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Sensory Rooms: Increasing Preschool Students' Focus and Engagement in the Classroom

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Capstone Project: A School Improvement Plan

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Abstract

This paper analyzes the need for schools to implement a multi-sensory room to help students regulate their sensory needs. Students today require a multitude of experiences and different levels of support in order to effectively learn. Teachers are faced with the challenge of providing this support to students so they can engage in and retain what is learned each day. To overcome this challenge, we looked at the history of multi-sensory rooms, the benefits they have for all students in the classroom, and how one can be properly implemented in a preschool classroom. We put forth an action plan that lays out the steps needed to effectively implement a multi-sensory room at one specific school for young learners. Our research showed the positive effects sensory rooms have for students in the classroom by increasing student focus, attention, behavior, and overall academic achievement. This plan shows the need for a multi-sensory room in schools because of the many benefits sensory rooms have and will continue to provide to all students.

Keywords: multi-sensory room, sensory processing, autism, students with disabilities, student engagement, focus, attention, improved behavior, academic achievement

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Sensory Rooms: Increasing Preschool Students' Focus and Engagement in the Classroom

Preschoolers today are experiencing high expectations when it comes to attending and engaging in the classroom. Their learning day consists of several structured activities where they are expected to sit and engage for several minutes. For most, structured learning activities cannot exceed 10-15 minutes before they start to lose focus or engagement, but for some the time is even less. The problem is students struggling with sensory processing have a difficult time sitting for long periods of time and an even harder time engaging in or retaining what was taught. "Sensory processing refers to the ability to take in information through the senses (e.g., touch, movement, smell, taste, vision, and hearing), organize and interpret that information, and respond meaningfully" (Murray et al., 2009, p. 246). "People with atypical sensory processing may display exceedingly high or low thresholds to sensory stimulation. Such individuals require either more sensory input than others or significantly less than others; therefore, the ability to attend and focus is affected, and they are either under responsive or over responsive to sensory input or environmental stimuli." (Dunn, 1999, as cited in Murray et al., 2009, p. 246).

To overcome this obstacle some educators use sensory breaks to help students recharge and regain focus for the activity. Some sensory breaks include Playdoh, sand, slime, or a more active break like going on a walk. In the same way, sensory rooms provide a way for learners to regroup and refocus their attention. Sensory rooms, also referred to as multi-sensory environments, are "rooms or spaces containing equipment that is designed to provide sensory stimulation to the users…including items such as projectors and effect wheels, bubble tubes, music equipment, fibre optics, vibrating devices, aroma diffusers, and sound equipment" (Fowler, Lancioni, Cuvo & O'Reilly, 2002, as cited in Stephenson & Carter, 2011, p. 276). The implementation of sensory rooms has been seen more in schools solely teaching students with

special needs, however the benefits are beneficial to all students. “Providing students with opportunities for sensory experiences enhances the ability of the central nervous system to process and integrate sensory information” (Botts, 2006, as cited in Thompson, 2011, p. 202) Not having the opportunity to utilize a sensory room in preschool may hinder learning and their ability to attend and engage during learning activities. However, by creating and utilizing a sensory room for preschoolers to use when needed, they are given opportunity to overcome the challenges of sensory processing and are able to better regulate their learning.

The purpose of this school improvement plan is to share the history of sensory rooms and their benefits to students’ learning by examining research and looking at the steps to successfully implement such a space. Through a better understanding of what sensory rooms are, how they came to be, and how they can improve student learning, educators will be more apt to want to incorporate them in their school and learning environments. By creating an area specifically for students to use their senses to explore and learn, they will likely be able to focus and engage better in the classroom. In fact, one study found “students were 56% more engaged in classroom activities post-sensory room intervention” (Spyhalski, 2019, p. 2). Even more, “early intervention within the classroom setting has been found to play a crucial role in improving the sensory processing of students and their academic performance” (Lin, Min, Chou & Lin, 2012, as cited in Spyhalski, 2019, p. 12).

The articles reviewed for this improvement plan were found online through Dewitt Library at Northwestern College in Orange City, Iowa as well as Google Scholar. Each article is peer-reviewed and contains research related to sensory rooms, education, and students with disabilities. Several of the articles focused on how the use of sensory rooms effect individuals with autism or those with sensory processing difficulties. The articles explored the history,

definitions, rationale, effects, and implementation of multi- sensory environments in different schools. Most of the research focused on research outside of the United States such as Australia, China, and the United Kingdom, while only a few discussed research in the states. Research was also filtered within the last ten years, with a few exceptions as not much research has been done specifically on this topic as a whole. In addition, the participants of the studies tended to be older or data collected from teachers, and not much focus was on preschoolers specifically in relation to sensory rooms and attending and engaging in the classroom.

Based on a multitude of research articles, it was found that when individuals were given the opportunity to participate in a multi-sensory room, they were better able to focus and engage when they returned to the classroom. This was especially true for individuals with autism. "Learners with autism spectrum disorder (ASD) often present a myriad of communication and behavioral challenges that need to be skillfully addressed for learning to take place" (Murray, et al., 2009, p. 245). "Providing a space to help a child regulate their senses while also working on teaching the child ways to recognize and communicate that they are having difficulties regulating their senses can increase the child's participation in the classroom as well as aid in their social play in the school setting" (Murphy, Pagan-Neves, Wertzner, & Schochat, 2014, as cited in Schramm, 2021). These findings are valuable because it shows the benefits implementing sensory rooms can have on students and their ability to focus in the classroom. Sensory rooms provide the extra support some students need to recharge and refocus their attention on the learning activity so they are better able to participate and retain information being learned.

To review the literature we will first look at the history of multi-sensory rooms and their use in the classroom. From there we will look at the research to see what has been found in terms of the effects and benefits of utilizing multi-sensory rooms and how they can improve student

learning. Finally we will look at how to implement a sensory room for an early childhood classroom. Overall, this improvement plan will dig deeper into what multi-sensory rooms are, what research has found to be the benefits, and the best ways to implement a sensory room for today's youngest learners.

Review of the Literature

Taking a closer look at the literature relating to multi-sensory environments, this literature review will help us learn what sensory rooms are, who can benefit from them, how they are beneficial in the classroom, and how they can be implemented successfully. We will begin by reviewing the history of multi-sensory environments and learning what these environments are. Then we will learn who benefits most from sensory rooms and how they specifically benefit children with disabilities. Next we will look at the benefits sensory rooms provide, especially to students in the classroom. Finally we will discuss ideas on how to successfully implement a sensory room for preschool students.

Sensory Rooms: What Are They and How Did They Come to Be?

