Identifying Sensory Preferences Using Written Language: Curriculum and Resources

by

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Abstract
Indentifying Sensory Preferences Using Written Language

The primary purpose of this project is for students to learn how to identify and self regulate sensory processing needs through written language lessons in English-Language Arts. The curriculum includes multiple lessons which are designed to be implemented by general or special educator who serve elementary students as well as assist students with Sensory Processing Disorders (SPD). There is discussion regarding consultation with a credentialed occupational therapist to address individual student sensory needs.

The curriculum is devised to be used to teach academic content in elementary writing skills, with the topics addressing the sensory system and self regulation. The project consists of three units which help students in identifying the senses, learning to incorporate sensory experiences in everyday classroom activities, and supporting self-regulation. Each lesson includes reflective journaling and descriptive writing.

The results of this sensory writing project expose the importance of consulting with qualified professionals as well as following a prescribed curriculum when teaching the skills needed to utilize sensory strategies in the classroom. Qualified professionals can assess and recommend specific activities, resources, and ideas for the classroom and school environment. This curriculum is designed as such, so as to foster the collaborative consulting methods for specifically qualified professionals when providing sensory opportunities for student with SPD. KEY WORDS: Education, Occupational Therapy, Special Education, SPD, Sensory Processing Disorder, Written Language
Dedications and Acknowledgments

I would like to dedicate this project to my son, Jonas. I would also like to dedicate this project to my parents who taught me that success is personal excellence. I would like to acknowledge Leslie and Mark Mauerman for their time, support, and dedication to my project. I would also like to express my sincerest appreciation to Jill Wauters-Ryback for all of her support and expertise.
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Chapter One: Sensory Processing and the Writing Project

When one uses his or her senses, the information obtained is called “sensory input”. The reactions and behaviors that occur when human senses are stimulated are called “output”. The output responses include how one pays attention, demonstrates knowledge, learns, interacts with the environment, moves, feels emotions, exercise self-control, and expresses feelings. This is a continuous cycle known as sensory integration; a cycle wherein sensory information enters the brain and feedback is outputted. This process of organizing sensory information in the brain in order to receive and make adaptive responses is titled sensory integration.

Sensory based learning occurs when students organize information obtained through their senses and respond to the environment. Students who are particularly responsive to sensory input may be considered overly sensitive to sensory stimulation when stimulation causes anxiety and stress and subsequently affects learning. Students who are less responsive than their peers to sensory information may be considered under responsive and may need sensory input that involves strong and meaningful learning activities in order engage their senses for learning. Lane, Miller and Hanft (2000), discuss that adaptive behaviors resulting from impaired sensory processing which may include inattention, distractibility, fidgeting, acting without thinking, and even aggressive or defiant behaviors. An educator teaching such a child can only plan an effective intervention for such behaviors if the educator understands the adaptive function of the behavior. Without this knowledge, educators may not understand their student’s needs and where these needs originate. Students’ sensory needs may vary and instructional delivery needs to be adjusted to fit their sensory based learning style in order to successfully engage the student in meaningful learning opportunities.
Sensory processing difficulties can range from mild to severe and are more commonly seen in students with autism, Attention Deficit Disorder and learning disabilities than in the general population. Children with sensory difficulties have a hard time regulating sensory input, which can affect these students’ productivity and ability to remain calm, alert, and comfortable. A properly functioning sensory system assists individuals to respond to the surrounding environment through instinctive and habitual input and output, however, children with sensory difficulties may not be able to regulate the flow of such information to establish and maintain the calm, alert, and comfortable state that is required for successful learning to take place.

**Purpose of the Project**

This project is designed to incorporate writing lessons across the California state essential content standards in grade 1-5 to teach students with sensory processing disorders and sensory based learning needs as part of a blended services model. This project is designed to be taught by the academic instructor while collaborating with the Occupational Therapist. Students will learn about their own sensory regulation strategies as well as understand their own sensory needs.

**Sub Questions**

Specific questions that need to be addressed in this writing lesson project assist one in understanding types of sensory processing disorders and what types of strategies students’ learn in the classroom with the help of their classroom teacher. In addition to learning strategies, there are certain disabilities that are more prone to comorbidities of sensory processing and resulting behaviors need to be addressed by both the student and teacher.

1. What curriculum or lessons currently exist for Occupational Therapists and educators and how can this be incorporated into academic content?
2. What are common sensory strategy approaches that Occupational Therapists commonly use that can be applied to the classroom?

3. How do sensory processing disorders affect the student’s ability to access the academic curriculum for students with certain disabilities, such as Autism, ADHD or Speech and Language Disorders?

4. What is the difference between a behavior and sensory and how does a teacher know because behavior can be a result of SPD that the child may or may not be able to control.

5. Is a teacher reinforcing a negative behavior with a positive incentive or consequence when a sensory strategy is used after a behavior occurs?

6. When is it necessary to use a sensory strategy when a socially inappropriate behavior is observed in the classroom?

7. How can sensory strategies be used to limit the disruption of classroom instructional time?

8. What studies have been done that dispute or support sensory processing integration?

Educators face the challenges of classroom and student management and need tools that will support students who are known to have SPD as well as students that have not been identified with SPD. According to the Sensory Processing Disorder Foundation, at least 1 in 20 adults have Sensory Processing difficulties and 1 in 6 children (Sensory Processing Foundation, 2010). Sensory Processing Disorders can overlap with comorbidities with such disabilities as Autism, Attention Deficit Hyper Activity Disorder, learning disabilities, depression, anxiety disorders, Bipolar disorder, Obsessive Compulsive Disorder, Tourette’s syndrome, physical disabilities, and Speech and Language Impairments as well as other disabilities, syndromes, and disorders (Taylor 2010). Not only do sensory issues affect a child’s everyday life, they can
affect academic ability, how a child performs in the classroom, behavior, and social relationships. Teachers can support these students by using sensory strategies in the classroom to help improve affected students’ self-regulation and abilities to cope with the demands of learning.

Only a trained specialist can determine whether a child has a Sensory Processing Disorder, however, educators can learn the systems and signs of a student with SPD. An educator can observe and collect for signs of the dysfunction that include hypersensitivity or overresponsiveness and hyposensitivity or under responsiveness to sensory stimuli in the classroom and school environment. Tactile dysfunction can include a hypersensitivity to touch so that, the affected student may not enjoy messy activities. A vestibular dysfunction can include areas that involve movement. Vestibular dysfunctions can affect one’s balance. A student with proprioceptive dysfunction, which is the knowledge of the position of our body, and body parts, may seek sensory input through movement. Students with auditory dysfunction may display either hypersensitivity to sounds in the classroom or hyposensitive to sounds as evidenced by not hearing their names being called, or displaying difficulty following directions. Children with oral input dysfunction may be either hypo or hyper sensitive to foods and objects in the mouth. Visual input dysfunction includes hypersensitivity which can involve a difficulty in focusing, sensitivity to bright lights, and the student may avoid eye contact. If the student is hyposensitive to visual input the student may have difficulty copying words from a white board to paper. A child’s sensory processing difficulties may not occur in isolation. If Educators are aware of the signs and symptoms of the various dysfunction areas, they can refer a child exhibiting such symptoms as, hyposensitivity or hypersensitivity to the senses to the Occupational Therapist for an SPD assessment, as well as learn and use strategies to support the student in the classroom.
When behavior comes in to play for those living with sensory processing difficulties, it is essential that educators keep in mind that these children make choices to meet their own needs, regardless of whether the need is apparent to others. It is important to consult with a trained and qualified Occupational Therapists (OT) who can choose to perform necessary assessments to identify what sensory needs a child may have. These behaviors can be observed during academic instruction, cooperative play, and out on the playground. The goal of Occupational Therapy for children is always to help students develop appropriate responses to sensations so that daily tasks and social interactions can be competently performed. It is also important to include the parents, the IEP team, and child in this process in order to allow each of them to gain better insight into why the child is behaving the way he or she does.

**Preview of Literature**

I. The effects of Sensory Integration Disorder on the Behavioral and Academic Function of Children at School

Techniques utilized for students with sensory integrative dysfunction may support learners at school because children with behavioral problems may encounter difficulty in academics. It is frequently beneficial to provide these students with sensory supports throughout the academic day in addition to the students’ therapy sessions with an Occupational Therapist. Teachers’ collaboration with specialists is important in creating a program that works for these children. Schaaf, Roseann C., Miller, Lucy J., Seawell, Duncan, O’Keefe, Shannon (2003) completed a study that analyzed the importance of sensory modulation and the need for empirical data that examines behavior, neurological mechanisms, and the impact of daily life and social activities of children with sensory processing disorders. Furthermore, the authors found that low parasympathetic functions in children with SPD were associated with stress vulnerability,
developmental and cognitive delays, or emotional and behavioral over reactivity. Schaaf and Miller (2005) also discuss the importance of collaboration of those involved with the child. Natural settings such as the classroom are places where collaboration between the Occupational Therapist and consultation with the teacher and support staff can occur.

The correlation between behavior and brain functioning is called Sensory Integration (SI). This process typically occurs automatically and without effort. For children or persons with sensory integration difficulties more intensive effort is required to process certain sensory information. The process of SI continues before birth and throughout life. (SPD Foundation, 2012) Most children naturally develop their sensory integration processing by their teenage years. SPD can typically be detected in early childhood as children motor plan and adapt to the input of sensory and make responsive appropriate output reactions. Learning, development, and behavior can be affected by poor sensory integration.

II. Professional Recommendations on Sensory Strategies and Interventions.

Sensory integration theory goes at least four decades and is still popular today in the field of Occupational Therapy, Speech and Language Pathology, and Education. The goal of sensory integration is to improve students’ independence and quality of daily life, as well as performance on school tasks. Students who may benefit from sensory integration frequently miss instructional cues and are sometimes unreceptive or unable to apply cognitive or behavioral regulations (Berkey 2009; Miller 2006) to a particular task. Gradually introducing unfamiliar sensory experiences can assist a hypersensitive child to tolerate more activities (Berkey 2009; Miller 2006). Teaching new social skills and/or providing a sensory strategy can help reinforce appropriate reactions to changing environments, transitions, and new or novel stimuli for these students. Whether the student is sensory underresponsive, overresponsive, or sensory seeking,

III & IV. Sensory Integration Theory and Efficacy: A critical review of research critiques, systematic reviews, and/or studies.

Controversy surrounds the lack of empirical evidence for Sensory Integration theory and therapy. There is limited research concerning its classroom application for students with Sensory Processing Disorder. Sensory Processing Disorder itself is not recognized as a mental health disorder by the American Psychological Association or the National Institute of Mental Health. According to a survey conducted by Green et al., (2006) (as cited in Stephenson & Carte, 2008) Sensory integration was reported as the third most commonly implemented treatment for students with SPD, ahead of interventions with solid empirical support such as applied behavior analysis. Hyatt and Stephenson (2009) state that Sensory Integration is an expensive intervention and available research data overwhelmingly suggests that it is manifestly ineffective.

V. Determining the need for Sensory Processing Disorder assessments and distinguishing the symptoms.

According to Miller, L. J., Coll, J. R., & Schoen, S. A (2007) it is important to consider that a high proportion of children with Autism and ADHD may also have SPD. Miller (1999, 2001, 2006, 2007) conducted studies determining the efficacy of sensory processing disorders because sensory processing disorders have been called into question due to lack of empirical evidence supporting the existence of SPD. Red flag symptoms of SPD of children who are overresponsive, underresponsive, sensory seeking, or have dyspraxia, postural disorder, or sensory discrimination disorder may not have SPD but rather another disorder accepted by the
Diagnostics and Statistics Manual. In California, training to give sensory assessments and service to children with sensory disorder must be completed through the University of Southern California. This requirement emphasizes the importance of seeking expert guidance and recommendations from qualified individuals when blending academic and sensory services. Sensory profiles, observations and a doctor’s clinical diagnosis are common assessments in identifying a sensory processing disorder in a child. Students in the classroom receiving lessons from this project had been assessed and identified using the Sensory Profile. Ermer and Dunn (1997) conducted a study for three groups of children with Autism, Pervasive Developmental Disorder (PDP), Attention Deficit Hyperactivity Disorder (ADHD), and children without disabilities to discriminate the analysis on the three groups using the Short Sensory Profile. The results yielded the usefulness of using the Short Sensory Profile to discriminate characteristics of children with Autism, ADHD, PDP, and without disabilities. The Occupational Therapist who supported the researcher in this project utilizes the Short Sensory Profile as part of a system of determining sensory needs for the child.

**Key Areas of Literature and Leading Authors**

I. The effects of Sensory Integration Disorder on the Behavioral and Academic Function of Children at School

Schaaf, Miller, 2005.

II. Professional Recommendations on Sensory Strategies and Interventions.


III & IV. Sensory Integration Theory and Efficacy: A critical review of author research critiques, systematic reviews, and/or studies.

V. Determining the need for Sensory Processing Disorder assessments and distinguishing the symptoms.

Mangeot, Miller, McIntosh, McGrath-Clarke, Simon, Hagerman, & Goldson, 2001; McIntosh, Miller, Shyu, Hagerman, 1999; Miller 2006; Miller, Coll, & Schoen, 2007; Schaaf & Miller, 2005.

**Preview of Methodology**

A writing project with an emphasis in sensory processing was designed for a 1-5 grade level writing unit using common core California written language content standards with a blended services model in collaboration with the Occupational Therapist and Specialized Academic Instructor. Each lesson in the sensory processing writing lessons is designed for the specialized academic instructor to introduce a writing topic. The lessons are progressive to align with hierarchy of sensory processing while meeting academic content by utilizing common California language arts essential standards which will assist students in meeting grade level learning needs. There are three units with writing topics in maintaining focus and attention, sensory preferences, and finally self regulation. The lessons in the units include assisting students in identifying their individual sensory needs and understanding sensory integration and processing concepts while working on academic content in written language. The project is designed for students in need of sensory interventions to educationally benefit their sensory needs. Students are to also practice writing skills using essential academic content standards. With weekly consultations with the Occupational Therapist, the educator can develop expert knowledge in sensory processing and monitor their teaching. The weekly consultations with a trained Occupational Therapist are completed to ensure the students are having their sensory needs met as according to their IEPs and identified sensory needs.
Significance of Study

This project is intended to improve education of students with SPD in California because it provides a tool to support Educators in identifying and implementing sensory processing integration strategies through written language. This assistance to educators will in turn help learners who are struggling with Sensory Processing Disorders in the classroom. Students who receive Occupational Therapy may benefit from a blended services model where sensory strategies are incorporated into the classroom, rather than used solely in an isolated therapy room where the student receives individual or small group sensory therapy sessions. In addition to receiving Occupational Therapy, it may be effective to integrate strategies and sensory breaks in the special education classroom during presentations of academic content as well as to teach students self-regulation strategies. Meeting sensory based learning needs can be a teaching approach that differentiates instruction and classroom management as well as meeting student centered learning needs.

