge and insights through the previous design thinking steps, I create informed lesson plans that still incorporate the student. Without the previous steps in this process, I am back to creating lesson plans that rely on paraprofessionals to complete and make choices for the students and leave the student out of the art making experience.

The art education community is built of a wide variety of teaching situations, from my experience many art teachers are the only art teacher teaching art in their building. Through this experience, art educators have created communities online to share their knowledge, ideas and insights into teaching art. These social media groups and websites can be a wealth of information for lesson plan ideas. Some of the resources I have used are websites:

<https://theartofeducation.edu/> and <https://www.arteducators.org/learn-tools>. I have often sought resources outside my building from other art educators via the school district or through social media. Some examples of art educator specific websites and social media sites are <https://cassiestephens.blogspot.com/>, <https://www.instagram.com/antiracistartteachers/>, and <https://www.facebook.com/groups/specialneedsarted>. These content experts can give ideas that can be changed to fit the needs of specific students. The information that has been collected

through the process of design thinking will equip you to find resources that work best for your students.

As stated previously, many of the published books on art education for students with disabilities are project based. These could be a good start, such as *Reaching and Teaching Students with Special Needs Through Art*, *Emphasis art: A Qualitative Art Program for Elementary and Middle Schools*, *Adaptive Art: Deconstructing Disability in the Art Classroom*, and *Including Difference: A Communitarian Approach to Art Education in the Least Restrictive Environment*.

Starting with existing lessons and modifying to meet the learned need of the students functionally appropriate. The art educator should continue to ask the questions:

- How can the student be the most involved in the art making process?
- What choices will the student have what materials are accessible?
- How much prep needs to happen before the lesson can be accessible?
- How much adult interaction is interfering with the students engagement?

With the knowledge gained from the previous steps, identify what does success look like for that student how can that be achieved through the art lesson. For example, in Figure 4.8, I took a lesson plan that was already planned for general education students and wrote notes on possible modification to be made for my adaptive art class. The students are experiencing the same content and technique, but I am planning adjustments such as large handle tools and stamp pads instead of paint. These modifications will increase success for each student. To help reduce tearing of paper or too much movement, I could tape the paper to the table or slant board. These notes and planning help for preparation. I have found preparation my Adaptive Art class takes more time than other classes.



DeKalb County		DCSD Instructional Planning Instrument Focus on Teaching and Learning Weekly Lesson Plan		DeKalb County	
Section C: Instructional Framework					
Identify the strategies from Section A that will be implemented within the daily instructional framework. List the specific strategies as provided on the strategy chart found at the end of the DCSD Instructional Planning Instrument.					
ART Lesson Plan for Kindergarten & First Grade				Assessment Evidence	
FOR THE WEEK	Priority Standard(s) (Content specific)	VA1.CR.3 Understand and apply media, techniques, and processes of two-dimensional art. b. Experiment in the printmaking process (e.g. stamping). VAK.CR.5 Demonstrate an understanding of the safe and appropriate use of materials, tools, and equipment for a variety of artistic processes.			 Rubric Reflection Writing
	Supporting Standard(s) (Content specific)	VAK.RE.1 Discuss personal works of art and the artwork of others to enhance visual literacy.			
	Non-Content Standard(s) (WIDA, Interdisciplinary, Literacy)				
	Essential Question(s) (Address philosophical foundations; contain multiple answers; provoke inquiry)	<ul style="list-style-type: none"> What is printmaking? What is stamping? What is architecture? <i>Show the Learning about Printmaking on YouTube by Nirek</i>			
	Big Ideas (Concepts or principles central to the lesson that anchor all of the smaller ideas in a lesson)	Artists create an architecture artwork utilizing stamping.			
Learning Target/Success Criteria		I can create an artwork with stamping.			Teacher Observation
Pre-Instructional Activity		Daily Noodle (warm up) architecture discussion			
Opening (ENGAGE)		Watch Iggy Peck Architect. https://www.youtube.com/watch?v=1888WJldTCQ			
Work Period (EXPLORE/EXPLAIN EXTEND/ELABORATE)		Differentiation: one-on-one and small group redelivery, choice in direction, Key vocabulary is emphasized. New vocabulary is used in context. <ol style="list-style-type: none"> Plan a building on the white board Stamp white paper paint on blue paper <i>maybe a stamp pad instead</i>			Formative: Teacher observation/ oral feedback Visual Verbal Journal/Practice Activities
Closing (EVALUATE)		<i>Prep large handled stamps</i> Write about your artwork on Reflection paper			