The concept of a multi-sensory room originated in the Netherlands in 1970s (Baker, 2019). Additional research from Hulsegge and Verheul led to the use of the term 'Snoezelen' and the creation of a series of sensory rooms. The term "Snoezelen has given us the means to provide a wide range of sensory experiences that increase the quality of life of the individual" (Kewin, 1994, as cited in Stadele & Malaney, n.d., p. 213). From these variety of sensory experiences, the term multi-sensory environment has become the term widely used today. "Multi-sensory environments are designated spaces where stimulation can be controlled, manipulated, intensified, or reduced…by utilizing a range of objects and materials" (Hope, 1997, as cited in Stadele & Malaney, n.d., p. 213). Often times these are spaces that help individuals calm down

and regulate their senses so they are able to tackle daily experiences. In fact, research conducted by Pagliano in 1999 found that multi-sensory environments have the following attributes:

1. Opportunity for affective/emotional development
2. Stimulation for all senses
3. Relaxation
4. Facilitation of therapy
5. Enhancement of communication
6. Minimization of challenging behavior
7. Development of self-determination
8. Opportunity for social interaction (Pagliano, 1999, as cited in Stadele & Malaney, n.d., p. 213).

Pagliano goes on to define multi-sensory environments as a "'living environment' where a physical environment is determined by the needs of the user and shaped by the intelligence and sensitivity of the disciplinary team that manages it" (Pagliano, 1999, as cited in Hussein, 2010, p.25). In other words, multi-sensory environments are physical spaces with a variety of sensory experiences for the user to explore.

Because sensory rooms are "determined by the needs of the user" as Pagliano suggested, every sensory room or multi-sensory environment will look different. Some common objects that might be found in a multi-sensory environment include bubble towers, therapy balls, weighted blankets, play tents, tunnels, and swings. In addition, environmental factors such as calming colors, dim lighting, and mats covering the walls to aid in sound absorption are commonly seen. The objects within a sensory room should be tailored to the individual(s) that are utilizing the space as to provide them the most effective space to manage their sensory needs.

Not only do multi-sensory environments provide opportunities for sensory exploration, but they also provide coping skills for these experiences (Kharod, 2020, slide 3). Individuals learn how to manage and regulate their behavior and how they react to different stimuli through a variety of sensory experiences. They learn what factors cause them to react the way they do and what experiences they need to overcome the struggle. These sensory experiences do not stay in the physical space, but individuals bring these experiences with them. The coping mechanisms used are brought back to the classroom to help them be able to engage and focus on the learning activity. In fact, in a study looking at the use of sensory rooms and students' readiness to learn, "the sensory room interventions appeared to positively impact a student's classroom performance by increasing their readiness to engage in educational activities by 56%" (Spyhalski, 2019, p. 1).

Overall, there are many components to what a multi-sensory environment is and what they provide. From the compilation of research, we can summarize multi-sensory environments as being spaces that provide a variety of sensory experiences unique to its users. Through a multitude of sensory activities, individuals are given opportunity to explore and learn how to manage their sensory needs. From there, they are able to continue on with their daily activities and engage in learning experiences.

Effects of Sensory Rooms on Students with Disabilities:

Although the concept of a multi-sensory environment came to be in the 1970s, it was not until the late 1980s that the idea was tailored towards individuals with special needs (Hussein, 2010). Schools today are seeing more and more children enrolled that have special needs. In fact, "in the United States, 1 in 5 students have learning and attention issues…including those with identified learning disabilities, ADHD, or related disorders that impact learning" (Galiatsos et al.,

2019, p. 6). This past school year 5 out of 20 preschool students in my classroom were identified as having learning disabilities and given individual education plans (IEPs) to support their learning. From these students alone, every one had difficulties with attending and engaging.

One explanation of students' inability to focus or engage in a learning activity might be due to sensory processing. "Sensory processing refers to the ability to take in information through the senses (e.g., touch, movement, smell, taste, vision, hearing), organize and interpret that information, and respond meaningfully" (Murray et al., 2010, p. 246). Students struggling with sensory processing often times have a more difficult time listening and taking in what is being said. They might over respond or under respond depending on the stimulus. "Students with difficulties in processing sensory information are at an increased risk for learning disabilities and exhibit lower participation in school-related activities as well as decreases in academic achievements" (Koenig & Rudney, 2010, as cited in Spyhalski, 2019, p. 13).

In addition to sensory processing disorders, autism is also prevalent in schools today. "According to the Center for Disease Control's Autism and Developmental Disabilities Monitoring Network, 1 in every 150 children has some form of autism" (Murray, et al., 2009, p. 245). Like sensory processing disorders, individuals diagnosed with autism have difficulty responding appropriately to different stimuli and may have difficulties engaging in learning tasks or being able to focus for extended periods of time without support. They typically have difficulties with social interactions, communication, behaviors, and sensory stimulation. For instance, a study conducted in Taiwan with 40 children with autism (ASD) and 40 typically developing (TD) children found that "compared with TD children, children with ASD had significantly lower scores on participation diversity in activities across areas of play, physical recreation, and social activities" (Lin, 2020).

Sensory rooms have been shown to benefit individuals with disabilities including those who struggle with sensory processing as well as those with autism. For example, a study conducted with 36 individuals living in a residential center for people with disabilities found that "multisensory stimulation in a Snoezelen room in participants with moderate learning disabilities improved short-term memory" (Toro, 2019, p. 276). In the same way, a study conducted in Houston's Independent School District researched teacher's perceptions of the use of sensory rooms for students with disabilities in the district. The study found that increased focus was the most often reported benefit for students using the sensory room. Along with increased focus, 57.5% of teachers shared that students with disabilities followed directions better after participating in sensory room activities, 38.8% observed students were more on task, 55% saw a decrease in negative behaviors, and 27.5% observed students were more motivated after using the sensory room (Graham, 2019, p. 12). Additionally, Collier and Truman (2008) explored the use of multi-sensory rooms for persons with neurological disabilities and found that "multi-sensory environments when used as a companion for routine daily activities enhanced the sensory awareness of individuals with neurological disabilities and assisted with many of the problems (aggression, agitation, wandering, poor-coordination) to enhance individual engagement and participation to reduce environmental barriers" (Thompson, 2011, p. 203).

Looking specifically at autism, studies found evidence that sensory activities that used equipment to provide different balance and movement activities improved academic performance of elementary students with autism (Davies et al., 2018, p. 47). Likewise, a study conducted in Wales with 41 autistic children ages 4-12 found that "multi-sensory environments brought numerous benefits for autistic children, such as improvements in focus and attention, social

interaction and communication, mood, as well as a reduction in repetitive motor behaviors (RMBs) and anxiety" (Unwin, et al., 2021a, p. 4).

Overall these studies show that utilizing multi-sensory environments for individuals with disabilities has multiple benefits. From improving short-term memory, increasing focus and attention, improving social interactions and communication, and increasing engagement and motivation to learn, these are just some of the benefits multi-sensory environments have given. Providing a space for students with disabilities to partake in a variety of movement and tactile experiences has proven to benefit not only the individual but also their functioning in the classroom. Making use of these specialized environments are one way to help children with disabilities be successful in the classroom.