Conclusion

While existing research and reviews of the existing literature discuss the effects of sensory integration for students with SPD, there is limited information available regarding how using the sensory strategies affect classroom behavior and whether or not such strategies are successful. This project used written language lessons to teach students sensory processing strategies in a special education classroom setting to provide a foundation for educators to address concerns for their students with SPD. In addition to the pull out therapy model of Occupational Therapy, students can learn about their sensory needs in the general education or special education classroom with their peers. Sensory processing disorder as well as sensory strategies that Occupational Therapists use would provide an informational framework. Because
research shows that sensory processing disorders can affect attention and focus for students with disabilities such as Autism, ADHD, Speech and Language Disorders, this will be discussed in the Literature Review. Educators and researchers may also be interested in knowing the difference between behavior and sensory processing difficulties and if a teacher is reinforcing a negative behavior with a positive incentive or consequence when a sensory strategy is used after a behavior occurs. Educators want to maximize instructional time with little disruption to student learning. It is important to know how sensory strategies can be utilized for students to increase attention and focus before and during instruction and independent practice. Researchers have disputed the credibility and effectiveness of sensory integration theory and this information needs to be addressed in order to give other educators the opportunity to reflect on the necessity of incorporating sensory based writing lessons in their classrooms.

Summary

Sensory processing is the way people organize information and respond to that information appropriately to their environments. Difficulties with sensory integration and processing can interfere with a child’s daily activities, social life, and school. Integrating sensory processing into academic content is a way to introduce the concept in a natural academic setting while meeting a student’s sensory needs to stay calm, alert, and focused. Sensory Processing is not listed in the Diagnostics and Statistics Manual of mental health disorders and is not recognized by the National Institute of Mental Health or the American Psychological Association, due to the lack of empirical research demonstrating outcomes as a necessary and effective therapy for children with SPD in relation to other methods natural occurrences such maturation, behavior interventions, and increased attention from adults.
The next chapter discusses studies in which researchers in the fields of neuropsychology, neurology, physiology, child development, and psychology have conducted studies which question the efficacy of sensory processing as well as studies that support the efficacy of sensory processing training. Some research shows that a mix of approaches which include behavior intervention, attention, and sensory processing may be more effective than sensory integration alone. Other research demonstrates hopeful outcomes of Sensory Processing therapy for children with SPD. Only a trained Occupational Therapist can determine sensory deficits in a child. Academic specialists and other teachers and families can identify possible symptoms of a sensory deficit; however, the O.T. uses skilled observation, review of records, and interprets the results of sensory profiles completed by the IEP team.

Definitions

Blended Services

A blended services model in the school setting would include collaborating with DIS service personnel and providing direct support and consultations for the student. A student receiving sensory processing therapy for self-regulation, in addition the students pull out therapy, the classroom teacher collaborates with the Occupational Therapist in order to provide seamless practice in the goals and areas of need in the classroom setting. Blended Services is known as mainstream or consultation service and can differ in that the teacher takes the responsibility of providing the services required in the classroom specifically through the guidance of the designated instructional service which includes O.T., Adapted Physical Education, and/or speech and language pathology. Designated instructional service provider’s work towards meeting the student’s specific needs.
**Occupational Therapy**

Occupational Therapy interventions are working towards adapting the environment, modifying a task, teaching new schools and supporting education of family and the student. The goal is to increase participation and support effort in daily life activities.

**Sensory Processing Disorder (SPD)**

Sensory Based Motor Disorders (SBMD) Sensory integration disorder or dysfunction (SID), also known as sensory processing disorder, is a neurological disorder that results from the brain's inability to integrate certain information received from the body's five basic sensory systems. (Sensory Processing Foundation, 2010)

Sensory processing and sensory processing disorders is complex to the untrained specialists. As an educator, understanding sensory processing takes careful research, questioning, and reading. Because little empirical data of the affects of SPD strategies exists for the classroom, students will benefit from sensory writing lessons. Occupational Therapists may use special program lessons to teach children about sensory processing. In the classroom setting, students can use the successive concepts that occupational therapists use from identifying alert states, using and identifying our senses, to learning about self regulation. Students will learn about writing in the processing bridging the gap between their disability and academic learning in the least restrictive environment in general education and with their peers.
Chapter Two: Literature Review

Sensory processing therapy is a popular tool used by Occupational Therapists for children with sensory processing disorders. A variety of other methods and strategies are used to help students with differing sensory based needs. Classroom interventions are used by Special Educators; however, there is a lack of empirical research in this area. This project developed a thematic unit that will introduce students to identifying self regulation strategies and understanding SPD through written language lessons. These lessons are intended as part of a blended services model with the Occupational Therapist. The information discussed in the following literature review includes; (a) how Sensory Integration Disorder affects students at school, (b) the efficacy of SPD, (c) professional recommendations on strategies and interventions, and (d) how educators can identify the need for a student to have a referral to the Occupational Therapist for an SPD assessment.

The effects of Sensory Integration Disorder on the Behavioral and Academic Function of Children at School

Sensory integration techniques may help support children with behavioral problems that can lead to difficulty in academics. Sensory regulation includes threshold of responsiveness and intensity of reaction which means how one responds to sensory and amount of reaction to the sensory input. Sensory regulation can have an independent role in arousal level, attention, affect, and action. There is some indication that poor sensory regulation can contribute to the development of emotional and behavioral problems in children. Gouze, Hopkins, LeBailly, and Lavigne, (2009) conducted a study on a community sample of 796 four year olds to examine ethnic/racial, gender differences, and to examine the co-occurrence of sensory regulation dysfunction and preschool psychiatric disorders. Results indicated that regulation dysfunction
was more prevalent in Hispanics and more prevalent in boys than girls. The findings lend support to the hypothesis that poor sensory regulation is either a significant risk factor for the development of other emotional and behavior disorders of childhood or frequently occurs concurrently with such disorders. Reynolds, Lane, and Gennings (2009) recruited forty eight children with ADHD to determine if sensory overresponsitivy is a moderating condition impacting children with ADHD. The results of this study suggest that preexisting sensitivity to sensory stimuli may serve to moderate Hypothalamic Pituitary adrenal responsivity in children with ADHD which is a problem with inattentiveness, over-activity, and impulsivity. Hypothalamic pituitary axis is a major part of the neuroendocrine system that controls reactions to stress and regulates many body processes, including digestion, the immune system, mood and emotions, sexuality, and energy storage and expenditure. Schaaf, Miller, Seawell, and O’Keefe, (2003) found that low parasympathetic functions, which supports homeostasis and balance, in children with SPD were associated with stress vulnerability, developmental and cognitive delays, or emotional and behavioral over reactivity.

Because Sensory Processing Disorders may have an effect on students’ emotional and behavioral well being, it may be beneficial to provide sensory supports throughout a child’s regular day rather than solely in a therapy room. Few empirical research methods include direct classroom interventions. Two quasi experimental, single subject study designs using weighted vests, and therapy ball chairs in the classroom had mixed outcomes. Bagatell and Mirigliani (2010) studied the use of therapy balls for children with Autism Spectrum Disorder and data was collected and assessed on seat behavior and engagement. Vandenburg (1998) studied the use of weighted vests with students with Attention Deficit- Hyperactivity Disorder. This study investigated the effect of deep-pressure sensory input on children’s on-task behavior in the
classroom. Using the weighted vests, on-task behavior increased with four students during fine-motor activities. The ball chair only had positive effects for on-seat behavior for one of six children with vestibular-proprioceptive seeking behaviors.

Children with Autism Spectrum Disorders are often subject to difficulties with sensory processing. Most of the previous research involving this population used small sample populations, thereby rendering the efficacy of using Sensory Integrative techniques questionable. Watling and Dietz (2007) examined the effects of Ayres’s sensory integration intervention on the behavior and task engagement of four young children with autism spectrum disorders (ASD) during play scenarios. Their results indicated no clear patterns of change in undesired behavior or task management. Data from the study suggest that Ayres’s sensory integration may produce an effect that is evident during treatment sessions and in home environments. Student engagement is multi-dimensional and can be dependent on environmental factors such as teacher absence, classroom disruptions, the nature of the task or activity, and visitors. Using specific treatments need analysis, such as performance skills, student factors, contexts, and task designs. Small sample sizes may delineate definitive conclusions because there is extensive subject variability such as differing comorbid disabilities and behavioral deficits.

Mason and Iwata (1990) suggest that sensory integrative techniques can reduce self-injurious behavior (SIB). Mason and Iwata examined the effects of sensory integrative techniques for three students with self-injurious behaviors. The students’ self-injurious behaviors had appeared to be motivated by attention seeking, self-stimulatory, escape, and avoidance. Results were mixed for the three subjects. Integrative therapy and variables known to maintain SIB, suggested the need for additional subject-selection and control procedures such as the
affects of increased attention, social stimulation, physical contact, and reduction in demands placed on the subject in their environment.

Carte, Morrison, Sublett, Uemura, and Setrakian, (1984) conducted a study of sensory integrative therapy to remediate learning difficulties. Eighty-seven children who were learning disabled received individualized assessment based therapy for nine months. The results of the research indicated that no systematic or statistically significant effect was made on any of the dependent variables in improving perceptual processing and academic achievement.

Other recent studies have shown positive trends supporting the effectiveness of the SI approach, especially when measuring goals customized for the client. This review suggests that, despite lack of definitive results in most studies, there is a trend toward positive evidence to support the SI approach (Benson & Koomar, 2010). An individualized, student centered, needs based approach with collaboration between family, educators, Speech and Language Pathologists and specific assessments and interventions may be necessary. Student progress can then be monitored at an individualized level.

Schaaf and Miller (2005) describe how the limitations in previous studies result in the absence of a consensus in the field because of inconsistency in study results, the variation in sample characteristics, intervention methods and durations. Schaaf and Miller also discuss the importance of collaboration with parents, teachers, and others who are involved with the child. They contend that therapy should be adapted to the needs of the child and that therapy should occur in natural settings, such as the classroom, to help the child become more functional in daily life activities. Systematic goal and progress monitoring, managed through an Individualized Education Program, should serve to provide the support required by students with Sensory Processing Disorders.
According to Trott (2002) there are few behaviors that are solely sensory based. Therapy and treatment techniques should also be based on the child’s individual and unique needs (Stonefeld & Stein, 1998). Other important factors, implications, and considerations for further research described by Griffer (2001) include adequacy of intervention, frequency and duration of treatment, variation in subject characteristics, and variations in the types of measures to evaluate variables and the condition. Stonefeld and Stein also recommend that treatment sessions should be as unique as the child when therapy is developed and implemented. In order to more fully understand the child with disturbances in sensory modulation, empirical data that examines behavioral symptoms, neurological mechanisms, and their impact on participation in daily life and social activities is needed (Schaaf et al. 2003).

**Professional Recommendations for Sensory Strategies and Interventions.**

How are behavior and Sensory approaches linked?

The history of sensory integration theory goes back forty years and is still popular today in the field of Occupational Therapy, Speech and Language Pathology, and Education. Ayres (1972) conducted a study on 148 elementary school children with learning disorders. Ayres developed the theory of sensory integration to explicate potential relationships between the neural processes of receiving, modulating, and integrating sensory input and the resulting output: adaptive behavior (Schaaf & Miller, 2005). Ayres’s experimental group received Sensory Integration training for up to forty minutes per day, five days a week for five to six months. Ayres’ statistical analysis suggested that sensory integration helped children improve academic scores. While the theory of sensory integration has been debated, Ayres’s application of sensory integration therapy continues to be a popular intervention. Schaaf and Miller discuss the goal of sensory intervention to improve independence, participation in daily life activities, such as play
and school tasks. While increased participation in daily life activities is the goal, children can have different sensory dysfunctions which can affect different aspects of their lives.

Sensitive dysfunctions have been narrowed into subtypes such as Sensory Modulation Disorder, Sensory Discrimination Disorder, and Sensory Based Motor Disorders (Schaaf & Miller, 2005). Dunn (1997) proposed a model for sensory processing that characterizes patterns of responding based on a person’s neurological thresholds and self-regulation strategies (Dunn, Saiter, & Rinner, 2002). Children with SPD may exhibit behaviors such as low registration, sensory seeking, sensory sensitivity, and sensation avoiding. Trott (2002) suggests it is better to provide the sensory input that prevents a difficult behavior than to try to reward the absence of a behavior a child cannot control. Teaching new social skills and/or providing a sensory strategy can help reinforce appropriate reaction to changing environments and stimuli.

A child who has low registration of sensory input may seem uninterested and have difficulty paying attention. Sensory input to the underresponsive child may not be registered or used effectively to achieve and sustain learning readiness for occupational performance (Berkey 2009; Miller 2006). Vestibular sensory input or movement to start the day and movement break to increase the intensity of sensory input, if used correctly, can have both alerting and calming effects (Dunn et al. 2002). When learning takes place in the classroom, it may even be useful to highlight important information on handouts and reading material to help the student focus on major points or big ideas in lessons. Having students attend PE in the morning may give children the opportunity to stay alert. Physical Education in the morning and movement breaks in the classroom may benefit many students’ states of alertness because of the regular physical and mental advantages in exercise that maintain the health of adults and children alike.
Students who are sensory sensitive have unique needs. This type of student has a low threshold for sensory input (Dunn et al. 2002). Students may miss instructional cues and unreceptive or unable to apply cognitive or behavioral regulations (Berkey 2009; Miller 2006). Classrooms can be overwhelming for the hypersensitive child. Consistency in the classroom schedule and routine can help calm these students. Preparing these students before unpredictable activities such as fire drills, and changes in routine may make a difference. Relaxing music and a soft voice can help the learner who is sensory sensitive. The gradual introduction of new or unfamiliar sensory experiences can help a child tolerate more activities (Berkey 2009; Miller 2006). Bean bags and noise reduction headphones can provide a sensory break.

The sensory seeking student needs high sensory input. This child may have difficulty with self control, impulsivity, and may be uncoordinated (Berkey 2009; Miller 2006). Heavy movement activities can help the sensory seeker as well as the use of fidgets, which are objects that can be held in the hand such as clay or a soft textured ball (Dunn et al. 2002). Allow the student to use fidgets with rules during lessons if this does not interfere with the student’s ability to pay attention. Giving the student movement activities, chewy snacks, gum, or a straw to chew may give the child the sensory input they need in order to focus.

The sensory avoider may have difficulty focusing because of all that is going on around him or her and may appear uncooperative. The student may have difficulty focusing and concentrating. Calming vestibular and proprioceptive activities throughout the day as well as consistency may help this student (Dunn et al. 2002). Proprioceptive input can include chewy snacks, wiping tables, running errands for the teacher around the school, hand pushes, and carrying books. Whether the student is sensory underresponsive, overresponsive, or sensory seeking, Berkey (2009) recommends social stories, reasoning strategies, and reinforcements.
Taylor (2010) provides an outline for providing sensory–smart school accommodations for the classroom to enhance student attention skills, help students remain calm, provide movement, reduce auditory distractions, and assist with student motivation and praxis.

Sensory processing integration and therapy are accepted among many professionals who utilize SI strategies. A combination of interventions such as differentiated instruction, student centered planning, and sensory integration may provide better effects than sensory strategies alone. According to Benson and Koomar (2010) many studies did not provide a complete description of the intervention provided, a measure of adherence to the SI approach principles, or a fidelity instrument for alternative interventions. Classroom intervention strategies can be found in sensory processing handbooks, books, in-service material, and seminar handouts written and provided by professionals who support sensory integration therapy.