Figure 4.8 Lesson Plan Modification Notes From Kendall Siddiqui, 2022

Figure 4.9 is the distilled narrative research from the create step into the curriculum planning tool. The entire tool is in Appendix A

Design Thinking Process	Questions to Answer	Resources
Create <i>Prototype Development</i>	1. Build a new lesson or modify an existing lesson? 2. What modifications are needed for success? 3. What preparations need to be made before class?	Access other art educators through social media Art Education websites

Figure 4.9 *Curriculum Planning Tool for Students with Severe Disabilities: Create Step* Kendall

Siddiqui, 2022

4.5 Present

“Presentation is an integral part of the classroom experience. The audience is the ‘focus group’ who will give feedback on the effectiveness of the solution” (Vande Zande, 2017, p. 48).

The lesson has been created in the previous step, create, with the students at the center and the standards or end project as the guide. Modifications to materials have been prepared. It is time to present the lesson. This stage in design thinking is called present. It has been referred to by other design thinking experts as present (Vande Zande, 2017), test (Portnoy, 2020; Gallagher & Thordarson, 2018; Lee, 2018; Booth & Baggereor, n.d.), and implementation (Brown, 2009).

This is the stage where the theoretical and the planned are brought before students. Failure is an essential part of this step (Lee, 2018). No lesson plan is perfect and paying close attention to what happens during the lesson will be vital to improving and revising for the next time.

Through the knowledge gained and the recorded thinking from the previous design thinking steps, the art educator’s toolbox will grow and confidence with what works and does not work for each student.

A crucial part of lesson prestatation is understanding the student’s assistive technology and what can be used to increase engagement. Through previous conversations with the special

education teacher and speech pathologist, there should be a foundational understanding of any communication assistive technology being used by the students. The art teacher needs to be aware of these, so the tools can be utilized and referenced during the lesson. The paraprofessionals may not be the best resource for using these communication devices during class. These tools are vital to increase engagement, choice and voice for the students.

Some questions to ask yourself or take note of during the presentation and creating portions of the lesson:

- Who is engaging with the presented content? Are they responding to still images or videos?
- Which students are successfully using the modified materials?
- Are students engaging by making choice and actively participating in their artmaking?

Design Thinking Process	Questions to Answer	Resources
Present <i>Test Implementation</i>	1. Who is engaging with the presented content? Are they responding to still images or videos? 2. Which students are successfully using the modified materials? 3. Are students engaging by making choice and actively participating in their artmaking?	Refer to previous steps and information gathered from colleagues

Figure 4.10 *Curriculum Planning Tool for Students with Severe Disabilities: Present Step*
Kendall Siddiqui, 2023

4.6 Evaluate and Refine

“Use comments from the audience and personal reflections to determine the effectiveness and make changes needed” (Vande Zande, 2017, p. 44).

From the notes taken during the present step, changes can be made to the lesson plan and future lesson plans. The next step is to evaluate and refine. This step has also been referred to as iteration (Lee, 2018), reflection (Gallager & Thordarson, 2018), iterate and reflect (Portnoy, 2020), and communication (Rowe, 1987).

The conversation between the art educator and their colleagues that service students with multiple and severe disabilities must be continuous. The benefit of design thinking is that while it is listed as linear, it does not have to be. No prototype is complete until it has been tested (presented) and refined (Brown, 2009). The lesson plan is the prototype, the students are the testers, and the art educator must be the reflective refiner. See Figure 4.11 for an example of a quick check off form that could be useful for during class or immediately after class.

Student	Engaged?	Use of Materials	Made Choice	Created

Figure 4.11 Lesson Reflection Checklist Kendall Siddiqui, 2023

Changes should be documented, so the art educator can return to their notes. By making the art educators thinking visible and reflecting in a way that is documented, this can be referred to later as planning continues throughout the school year. In my elementary setting, students only come once a week. Keeping written or digital records is vital to me remembering in preparation for the next week. While most of the design thinking process for lesson planning has been done

as singular teacher, the involvement and input of other colleagues and fellow art educators could lend insight into potential changes that can be made.