How Sensory Rooms Are Beneficial to the Classroom:

Multi-sensory environments are not only beneficial to students with disabilities. They are beneficial to all students in the classroom. The benefits that studies have found for utilizing multi-sensory environments with students with disabilities can also be seen in typically developing students. "Providing students with opportunities for sensory experiences enhances the ability of the central nervous system to process and integrate sensory information" (Thompson, 2011, p. 1), and thus enables students with and without disabilities to effectively participate and learn in the classroom. For example, a study conducted at a public prek-12 school found that a "significant increase in sustained focus was found when students returned to regular classroom activities after experiencing the multi-sensory center" (Thompson, 2011, p. 8). In the same way, a study looking at the effect of multi-sensory environments and behavior, found that "multi-sensory environments can positively influence student off-task behaviors, decreasing the number of interruptions in the classroom" (Schlichting, 2010, p. 3). A study with similar results

conducted at the Central Kitsap School District found "off-task behavior decreased significantly following both static and moving tactile stimulation" (Davies et al., 2018, p. 45). Similarly, a study conducted with children ages 3-5 found that "students who had a scheduled time in the sensory room had increased positive behavior in the classroom" (Schramm, 2021). Another study discovered that "multi-sensory environments help change behavior, increase focus and attending, and add to the feelings of positive self-esteem and well-being" (Schlichting, 2010, p. 9). Lastly, a study from the United Kingdom where 102 practitioners collaborated about the effects of multi-sensory environments on autistic children found that multi-sensory environments "foster learning, which could be enhanced through a range of factors including: increasing levels of motivation, providing control, establishing a more comfortable sensory environment, and improved relationship building (Unwin, et al., 2021a, p. 10).

Through these studies we can see that multi-sensory environments not only benefit students with special needs, but they are also beneficial to every student in the classroom. When individuals are provided the opportunity to take a step away from the classroom to explore different sensory experiences, they not only feel better as a whole, but their learning is affected as well. When they come back to the classroom they tend to focus better on the learning activity and are better able to follow directions, communicate better with their peers, and are more motivated to learn.

Implementing Sensory Rooms in Preschool:

As we have learned, multi-sensory environments are critical to a child's learning and achievement in school. "Providing a space to help a child regulate their senses while also working on teaching the child ways to recognize and communicate that they are having difficulties regulating their senses can increase the child's participation in the classroom as well

as aid in their social play in the school setting" (Schramm, 2021). In order to help students gain all the benefits multi-sensory environments have to offer, we need to look at proper ways to implement a sensory room within a school. "Sensory room interventions need to be individualized in order to be effective in decreasing target behaviors among autistic children and young adults" (Stadele & Malaney, n.d., p. 217). In other words, every sensory room and experience will look different depending on the need of the child using it. For instance, one study showed that "an individualized sensory diet significantly improved the attention span, learning, and behaviors of children aged 1-18 years with a variety of conditions including ASD, PDD, ADHD, DD, and no diagnosis" (Davies, et al., 2018, p. 44). Sensory diets are specific sensory activities that a child completes throughout the day in order to promote sensory regulation. Including specific routines and activities for each sensory room user is important in order to make the sensory experience most effective for the child.

In terms of *what* should be included in a multi-sensory room, the answer lies in the child's needs. As we have learned, sensory room experiences are unique to each user, so to say each room needs a list of specific items in order to be successful is difficult. We can on the other hand look at research for ideas on successful implementation experiences. Research has indicated that sensory rooms need to "incorporate positive physical stimuli: a livelier color scheme, softer lighting and an upgrade of current furniture to allow for happier room users" (Krajewski & Khoury, 2021, p.10). In addition to these environmental factors, sensory rooms typically include objects that promote sensory stimulation "bubble tubes, sensory projectors, sensory lighting, and sensory fiber optics, projectors, tall columns of color-changing water, bubbles in a corner, and soft music playing" (Hirstwood, 2018, as cited in Graham, 2019, p. 3). Sensory rooms are also known to offer movement experiences to help individuals regulate their

senses and emotions. However, research has shown “The key is not to provide movement for the sake of movement, but exercise to provide learners with the sensory input they need to organize their body, level of arousal, and attention for function” (Murray et al., 2009, p. 247). Therefore sensory room experiences should not just be a time to “play” and get away from the classroom, but rather a stimulating experience to help students sort out their sensory needs.

To summarize, successfully implementing a sensory room requires focus on individual needs. Every child responds to stimulus in their own way, so educators need to be observant and have an open mind to what each child needs in order to help regulate their senses. The room will need to incorporate a variety of sensory objects that provide opportunities for users to explore. Lastly, we will need to implement environmental factors such as lightning, sound barriers, and aesthetic features to create an environment that promotes learning and sensory regulation.

Overall this literature review has showed us what sensory rooms are, the benefits these environments have for students with and without special needs, and how to effectively implement a sensory room within our school. We learned that the purpose of multi-sensory environments is a quiet, safe, and relaxing space where students work on self-regulation, sensory activities, social engagement, skill building, relationship building, and movement experiences (Baker, 2019). These spaces help students manage environmental stimulus through sensory experiences that encourage focus and attention. These skills are then carried back to the classroom where students with and without disabilities are able to effectively engage and participate in learning experiences.

School Profile

Community Characteristics

Fort Dodge is an urban city with a population just under 25,000 located in north central Iowa. The community has seven public school buildings including one high school, one middle school, four elementary schools, and one early childhood center. There are also a handful of private schools located in Fort Dodge serving students K-8 and some K-12. In addition to education, the community offers many opportunities for recreational fun with several parks, trails, and a water park. Fort Dodge is also known for The Fort Museum and The Blandon Art Museum. In addition to the recreation and fine arts attractions, Fort Dodge has a public library, movie theater, and many local shops to explore.

School District Characteristics

"The Fort Dodge Community School District is an innovative school community that exceeds expectations, builds meaningful relationships and creates the foundation for all learners to excel" (Fort Dodge Community School District, 2022). The district encompasses eight buildings serving preschool through high school students. There are 3,789 students and from those, almost 50% are economically disadvantaged. The student body is 70.2% White, 7% Black, 0.7% Asian/Pacific Islander, 13.5% Hispanic/Latino, 0.3% American Indian or Alaska Native, and 0.1% Native Hawaiian or other Pacific Islander. 8.3% are two or more races. Of these students, 53% are males and 47% are females, and 1.8% are English language learners (U.S. News & World Report, 2022).

Fort Dodge community schools focus on four core beliefs: respect, integrity, empathy, and leadership. These core beliefs are taught and reinforced daily in all of the school buildings across the district. Our mission is to "provide quality learning experiences and build relationships that develop productive citizens ready for their futures" (Fort Dodge Community School District, 2022).

School Building Characteristics

The Early Childhood Center in Fort Dodge, Iowa is home to approximately 450 students in preschool, transitional kindergarten (TK), and kindergarten. We are the only public preschool in Fort Dodge that serves students with disabilities and individual education plans (IEPs). We have six preschool teachers, two transitional kindergarten (TK) teachers, and twelve kindergarten teachers with class sizes for preschool ranging from 18-20 students. The Early Childhood Center's goal is to "provide a safe, fun and stimulating environment where all kids can learn and excel" (Fort Dodge Community School District, 2022). We are located in central Fort Dodge within a residential neighborhood and a few commercial buildings surrounding the school.