**Sensory Integration Theory and Efficacy: A critical review of author research critiques, systematic reviews, and/or studies.**

Much controversy surrounds the application of sensory integration theory, interventions, and strategies utilized by Occupational Therapists around the country. Speculation surrounds the lack of empirical evidence regarding Sensory Integration therapy and theory and there is limited research in regards to its classroom application by special educators who work with individuals with a variety of learning and behavioral disabilities and needs. Sensory Processing Disorder is not recognized as a mental health disorder or listed in the Diagnostics Statistics Manual of Mental Disorders fourth edition which is sponsored jointly by the American Psychological Association and National Institute of Mental Health. The APA and NIMH support research scientists in the areas of psychiatry and other disciplines. The DSM IV was last published in the year 2000. Supporters of the efficacy of sensory processing disorder are advocating for SPDs
scientific new or novel diagnosis in the upcoming fifth addition of the DSM which is set to be published in 2013 and supersede the DSM IV. The addition of Sensory Processing as a mental disorder would add credibility to SPDs efficacy and validate the scientific evidence that supports the theory of SPD. In the meantime, educators and Occupational therapists continue to collaborate to provide interventions for children with SPD and the American Occupational Association continues to advocate for specialist training and proper therapy techniques using the available empirical evidence.

The Diagnostic and Statistical Manual of Mental Disorders (DSM) is the standard classification of mental disorders used by mental health professionals in the United States and contains a listing of diagnostic criteria for every psychiatric disorder recognized by the U.S. healthcare system. Until SPD is recognized by the American Psychological Association and the National Institute of Mental health, as well as being scientifically documented as a mental health disorder, SPD may continue to be the subject of undisciplined speculation. Even though sensory integration research now dates back over 40 years and is not recognized by the United States healthcare system, Hyatt, Stephenson, and Carter (2009) discuss a study in which a survey was completed by over 500 parents of children with autism in which sensory integration was reported as the third most commonly implemented treatment, ahead of interventions with solid empirical support such as applied behavior analysis.

The controversy surrounding the scientific validity of SPD and its treatment through Sensory Processing Integration in the field of Occupational Therapy has limited the research involving the classroom application of SPI strategies and supports for students in the educational setting. Stonfeld and Stein (1998) conducted a survey of twenty three participants including parents, teachers, and Occupational Therapists who were using sensory integrative techniques for
children with learning disabilities in both the classroom and home environment. The participants perceived improvements among the children with whom they worked in the areas of gross motor skills, fine motor skills, and coordination. However the findings also indicated that that the study participants may have considered academics to be secondary to attention and improved behavior.

Bochner (1978) and Griffer (2001) discuss the Hawthorne effect (an effect resulting from attention or perceived changes in physical conditions) where increased attending skills can be the result of training, maturation, regression of controls, success, improved self-esteem, and not necessarily the result of SI therapy in remediating learning difficulties. A combination of supports such as attention, academic intervention, and SI may be more effective than using sensory integrative techniques alone.

Kaplan, Polatajko, Wilson, and Faris, (1993) concluded that the therapeutic effect of sensory integration therapy on children with learning deficits is not greater than other more traditional methods of interventions such as perceptual motor training which involves learning the awareness of body, egocentric and external space, direction, and temperance,

Mixed results in studies is a common thread throughout the research on sensory processing. Benson and Koomer (2010) found in their systematic review of literature that, twelve studies examined academic and psychoeducational outcomes (e.g., math, reading, visual targeting, cognitive functions, language). Six of these studies suggested some positive gains result from utilizing SI. In particular, reading skills tend to improve with the SI approach and are maintained at follow-up. Benson and Koomer also state that it is unclear whether these effects are greater than gains achieved by alternative interventions. They go on to suggest that changes in the way parents, educators, and therapists use positive reinforcement may more likely than
sensory integration therapy and techniques to lead to improvement in skills, behavior, and attitude in an individual.

Furthermore, Mason and Iwata (1990) note that the confounding effects of attention from the adult to the child may be misinterpreted as a therapeutic benefit derived from sensory-integrative therapy. Sensory integration may be a remedial treatment for individuals with learning disabilities and other disorders (Hyatt et al. 2009). Using a combination of techniques such as differentiation, individualized planning, positive behavior modification, and sensory strategies may be beneficial for students with SPD rather than sensory processing therapy alone.

The American Occupational Therapy Association (AOTA) supports the application of Sensory Integration Therapy for children diagnosed with learning disabilities, developmental disorders, and psychosocial dysfunction (Griffer, 2001). The American Occupational Therapy Association, recruited a team of highly qualified researchers to conduct a systematic review of existing scientific data, based on Sensory Integration. This research team concluded that scientific evidence does, in fact, indicate a support of the current theory. The working title of the project became “AOTA Evidence-Based Literature Review of Occupational Therapy for Children and Adolescents with Sensory Processing Disorder/Sensory Integrative Dysfunction”. As part of the project, six questions were developed for intervention, assessment, environment–context, occupational performance, and neuroscience (Arbesmen & Lieberman, 2010).

An advisory group was formed of practitioners, educators, researchers, and scientists; the advisory group included members of AOTA’s Special Interest Sections and national and international content experts, both within and outside of the occupational therapy field (e.g., neurology, neuropsychology, and pediatrics). The members of the advisory group were asked to review and comment on drafts of questions that focused on each specific area. A total of 198
literature reviews and empirical research were included in the analysis and review of five eventual focus questions. The scope of the review included evidence based on intervention and effectiveness, neuroscience, subtyping, and performance issues for children and adolescents with sensory processing and integrating sensory information. Results of the systematic review indicated that children and adolescents with difficulty processing and integrating sensory information have problems that limit their performance in a number of specific occupations which take place in a variety of environments. Limitations of the systematic reviews included small sample sizes and issues with control groups such as medication use, individual perception, limited diagnoses, and lack of literature on adolescent populations.

Literature and empirical evidence remains split, some supporting and some arguing against the use of sensory processing, integration, and therapy techniques. There is also a large, profitable market geared towards parents, educators, therapists, and people from other disciplines that has promoted the consumption and application of recommendations of literature, books, workshops, in-services, sensory based therapy and learning products, as well as applied therapy services. This market generally makes a determined attempt to use relatively harmless supports to meet the needs of individuals with SPD. Bochner (1978) suggests that theories can be frequently and highly publicized and randomly applied before they have been adequately tested. In spite of the efforts of those in the field to ensure the scientifically validated interventions are the treatments of choice, non-validated approaches continue to hold a considerable amount of influence on the perceptions of many professionals and the public (Hyatt & Stephenson, 2009). Hyatt and Stephenson state categorically that Sensory Integration is an expensive intervention that available review data overwhelmingly demonstrates it is ineffective.
Schaaf and Miller (2005) discuss the concept of equipoise in regards to sensory processing treatment. This concept suggests there should be a state of agreement about sensory processing treatment within the community for whom the issue has meaning, such as families with children affected, researchers, clinicians, and scholars. To achieve this state of equipoise, empirical research must be conducted and findings must be generalized and communicated to the people who are stakeholders. According to Ottenbacher and Short (1985), the logic of the medical model is to identify and uncover the cause of underlying symptoms through diagnostic evaluation, and then direct treatment, therapy and education toward the cause of the disorder. Until Sensory Integration is proven to be a scientifically valid approach to treating individuals with SPD, it will continue to be susceptible to criticism by practitioners and researchers who question its efficacy that it is a pseudo-science and not a valid approach. Such criticisms contend that Sensory integration may relieve some symptoms, but does not treat the underlying problem of an individual’s disabling condition.

Determining the need for Sensory Processing Disorder assessments and distinguishing the symptoms.

Comorbidities of Sensory Processing disorder can co-occur with other disorders such as ADHD, Autism, learning disabilities, Speech and/or Language Difficulties, and other disorders. According to Miller, Coll, and Schoen (2007), for people with diagnosed developmental disabilities, the rate of comorbid Sensory Modulation Disorder SMD is estimated to be from 40% to 80%, depending on the specific developmental condition. It is important to consider that a high proportion of children with disorders may also have SPD. McIntosh, Miller, Shyu, and Hagerman (1999) used a medical model design to study of nineteen children with Sensory Modulation Disorder. The subjects of the study were clinically identified with sensory
modulation disruptions and the researchers hypothesized that the sample individuals would have atypical physiological responses to sensation, and that such responses would predict parent reported behavioral responses to sensation when compared to a control group of nineteen children without SMD. During the study, electrodermal activity (EDR) of the child was recorded for each stimulus applied. Excluding four non-responders, children with SMD showed more and larger EDR than control children. Participants with disruptions habituated more slowly to repeated stimulation, consistent with the parent-reported abnormal behavioral responses to sensation. The study indicated that children with clinically identified SMD respond physiologically to sensory stimuli differently than typically developing children. These differences have ramifications for functional behavior. The children with SMD also showed a physiological response, as measured by electrodermal activity, to sensory stimuli that was different from responses of children with other disorders. The results of the study indicate that SMD may be a valid syndrome that can be scientifically measured. Ermer and Dunn (1997) conducted a study for three groups of children with Autism, Pervasive Developmental Disorder, ADHD, and for children without disabilities to discriminate the analysis on the three groups using the Short Sensory Profile. The results yielded the usefulness of using the Short Sensory Profile to discriminate characteristics of children with Autism, ADHD, and without disabilities.

Mangeot, Miller, McIntosh, McGrath-Clarke, Simon, Hagerman, and Goldson (2001) studied sensory modulation disorder among twenty-six children with ADHD comparing them to a control group of 30 typically developing children. A laboratory procedure was used to gauge responses to repeated sensory stimulation by measuring electrodermal reactivity. The Short Sensory Profile, the Leiter International Performance Scale, and the Child Behavior Checklist were used to assess and results were tabulated from parental reports of the limitations of sensory,
emotional, and attention issues they observed in the children. The results of the physiological study and subjective parental measurements indicated that children with ADHD displayed greater abnormalities in sensory modulation compared to the sample of typical children. The need for larger sample sizes in both of the above studies was identified by the researchers as limitations of the studies.

Miller et al. (2007) did a study using pilot randomized controlled trial of the effectiveness of occupational therapy using a sensory integrative approach. The results indicated that therapy can help students with SMD. Wiggins and Robins et al. (2009) studied children with Autism Spectrum Disorder and their results found that young children with ASD had more tactile and taste/smell sensitivities and difficulties with auditory filtering than young children with other developmental disorders.

Miller (2006) gives examples of red flag symptoms for children with abnormal levels of sensitivity: (a) The symptoms identified for children who are overresponsive, include tactile sensitivity, aggressiveness, and impulsivity, irritability, lack of unsociability, caution or fear, and/or distress in response to transitions or changes in routine; (b) Red flags for children who are underresponsive include low response to injuries, passiveness, difficulty with social interactions, ease in becoming lost and distracted, apathy, slowness to respond to directions or complete assignments, and loss of interest; (c) Frequent symptoms for sensory seeking students included easily angered, intense, demanding, and excessive physical displays of affection; (d) Children with dyspraxia may prefer fantasy games or sedentary activities, rather than movement, may be messy eaters and easily frustrated by poor motor skills; (e) Children with postural disorder may appear lazy, unmotivated, indifferent, weak, and easily tired; and (f) Children with sensory discrimination disorder may have difficulty following directions, may avoid visual
games, may have difficulty in differentiating between visual or auditory signals, may need repeated directions, and may need more time to complete tasks.

The federal Individuals with Disabilities Education Act (IDEA) require that children who have a suspected disability be screened. Referrals for screening may be made by parents, physicians, educators, or other concerned individuals. Such screenings must be conducted by a person knowledgeable about the suspected condition. Not all Occupational Therapists are trained in Sensory Processing assessments or therapy. Sensory Processing assessments typically utilize sensory profile rating scales filled out by those most familiar with the child i.e., parents, teachers, and other specialists. Sensory profiles usually attempt to measure and indicate each area of possible sensory deficit. Specialists use observation and consultation as a means to make assessments. These observations and the information gained from consultations can help direct an educational benefit or clinical diagnosis by a doctor and be a guideline for treatment, services, and intervention.

Discussion

Sensory processing integration is widely used as a therapeutic approach to Occupational Therapy for children with sensory disorders in education. Research suggests that more empirical research needs to be conducted to determine its therapeutic value. Research also suggests that sensory integrative therapy, when undertaken, should be conducted by an Occupational Therapist in a therapy room. However, children should also have the opportunity to practice their new skills in natural settings that prepare them for daily life activities. Employing sensory integration techniques in the classroom may help support students with SPD.

Through this literature review, the researcher gained insight into areas related to SPD that lack research support in academic literature and areas in which such support is based on studies
that had significant limitations. Specific areas lacking significant levels of research support included (a) the effectiveness of specific classroom interventions of meeting the needs of sensory based learners, (b) how specific interventions can apply to general educators and (c) the efficacy of common strategies for sensory learners who are not identified as having a sensory processing disorder. Universal sensory strategies could be explored in an attempt to respond to the needs of all learners, assuming that students who exhibit behaviors that are similar to students with SPD may also benefit from sensory strategies that involve the proprioceptive, vestibular, visual, auditory, and tactile senses to potentially increase attention and motivation skills.
Chapter Three: Methodology of the Sensory Writing Project

Occupational Therapists address IEP goals for students with Sensory Processing Disorders (SPD). The OT is trained in areas of human growth and development, physical, emotional, psychological, socioculture and the cognitive and environmental components brain and human functions. There are three main types of sensory processing disorders which include Sensory Modulation Disorder (SMD), Sensory-Based Motor Disorders (SBMD), and Sensory Discrimination Disorder (SDD). Sensory processing disorders affect a child’s daily life activities and for this reason, Occupational Therapists meet with students to provide therapy sessions that are offered in addition to the student’s instructional environment. Because of the often profound impact of SPD in the functional skills of any student, it may be beneficial for Occupational Therapists and Special Educators to utilize a blended services model to assist students in meeting their IEP goals. Written intervention lessons were obtained through positive individualized goal oriented lesson designs and strategies and outcomes to pair sensory processing strategies through academics. Students will learn to understand their own sensory needs and about their own sensory regulation strategies.

In order to successfully write and implement the Sensory lessons, questions were addressed in the literature review to include information about the different types of sensory processing disorders and sensory strategies that are commonly used by Occupational Therapist. Other questions that were addressed are how SPD affects persons with Autism, Attention Deficit Disorder, and speech and language disorders. The literature review suggests that it may be beneficial to deter negative behavior with a positive incentive when the sensory strategy is used as an antecedent rather than a consequence.
Children with SPD have behaviors that they may not be able to control such as, inattentiveness and restlessness. The lessons in this project were adapted from the Alert Program which is a program curriculum that is implemented as a team (Williams & Shellenberger, 1996). This program is designed to help children monitor, maintain, and change their levels of alertness to achieve the calm and alert state that is required for daily life. According to the research in chapter two, implementing sensory strategies in the classroom may limit disruptions and increase student attention as well as encourage children with SPD to participate in classroom activities and play. It is recommended that this occur with a blend of positive reinforcement and social interaction.

**Project Design**

This project was created to incorporate writing lessons across the curriculum using common California core content standards in grade one through five, in order to teach students with sensory processing disorders and sensory based learning needs. This was part of a blended services model, in collaboration with the Occupational Therapist about sensory integration and processing as well as self regulation strategies as a means to assist students in monitoring and understanding their sensory needs. The units are designed in age appropriate and progressive sequence, in order to gradually build student understanding of their senses and sensory needs that coincide with their sensory development and individual needs.

**Participants, demographic setting, and participants**

This project was designed for students receiving and in need of educational intervention; specifically for students with IEPs who are already received specialized academic instruction in writing skills in grades one through five, and who also tested within the mild to moderate range of disabilities. Key considerations in developing the curriculum included recommendations from
the Occupational Therapist as part of a blended services model, individualized sensory integration, and processing needs as identified by the Occupational Therapist.