Figure 4.12 is the distilled narrative research for the evaluate and refine step. The entire curriculum tool can be found in Appendix A.

Design Thinking Process	Questions to Answer	Resources
Evaluate & Refine	1. What worked? What did not work? 2. What changes can I make for more student success? 3. Who do I need collaborate with to fill in the gaps?	-Notetaking from previous steps -Record changes in written or digital format

Figure 4.12 *Curriculum Planning Tool for Students with Severe Disabilities: Evaluate and Refine Step* Kendall Siddiqui, 2023

5 CONCLUSIONS

I started this study with the concern that many art educators struggle to create effective and engaging lessons for students with severe and multiple disabilities, based on my personal experience and research in the literature review. In most undergraduate programs, art educators receive an overview of diagnoses they may encounter during their career but not a way to plan for those students. For example, in a survey of 79 art educators, Cramer et al. (2015) discovered that “only 19 of 77 (24.6%) teachers reported being highly knowledgeable and prepared to work with this population of students” (p. 17). There are a variety of project based ideas that exist in planbooks and articles. However, those tend to focus on the diagnosis of a student and not the actual student. The issue with that is as student with severe and multiple disabilities often does not fit into one category and the teacher is left guessing whether the students can engage with the

lesson. These instances, in my experience, lead to the paraprofessionals or the teachers creating the artwork for the student without the student's involvement.

From my personal experience, I was not prepared to plan and create art experiences for students with severe and multiple disabilities. These students could not hold traditional materials and could not verbally express their choices, as well as a range of other differences from general education students. I proposed that the design thinking process could be used as a tool or framework for planning for this population of students and that visible thinking could be useful for art educators throughout the process.

Through my research, I applied design thinking to curriculum design for students with multiple and severe disabilities. I worked through the design thinking process as laid out by Vande Zande (2017): define design problem, investigate, develop ideas, create prototype, present, evaluate and revise (p. 44). I worked through each step and narrated my thinking. As I investigated each step and how it could be applied to curriculum design that led me to develop questions for each step and create a list of potential resources to support the art educator as they plan for their students. I took these questions and put them into a framework, which I shared at the end of each step and the completed version is listed in Appendix A.

I believe that having a clear process and even a tool would be helpful for other art educators. Art educators continuously plan for their students throughout the school year and often for multiple years in a row. The research, knowledge of a student and colleagues' insights is necessary when working with students with severe and multiple disabilities. If an art educator continues to plan without this knowledge, then they will most likely find that students are being left behind, left out and not engaged in art making experiences. Design thinking offers a plan to make the teacher's thinking more visible and encourages the idea that no final "product" is

complete and can continually be improved through testing and reflection (Gallagher & Thordarson, 2018; Lee, 2018; Luka, 2014). In my experience, too often artwork is created for these students without their engagement. My ultimate goal when working with this population is to have them involved in making choices and interacting with materials as much as possible. However, without knowledge of each student, I was left scrabbling for how to do that once they were in the room. Through the process of creating a lesson for this population, art educators gain knowledge about students' mode of communication, their physical abilities, and their interests. This is information that requires interacting with colleagues and parents.

I faced limitations in my research because I was unable to work through the design thinking process with an actual student. Instead, I speculated and reflected on what I would do with fictional students. The nature of design thinking process is to center the user, in my case a student with severe and multiple disabilities. Since I could not investigate this process with an actual student, there is potential for the framework to need adjustment and possible changes to questions and resources to make it viable for other art educators. I based my narrative on my previous experiences with students and colleagues. This narrative was also informed by my literature review. I continued to read other design thinking books and articles as I worked through the process.

I acknowledge that as an elementary art educator my planning time is limited. This is why the strategic order and steps in a framework could be a useful tool for other art educators. The design thinking process keeps students at the center of the student research and lesson planning. It orders the process and does not leave out the student. While the define and investigate steps of design thinking process may take more time than the art educator may have

previously given to preparation, the value of this information has the potential to make a deep and meaningful impact on planning for all students.