The Early Childhood Center is also a Leader in Me school, teaching and demonstrating the seven Leader in Me habits:

1. Be Proactive
2. Begin with the End in Mind
3. Put First Things First
4. Think Win-Win
5. Seek First to Understand, Then to Be Understood
6. Synergize
7. Sharpen the Saw

When students are demonstrating any of these habits they receive a leader slip. Each class earns parties for earning so many leader slips and we also have school-wide celebrations every month.

Parents have the opportunity to be involved in our school in many ways. We have parent teacher conferences two times a year, once in the fall and once in the spring. We have family engagement nights and graduations at the end of the year. Most classrooms use an app called

Seesaw to stay connected with parents as well. Teachers use this app to send messages, pictures, and send important information and reminders to parents throughout the year. During the year studies give opportunity for parents to visit the classroom to celebrate our learning or share about their expertise or experience. Overall, parent involvement is strongly encouraged at the Early Childhood Center.

Student Portfolio & Performance

The Fort Dodge Community School District prides in having bright and hard-working students. In fact, 61% of students in elementary scored at or about the proficient level for reading and 54% scored at or above proficient for math (U.S. News & World Report, 2022). Specifically at the Early Childhood Center we are committed to helping our students reach at or above proficiency for all learning objectives by the end of the year through individualized interventions and dedicated teaching staff. Each preschool classroom at the Early Childhood Center typically has 18-20 students ranging in age from three to five. Each class consists of general education students as well as students on IEPs.

The goals for students enrolled in the Fort Dodge Community School District include:

1. All students will perform at or above grade level
2. Achievement gaps among all student groups will be eliminated
3. All students will graduate ready for college, career and life in a globally competitive economy
4. All schools will meet or exceed state accountability standards, and the district will meet federal standards and exceed state standards

5. Every child feels he/she has a safe, meaningful relationship with an adult in the school system who they can go to for guidance and support (Fort Dodge Community School District, 2022).

Curriculum, Instruction, & Assessment

Preschool teachers at the Early Childhood Center use Creative Curriculum and Teaching Strategies GOLD. This is a research based curriculum that focuses on learning for the whole child. We assess students throughout the year using antidotal notes, observations, and other individualized assessments to collect data on student progress towards meeting the learning objects. Creative Curriculum has 38 learning objects that are split into ten categories: 1) social-emotional, 2) language, 3) cognitive, 4) literacy, 5) math, 6) physical, 7) science and technology, 8) social studies, 9) the arts, and 10) English language acquisition. Throughout the year we have three checkpoints where we level students for each objective to see how they are progressing towards the learning objectives in comparison to other three and four-year-olds in the state of Iowa. We also incorporate the Second Step social emotional curriculum within our weekly lessons to help students build on social and emotional skills. Second Step uses puppets, stories, and activities to help students learn and practice these skills.

Professional Development Practices

The Fort Dodge Community School District provides several opportunities for professional development throughout the year. Teachers in all the schools meet once a month in their respected buildings to discuss specific topics the district chooses for the year. This past school year, 2021-2022, we focused a lot on Leader in Me since we recently became a Leader in Me school. Other topics have included breaking down the standards, discrete trial training, and collaborating on individual building goals. We are also given time to learn from professional

learning communities (PLCs) once a week on Wednesdays for 60 minutes where we collaborate with our team about student data and set goals and brainstorm ideas on how we can help our students improve and be successful in our classrooms.

Needs Assessment

Based on our school profile, I believe one area of improvement for the Early Childhood Center is our school climate and culture. We do a great job of setting goals for our school and for our students as well as using data to make instructional goals. We build positive and welcoming classroom environments so students feel safe and ready to learn. The teaching and support staff are dedicated to helping our students learn and achieve in and out of the classroom. Even with these accomplishments, I believe there are always areas that we can work on to make our school better, and in this case I believe implementing a sensory room would help improve our school climate and culture and the overall achievement for our students.

School climate is defined as "the individual experiences and feelings that students, teachers, and staff have about the school" and school culture is defined as "the long-term physical and social environment, as well as the values or beliefs of the school shared across individuals and time" (National School Climate Center, n.d., as cited in Kane et al., 2016, p. 1). From these definitions, "individual experiences" and "long-term physical and social environment" are specific areas where I believe implementing a sensory room would change the culture and climate at our school. From our research, we know that sensory rooms are beneficial to students with and without disabilities in helping provide a space for sensory regulation. These environments help decrease unwanted behaviors in the classroom and provide students who struggle with sensory processing a place to monitor and manage reactions to stimuli. Incorporating a sensory room at the Early Childhood Center would improve individual student

experiences because all students will be better supported in being able to function properly in the classroom. It would also improve the physical and social environment for students because the sensory room would provide needed materials in the physical environment to help students not only work on sensory regulation but work on communication skills as well.

Not implementing a sensory room at the Early Childhood Center would have negative effects on the students. Because The Early Childhood Center is the only preschool in Fort Dodge that serves students with disabilities, there is a high need for an area for students to get away from over stimulus the classroom environment brings at times. Students struggling with sensory processing typically have a harder time staying engaged in a lesson and often react to stimulus in the classroom or from other peers. Not having a space for those struggling with sensory processing would affect learning in the classroom.

However, providing students with a space away from the classroom gives them the needed support to regulate their senses and function properly in the classroom. “A positive school climate should be a priority because learning in a safe, engaged, and responsive environment sets the foundation for positive academic, social, and emotional development” (Blum et al., 2002, as cited in Kane et al., 2016, p. 1). Implementing a sensory room at the Early Childhood Center will create a positive school climate for our school. The sensory room will provide all students the support they need to successfully learn throughout the day.

Data Analysis

Data for the 2021-2022 school year shows information regarding behavior, attendance, and academic achievement at the Early Childhood Center. Table 1 below shows the number of behavior referrals (majors/minors) for the Early Childhood Center for the school year. Minor behaviors are those that are handled by the teacher, whereas major referrals require the assistance

of other staff or administration. These are typically more aggressive behaviors. The table breaks down how many behavior referrals were given for each month and specifically how many major referrals were given each day for each month. The data shows the most major referrals were given towards the beginning of the school year, especially in the month of September. This could be due to learning expectations and getting into the routine of school. The lowest number of referrals were given in the month of January, which is actually surprising as students would have just returned from winter break, but this shows that teachers at the Early Childhood Center were dedicated to re-teaching and modeling expectations after a long break in order to maintain a positive and successful learning environment for their students. The number of referrals is fairly high overall, with 1,291 total major referrals and 494 total minor referrals during the entire school year. These totals show interventions are needed to improve behavior at our school.

Table 1

Early Childhood Center Office Discipline Data 2021-2022

Month	Majors	Majors Per Day	Minors
August	19		6
September	211	10/day	73
October	192	11/day	90
November	171	10/day	77
December	154	10/day	57
January	97	5/day	43
February	111	6/day	42
March	152	8/day	58
April	184	10/day	48

Figure 1 below looks at GOLD data for preschool students at the Early Childhood Center. The graph shows the percentage of students below expectations, meeting expectations, and exceeding expectations for the winter checkpoint for each of the learning domains: social emotional, physical, language, cognitive, literacy, and mathematics. The data shows a high percentage of students meeting expectations in each of the domains. The highest percentage of students below expectations was language with 19.64% of students below expectations and social-emotional close behind with 16.07% of students below expectations.