**Procedures and instruments**

Sections from the Sensory Profile School Companion were used to identify specific sensory needs and to determine how well children process sensory information in everyday situations (Dunn, 2006). The Sensory Profile is a scientific questionnaire that is completed by educators, as well as education specialists, speech and language pathologists and other professionals who work with the student. It is an instrument which utilizes a classification system based on normative information which is administered and scored by the trained Occupational Therapist, then reviewed with the IEP team. This data provides the team with sensory information related to home and school, so as to design strategies and services for managing daily life.

In the written language unit of this project, the students sensory, linguistic, behavioral, and social needs were addressed within the context of their curricular environment. Weekly and monthly consultations were implemented in order to ascertain how to most effectively design lessons that incorporate SPD needs.

**Data analysis**

Data gathered was analyzed by reviewing the Sensory Profile School Companion results that the Occupational Therapist provided and had utilized to create highly individualized intervention based upon the results and recommendations of the Occupational Therapist for classroom interventions. (Dunn, 2006)
Procedures

This project was intended to provide students with academic content in elementary writing skills while teaching children to learn about their own sensory processes. The lessons were designed as steps for children to understand self–regulation. The prerequisite steps and age ranges that students learn self regulation of their senses varies, as does the curriculum this project.

In Unit One, students learned about the five senses and how to recognize them. The students learned to write a paragraph including a topic sentence, at least two details, a commentary, and a closing sentence. They gained an understanding of what strategies to use in order to remain alert and receptive to instruction, as well as how to self-manage their individual levels of alertness. Students learned about distractions and ways to manage and to think about what specifically distracts them. In addition the students learned about what concentration is and how they concentrate in different situations. The unit provided instruction which aided students to grasp what situational demands are and what their individual sensory preferences are regarding their responses to sight, sound, taste, smell, and movement. Further, the unit provides active practice in choosing what can help to assist in achieving a calm demeanor. The students then wrote about these experiences through a series of writing activities and lesson review.

In Unit Two, the writing skill and sensory skill focus is about feelings and writing a one chunk paragraph using the reflective journaling process. The specific lessons address topics which include the use of defensive and protective feelings. Activities aid the student to understand what experiences and sensations affect their own responses. The students learn about how to utilize their sensory motor experiences to modify their feelings and responses. The unit incorporates the use of food textures and other sensory diets through writing activities and hands-
on experiences. Students continue to learn how to remain in a calm, alert state as well as how to transition, minimize perseveration, distractibility, and vestibular and proprioceptive input. Finally, this unit provides lessons in which students learn how to integrate sensory processing problems with adaptive responses, and how to implement personal coping strategies using purposeful movement.

Unit Three was developed for use with children aged eight and older. Self–Regulation begins at this developmental age and so this unit focused on this aspect of sensory adaptation skills. Here, the students learn, through various lessons, activities and experiences, how to self regulate, self monitor, and practice recognizing their own need to change their states or alertness, or arousal. The unit provides lessons for teachers to use in teaching students how to sustain their own attention, how to organize their own environment and to make personal goals. The student’s focused on developing a sensory menu and wrote a three paragraph essay. They included a topic paragraph that discussed the supplies or space (quiet or movement) needed to implement the strategy. The second paragraph discussed what strategies how the strategies would be used and the third paragraph discusses when the student’s plan to use their strategy. The unit provides a system in which the students can document utilizing the self regulation strategies.

All of the lessons in these units are progressive and organized so as to lead students to practice writing and to develop writing skills at the same time as developing sensory integration skills. The lessons developed for each unit include various writing opportunities such as personal journaling, dialogue journaling, paragraph writing with art, as well as writing charts. Students experience hands-on, kinesthetic lessons to help them explore their own senses and to begin to decipher and understand the world around them.
Results

The results of this sensory writing project illuminate the complex nature of children who live with needing individual sensory processing interventions. Further results highlight the importance of utilizing sound clinical reasoning skills when recommending sensory strategies for the classroom and designing specific lessons to support students identified as having a Sensory Processing Disorder. Clearly the most valuable point of research in these results was that it is imperative for teachers to work with a trained Occupational Therapist in sensory processing goal setting for any student. These trained and qualified professionals can assess and recommend specific activities, resources and ideas for various classroom experiences that will benefit the student far more than an IEP without the benefit of these insights.
Chapter Four: Project

Description of the Project

Sensory Processing is the way in which we perceive the world around us. It includes sight, taste, touch, smell, hearing, vestibular (balance), and proprioceptive (movement). Our exteroceptive senses include the five main senses. Our interceptive senses include feelings, emotions, and how we perceive pain. Sensory processing disorders (SPDs) make it difficult to: (a) integrate and organize sensory information in the brain; (b) demonstrate knowledge; (c) learn; (d) interact with others or the environment; (e) move; (f) develop self-esteem and self control; and (g) express feelings. Children with SPD may not have the ability to process information provided by their senses in a way that achieves the calm and alert state that is required for effective learning.

Implementing lessons that assist students in understanding their own sensory needs may benefit educators in supporting their students with Sensory Processing Disorders. After students learn to identify their own sensory needs, they may gain the ability to recognize when they need to implement a sensory strategy. This realization allows these students to achieve self regulation.

This project addressed the need for students to learn self regulation strategies by teaching reflective journaling. Each lesson in the project met elementary level California Language Arts content standards in written language. Current Occupational Therapy models include both push in and pull out therapy. The written language lessons included in this project provide an opportunity for teachers to help students work on identifying self regulation strategies, while collaborating with the students’ Occupational Therapists to meet students’ sensory based and self regulation goals.
Sensory concepts for this project came from the Alert Program. The Alert Program is a three week series of therapy lessons where students learn self regulation with their Occupational Therapists, utilizing what is called their “engine” (Williams and Shellenberger, 1996). Students learn three engine states, low, just right, and high. Students also learn ways to identify their engine states, as well as strategies to meet sensory needs to maintain the “just right” state. The Alert Program was designed to support educators, families and children in that it can be implemented by a team, when supporting a child with SPD. This program helps children monitor, maintain, and change their levels of alertness to achieve the calm and alert state that is optimal for daily life. Key concepts of the Alert Program are: (a) the role of a leader; (b) understanding sensory integration; (c) arousal theory (a state of the nervous system describing how alert one feels); (d) self regulation; (e) protective responses (sensory defensiveness, inhibition and its relationship to proprioceptive input); (f) and sensory motor preferences. The project was built upon the premise that children can learn to identify their senses and learn self regulation strategies. This can be accomplished through the through building student understanding of the concepts underlying sensory identification. The project also built upon three theoretical concepts discussed by Williams and Shellenberger (1996); (a) Arousal Theory; (b) Sensory Integration and Modulation; and (c) Self-Regulation.

**Descriptions of Curriculum Units**

Each unit was designed to build on concepts of what sensory processing means in a progressive manner. The units were structured to first teach students fundamentals of sensory processing and then teach the higher level comprehension necessary to develop the ability to self regulate to remain calm and alert. This teaching process was accomplished through reflective journaling and writing.
The project developed three curriculum units. The first unit emphasized the senses. Students explored each of their senses including: (a) tactile; (b) vestibular and proprioceptive; (c) visual; (d) taste; (e) auditory; and; (f) olfactory senses. The students used a variety of activities to understand these concepts. Through the process of reflective journaling, the students identified their sensory preferences. The students used materials, such as a sensory preference checklist, for each lesson and a reflective journal. Written language standards were developed to support learners in writing a single topic paragraph, developing a topic with supporting details, and maintaining a consistent focus. Differentiation strategies included flexibility in the length of each student’s writing and the method in which each student writes (e.g. word processing). The instructional strategy was direct instruction in a group setting, where students were given the opportunity to participate in hands on sensory experiences.

The California state instructional standards addressed in unit one were those applicable to students in grades first through fifth grade. The lessons built on writing sentences and developing paragraphs which include: (a) a topic sentence, (b) details, (c) commentary, and (e) a closing sentence. Students worked on selecting a writing focus and on writing brief narratives describing a personal experience.

Unit two writing standards involved the students continuing to write a one topic paragraph. These lessons were designed to meet California state standards for students in grades three through five. The students explored the meaning of sensory modulation and integration and continued to write, using the same reflective journaling technique. The specific California standards addressed were; (a) writing about experiences and impressions using the senses, (b) expanding vocabulary using sensory experiences, and (c) creating sensory images through word choices.
The students learned ways in which to cope with the demands of their sensory rich environments, particularly when they felt sensory avoiding. Sensory avoiders, in general, often appear protective and defensive to others. These students were taught to use a quiet escape place, as well as how to utilize calming sensory activities (Miller 2006).

When students feel sensory sensitive, they are often feeling uncomfortable with sensory input and feeling protective Miller 2006). These students were taught how to cope with feeling sensory sensitive. The students learned about what to do when they felt down and have low registration of sensory input by practicing alerting exercises. The students also learned what to do when they are seeking sensory, how to create a sensory diet, and how to use purposeful movement to integrate sensory processing.

The lessons in unit three were designed for students age eight or older. The ability to independently self regulate usually develops at age eight (Williams & Shellenberger, 1996). The students learned how to self monitor and recognize the need to change their arousal states. The students also learned ways in which to sustain their mental effort and attention and to organize their environment. The students also made sensory goals and chose specific strategies for themselves to help manage their arousal states.

The writing focus is based on organization, structure, and selecting an audience. The lessons in unit three were written for students in grades three through five. The student’s were taught to develop a multiple paragraph essay, beginning with creating a sensory preference menu, creating a mind map and utilizing self and peer editing. The students learned how to continue to develop paragraphs to clarify meaning and improve focus. Lastly the students wrote their final paragraph about how they wanted to organize their sensory environment.
All of the student writing was assessed using a five part writing rubric which includes: (1) focus, (2) word choice, (3) organization, (4) style, and (5) conventions. The students must have (a) a topic sentence, (b) details, (c) commentary, and (d) closing sentence. Differentiation strategies were based on specific students’ IEP writing goals, grade levels, content standards, and ability levels.
## Curriculum Calendars

### Table 4.1

**Unit One: Sensory System Functions**

<table>
<thead>
<tr>
<th><strong>Unit One Lessons</strong></th>
<th><strong>Standards</strong></th>
<th><strong>Objectives</strong></th>
<th><strong>Assessments</strong></th>
<th><strong>Student Activity</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lesson One:</strong> Tactile Senses</td>
<td>Grade 1.1.1 Grade 2.1.2 Create readable documents</td>
<td>Write sentences Identify tactile Senses</td>
<td>Five part writing rubric</td>
<td>Kinesthetic activities using tactile senses. Write in reflective journals.</td>
</tr>
<tr>
<td><strong>Lesson Two:</strong> Vestibular &amp; Proprioceptive Senses</td>
<td>2.2.1 write brief narratives 2.1.1 Write in complete sentences.</td>
<td>Write sentences Identify vestibular and proprioceptive senses</td>
<td>Five part writing rubric</td>
<td>Kinesthetic movement. Reflective journal writing</td>
</tr>
<tr>
<td><strong>Lesson Three:</strong> Visual Senses</td>
<td>2.1.1 ideas and focus 3.2.1 context with action 4.1.3 Traditional structures for conveying information.</td>
<td>Work on writing a five sentence paragraph. Identify vestibular and proprioceptive senses</td>
<td>Five part writing rubric</td>
<td>Students explore their boundaries through visual space</td>
</tr>
<tr>
<td><strong>Lesson Four:</strong> Gustatory (Taste)</td>
<td>3.1.1 Create a paragraph 5.2.3 Establish a topic, facts, and ideas</td>
<td>Students write a paragraph. Students identify their sense of taste.</td>
<td>Lesson Four: Gustatory Senses (Taste)</td>
<td>Explore taste through different flavors and write a paragraph.</td>
</tr>
<tr>
<td><strong>Lesson Five:</strong> Auditory Senses</td>
<td>3.1.1 Create a single paragraph with a topic sentence and details 5.2.3 b. Establish a topic with supporting facts, details, and examples.</td>
<td>Students become aware of the meaning of their auditory senses. Students will write a five sentence paragraph.</td>
<td>Five part writing rubric</td>
<td>Through various auditory activities, students learn about their auditory preferences and write a paragraph in their reflective journals.</td>
</tr>
<tr>
<td><strong>Lesson Six:</strong> Olfactory Senses (smell)</td>
<td>2 1.0 write clear and coherent sentences with a central idea. 3.1.0 Write clear and coherent sentences and paragraphs that develop a central idea.</td>
<td>Students will write a one chunk paragraph about their sense of smell using at least two to three descriptive details.</td>
<td>Five part writing rubric</td>
<td>Students learn about their sense of smell and practice their journal writing.</td>
</tr>
<tr>
<td>Unit Two Lessons</td>
<td>Standards</td>
<td>Objectives</td>
<td>Assessments</td>
<td>Student Activity</td>
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<tr>
<td>Lesson One: Feeling Defensive and protective and avoiding sensory</td>
<td>3.2.2 Write about experiences of the senses. 4.2.1 Expands vocabulary using sensory 5.1.0 creates sensory images</td>
<td>learn about events that make student’s feel defensive, protective, and avoid sensory experiences</td>
<td>Five part writing rubric</td>
<td>Practice calming vestibular activities to help regulate their senses. Have the students brainstorm sensory words. Students draw a picture illustrating their writing.</td>
</tr>
<tr>
<td>Lesson Two: Feeling Protective and sensory sensitive</td>
<td>3.2.2 Write about experiences of the senses. 4.2.1 Expands vocabulary using sensory 5.1.0 creates sensory images</td>
<td>Learn about feelings sensory sensitive Document coping strategies and write a one chunk paragraph</td>
<td>Use the five part rubric to grade student work and understanding of the concept.</td>
<td>Practice doing calming and calming and soothing activities Identify and utilize a safe place in the classroom.</td>
</tr>
<tr>
<td>Lesson Three: sensory seeking</td>
<td>3.2.2 Write about sensory experiences 4.2.1 Expands vocabulary using sensory experiences, 5.1.0 creates sensory images</td>
<td>After learning about what it means to be sensory seeking, the students will learn about activities that can meet these sensory needs.</td>
<td>Use the five part rubric to grade the student writing and understanding of the concept.</td>
<td>Practice sensory activities that involve heavy movement such as sitting and spinning, dancing, somersaulting, and swinging. Students will write a topic sentence and details.</td>
</tr>
<tr>
<td>Lesson Four: low registration of sensory input</td>
<td>3.2.2 Write about sensory experiences 4.2.1 Expands vocabulary using sensory 5.1.0 creates sensory images</td>
<td>Learn about low sensory input Write a one chunk paragraph</td>
<td>Use the five point writing rubric to assess the students writing skills as</td>
<td>Practice simple alerting movement activities such as swaying, standing on one foot, or spinning around.</td>
</tr>
<tr>
<td>Lesson Five: Practicing sensory modulation using purposeful movement</td>
<td>3.2.2 Write about sensory experiences 4.2.1 Expands vocabulary using sensory 5.1.0 creates sensory images</td>
<td>Explore movement activities Write descriptive words Compose sentences</td>
<td>Have students cross out writing errors and rewrite. Do not have the students erase their mistakes.</td>
<td>Act out sensory experiences Brainstorm and write descriptive words Compose Sentences Practice heavy movement activities</td>
</tr>
</tbody>
</table>
Table 4.3
Unit Three: Learning to Self-Regulate the Senses