There were some steps that were difficult to investigate due to the limitations of not researching with students. In the brainstorming step, I would have been able to participate in idea generation that would be based on previous knowledge gained in earlier steps. However, I had to create those examples without a specific user as the focus. As a consequence, the create step was also effected due to a lack of a user as a focus. The idea of using designing this is rooted in focusing on the user. While I think my narrative based on previous experience works to fill in the gaps of not having a user, it still misses the mark. In the present step, a lesson would be presented to the Adaptive Art class and then documentation would be done to see how engaged students were and if they were making choices. I could only narrate what I would do if I was presenting a lesson to real class, versus testing out a lesson and gaining feedback from the students. Consequently, because there was no real data gained in the present step, it was difficult to speculate how I would revise the lesson in the next step, evaluate and refine. I do think that the last step is crucial to the design thinking process. It opens the opportunity for the process to be cyclical and for art educators to build on previous experiences with students. It also asks the art educator to document their thinking in needed to adjustments or completely redo lesson elements. This documented thinking throughout the process is important for future interactions and planning for this population.

Some of the elements of each step were based on previous experience in researching my students for my Adaptive Art class. I found this research could be useful in my planning for my Adaptive Art class. I believe this curriculum tool based on design thinking process could equip art educators to work with this population of students in a more successful way. I believe this

tool could fill in the gap that has been created by limited exposure and experience through art education training programs. Instead of learning on the job, this could be a guide for new and veteran art educators.

In future research, this tool would need to be tested with actual students with severe and multiple by art educators. I would also be interested in feedback on this framework by adaptive art teachers, who primarily work with this population of students on a day-to-day basis. This would allow for the real amount of time spent on the earlier steps to be documents and refine. Further testing would document whether the framework is a feasible ask of art educators. I would be interested in sharing this design tool with other art educators and gaining feedback for refining it.

I, too, used the design thinking process to create this tool. I worked my way through the process with this research and have now gotten to the last two steps. Without sharing this tool with other art educators, I will be unable to evaluate and refine the tool for use. At the center of this research was the art educator who teaches students with severe and multiple disabilities. Therefore, the framework needs testing within the art education community and can be further adjusted for optimal use. Despite the framework needing to be tested by other art educators, I do believe that this tool would be useful for creating successful art making experiences for students with severe and multiple disabilities.

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APPENDICES

Appendix A: Art Educator's Curriculum Planning Tool for Students with Severe and Multiple Disabilities

Design Thinking Process	Questions to Answer	Resources
Define <i>Emphathize</i> <i>Understand</i>	1. Who am I teaching? 2. When is the teaching happening? <ul style="list-style-type: none"> Inclusion or Adaptive Art class? 3. Where is the teaching taking place? <ul style="list-style-type: none"> In the art room, in the Special Ed room, in an auxiliary room? 	- Individualized Education Plan - List of Additional Services and who administers them
Investigate <i>Research</i> <i>Analysis</i>	1. Communication <ul style="list-style-type: none"> Are any communication devices being used? Can the devices be modified for the art room? 2. Physical Modifications <ul style="list-style-type: none"> What physical goals is this student working toward? What is their grip like? What suggestions do you have for working with this student in the art room? 3. Academic Goals	-OT -PT -SPED teacher
Develop ideas <i>Imagine</i> <i>Ideate</i> <i>Navigate Ideas</i> <i>Synthesis</i>	1. Where to start? <ul style="list-style-type: none"> The student's IEP goals? The standards? The students abilities? 2. Brainstorming individually or collaboratively? <ul style="list-style-type: none"> What colleagues can support idea generation? 	-State Standards -Students IEP -Fellow Art Educators -Social Media groups
Create <i>Prototype</i> <i>Development</i>	1. Build a new lesson or modify an existing lesson? 2. What modifications are needed for success? 3. What preparations need to be made before class?	-Access other art educators through social media -Art Education websites

<p>Present <i>Test</i> <i>Implementation</i></p>	<p>1. Who is engaging with the presented content? Are they responding to still images or videos?</p> <p>2. Which students are successfully using the modified materials?</p> <p>3. Are students engaging by making choice and actively participating in their artmaking?</p>	<p>-Refer to previous steps and information gathered from colleagues</p>
<p>Evaluate and Refine</p>	<p>1. What worked? What did not work?</p> <p>2. What changes can I make for more student success?</p> <p>3. Who do I need collaborate with to fill in the gaps?</p>	

Appendix B: Georgia Department of Education Individualized Education Program Form