The following table displays the percentage of students meeting or exceeding expectations in each of the learning domains for the fall, winter, and spring checkpoints. We can see in the fall that math and social-emotional were our lowest domains with only 49% proficiency in math and 64% proficiency in social-emotional. These low percentages show the need for extra support for students in these areas. Because students' proficiency in social-emotional learning is low, I believe it affected students' performance in math. If students had the opportunity to utilize a sensory room to help regulate their senses and use a variety of sensory experiences to build other skills like communication and emotional regulation, I believe it would positively affect their achievement in the classroom and likely increase their proficiency in other academic areas like math. We can also see from our data that teachers at the Early Childhood Center did a phenomenal job of providing support to students to increase their performance in relation to the social-emotional and math domains. The percent proficiency increased from 64% to 83.93% for social emotional and 49.54% to 84.82% for math.

Figure 1

Preschool Winter GOLD Data 2021-2022

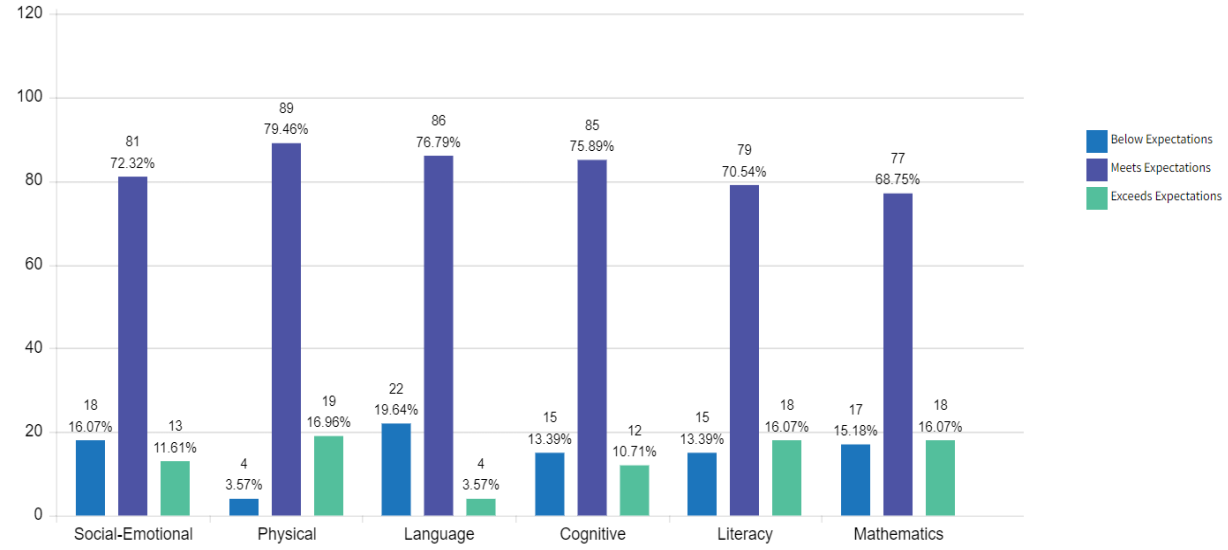


Table 2

Percent of Students Meeting/Exceeding Expectations for GOLD 2022 Checkpoints

Areas	% of Students Meeting/ Exceeding in Fall	% of Students Meeting/ Exceeding in Winter	% of Students Meeting/Exceeding in Spring
Social-Emotional	64%	83.93%	89.72%
Physical	86.24%	96.42%	97.19%
Language	67.89%	80.36%	87.85%
Cognitive	56.88%	86.50%	89.53%
Literacy	67.89%	86.61%	89.72%
Mathematics	49.54%	84.82%	90.66%

Further exploration of data specifically looking at students with disabilities would be beneficial. The data above looks at the behavior referrals and assessment scores for the Early Childhood Center as a whole. Looking specifically at how many behavior referrals were for students with disabilities, and how this specific group of students performed on assessments would better help us see the need for a sensory room. If this data showed more students were receiving behavior referrals that were on IEPs then we would know that these students could have been better supported through the use of a sensory room. In the same way, if the data showed students on IEPs were scoring low in math and literacy assessments, that would show not having the proper support for their sensory processing needs had an effect on their academic achievement in the classroom. Overall, further analysis into specific group data would give better explanation of the necessity of implementing a sensory room at the Early Childhood Center.

In conclusion, from our data we can see the need for additional support for students in the area of language, social-emotional and math at the Early Childhood Center. This can be achieved by implementing a sensory room for our students. The sensory room would not only be for students with disabilities, but any student demonstrating the need for additional support that a sensory room could provide. With the implementation of a sensory room at the Early Childhood Center all students would get the support they need to function in the classroom. They would be provided with a variety of sensory experiences to encourage exploration and regulation of senses and emotions. Through the use of the sensory room, there would likely be less behavior referrals as students would be given the opportunity to efficiently work through over stimulus in order to prevent negative behavior in the classroom. In addition, after using the sensory room, students would likely have a better attitude about learning and come back to the classroom with increased focus and engagement which would aid in the overall academic achievement for students.

Action Plan

As we have learned, the problem at the Early Childhood Center is that there are a high number of students with sensory processing needs and the lack of a space to provide these sensory breaks has led to decreased focus and engagement in the classroom; thus, lower academic achievement for students overall. To solve this problem, one solution is to implement a multi-sensory room for all students at the Early Childhood Center. In order to create a successful space for our students, it is important to make a plan of how this solution is going to be carried out. The following plan goes into detail about how to start a sensory room, what an effective sensory room might look like, and how to keep a sensory room running smoothly.