<table>
<thead>
<tr>
<th>Unit Three Lessons</th>
<th>Standards</th>
<th>Objectives</th>
<th>Assessments</th>
<th>Student Activity</th>
</tr>
</thead>
</table>
| Lesson One: Self - Monitoring & Self Esteem | 4.1.1 Select a focus, an organizational structure, based upon audience, and format requirements. | Create a sensory menu  
Identify an audience  
Share the sensory menu with peers | Check that all components of the sensory menu are completed. Check that students could share something they learned about a peer. | Identify preferred strategies reflecting on reflective journals  
Share sensory menu to build appreciation and understanding for one another |
| Lesson Two: Changing arousal state | 4.1.1 Select a focus, an organizational structure, based upon audience, and format requirements. | Identify the audience  
Apply steps of writing process in writing  
Recognize when to use sensory menu | Check that the mind map matches their sensory preferences. | Create a mind map students begin writing a paragraph describing what they need (supplies) to utilize their sensory preferences Have the students use colored pencils to write sentences |
| Lesson Three: Sustaining Attention | 4.1.10 Edit and revise drafts  
4.1.2 Create multiple-paragraph compositions  
5.1.6 Edit and revise | Write a draft second paragraph from lesson two  
Recognize what they need to do to remain alert using sensory strategies | Use the writing rubric to check points and if their draft paragraphs are complete. | Students to continue recognize their own sensory needs and this will help them feel calm and alert. Use colored pencils to write paragraphs |
| Lesson Four: Organizing My Classroom Environment | 4.1.10 Edit and revise drafts  
4.1.2 Create multiple-paragraph compositions  
5.1.6 Edit and revise | Students write a third paragraph about how they will organize their sensory environment to help them remain calm and alert. | Use the writing rubric to check points and if their draft paragraphs are complete. | Students write a third paragraph to their essay. Students proofread their paragraphs with a partner. |
| Lesson Five: Making My Sensory Goals & Using strategies | 3.1.4 Revise drafts using a rubric  
4.1.2 Create multiple-paragraph compositions  
5.1.6 Edit and revise | Revise three paragraph essay with a peer using an editing checklist | Check for completed self and peer editing checklists | Self and Peer proofread and revise essays |
Chapter V: Project Recommendations

An inclusion model is best practice in education for children with disabilities. Children who receive Occupational Therapy for sensory processing disorders (SPD) may have pull out services in a therapy room or consult services in the classroom. The researcher believes that children with SPD may benefit from inclusion models where educators incorporate student’s sensory processing goals into academic lessons to provide for inclusion for the students. The researcher’s project was designed to support children with sensory processing disorders in the classroom by teaching written language through sensory processing. When students learn to identify their own sensory needs they may recognize their sensory needs and integrate sensory strategies into their daily routines to help maintain the calm alert state that is needed for learning. Each lesson meets California content standards in written language for grades one through twelve.

This project is intended to improve education of students with SPD because it provides a tool to support educators in implementing sensory processing strategies through written language. The assistance from teachers may in turn help learners who struggle with SPD. It is the belief of the researcher that collaboration with the Occupational Therapist is a key component of this project. The Occupational Therapist can guide educators in teaching appropriate sensory strategies and provide a focus on individual student sensory IEP goals. The OT has the training and background to ensure appropriate students sensory needs are met. Meeting sensory based learning needs is a teaching approach that differentiates instruction and classroom management.

This project addresses concerns for educators who would like to provide sensory strategies in the special education or general education classroom setting. The written language
lessons teach students sensory processing strategies therefore providing a differentiated inclusive instruction model. Thus students with SPD receive OT sensory services in therapy and in the classroom.

Sensory strategies that Occupational Therapists use would provide an informational framework in sensory strategies and processing. The research in the literature review showed that sensory processing disorders can affect attention and focus for students with disabilities such as Autism, ADHD, and Speech and Language Disorders. Implications for research trends that lean towards the positive effects of sensory therapy on behavior indicate that teachers are not reinforcing negative behaviors when using sensory strategies because sensory strategies are not used as a positive reinforcement but rather an antecedent and intervention to support a need the child cannot control. While research showed mixed results in the efficacy of sensory processing integration therapy, it continues to be a widely renowned use of therapy in the field of occupational therapy. The intention of the written language lessons written by the researcher are in support that sensory integration practice is beneficial to children with SPD to implement in the classroom.

**Results and Lessons Learned**

The researcher emphasizes the importance of consulting with a qualified professional when choosing to implement sensory strategies in the classroom. Children with a sensory processing disorder may be assessed by a trained occupational therapist who can establish student centered goals and services and guide the teacher in ways to support the student in the classroom. When student SPD goals are implemented in the classroom and consultation with the Occupational Therapist occurs, this creates a blended services model for the student.
The sensory writing units and lessons revealed the importance of allowing the student to discover their own sensory needs. The student’s use reflective journals, paragraph composition, and descriptive writing to develop their understanding of sensory processing and identify sensory needs. The students begin in unit one by learning to define their sensory systems such as proprioceptive, vestibular, olfactory, touch, gustatory, and vision. The lessons in the second unit consist of sensory modulation and integration. The students learn how to identify and what to do when they feel sensory defensive, underresponsive to sensory stimuli, and sensory seeking. The students learn how to use purposeful movement and identify a quiet and escape place as well as a movement space in the classroom. In unit one and two, students learn and practice reflective journaling and paragraph writing. The third unit involves lessons regarding self-regulation. The students work on a three paragraph essay and learn how to self and peer edit.

The teacher is in the classroom to teach and facilitate the student’s sense of sensory self discovery. When whole group sensory lessons are taught, children with SPD are not singled out or isolated because they may have their sensory needs met in the classroom. This may limit the classroom disruptions that may occur if sensory needs are not being met. The whole group lessons allow students with SPD to explore their sensory needs with their peers rather than independently.

**Educational Implications and Project Implementation**

It is recommended that curriculum development and instruction be centered on the classroom needs. Sensory stations are developed as needs are addressed. It is also recommended that there be regular consultation with an occupational therapist that is trained in sensory processing. This project may lead to effective instruction as it demonstrates an inclusive differentiated instruction model.
Recommendations for this project and the creation of similar projects include further collaboration with specialists, parents and other service providers. Working on a similar project with the speech and language pathologist may be beneficial. Many Speech and Language Pathologists may have interests in sensory processing because they also service children with SPD.

If concerns exist regarding whether student behavior (inattentiveness, off task) is the result of SPD, instructors can follow a “first, then, after” approach. The sensory strategy is then implemented and used as an antecedent; the student performs the desired behavior, and after the student is rewarded for exhibiting the desired behavior or completing the task. Teachers can reward the behavior during or after the desired behavior is occurring rather than offering sensory when the undesired behavior is occurring. Instead of accidently reinforcing learners off task behavior, a more preventative approach views the sensory strategy as both an antecedent and an intervention.

Limitations of Project

Limitations of the project include how fine motor skills could be addressed in the writing process. Some children who receive occupational therapy services for fine motor may benefit from the writing unit. Furthermore, the practice of fine motor skills can address proprioceptive, vestibular, and visual processing practice.

Other limitations include lack of empirical research that suggests the effectiveness of incorporating sensory strategies into academic lessons and whether or not these are effective. It would also be beneficial to know how likely teacher’s would be willing to incorporate lessons that teach children about sensory strategies.
The design and implementation of a sensory/movement room at the school site may have further varied this project. A sensory room would have specific items that are designed for children with SPD. This can include swings, therapy balls, therapy mats and cushions, and/or other therapy items. Although, incorporating sensory strategies in the classroom might limit disruptions and transitions.

**Future Research or Project Suggestions**

Future educational research may include investigating the preconceived belief’s regarding inclusive settings. Professional development seminars can be focused on training teachers in creating modifications in the classroom to facilitate a sensory based learning environment for students with sensory needs.

Further areas of research can investigate the effectiveness of consultations between the teacher and the occupational therapist including how student progress is documented after utilizing sensory recommendations based on IEP goals. Research can also focus on the knowledge base educators have about sensory processing. This research can include whether progress monitoring is occurring and whether sensory strategies are being used to meet specific student centered needs.

Areas that should be explored further are extension activities to the curriculum, other content areas, and ways to progress monitor the individual student as they explore their sensory needs and make sensory goals in the special education or general education classroom. Research may be done on how learning about sensory in an inclusive environment for students with and without SPD affects students without SPD in determining an inclusive equitable classroom.

Additional research could be conducted with the goal of determining whether a writing unit may be appropriate to incorporate sensory processing strategies to maximize classroom
academic time while teaching students to understand their sensory needs. Because students with SPD and other disabilities have unique needs, it may be beneficial for general educators to collaborate with an Occupational Therapist to provide sensory input opportunities that are designed to support specific sensory deficits, using a blended services model and graph results before, during and after the sensory technique is implemented.

Universal sensory strategies could be explored in an attempt to respond to the needs of all learners, assuming that students who exhibit behaviors that are similar to students with SPD may also benefit from sensory strategies that involve the proprioceptive, vestibular, visual, auditory, and tactile senses to potentially increase attention and motivation skills.

Conclusion

The results of this sensory writing project illuminate the importance of consulting with qualified professionals when utilizing sensory strategies in the classroom and designing specific lessons. Qualified professionals can assess and recommend specific activities, resources, and ideas for the classroom and school environment that will benefit the student far more than without the benefit of these insights. Educators should consider these implications when integrating sensory experiences into their classroom and school setting.
References


Bagatell, Nancy; Mirigliani, Gina; Patterson, Chrissa; Reyes, Yadira; & Test, Lisa. (2010), Effectiveness of therapy ball chairs on classroom participation in children With Autism Spectrum Disorders. *American Journal of Occupational Therapy*, 64(6) (November/December) 895-903.


Mangeot, Shanley; Donelan D.; Miller, Lucy J.; McIntosh, Daniel N.; McGrath-Clarke, Jude; Simon, Jody; Hagerman, Randi J.; & Goldson, Edward. (2001), Sensory modulation dysfunction in children with attention-deficit-hyperactivity disorder. *Journal of Developmental Medicine and Child Neurology*, 43(6) 399-406.


Schaaf, Roseann C.; Miller, Lucy J.; Seawell, Duncan; & O'Keefe, Shannon. (2003), Children with disturbances in sensory processing: a pilot study examining the role of the parasympathetic nervous system. *The American Journal of Occupational Therapy, 57*(4) (July/August) 442-449.


It Makes Sensory!

Identifying Sensory Preferences Using Written Language

Marie Nieblas
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Unit One: Sensory System Functions

The curriculum map below details the lessons covered in this unit. The ability to identify one’s sensory functions is the goal of this unit. Worksheets for lessons in this unit are at the end of the unit.

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<tr>
<td>Lesson One: Tactile Senses</td>
<td>Grade 1.1.1 Grade 2.1.2 Create readable documents</td>
<td>Write sentences Identify tactile Senses</td>
<td>Five part writing rubric</td>
<td>Kinesthetic activities using tactile senses. Write in reflective journals.</td>
</tr>
<tr>
<td>Lesson Two: Vestibular &amp; Proprioceptive Senses</td>
<td>2.2.1 write brief narratives 2.1.1 Write in complete sentences.</td>
<td>Write sentences Identify vestibular and proprioceptive senses</td>
<td>Five part writing rubric</td>
<td>Kinesthetic movement. Reflective journal writing</td>
</tr>
<tr>
<td>Lesson Three: Visual Senses</td>
<td>2.1.1 ideas and focus 3.2.1 context with action 4.1.3 Traditional structures for conveying information.</td>
<td>Work on writing a five sentence paragraph. Identify vestibular and proprioceptive senses</td>
<td>Five part writing rubric</td>
<td>Students explore their boundaries through visual space</td>
</tr>
<tr>
<td>Lesson Four: Gustatory (Taste)</td>
<td>3.1.1 Create a paragraph 5.2.3 Establish a topic, facts, and ideas</td>
<td>Students write a paragraph. Students identify their sense of taste.</td>
<td>Lesson Four: Gustatory Senses (Taste)</td>
<td>Explore taste through different flavors and write a paragraph.</td>
</tr>
<tr>
<td>Lesson Five: Auditory Senses</td>
<td>3.1.1 Create a single paragraph with a topic sentence and details 5.2.3 b. Establish a topic with supporting facts, details, and examples.</td>
<td>Students become aware of the meaning of their auditory senses. Students will write a five sentence paragraph.</td>
<td>Five part writing rubric</td>
<td>Through various auditory activities, students learn about their auditory preferences and write a paragraph in their reflective journals.</td>
</tr>
<tr>
<td>Lesson Six: Olfactory Senses (smell)</td>
<td>2 1.0 write clear and coherent sentences with a central idea. 3.1.0 write clear and coherent sentences and paragraphs that develop a central idea.</td>
<td>Students will write a one chunk paragraph about their sense of smell using at least two to three descriptive details.</td>
<td>Five part writing rubric</td>
<td>Students learn about their sense of smell and practice their journal writing.</td>
</tr>
</tbody>
</table>
Unit One: Lesson One

Sensory Senses: What is my tactile sensation? What tactile senses make me feel comfortable and calm?

Concept / Topic To Teach: Students will explore their tactile sense (sense of touch) and identify touch sensations such as, soft, rough, smooth, sharp, hot, cold, and pressure.

Standards Addressed:
First Grade  1.1.1 Select a focus when writing.
Second Grade 2.1.2 Create readable documents with legible handwriting.

Lesson Time: 1-2 30-45 minute sessions

General Goal(s): Teacher understands that touch can raise blood pressure, heart rate, change breathing patterns, and lower responsiveness. Students understand that skin causes sensations. The students will focus and identify an interest in one or more sensations that they like. Students will develop written communication skills and fine motor skills.

Specific Objectives:
• Students will copy or write independently about the sensations that they experienced.
• Students are able to identify the tactile sensations.
• Students choose preferred tactile sensations by writing these down in a journal.

Required Materials:
• Journal
• A list of items for students to choose from. Items to touch with a variety of textures and temperatures such as an ice pack, heating pad, cloth material (silk, denim, cotton), squishy ball, stuffed animals or pillows, bean bag, clay, or other fidgets.
• Sensory station set up with tactile items available

Anticipatory Set (Lead-In):
1. Ask students if they like to have their mom or dad hug them, if they like to pet their dog or cat.
2. Tell students these are types of touch that we experience in our lives. Other types of sensations are hot and cold.
3. Ask students what types of items or objects can be hot or cold.
4. Tell students we are going to experience different feelings of touch using different items.

Step-By-Step Procedures:
1. Read and define the vocabulary word “tactile or touch”.
2. Write this on chart paper.
3. Tell the students that they will fidget with objects using their “sense of touch”, pick their favorite item(s), and write sentences about their favorite item to develop a focus of writing.
4. Emphasize that touch is part of our “senses”.
5. Have students fidget, touch, rub, hold, and play with each item (be sure to model this).
6. Ask students to identify their favorite things to touch.
7. Have each student show or share which was their favorite item and answer why or what they liked about it (use why or what questions only for students who can comfortably answer).
8. Have the students choose one of the items they liked the most and draw a picture of themselves holding or using that item.
9. Have the student copy or write 2-3 sentences discussing what they did or felt when they touched or held their favorite item.
10. Have the student add a sentence about what their favorite item to touch is at home.

Plan For Independent Practice: Leave the sensory touch station in a bin. Allow sensory hyposensitive or hypersensitive children opportunities to play in the touch bin throughout the day. Allow the student to keep a small item at their desk that they may use to touch and change the item to provide the student with different tactile sensations and touch experiences.

Closure (Reflect Anticipatory Set): Have the students read aloud and share their journal entry and picture to their neighbor or group.

Assessment Based On Objectives: Correct student writing and have students make their own corrections. Have students verbalize or model what it means to touch or use our “tactile senses”.