Student Name: _____ Meeting Date: _____

_____ SCHOOL SYSTEM INDIVIDUALIZED EDUCATION PROGRAM (IEP)

IEP Meeting Date:		Purpose of IEP Meeting : Initial <input type="checkbox"/> Annual Review <input type="checkbox"/> Amendment <input type="checkbox"/>	
Student Name:		Date of Birth:	GTID#
Eligibility Category(s):		Most Recent Eligibility Date(s):	
School:	Grade:	School Year:	
Parent(s):			
Address:		Email:	
Phone (home):	(work):	(cell phone):	

TEAM MEMBERS IN ATTENDANCE

REQUIRED MEMBERS	ADDITIONAL MEMBERS
Parent:	Name/Title:
Parent:	Name/Title:
Local Education Agency Representative (LEA):	Name/Title:
Special Education Teacher:	Name/Title:
Regular Education Teacher:	Name/Title:
Student (age 18 or if transition is being discussed):	Name/Title:
Agency representative (responsible for transition services):	Name/Title:

I. PRESENT LEVELS OF ACADEMIC ACHIEVEMENT AND FUNCTIONAL PERFORMANCE

Results of initial or most recent evaluation and results of state and district assessments:
Description of academic, developmental and/or functional strengths:
Description of academic, developmental and/or functional needs:
Parental concerns regarding their child's education:
Impact of the disability on involvement and progress in the general education curriculum (for preschool, how the disability affects participation in appropriate activities):

Student Name: _____ Meeting Date: _____

II. CONSIDERATION OF SPECIAL FACTORS

- a) **Does the student have behavior which impedes his/her learning or the learning of others?** ☐ Yes ☐ No
If yes, consider the appropriateness of developing a Behavior Intervention Plan.
 Behavior Intervention Plan developed? ☐ Yes ☐ No
 Refer to Behavior Intervention Plan for additional information.
- b) **Does the student have Limited English proficiency?** ☐ Yes ☐ No
 If yes, consider the language needs as related to the IEP and describe below.
- c) **Does the student have blindness/visual impairment?** ☐ Yes ☐ No
 If yes, provide for instruction in Braille and the use of Braille, unless the IEP Team determines that instruction in Braille is not appropriate for the student after an evaluation of the student's reading and writing skills, needs, and appropriate reading and writing media, including evaluation of future needs for instruction in Braille or the use of Braille. Describe below.
- d) **Does the student have communication needs?** ☐ Yes ☐ No
 If yes, consider the communication needs and describe below.
- e) **Is the student deaf or hard of hearing?** ☐ Yes ☐ No
 If yes, consider and describe the student's language and communication needs, opportunities for direct communication with peers and professional personnel in the student's language and communication mode, academic level and full range of needs, including opportunities for direct instruction in the student's language and communication mode. Describe communication needs below.
- f) **Does the student need assistive technology devices or services?** ☐ Yes ☐ No
 If yes, describe the type of assistive technology and how it is used. If no, describe how the student's needs are being met in deficit areas.
- g) **Does the student require alternative format for instructional materials?** ☐ Yes ☐ No
 If yes, specify format(s) of materials required below.
- ☐ Braille ☐ Large type ☐ Auditory ☐ Electronic text

III. TRANSITION SERVICE PLAN

A transition service plan must be completed no later than entry into 9th grade or by age 16, whichever comes first, or younger, if determined appropriate by the IEP team and updated annually. If transition service plan is developed, attach to the IEP.

Student Name: _____ Meeting Date: _____

IV. MEASURABLE ANNUAL GOALS

Measurable Annual Goals: Academic and/or functional goals designed to meet the child's needs that result from the disability to enable the child to be involved in and make progress in the general education curriculum or to meet each of the child's other educational needs that result from the disability.	Criteria for Mastery	Method of Evaluation	Progress At Reporting Period			
			1 (date)	2 (date)	3 (date)	4 (date)
1.						
2.						
3.						
4.						

REPORT OF STUDENT PROGRESS

When will the parents be informed of the child's progress toward meeting the annual goals?

Student Name: _____ Meeting Date: _____

V. MEASURABLE ANNUAL GOALS & SHORT TERM OBJECTIVES/BENCHMARKS

Academic and/or functional goals designed to meet the child's needs that result from the disability to enable the child to be involved in and make progress in the general education curriculum or to meet each of the child's other educational needs that result from the disability.