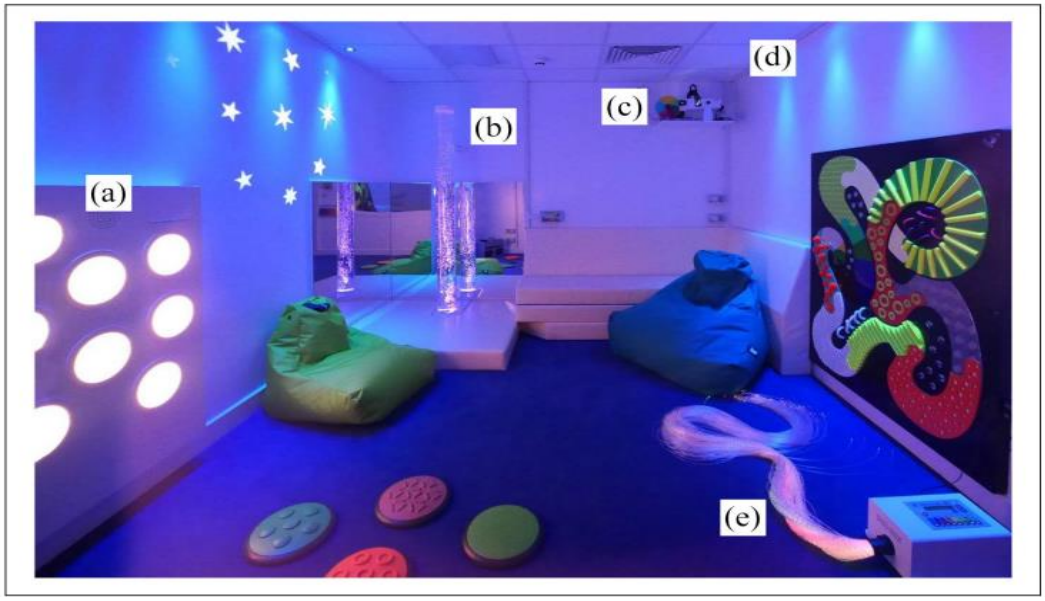
The first step is to identify the need for a sensory room. Our data shows that students at the Early Childhood Center would benefit from a multi-sensory room as we are the only preschool in Fort Dodge that serves students with disabilities and have a high number of students with sensory processing needs. In addition, one of the lowest assessment categories for our school was social-emotional learning. As we have learned about students with sensory processing difficulties, regulating emotions as well as social interactions and communication are more challenging for these students. Because of these challenges, students often struggle in the classroom as we saw with low math scores for our students. This data supports the need for implementing a sensory room at the Early Childhood Center.

The next step after identifying the need for a sensory room is to find a proper location and materials for the sensory room. Every sensory room looks different, but it needs to be in a room big enough for students to explore different sensory experiences. Figure 3 below shows an example of a sensory room implemented for a study examining student control in sensory rooms. Some of the items included: a) touch sound and light board b) bubble tube c) pin spot for

adjacent mirror ball d) colored LED room lights and e) fibre optics. Other features might include calming colors and lighting, bean bag chairs, mats on the walls for sound barriers, balance beams, tunnels, mini trampolines, swings, and weighted blankets.

Figure 3

Sensory Room Example



(Unwin et al., 2021b, p. 4)

The image above is an example of a sensory room used in a study specifically looking at how giving students control over how they used the multi-sensory environment affected their overall achievement. They found that students that were given the opportunity to explore and were in control of their sensory experience had positive outcomes. By giving students control of the sensory equipment in the room, they are able to make sure they can meet their sensory needs. In addition, they are better able to predict their own sensory experiences thus reducing sensory overload. When students are able to predict their environment they are less likely to act out and are more focused and engaged in learning. Research has also found that “the perception of being in control of the sensory environment can be just as important as the sensory changes that are

actually made (Pfeiffer et al., 2017 as cited in Unwin et al., 2021b, p. 11-12). Therefore it will be important when implementing the sensory room at the Early Childhood Center that students are given the freedom to choose how they use the materials in the room. This will provide optimal benefits for the students.

The next step is maintaining and keeping the sensory room running smoothly. One way to do this is to use daily sheets to keep track of who is using the sensory room. These sheets can document the student's name, time of day the room was used, and pre and post behaviors of students using the sensory room. Documenting this information will help collect data on if the sensory room break is effectively improving student behavior after use, if certain times of the day are more prone to use, and if changes are needed for the sensory room to be more effective.

Lastly, the final step in implementation is professional development/training for teachers and support staff. In order to carry out a successful plan, the users need to be knowledgeable about the project. Providing specific training to all staff will give confidence to teachers and support staff to successfully carryout the new plan as well as an understanding on how sensory rooms are beneficial to students and their school experience. They will learn how to use the specific materials that will go in the sensory room so they are able to assist students if needed. They will also practice how to properly document the data on the daily sheets. Professional development can also be utilized after the sensory room has been established in order to check in on progress and address any questions or concerns about the new space.

Implementation of School Improvement Plan

Now that we have created an action plan for implementing a sensory room at the Early Childhood Center, we need to look at how to specifically carry out the plan. We will first look at the timeline for implementation, then we will identify resources we will need, next we will

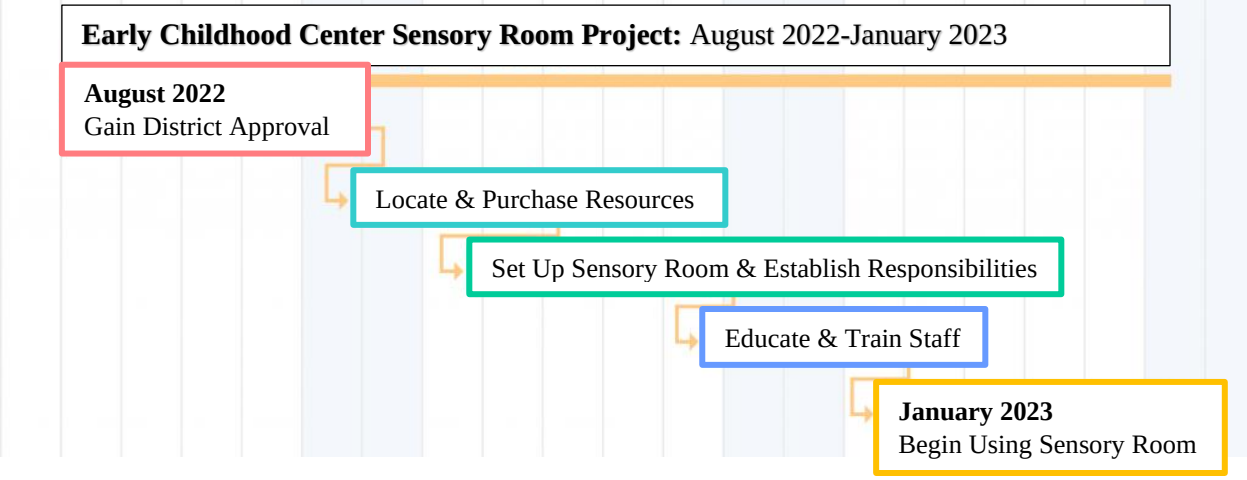
discuss the responsibilities of individuals who are a part of the process of implementation, then we will talk about the potential successes and failures of the interventions, and finally we will discuss possible challenges or barriers that might hinder the success of our improvement plan.

Project Timeline:

New projects take time. It takes time to properly educate and train individuals as well as gather the needed space and materials. Figure 4 below displays a brief outline of how the sensory room project will be carried out at the Early Childhood Center. Ideally, we would want to begin the process of implementing the new sensory room before the school year begins. This would give ample time for teachers and support staff to learn about the improvement plan, how it will benefit our students, and understand their role in carrying out the plan. It would also give administration time to research and collect materials needed to set up the sensory room. It would be our goal that the sensory room would be utilized after students come back from winter break in January 2023. Administration would begin the initial planning before the beginning of the school year as they would need to gain district approval, find the resources, and create the action plan before utilizing the sensory room can occur. Beginning this process at the start of the school year will give opportunity to learn about our students and their needs and locate needed resources and support to carry out the plan. Students will benefit from having the sensory room available for use for the last half of the 2022-2023 school year as it will give them a space that provides support for sensory regulation that will set students up for success. It also gives opportunity for reflection on how improvements can be made for the following year.