Adaptations (For Students With Learning Disabilities): Focus is on students with indications for use of sensory touch needs demonstrating habits of touching others, clicking pens, tapping pencils and drumming, tearing, fiddling, picking at skin and fingernails and/or touching mouth nose or eyes.

Extensions (For Gifted Students): Students may write a paragraph describing their tactile experience. Write about an experience and impression in the area of the tactile sense.

Possible Connections To Other Subjects: Science
Unit One: Lesson Two

Sensory Senses: Vestibular and Proprioceptive Senses

Concept / Topic To Teach: Students learn what are the vestibular (balance) and proprioceptive (movement) senses and their sensory preferences. Students learn about their speed and direction.

Standards Addressed:
Second Grade 2.2.1 Write brief narratives (e.g., fictional, autobiographical) describing an experience.
Second Grade 2.1.1 Write and speak in complete, coherent sentences.

Lesson Time: 1-2 sessions of 30-45 minutes

General Goal(s): Students will know the concepts of vestibular and proprioceptive sense and be able to identify their preferred movement break.

Specific Objectives:
- Students will learn to identify vestibular and proprioceptive senses.
- Journal writes 2-5 sentences about their preferences and experience.

Required Materials:
- Journals and pencils as well as areas for seated and standing movements. Sensory cushions, small weights or beanbags.
- Settings may need to include open space indoors or an activity area outdoors such as the playground.

Anticipatory Set (Lead-In):
1. Ask the students if they like to do movement activities.
2. Ask students places they move around in their everyday lives and what types of movements they do (some answers may include, walking, running, climbing).

Step-By-Step Procedures:
1. Begin by making space expectations clear. Students need to be at minimum an arms distance apart for physical activities and talking needs to remain to the minimum that is allowed by the teacher.
2. Begin by writing the vocabulary words “vestibular and proprioceptive”. Simplify the vocabulary by saying that vestibular is balance and proprioceptive is movement.
3. Write this and the definition on the chart paper and label a body system. For vestibular senses provide information about where our body is in space as well as the speed and direction of movement.
4. Discuss that proprioceptive is our body awareness and the awareness of where our body parts are and how they are moving.
5. Have students practice a variety of proprioceptive and vestibular experiences (do one activity at a time and define each activity) such as rocking, spinning in a chair, bouncing on a therapy or yoga ball, stretching, running, hand pushes and pulls, chair push-ups, carrying books or weights.

6. Ask students to state what part of their body they are using and how they use their balance to coordinate these movements.

7. Ask students to draw a picture doing their favorite proprioceptive or vestibular activity.

8. Tell students to then write about what position they were in when they performed their favorite movement activity. Ask students where their bodies, feet, arms, hands, and legs were and if they moved fast or slow.

9. Have the students write 2-5 sentences describing the picture of their favorite proprioceptive or vestibular activity.

10. Have students write a few narrative sentences of why they liked this activity.

**Plan For Independent Practice:**

1. Students will practice writing their narrative detail sentences independently after the narrative topic sentence is written with teacher support.

2. Students will have a station area in the classroom or strategies while seated to practice movement and body awareness such as sit on a sensory cushion, manipulate a soft cloth, yarn, or string, stabilize a chair with tennis balls on the legs, manipulate beads, utilize opportunities to rock safely.

**Closure (Reflect Anticipatory Set):** Ask students to define proprioceptive (body awareness) and vestibular (balance) and, read and share out their journal entry.

**Assessment Based On Objectives:** Correct sentences. Compare writing to other journal writing samples. Look for areas of improvement and have the students identify areas of writing improvement.

**Adaptations (For Students With Learning Disabilities):** Horizontal movement and moving in circles changes the fluids in the neural space and promotes sensory integration. These movements can also help students who head bang. Try linear movement to calm students before tasks and vertical movement to alert student to tasks. Make adaptations based on the student’s physical ability. Safely assist students with limited mobility. Be sure to model all movements.

**Extensions (For Gifted Students):** More advanced students can write more descriptive sentences such as a five sentence narrative paragraph.

**Possible Connections To Other Subjects:** Science
Unit One: Lesson Three

Sensory Senses: Visual (sight)

Concept / Topic To Teach: Our eyes give us the sense of vision in which we visually perceive space and objects.

Standards Addressed:
Second grade 2.1.1 Group related ideas and maintain a consistent focus.
Third Grade 3.2.1 Provide a context within which an action takes place.
Fourth Grade 4.1.3 Use traditional structures for conveying information.

Lesson Time: 1-2 sessions of 30-45 minutes

General Goal(s): Students will understand that their visual sense provides information about objects and persons. Students will explore boundaries to move through space focusing on their visual senses.

Specific Objectives:
- The students will complete visual activities exploring visual senses.
- The students will explore boundaries and find their visual preferences.
- The students will use visual words to write sentences in their reflective journals.
- Write expository and narrative sentences.

Required Materials: colored pencils, journals, colored paper, reading material

Anticipatory Set (Lead-In):
1. Ask students what their favorite colors are.
2. Ask students to look in their desks and say whether it is neat or messy.
3. Turn on all of the lights, dim the lights, and turn off the lights.
4. Ask students how they feel when there is a change in lighting.

Step-By-Step Procedures:
1. Provide a variety of sensory visual sensory experiences for the students.
2. Begin by writing the vocabulary word “sight” or “vision” on the board and write a definition on the board.
3. Ask students to identify items they can see in the classroom.
4. List 4-5 items on the board.
5. Ask students to tell you people or objects they like to see and how it makes them feel.
6. Tell the students that they are going to play a game.
7. The students will stand and walk around the room for one minute.
8. Tell the students they are not allowed to touch any object, bump into any object, or touch
or bump into each other.
9. Tell students they will be using their sight to help them identify the boundaries and space between themselves and others.
10. When the students are finished, ask the students what objects or people they had to look for and move from.
11. Ask the students why they had to move away and write these on the board (answers may include, (“so I do not run into someone, so I do not get hurt”).
12. Discuss using our sight to imagine a personal bubble around those and objects around us. Everyone and everything has a bubble and it is okay to stand in someone else’s personal bubble if they allow you.
13. Model using the reflective journals to have the students write sentences about what they did, how they did it, and how it made them feel. The students can add a closing sentence about what they would like to do.

**Plan For Independent Practice**: Students will look at their desks and determine whether their desk is messy or clean. The students will organize their desks to make it visually pleasing. The students can then organize places in the classroom to make it visually pleasing and write about what they did in their journals.

**Closure (Reflect Anticipatory Set)**: Ask students why we use our sight. Ask students to reflect, share, discuss or make simple statements about how our sight can make us feel or how it is useful.

**Assessment Based On Objectives**: Assess student’s visual preferences using a visual preferences check list. Assess the students writing by looking for proper grammar, punctuation, sentence structure, spelling, and coherence.

**Adaptations (For Students With Learning Disabilities)**: Students with disabilities may write more simple sentences or statements. Have students dictate and/or copy information in their journals. They may also draw a picture of the concept and the definition of the vocabulary word.

**Extensions (For Gifted Students)**: Have students who are gifted describe visual places they have visited and experiences they have had using their sight. Students may determine their own visual sense preferences and write these down.

**Possible Connections To Other Subjects**: science and body systems
Unit One: Lesson Four

Sensory Sense Concept / Topic To Teach: Gustatory Sense (taste)

Standards Addressed:
Third Grade  3.1.1 Create a single paragraph: a. Develop a topic sentence. b. Include simple supporting facts and details.
Fifth Grade  5.2.3 b. Establish a controlling idea or topic. c. Develop the topic with simple facts, details, examples, and explanations.

Lesson Time: 1-2 30-45 minute sessions

General Goal(s): Students will learn that chemical receptors in our tongues provide information about different types of taste such as sweet, sour, bitter, salty, and spicy.

Specific Objectives:
- Students experience different types of taste, the students will identify the tastes and identify their preferred sense of taste.
- Students will learn about the sense of taste by performing hands on experiment to test where specific flavors are tasted.
- Students will learn the vocabulary, (a) Flavor, how something tastes (b) Papillae, the tiny bumps on their tongue (c) Saliva, a liquid in your mouth that helps to break up food and wash it down their throat and (d) Taste bud, an area on your tongue that carries messages about flavor to your brain.

Required Materials: mirrors for students to observe their tongues, pencils, journals, flavored water and items (you can add salt, sugar, and other flavors to water with small cups for students to use individually, students can use cotton tips in their personal individual cups, not to share, and dip the cotton tips in to taste).

Anticipatory Set (Lead-In):
1. Discuss that taste is one of our five main senses. Taste tells you the flavor of what you have in your mouth.
2. Discuss the function of saliva. When you eat or drink something, it mixes with a watery substance called “saliva” and helps to create a taste or flavor.
3. Discuss the function of taste buds. You taste using “taste buds” on your tongue. Everyone’s tongue has tiny bumps all over it called “papillae” (have students look in a mirror and stick out their tongues to see their papillae).
4. Tell the students that between these are the taste buds. The taste buds are so small that you can’t see them with our human eyes. There are thousands of them on each tongue. When you eat or drink and it reaches your taste buds, you taste what is in your mouth. Your taste buds send messages along “nerves” in your tongue to your brain. Your brain tells you what you taste.
Step-By-Step Procedures:

1. Have a thorough discussion on the “Functions of the tongue”.
   - Helps us talk (Have students say “We are learning about taste!” and ask students to focus on how their tongue is moving.”
   - Helps us mix and break up food
   - Helps us swallow (Have students swallow and focus on how their tongue is moving)
   - Helps you taste

2. Discuss, “what is taste? And how we taste?”
   Taste is one of our five main senses. Taste tells you the flavor of what you have in your mouth.
3. Discuss the “four different flavors a tongue tastes”
4. Display image of items that are sweet, sour, salty, and bitter.
5. Show pictures of non exemplars such as items that do not have taste.
6. Group children into one table group.
7. First have them guess where they think the flavors will be located.
8. Hand out the cotton swabs and individual flavored water with paper towels and have each student dip their cotton swabs in their individual flavored water cups and taste.

Plan for Independent Practice: Students will each be responsible for completing documentation in their journal of their favorite taste and make a statement of how it makes them feel as well as their favorite snack. Provide sensory snacks in a tub that have different textures and tastes such as hard candy, crunchy pretzels, chewing gum and raisins, sour candy or pickles, frozen drinks, and trail mix for sensory combination.

Closure (Reflect Anticipatory Set): Ask questions such as, “What are papillae? What is saliva? What does a taste bud do? What is flavor? What are the four main functions of the tongue?”

Assessment Based On Objectives: Check for understanding by asking questions throughout the lesson. Have the students complete a sensory taste preference sheet.

Adaptations (For Students With Learning Disabilities): Students with learning disabilities may draw pictures or write and/or copy simple sentences in their journals.

Extensions (For Gifted Students): Gifted students will write more complete complex sentences describing their sense of taste.

Possible Connections To Other Subjects: Science and body systems
Unit One: Lesson Five

Sensory Senses: Auditory (hearing)

Concept / Topic To Teach: Inside our ear is where we hear sound from our environment. We all have hearing sensory preferences.

Standards Addressed:
Third Grade 3.1.1 Create a single paragraph: a. Develop a topic sentence. b. Include simple supporting facts and details.
Fifth Grade 5.2.3 b. Establish a controlling idea or topic. c. Develop the topic with simple facts, details, examples, and explanations.

Lesson Time: 1-2 30-45 minute sessions

General Goal(s): Students understand that sound is stimulated by air/sound waves in the inner ear. Our ears provide sound from the environment such as loud, soft, high, low, near, far.

Specific Objectives:
1. Students will identify their own auditory preferences.
2. Students will write a five sentence paragraph including a topic sentence about what they learned, two to three detail sentences, a commentary about what they like or dislike, and a closing sentence about how they will utilize their auditory preference and would like to utilize this in the future.

Required Materials: classical music, hard rock music, hip hop music, CD player, interactive journals, bell, clock, iPods, text or dictate to speech application

Anticipatory Set (Lead-In):
1. Tell students that today they are going to learn about our auditory senses.
2. Tell students that they are going to listen to various types of music and sounds.
3. Tell students that they will discuss how these make you feel and that they will write a paragraph and draw a picture of their experience.

Step-By-Step Procedures:
1. The teacher will have the students state or describe sounds and noises they hear every day or can hear (responses may include, dog barking, people talking, music, clock ticking etc.).
2. The teacher will list these on the board.
3. Tell the students they will hear different noises in the classroom and decide what type of noise they prefer.
4. Play various types of music with variations in rhythm, arrhythmic versus, rhythmical for one minute each and have the students choose the music that made them feel most
relaxed and most alert.

5. Have the students begin working on a topic sentence in their journals.

6. Begin by allowing auditory distractions in the environment by allowing a noisy working environment by allowing the students to talk amongst themselves and play music.

7. Monitor their work and then after five minutes ask the students to work in a quiet working environment with little noise or distraction.

8. After five minutes of working with the students with support on their writing of a topic sentence and details, ask the students which environments they prefer by having them complete an auditory preference checklist.

**Plan for Independent Practice:** The students will complete the auditory preference checklist independently. Then the students will write a commentary and closing sentence including what their auditory preference is and what they would like to have happen to fulfill these preferences. Have the students draw a picture in their journal of their experience and to illustrate their writing.

**Closure (Reflect Anticipatory Set):** Review the vocabulary of our auditory senses. Have students share out their writing with their peers. Provide relaxing music, a study corral, soft ear plugs, and headphones for students who prefer to work in a quiet work environment.

**Assessment Based On Objectives:** Use a five point scoring grid and rubric to grade the students writing.

**Adaptations (For Students with Learning Disabilities):** Students with learning disabilities may write a topic sentence and details. Adhere to the students writing IEP goals if they have one. The students may dictate sentences and copy them from the teacher. Students may use keyboarding if they need to type their paragraphs. The students may also type or speak on portable technology. Be sensitive to students with hearing impairments with hearing aids. Auditory noises are often amplified more than students without hearing impairments.

**Extensions (For Gifted Students):** Students who have more advanced writing abilities may write more complex sentences and expand their writing to more than one paragraph.

**Possible Connections To Other Subjects:** Science and body systems
Unit One: Lesson Six

Sensory Senses: Olfactory (smell)

Concept / Topic To Teach: students learn about their sense of smell and continue practice paragraph writing using their reflective journals.

Standards Addressed:
Grade Two 2 1.0 Students write clear and coherent sentences and paragraphs that develop a central idea.
Grade Three 3.1.0 Students write clear and coherent sentences and paragraphs that develop a central idea.

Lesson Time: 1-2 30-45 minute sessions

General Goal(s): Students will learn that chemical receptors in the nasal structure are closely related to our gustatory system (sense of smell) and work on writing a one chunk paragraph.

Specific Objectives:
- Learn about their sense of smell
- write a one chunk paragraph about their sense of smell using at least two to three descriptive details.

Required Materials: Reflective writing journals, variety of scents such as scented candles sweet, spearmint, and floral. Set up a station with different scents and label the types of scents, musty, acrid, pungent, sweet, and floral. Have available other scents such as musty, acrid, putrid, pungent. Have vinegar for acrid scent, lemon and orange peel for pungent scents, empty pop cans for musty scents. Have available salt and sugar.

Anticipatory Set (Lead-In):
1. Explain the vocabulary word “smell”.
2. Ask the students what part of our body they use to smell.
3. Make two separate lists one listing things that smell good and one list of things the children think smell bad.