MEASURABLE ANNUAL GOAL: _____

Short term objectives/benchmarks: Measurable, intermediate steps or targeted sub-skills to enable student to reach annual goals.	Criteria for Mastery	Method of Evaluation	Progress At Reporting Period			
			1 (date)	2 (date)	3 (date)	4 (date)

REPORT OF STUDENT PROGRESS

When will the parents be informed of the child's progress toward meeting the annual goals?

Student Name: _____ Meeting Date: _____

VI. STUDENT SUPPORTS

To advance appropriately toward attaining annual goals; to be involved and progress in the general curriculum; to be educated and participate with other children in academic, nonacademic and extracurricular activities, the following accommodations, supplemental aids and services and/or supports for school personnel will be provided:

Instructional Accommodations
Classroom Testing Accommodations
Supplemental Aids and Services
Supports for School Personnel

VII. ASSESSMENT DETERMINATION FOR DISTRICT AND STATEWIDE ASSESSMENTS FOR GRADES K-12

- a) The student will participate in the following regular required assessments (Each state mandated test and subtest must be considered individually and documented below).

Specific Testing Accommodations (Accommodations used for assessment must be consistent with accommodations used for classroom instruction/testing and specified in the IEP. Some accommodations used for instruction may not be allowed for statewide assessment. Refer to the GaDOE Student Assessment Handbook for the only allowable accommodations. Conditional accommodations are only allowable for students who meet eligibility criteria.) All subtests must be considered individually. If the CRCT-M is considered, the Participation Guidelines for the CRCT-M must be completed and attached.

Test	Subtest	Setting	Timing/Scheduling	Presentation	Response	None, Standard or Conditional

- b) The student will participate in the Georgia Alternate Assessment (GAA)

☐ Yes

☐ No

If yes, provide a statement of why the child cannot participate in regular required assessment.

Student Name: _____ Meeting Date: _____

VIII. SPECIAL EDUCATION: Instruction/Related Services in General Education Classroom/Early Childhood Setting

Options Considered ✓		Frequency	Initiation of Services (mm/dd/yy)	Anticipated Duration (mm/dd/yy)	Provider Title	Content/Specialty Area(s)
	Consultative					
	Collaborative					
	Co-teaching					
	Supportive Services					
	Related Services					

IX. SPECIAL EDUCATION: Instruction/Related Services Outside of the General Education Classroom

Options Considered ✓		Frequency	Initiation of Services (mm/dd/yy)	Anticipated Duration (mm/dd/yy)	Provider Title	Content/Specialty Area(s)
	Separate Class					
	Separate School					
	Home Instruction					
	Residential					
	Hospital/Homebound					
	Supportive Services					
	Related Services					

X. The explanation of the extent, if any, to which the child will not participate with peers without disabilities in the regular class and/or in nonacademic and extracurricular activities:

Student Name: _____ Meeting Date: _____

XI. EXTENDED SCHOOL YEAR

- a) Are extended school year services necessary? ☐ Yes ☐ No
If yes, complete the section below.

- b) Goals to be extended or modified:

Services	Frequency	Initiation of Services (mm/dd/yy)	Anticipated Duration (mm/dd/yy)	Provider Title	Location

XII. DOCUMENTATION OF NOTICE OF IEP MEETING

	Date	Method of Notification	By Whom
1 st Notification		<input type="checkbox"/> Invitation <input type="checkbox"/> Phone Call <input type="checkbox"/> In Person <input type="checkbox"/> Reminder notice <input type="checkbox"/> Other: _____	
2nd Notification		<input type="checkbox"/> Invitation <input type="checkbox"/> Phone Call <input type="checkbox"/> In Person <input type="checkbox"/> Reminder notice <input type="checkbox"/> Other: _____	
3rd Notification		<input type="checkbox"/> Invitation <input type="checkbox"/> Phone Call <input type="checkbox"/> In Person <input type="checkbox"/> Reminder notice <input type="checkbox"/> Other: _____	

XIII. PARENT PARTICIPATION IN THE IEP PROCESS

The following documents were provided to parent(s):

- ☐ Parental Rights in Special Education
☐ Individualized Education Program (IEP)
☐ Eligibility Report(s)
☐ Evaluation
☐ Other: _____

If parent did not attend the meeting, complete below:

On _____ the documents were: ☐ Mailed ☐ Given In Person ☐ Sent via Student ☐ Other _____