Figure 4

Project Timeline:



Resources for the Project:

According to dictionary.com, a resource is "a source of supply, support, or aid, especially one that can be readily drawn upon when needed" (2022). In relation to our sensory room project, resources include teachers and other staff, students, administration, time for staff to learn about the project, money to buy materials for the sensory room, a space to set up the sensory room, and materials to be used in the sensory room. The space will need to be large enough for students to engage in movement experiences such as jumping, balancing, swinging or climbing. There will also need to be room for other stations where students can learn how to regulate their sensory needs such as a bubble machine, fibre optics, or a sensory wall. Heschong (2002) found that natural lighting was better in raising student performance (as cited in Krajewski & Khoury, 2021, p. 99), so incorporating natural light in the sensory room may be beneficial as well. We would also have to consider sound in the sensory room. Incorporating sound dampening modifications such as acoustical tiles or carpet may be useful.

In addition to the space itself, the materials within the sensory room are important in helping students manage their sensory needs. The following are a list of common items found in

sensory rooms that I believe would be beneficial to include in the sensory room at the Early Childhood Center. They include:

- mini trampoline
- balance beam
- swing
- rock wall
- bubble machine
- fibre optic lights
- liquid floor tiles
- bean bag chairs
- calming music
- tactile sensory wall

It is likely that additional materials will need to be purchased after students utilize the room to properly accommodate students' needs. For example if data shows that before students use the sensory room they have a hard time following directions and engaging in a learning activity, it may be necessary to add more movement options in the sensory room such as a mini trampoline, balancing beam, or rock wall. "When physical activity and movement are met students are better able to organize their thoughts, follow directions, and attend to the task requested" (Murray et al., 2009, p. 248). In the same way, if data shows the students that are using the sensory room are typically over-stimulated in the classroom, adding more calming areas in the sensory room would be appropriate such as a swing or calming music as research has found that listening to music with a steady beat is beneficial to over responsive learners (Murray et al., 2009, p. 250).

The definition of resource not only suggests material items, but it also refers to resources as the support and help provided by individuals. This would come from teachers, staff, and administration. Teachers will need to be trained on how to use the materials in the sensory room as well as learn the process of implementation. In the same way, there will need to be individuals on call to assist in the sensory room when teachers are unavailable. This could be principals, para educators, and behavior support staff.

Team Responsibilities:

In addition to resources, there will be specific responsibilities for staff at the Early Childhood Center to keep the sensory room running smoothly. First is the responsibility of the building principal to gain approval from the district to start the implementation of the sensory room. Once approval is granted, then it is also the principal's responsibility to locate an appropriate space and to fill that space with any of the items from the material list above. The sensory room will not be able to function properly without the support of teachers and other staff, so it will be these individuals' responsibility to learn about the sensory room, collect data when the sensory room is being used, and communicate with the building principal with any concerns or suggestions on how to make the sensory room more beneficial for students.

Progress Monitoring:

In order to monitor success and failures from the implementation of the sensory room, communication and documentation will be very important. Everyone who might utilize the sensory room will be trained how to properly use the materials in the room and how to accurately fill out the daily sheet. This sheet will help collect data on when students are using the sensory room and what behaviors or seen before and after the use of the sensory room. In addition to data collected from this document, staff will be observant of how students are using the materials in

the room as well as the behaviors that are displayed. We will know the sensory room intervention is successful if students' focus, engagement, and behavior is improved when returning to the classroom. In the same way, we can analysis behavior referrals and the number of times the sensory room was utilized each month to see if there is a correlation between using the sensory room and the number of behavior referrals received. If behavior referrals are low and the sensory room was used frequently we will know it had a positive effect on student behavior. We can also look at students' assessment scores throughout the year to see if using the sensory room had an effect on academic achievement.

Not every plan is 100% successful, so it will be important to acknowledge what is not working and communicate with the building principal any concerns teachers and support staff have concerning the sensory room. This will allow for the building principal to brainstorm with teachers and staff within the school to think of alternatives or modifications that can be done to the sensory room to make implementation more successful. For example, if certain materials are not working well, the materials can be switched out for more effective resources. We can use what we know about the students utilizing the sensory room to make modifications on what resources are in the room to provide the best possible support system for students.

Limitations:

With every plan comes challenges. When implementing a sensory room at the Early Childhood Center potential limitations might include: funding, space, staffing, professional development, and maintenance. Funding is a challenge for many schools and it is not an exception at our school. It will be a challenge finding the needed funding to properly fill the sensory room with the materials and sensory experiences students need. It will take some brainstorming and collaboration with the district to determine where we can find extra funding to

aid in the implementation of a sensory room at the Early Childhood Center, but I believe the benefits far outweigh the challenge of finding the money to carry out the project.

Another challenge might be finding an adequate space for implementation. The Early Childhood Center is a newly renovated building and we are already tight on space without a sensory room. Every room is being used, so we will need to think of ways we can combine rooms or relocate rooms to different spaces in order to accommodate for the implementation of the sensory room. In addition to space, staffing will also be a challenge. We are already struggling with having enough staff to fill our current positions at our school, so it will likely be difficult finding extra staff to assist in the monitoring and use of the sensory room with students. We will have to figure out a process that works, whether that is a para going with the student to the sensory room, or always having someone on the behavior support team readily available to assist in the sensory room.

Having the necessary time for professional development and training in regards to the implementation of the sensory room might be another challenge. Typically the district already has professional development planned for the school year before it begins, so it may be difficult to find time to add training on how to properly use the sensory room. Teachers and staff may feel like they will have to learn on the fly rather than get the proper training before implementation. This can be avoided by being intentional about creating building specific professional development in addition to what the district has already planned. This allows our school to focus on learning that is specific to our school and goals. Lastly, maintenance and upkeep of the sensory room may be a challenge. Unfortunately materials wear over time and, especially with young learners, repair is often needed. This may be difficult if there is a lack of funding to begin with as it will be hard to replace materials in the sensory room with little funding. In addition,

keeping the space clean will add more work for janitorial staff in an already stressful time of extra sanitizing and cleaning.

Overall, the implementation of a sensory room at the Early Childhood Center will be a process. It will take time, planning, modifications, and reflection in order to help the implementation be successful. It will take dedication and work from all individuals at the Early Childhood Center to keep it running effectively for our students. Although challenges will arise, tackling them as a team and with the same mindset will help our project be successful and allow our students to receive the support they need to effectively learn each day.

Conclusion

In conclusion, we learned that multi-sensory rooms play an important role in education. Not only are they used for students with sensory processing difficulties, but they are beneficial to all students in the classroom in increasing student engagement, focus, behavior, and overall academic achievement. Sensory rooms began as a space for relaxation and have moved towards an essential tool in many schools today in helping students regulate sensory needs. From providing movement experiences, hands-on exploration, and opportunities to calm after feeling overstimulated, sensory rooms give students the support they need to de-escalate and regulate their emotions.