Step-By-Step Procedures:
1. Have the students smell each item in the sensory scent station and describe the scents.
2. Then have the students hold their noses and try to taste a small amount of salt and a small amount of sugar.
3. Ask the students if they were able to taste flavors.
4. Discuss how our sense of scent or smell is strongly related to our sense of taste as well as how we feel and that certain scents make us feel hungry, sick, or relaxed.
5. Ask the students what scents made them feel repulsed or sick, relaxed or hungry.
6. Have the students complete a scent preference checklist.

**Plan for Independent Practice:** Have the students begin by writing a paragraph in their reflective journals. They should have a topic sentence of what they learned, 2-3 details, and a commentary of their favorite scent and what scent makes them feel good. Have the students draw a picture of their own interpretation of their writing and experience.

**Closure (Reflect Anticipatory Set):** Have the students share out their writing to their peers. Review the vocabulary word “scent” and “sense of smell”.

**Assessment Based On Objectives:** Use the writing rubric for student writing and to determine whether their writing sticks to the topic in the lesson.

**Adaptations (For Students With Learning Disabilities):** Students with learning disabilities may need to follow their IEP writing goals. The students may type their writing. The students may write at their ability such as develop a topic sentence and one to two supporting details.

**Extensions (For Gifted Students):** Students have more advanced writing skills may write more than one paragraph about the lesson topic.

**Possible Connections To Other Subjects:** science and body systems
Table 1.1

**Sensory Motor Preference Check List**
adapted from Williams, Shellenberger and the Alert Program

<table>
<thead>
<tr>
<th>Oral Input Sensory Checklist</th>
<th>Movement/ Vestibular /Proprioceptive Input) Checklist</th>
<th>Touch (Tactile Input)</th>
</tr>
</thead>
<tbody>
<tr>
<td>_____Suck on hard candy</td>
<td>_____rock in chair</td>
<td>_____twist on hair</td>
</tr>
<tr>
<td>_____Eat pickle</td>
<td>_____Crunch on pretzels</td>
<td>_____massage or back rub</td>
</tr>
<tr>
<td>_____whistle</td>
<td>_____Chew on pencil</td>
<td>_____pet animal</td>
</tr>
<tr>
<td>_____Eat spicy chips</td>
<td>_____Breath deeply</td>
<td>_____fidget (play) with object in hands</td>
</tr>
<tr>
<td>_____Eat popcorn</td>
<td>_____Suck, lick or bite your lip</td>
<td>_____drum or tap pencil</td>
</tr>
<tr>
<td>_____Cold popsicles</td>
<td>_____Chew gum</td>
<td></td>
</tr>
<tr>
<td>_____Bit nails</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Look (visual input)

_____watch a fish tank    _____bright light

_____low light           _____messy desk

_____neat desk           _____bright colors

_____soft colors

Listen (auditory input)

_____listen to classical music  _____listen to rock music

_____listen to hip hop music  _____work in a quiet room

_____work in a noisy room  _____sing or talk to self or others
Table 1.2

| Name__________________________ | Date__________________________ |

**Paragraph Writing Rubric**

<table>
<thead>
<tr>
<th></th>
<th>Acceptable</th>
<th>Getting Closer</th>
<th>Needs Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Topic Sentence</strong></td>
<td>Interesting topic sentence that introduces the topic of the paragraph</td>
<td>Adequate topic sentence that introduces the topic of the paragraph</td>
<td>Topic sentence is unclear or missing</td>
</tr>
<tr>
<td><strong>Concrete Details</strong></td>
<td>Paragraph includes two concrete details that strongly support the topic sentence</td>
<td>Paragraph includes one concrete detail that supports the topic sentence</td>
<td>Paragraph is missing concrete details or CD does not support the topic sentence</td>
</tr>
<tr>
<td><strong>Commentary</strong></td>
<td>There are two sentences of insightful analysis/commentary provided for each concrete detail. This commentary directly supports the topic sentence.</td>
<td>There are fewer than 2 sentences of commentary provided for each concrete detail. This commentary directly supports the topic sentence.</td>
<td>Paragraph is missing commentary or the commentary does not support the topic sentence.</td>
</tr>
<tr>
<td><strong>Concluding Sentence</strong></td>
<td>Concluding sentence pulls the ideas to a close</td>
<td>The paragraph has a closing sentence that strays from the main idea.</td>
<td>No concluding sentence.</td>
</tr>
<tr>
<td><strong>Neatness</strong></td>
<td>Legibly handwritten or typed with no distracting errors.</td>
<td>Legibly written, easy to read with 1-2 distracting errors.</td>
<td>Several distracting errors that make the paragraph difficult to read.</td>
</tr>
</tbody>
</table>

**TOTAL** /5
Unit Two: Sensory Integration and Modulation

The curriculum map below details the lessons covered in this unit. The ability to use calming techniques and identify sensory feelings is explored in this unit. The writing portion of this unit covers the senses, expanding vocabulary, and paragraph writing.

<table>
<thead>
<tr>
<th>Unit Two Lessons</th>
<th>Standards</th>
<th>Objectives</th>
<th>Assessments</th>
<th>Student Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lesson One:</strong> Feeling Defensive and protective and avoiding sensory</td>
<td>3.2.2 Write about experiences of the senses. 4.2.1 Expands vocabulary using sensory 5.1.0 creates sensory images</td>
<td>learn about events that make student’s feel defensive, protective, and avoid sensory experiences write paragraph</td>
<td>Five part writing rubric</td>
<td>Practice calming vestibular activities to help regulate their senses. Have the students brainstorm sensory words. Students draw a picture illustrating their writing.</td>
</tr>
<tr>
<td><strong>Lesson Two:</strong> Feeling Protective and sensory sensitive</td>
<td>3.2.2 Write about experiences of the senses. 4.2.1 Expands vocabulary using sensory 5.1.0 creates sensory images</td>
<td>Learn about feelings sensory sensitive Document coping strategies and write a one chunk paragraph</td>
<td>Use the five part rubric to grade student work and understanding of the concept.</td>
<td>Practice doing calming and calming and soothing activities. Identify and utilize a safe place in the classroom.</td>
</tr>
<tr>
<td><strong>Lesson Three:</strong> sensory seeking</td>
<td>3.2.2 Write about sensory experiences 4.2.1 Expands vocabulary using sensory experiences. 5.1.0 creates sensory images</td>
<td>After learning about what it means to be sensory seeking, the students will learn about activities that can meet these sensory needs.</td>
<td>Use the five part rubric to grade the student writing and understanding of the concept.</td>
<td>Practice sensory activities that involve heavy movement such as sitting and spinning, dancing, somersaulting, and swinging. Students will write a topic sentence and details.</td>
</tr>
<tr>
<td><strong>Lesson Four:</strong> Low registration of sensory input</td>
<td>3.2.2 Write about sensory experiences 4.2.1 Expands vocabulary using sensory 5.1.0 creates sensory images</td>
<td>Learn about low sensory input Write a one chunk paragraph</td>
<td>Use the five point writing rubric to assess the students writing skills as</td>
<td>Practice simple alerting movement activities such as swaying, standing on one foot, or spinning around.</td>
</tr>
<tr>
<td><strong>Lesson Five:</strong> Practicing sensory modulation using purposeful movement</td>
<td>3.2.2 Write about sensory experiences 4.2.1 Expands vocabulary using sensory 5.1.0 creates sensory images</td>
<td>Explore movement activities Write descriptive words Compose sentences</td>
<td>Have students cross out writing errors and rewrite. Do not have the students erase their mistakes.</td>
<td>Act out sensory experiences Brainstorm and write descriptive words Compose Sentences Practice heavy movement activities</td>
</tr>
</tbody>
</table>
Unit Two: Lesson One

Sensory Senses: Feeling Defensive and protective and avoiding sensory

Concept / Topic to Teach: Students recognize that not having our sensory needs met can make us feel defensive and protective especially when they are in states of sensory avoidance. Children may overreact and become upset to sensory input such as touch, light, or sound. The children will learn that sensory input can bombard us and they may be unable to ignore certain sensations.

Standards Addressed:
Third Grade 3.2.2 Writes about experiences and impressions in the areas of the senses.
Fourth Grade 4.2.1 Expands their use of vocabulary using sensory experiences.
Fifth Grade 5.1.0 creates sensory images through word choices.

Lesson Time: 1-2 sessions for 30-45 minutes

General Goal(s): Students recognize when they are avoiding sensory experiences and when to take a break. The students reflect on this in their writing journals.

Specific Objectives:
- Students learn about what events in an academic day make them feel defensive, protective, and avoid sensory experiences.
- The students will write a one chunk paragraph about this experience in their reflective journals.

Required Materials: white board markers, white board, reflective journals

Anticipatory Set (Lead-In):
1. Ask students to state what activities they do daily by referring to their classroom schedule. List these on the board.
2. Then ask the students questions about what they like to do at recess and list this on the board.

Step-By-Step Procedures:
1. Discuss the daily schedule and write daily schedule activities on the board.
2. Have the students copy or write their personal schedule in their journals including their speech and/or language, occupational therapy, adapted physical education or other activities in the day.

Guided Practice: After the students have listed daily activities in their journal, have the students practice calming vestibular activities such as pushups, sit ups, and rocking.
Plan For Independent Practice:
1. Practice calming vestibular activities to help regulate their senses.
2. Have the students brainstorm sensory words and experiences.
3. Have the students draw a picture illustrating their writing.

Closure (Reflect Anticipatory Set): Have the students share out their journal writing.

Assessment Based On Objectives: Use a five part writing rubric to assess the writing.

Adaptations (For Students With Learning Disabilities): Adaptations include developing a topic sentence and details, dictating these and copying them on the board.

Extensions (For Gifted Students): Students who are gifted can write more complex sentences and paragraphs.

Possible Connections To Other Subjects: science, social studies, physical education
Unit Two: Lesson Two

Sensory Senses: Feeling Protective and sensory sensitive

Concept / Topic To Teach: When children are sensory sensitive they are in a state of over-arousal. This can cause a child to be easily distracted.

Standards Addressed:
Third Grade 3.2.2 Writes about experiences and impressions in the areas of the senses.
Fourth Grade 4.2.1 Expands their use of vocabulary using sensory experiences.
Fifth Grade 5.1.0 creates sensory images through word choices.

Lesson Time: 1-2 sessions for 30-45 minutes

General Goal(s): The students will identify when they are feeling sensory sensitive and document this in their reflective journals using sensory descriptive words.

Specific Objectives:
- Students will learn what it means to feel sensory sensitive
- The children will document coping strategies and write a one chunk paragraph in their reflective journal.

Required Materials: relaxation music, escape place, tube socks filled with rice, writing journals

Anticipatory Set (Lead-In):
1. Discuss with the students the vocabulary “sensory sensitive”.
2. Discuss that they will learn activities they can do when they feel sensitive and overwhelmed.

Step-By-Step Procedures:
1. Begin the lesson by reviewing the vocabulary, “sensory sensitive”.
2. Discuss how working and focusing for too long can make them feel sensory sensitive and strategies for calming activities.

Guided Practice: Practice doing calming and soothing activities such as identifying and utilizing a safe place in the classroom (on bean bags, in a quiet area), sit at a listening center and listen to relaxing music, lower the lighting, and have children practice putting tube socks filled with rice across their laps and necks. The pressure can provide a calm soothing affect.

Plan For Independent Practice:
1. Have the students practice each of these activities and then write about what they want to
do when they are feeling overwhelmed and sensitive to the lighting, smells, work load, or other senses we learned about in unit one.
2. Have the students draw a picture about their writing.

Closure (Reflect Anticipatory Set): Review the vocabulary and have the students share out their journal entries. As a class, designate a quiet/escape space in the classroom.

Assessment Based On Objectives: Use the five part rubric to grade student work and understanding of the concept.

Adaptations (For Students With Learning Disabilities): Students with learning disabilities may copy or write an introductory paragraph and details with more support.

Extensions (For Gifted Students): Students who are gifted may write more complex sentences and multiple paragraphs.

Possible Connections To Other Subjects: social studies, physical education
Unit Two: Lesson Three

Sensory Senses: sensory seeking

Concept / Topic To Teach: A sensory seeking student may always seem on the move. Extra sensory input can help sensory seekers maintain a calm and alert state for learning.

Standards Addressed:
Third Grade 3.2.2 Writes about experiences and impressions in the areas of the senses.
Fourth Grade 4.2.1 Expands their use of vocabulary using sensory experiences.
Fifth Grade 5.1.0 creates sensory images through word choices.

Lesson Time: 30-45 minutes

General Goal(s): Students will learn about sensory seeking behaviors and how to remain calm and alert.

Specific Objectives:
- Students will learn about what it means to be sensory seeking
- The students will learn about activities that can meet these sensory needs.

Required Materials: a movement space in the classroom, reflective journals, white board markers

Anticipatory Set (Lead-In):
1. Discuss what it means to feel “extra sensory”.
2. Discuss that there are things you can do to help meet those extra sensory needs.

Step-By-Step Procedures:
1. Tell the students that feeling “extra sensory” means they really want to use their senses.
2. Brainstorm what the student’s see, hear, and feel when they feel jittery and want to move and have trouble paying attention.

Guided Practice:
1. Have the students practice using sensory activities that involve heavy movement such as sitting and spinning, dancing, somersaulting, and swinging.
2. Have the students write a topic sentence and details about their favorite sensory experiences.

Plan For Independent Practice: Have the students complete a full paragraph in their reflective journals about their favorite heavy movement activities.
Closure (Reflect Anticipatory Set): Review what it means to feel “extra sensory” and the heavy movement activities the students can do. Designate a movement space in the classroom.

Assessment Based on Objectives: Use the five part rubric to grade the student writing and understanding of the concept.

Adaptations (For Students with Learning Disabilities): Adjust the amount of writing as necessary in the IEP.

Extensions (For Gifted Students): Students with more advanced writing skills can write more complex sentences as well as multiple paragraphs.

Possible Connections To Other Subjects: social studies, physical education
Unit Two: Lesson Four

Sensory Senses: low registration of sensory input

Concept / Topic to Teach: low registration of sensory input makes a need for novelty and sensory input important in maintaining optimal alertness.

Standards Addressed:
Third Grade 3.2.2 writes about experiences and impressions in the areas of the senses
Fourth Grade 4.2.1 expands their use of vocabulary using sensory experiences
Fifth Grade 5.1.0 creates sensory images through word choices.

Lesson Time: 1-2 sessions for 30-45 minutes

General Goal(s): Students find ways to utilize sensory input to remain alert and attentive.

Specific Objectives:
- Students will learn about low sensory input
- Students will write a one chunk paragraph about how they will use sensory input to help them feel alert

Required Materials: movement space in the classroom, upbeat music

Anticipatory Set (Lead-In): Discuss that when students feel they need extra sensory input that there are activities they can do to help them.

Step-By-Step Procedures:
1. Discuss the vocabulary sensory input.
2. Have the students practice regular movement activities such as aerobic exercises and other sensory experiences such as going for a walk outside.

Guided Practice: Have the students practice simple alerting movement activities such as swaying, standing on one foot, or spinning around.

Plan For Independent Practice: Have the students practice their one chunk paragraph describing their experience. Have the students draw a picture of their work and share out.

Closure (Reflect Anticipatory Set): Review the vocabulary of sensory input and ways the children can utilize regular movement activities to help them be in a comfort zone.