Even with the many benefits sensory rooms provide, not all schools are utilizing sensory rooms for their students. The Early Childhood Center is a new building housing all public preschool, transitional kindergarten, and kindergarten students in Fort Dodge, Iowa. Data has shown students scoring low in social-emotional learning, communication, as well as a high number of major behavior referrals given per month. The problem is the Early Childhood Center does not currently have a sensory room and many students struggle with sensory processing and

thus have a hard time engaging in learning experiences and remembering what they have learned.

Research has shown the many benefits of implementing sensory rooms within school settings such as increased focus, students more on task and better able to follow directions, and a decrease in negative behaviors (Graham, 2019). Not to mention, "Sensory room interventions positively impact a student's classroom performance by increasing their readiness to engage in educational activities by 56%" (Spyhalski, 2019, p. 1). In a study surveying teachers' perceptions on sensory room use, many found sensory rooms to have positive effects on student performance in the classroom. In fact, "the most frequently reported benefit was increased focus" (Graham, 2019, p. 12). In the same way, 55% of teachers said students displayed less problem behaviors in the classroom after having the opportunity to use a sensory room. In addition, after spending time in a sensory room, 27.5% of teachers observed that students were more motivated to learn thus affecting their overall academic achievement (Graham, 2019, p. 12).

These findings are beneficial to teachers and staff at the Early Childhood Center as it shows just how important sensory rooms are in the success and learning of students. Without the implementation of a sensory room, students miss out on the opportunity to understand their senses and how to properly respond. However, with the implementation of a sensory room at the Early Childhood Center, all students will be provided with the support they need in understanding and responding to their sensory needs, improve their focus and engagement in the classroom, and increase their overall academic achievement. Adding a sensory room will not only have a lasting impact on our students and their learning experiences, but it will also positively change the atmosphere of our school.

References

Baker, M. (2019). *Multi-sensory environments: A qualitative exploration.* [Master's thesis, University of Manitoba]. https://mspace.lib.umanitoba.ca/bitstream/handle/1993/34188/Multi-Sensory%20Environments%20A%20Qualitative%20Exploration.pdf?sequence=1

Davies, A., Jones, L., LaRossa, K. & Shure, J. (2018). Sensory-based interventions in schools. [Master's thesis, University of Puget Sound]. School of Occupational Master's Capstone Projects. https://soundideas.pugetsound.edu/cgi/viewcontent.cgi?article=1039&context=ot_capstone

Dictionary.com (2022). *Resource.* Retrieved July 25, 2022, from https://www.dictionary.com/browse/resource

Fort Dodge Community School District (2022). *District mission, vision, goals, beliefs & values* Retrieved July 10, 2022, from https://www.fdschools.org/district/district-mission-vision-goals-beliefs-and-values/

Fort Dodge Community School District (2022). *Early childhood center* Retrieved July 10, 2022, from https://www.fdschools.org/schools/early-childhood-center/

Galiatsos, S., Kruse, L. & Whittaker, M. (2019). Forward together: Helping educators unlock the power of students who learn differently. *National Center for Learning Disabilities and Understood.* https://www.ncld.org/wp-content/uploads/2019/05/Forward-Together_NCLD-report.pdf

Graham, Georgia A. (2019). *Supporting students with disabilities: An evaluation of teacher professional development and implementation in HISD schools.* HISD Research and Accountability. file:///C:/Users/tpierce/Downloads/ED611218.pdf

Hussein, H. (2010). Using the sensory garden as a tool to enhance the educational development and social interaction of children with special needs. *Support for Learning, 25*(1). http://www.csgn.org/sites/csgn.org/files/47829187.pdf

Kane, E. et al. (2016). *School climate & culture.* Building & Sustaining Student Engagement. https://k12engagement.unl.edu/strategy-briefs/School%20Climate%20&%20Culture%202-6-16_1.pdf

Krajewski, S. & Khoury, M. (2021). Daring spaces: Creating multi-sensory learning environments. *Learning and Teaching, 14*(1), 89-113. Daring_spaces_Creating_multi-.pdf

Lin, L. (2020). Activity participation and sensory processing patterns of preschool-age children with autism spectrum disorder. *The American Journal of Occupational Therapy, 74*(6), https://doi.org/10.5014/ajot.2020.039297

Murray, M., Baker, P., Murray-Slutsky, C. & Paris, B. (2009). Strategies for supporting the sensory-based learner. *Preventing School Failure, 53(4).* https://glenwood.org/wp-content/uploads/2013/06/article-strategies-for-supporting-the-sensory-based-learner.pdf

Schlichting, R. (2010). How does creating a multi-sensory environment affect student on task behavior in the regular classroom setting? [Master's thesis, Southwest Minnesota State University]. https://www.proquest.com/openview/1658190c9e8df431ecb951fb6e2ee51e/1?cbl=18750&pq-origsite=gscholar

Schramm, H. (2021). Implementing a sensory room for preschoolers. *Creighton University.* https://www.creighton.edu/sites/default/files/2021-12/SPAHP-schrammhannah-3402420-59866244-schramm-hannah-capstone-presentation-2.pdf

Spyhalski, Mary C. (2019). *Program evaluation of the impact of sensory room activities on*

student readiness in Muskegon county [Master's Thesis, Grand Valley State University]. ScholarWorks.

Stadele, N. & Malaney, L. (n.d.). The effects of a multisensory environment on negative behavior and functional performance on individuals with autism. https://www.uwlax.edu/globalassets/offices-services/urc/jur-online/pdf/2001/stadele_and_malaney.pdf

Stephnson, J. & Carter, M. (2011). Use of multisensory environments in schools for students with severe disabilities: Perceptions from schools. *Education and Training in Autism and Developmental Disabilities, 46*(2), 276-290.

Thompson, C. (2011). Multi-sensory intervention observational research. *International Journal of Special Education, 26*(1). https://files.eric.ed.gov/fulltext/EJ921210.pdf

Toro, B. (2019). Memory and standing balance after multisensory stimulation in a Snoezelen room in people with moderate learning disabilities. *British Journal of Learning Disabilities, 47*(4), 270– 278. https://doi-org.ezproxy.nwciowa.edu/10.1111/bld.12289

Unwin, K., Powell, G. & Jones, C. (2021a). A sequential mixed-methods approach to exploring the experiences of practitioners who have worked in multi-sensory environments with autistic children. *Research in Developmental Disabilities.* https://doi.org/10.1016/j.ridd.2021.104061

Unwin, K., Powell, G. & Jones, C. (2021b). The use of multi-sensory environments with autistic children: Exploring the effect of having control of sensory changes. *Autism.* https://journals.sagepub.com/doi/pdf/10.1177/13623613211050176

U.S. News & World Report (2022). *Fort Dodge community school district.* Retrieved July 10

2022, from https://www.usnews.com/education/k12/iowa/districts/fort-dodge-comm-school-district-110528