Assessment Based on Objectives: Use the five point writing rubric to assess the students
writing skills as

**Adaptations (For Students with Learning Disabilities):** Adjust the amount of writing as necessary in the IEP.

**Extensions (For Gifted Students):** Students with more advanced writing skills can write more complex sentences as well as multiple paragraphs.

**Possible Connections To Other Subjects:** social studies, physical education
Unit Two: Lesson Five

Sensory Senses: Practicing sensory modulation to maintain a calm and awake state using purposeful movement

**Concept / Topic To Teach:** Students learn that they can control their senses through using them. Sensory integration is complex and each sense can be dependent on other senses. Using heavy movement can have both a calming and alerting effect.

**Standards Addressed:**
Third Grade 3.2.2 Writes about experiences and impressions in the areas of the senses.
Fourth Grade 4.2.1 Expands their use of vocabulary using sensory experiences.
Fifth Grade creates sensory images through word choices.

**Lesson Time:** 1-2 sessions for 30-45 minutes

**General Goal(s):** Students learn to incorporate heavy movement to help them remain calm and attentive. Proprioceptive input can have calming and alerting effects and is rarely overloading to the sensory system.

**Specific Objectives:**
- Students will have a review of the senses
- The students will explore and experience movement activities and brainstorm words, sensations, and ideas that can be used when writing.
- The students will work on writing descriptive words of their movement experience in their reflective journals.

**Required Materials:** reflective journals, rope, chairs, gum, journals

**Anticipatory Set (Lead-In):** Discuss what being attentive and calm feels and looks like as well as being tired and overactive.

**Step-By-Step Procedures:**
1. Have the students act out attentive behaviors through playing games, following directions, posture and listening skills.
2. Ask the students, what this looks like and what this feels like.
3. Write their descriptive words on the board.
4. Discuss that heavy movement can help us feel attentive and calm.
5. Do heavy movement activities such as chair push-ups, chewing gum, and play tug-of-war.
6. Cluster and brainstorm words and ideas that can be used when writing using words that describe what the heavy movement looks and feels like.
7. Write a descriptive sentence on the board as a model and underline the descriptive words that involve heavy work/movement.

Guided Practice: Have the children orally compose sentences using descriptive words with a neighbor.

Plan For Independent Practice: Have the students write 2-3 sentences using at least 2-3 descriptive words that were written on the board or one descriptive word in each sentence.

Closure (Reflect Anticipatory Set): Discuss that heavy movement can help us feel both calm and attentive even if we feel jittery (anxious) or unfocussed.

Assessment Based On Objectives: Have students cross out writing errors and rewrite. Do not have the students erase their mistakes.

Adaptations (For Students With Learning Disabilities): Students with disabilities may use dictation software or application such as Dragon Dictation or Alpha Smarts or any other writing alternative technology that is available.

Extensions (For Gifted Students): Gifted students may write 5-6 descriptive words in their sentences.

Possible Connections To Other Subjects: physical education
Unit Three: Learning to Self-Regulate the Senses

The curriculum map below details the lessons covered in this unit. The ability to practice self-regulation strategies is the focus of this unit. The lessons in this unit cover writing a three paragraph essay.

<table>
<thead>
<tr>
<th>Unit Three Lessons</th>
<th>Standards</th>
<th>Objectives</th>
<th>Assessments</th>
<th>Student Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lesson One: Self - Monitoring &amp; Self Esteem</td>
<td>4.1.1 Select a focus, an organizational structure, based upon audience, and format requirements.</td>
<td>Create a sensory menu Identify an audience Share the sensory menu with peers</td>
<td>Check that all components of the sensory menu are completed. Students collaborate with peer</td>
<td>Identify preferred strategies reflecting on reflective journals Share sensory menu to build appreciation and understanding for one another</td>
</tr>
<tr>
<td>Lesson Two: Changing arousal state</td>
<td>4.1.1 Select a focus, an organizational structure, based upon audience, and format requirements.</td>
<td>Identify the audience Apply steps of writing process Recognize when to use sensory menu</td>
<td>Check that the mind map matches their sensory preferences.</td>
<td>Create a mind map Students write a paragraph describing what they need (supplies) to utilize their sensory preferences</td>
</tr>
<tr>
<td>Lesson Three: Sustaining Attention</td>
<td>4.1.10 Edit and revise drafts 4.1.2 Write multiple paragraphs 5.1.6 Edit and revise</td>
<td>Write a draft second paragraph Recognize sensory strategies to remain alert</td>
<td>Use the writing rubric to check points and if their draft paragraphs are complete.</td>
<td>Students to continue recognize their own sensory needs and this will help them feel calm and alert. Use colored pencils to write paragraphs</td>
</tr>
<tr>
<td>Lesson Four: Organizing My Classroom Environment</td>
<td>4.1.10 Edit and revise drafts 4.1.2 Write multiple paragraphs 5.1.6 Edit and revise</td>
<td>Students write a third paragraph about how they will organize their sensory environment</td>
<td>Use the writing rubric to check points and if their draft paragraphs are complete.</td>
<td>Students write a third paragraph to their essay. Students proofread their paragraphs with a partner.</td>
</tr>
<tr>
<td>Lesson Five: Making My Sensory Goals &amp; Using strategies</td>
<td>3.1.4 Revise drafts using a rubric 4.1.2 Write multiple paragraphs 5.1.6 Edit and revise</td>
<td>Revise three paragraph essay with a peer using an editing checklist</td>
<td>Check for completed self and peer editing checklists</td>
<td>Self and Peer proofread and revise essays</td>
</tr>
</tbody>
</table>
Unit Three:  Lesson One

Concept / Topic to Teach: Self - Monitoring & Self Esteem

Standards Addressed:
Grade 4.1.1 Select a focus, an organizational structure, and a point of view based upon purpose, audience, length, and format requirements.

Lesson Time: 1-2 30 minute sessions

General Goal(s): Students understand that self monitoring involves being aware of one self. The students will write a sensory preference menu.

Specific Objectives: Students will write their own sensory menu to share with their peers and learn about writing for an audience.

- Recognize that writing to an audience is a genre they encounter in their everyday lives
- Identify the audience (i.e., peers) and shape their writing to appeal to this audience.
- Apply the steps of the writing process to complete their writing

Required Materials: daily schedule, plastic file sleeves, sensory menu worksheet

Anticipatory Set (Lead-In):
1. Pass out the sensory choice list based on the results of the sensory checklist in unit one and ask the students to look the choices over.
2. After five minutes ask the children what types of strategies they found and examples of the activities.
3. Explain to the students that they are each going to be writing a sensory menu based on their sensory preferences and they will be sharing their sensory menu with each other. This way they can appreciate and feel that they are appreciated and their needs are valued in our classroom. The children may also gain ideas from each other.

Step-By-Step Procedures:
1. Introduce the concept of an audience in writing. Discuss that they are going to convey their wants and needs to their peers. Ask the students to think about what sensory preferences they would want their “audience” (the other students) to know.
2. As a prewriting activity, write on the board and brainstorm as many sensory activities the children can recall especially the ones that they enjoy.

Guided Practice: Model writing a sensory menu referring to the sensory list and share this with the class.

Plan For Independent Practice: Have the students write their own sensory menu.
Closure (Reflect Anticipatory Set):
1. Have the students share their sensory menu with their peers. Discuss what it means to have an audience when writing. Discuss the purpose of creating a sensory menu and sharing this with one another.
2. Have students share out something new they learned about a peer.
3. Tell them that sharing their preferences helps each student to understand and be sensitive to one another.
4. Have the students put their sensory menus in a plastic file sleeve to keep where it is readily accessible. Students need to pick one sensory choice to utilize during the day.

Assessment Based on Objectives: Check that all components of the sensory menu are completed. Check that students could share something they learned about a peer.

Adaptations (For Students with Learning Disabilities): Students may draw a picture or dictate their sensory preferences.

Extensions (For Gifted Students): Students may write a paragraph describing their sensory preference menu.

Possible Connections to Other Subjects: Reading
Unit Three: Lesson Two

Concept / Topic to Teach: Changing arousal state

Standards Addressed:
Grade 4.1.1 Select a focus, an organizational structure, and a point of view based upon purpose, audience, length, and format requirements.

Lesson Time: 1-2 30 minute sessions

General Goal(s): The students will practice utilizing their sensory menus and organize this information in a mind map.

Specific Objectives:
• Identify the audience (i.e., peers) and shape their writing to appeal to this audience
• Apply the steps of the writing process to complete their writing
• Recognize when to use the sensory menu

Required Materials: Sensory menus, reflective journals, sensory stations (quiet place, movement space, sensory boxes with supplies (gum, putty, clay, chewy and crunchy snacks, sweet and salty snacks).

Anticipatory Set (Lead-In):
1. Tell students that we discussed how heavy movement can help them stay calm and alert.
2. Have students review their sensory preference sheets and what they feel will help them feel calm and alert.

Step-By-Step Procedures:
1. Model how to use a mind map to organize information from their sensory menus.
2. Ask the students what supplies they will need to utilize their sensory preferences.
3. Discuss how the supplies needed such as materials, time, and space for utilizing their sensory preferences can be described in a first paragraph.

Guided Practice:
1. During the modeling, show students how to add detail and information that would help explain their sensory preferences in writing.
2. Show the students how to add detail and explanatory information.
3. Emphasize the importance of keeping this information on the map because they will use this in their writing.

Plan for Independent Practice:
1. Have the students begin writing a paragraph describing what they need to utilize their sensory preferences and we will work on one paragraph describing what supplies they
will need to utilize their sensory preference.
2. Have the students write a topic sentence using a blue colored pencil, two details, using a red colored pencil, a commentary using a green colored pencil, and a closing using a blue colored pencil.
3. Allow students to add to the mind map as they review their reflective journals.

Closure (Reflect Anticipatory Set): Review the mind map, reflective journals, and draft of writing.

Assessment Based on Objectives: Check that the mind map matches their sensory preferences.

Adaptations (For Students with Learning Disabilities): Students may draw pictures for the mind map portion. Students may dictate sentences.

Extensions (For Gifted Students): Students may write more complex sentences and work ahead.

Possible Connections to Other Subjects: Reading
Unit Three: Lesson Three

Concept / Topic to Teach: Sustain Attention

Standards Addressed:
Grade 4.1.10 Edit and revise selected drafts to improve coherence and progression by adding, deleting, consolidating, and rearranging text.
Grade 4.1.2 Create multiple-paragraph compositions:
   (a) Provide an introductory paragraph. (b) Establish and support a central idea with a topic sentence at or near the beginning of the first paragraph. (c) Include supporting paragraphs with simple facts, details, and explanations.
Grade 5.1.6 Edit and revise manuscripts to improve the meaning and focus of writing by adding, deleting, consolidating, clarifying, and rearranging words and sentences.

Lesson Time: 1-2 45 minute sessions

General Goal(s):
- Students will work on writing a draft of second paragraph pertaining to lesson two.
- Students will recognize what they need and do in order to sustain attention and remain calm and alert by using their sensory strategies.

Specific Objectives: After students have written their first draft of paragraph one from lesson two, the students will work towards writing a second paragraph about what they will do to utilize sensory strategies and emphasize what they can do to remain calm and alert.

Required Materials: Writing paper, sensory menus, draft one from lesson two

Anticipatory Set (Lead-In): Review lesson two and discuss the essay map from lesson two. Tell the students that today they will continue writing their draft of their first paragraph and begin writing a second paragraph.

Step-By-Step Procedures:
1. Begin by discussing how utilizing the sensory menu and writing down what they will need and do will help the students to continue recognize their own sensory needs and this will help them feel calm and alert.
2. Model for students that paragraph one discusses what they will need (supplies, time, space) in order to use their sensory menus.
3. Model writing the second paragraph by writing a topic sentence about what their sensory menu is for and what to do when the sensory menu is utilized.

Guided Practice:
1. Model for students how to use their essay map to begin drafting their rough drafts of their second paragraph from lesson two. Tell them to skip lines as they write their drafts to allow for revisions and proofreading marks.
2. Have the students begin writing and walk around to help students.
3. Have the students write a topic sentence using a blue colored pencil, two details, using a red colored pencil, a commentary using a green colored pencil, and a closing using a blue colored pencil.

Plan For Independent Practice:
1. The students will proofread their paragraphs with a partner.
2. Circulate while students are working to offer support and answer questions.

Closure (Reflect Anticipatory Set):
1. Discuss the significance of writing a first draft and sharing work with a neighbor.
2. Discuss the importance of describing what they will talk about in the first paragraph and discussing what they will do in the second paragraph and how this ties into their topic.

Assessment Based On Objectives: Use the writing rubric to check points and if their draft paragraphs are complete.

Adaptations (For Students With Learning Disabilities): Have students dictate and write sentences.

Extensions (For Gifted Students): Write more detailed sensory sentences. Utilize the computer to work ahead for lesson four.

Possible Connections To Other Subjects: reading
Unit Three: Lesson Four

Concept / Topic to Teach: Organizing My Classroom Environment

Standards Addressed:
Grade 4.1.10 Edit and revise selected drafts to improve coherence and progression by adding, deleting, consolidating, and rearranging text.

Grade 4.1.2 Create multiple-paragraph compositions:
a. Provide an introductory paragraph. b. Establish and support a central idea with a topic sentence at or near the beginning of the first paragraph. c. Include supporting paragraphs with simple facts, details, and explanations.

Grade 5.1.6 Edit and revise manuscripts to improve the meaning and focus of writing by adding, deleting, consolidating, clarifying, and rearranging words and sentences.

Lesson Time: 1-2 30 minute sessions

General Goal(s): Students will write a third paragraph about how they want their environment to be organized (where and when to have sensory). The students will write a third paragraph to be edited and revised in lesson five.

Specific Objectives: After having written a first and second paragraph from lesson two and three the students will write a third paragraph that about how they will organize their sensory environment to help them remain calm and alert.

Required Materials: sensory menus, writing paper with draft of paragraph one and two, pencils

Anticipatory Set (Lead-In):
1. Discuss that students have recognized what sensory strategies they prefer. Review their first and second paragraph.
2. Tell the students that paragraph one discusses supplies that they need for sensory activities and that paragraph two discusses what they need to do and actions to take.

Step-By-Step Procedures:
1. Begin by telling the students that they will write a third paragraph discussing the time and place that they will utilize sensory strategies.

Guided Practice:
1. Model how to write the third paragraph by including a topic sentence that describes where the sensory strategy will take place and 2-3 details describing the times it will take place.
2. Model writing a commentary about how this will make me feel and a closing telling the reader what they plan to do in the future.

**Plan For Independent Practice:**
1. Have the students write a topic sentence using a blue colored pencil, two details, using a red colored pencil, a commentary using a green colored pencil, and a closing using a blue colored pencil.
2. Circle the room to offer student support.

**Closure (Reflect Anticipatory Set):**
1. Have the students share their writing with their peers.
2. Discuss how the paragraphs tie into organizing their sensory environments.

**Assessment Based On Objectives:** Use the five point writing rubric. Check that the students used the correct color to correspond with their sentence, blue is topic and closing sentence, red are details, and green is the commentary sentence.

**Adaptations (For Students with Learning Disabilities):** Have students dictate and write sentences.

**Extensions (For Gifted Students):** Write more detailed sensory sentences. Utilize the computer to work ahead for lesson four.

**Possible Connections To Other Subjects:** reading
Unit Three: Lesson Five

Concept / Topic to Teach: Making My Sensory Goals & Using strategies

Standards Addressed:
Grade 3.1.4 Revise drafts to improve the coherence and logical progression of ideas by using an established rubric.

Grade 4.1.2 Create multiple-paragraph compositions:
a. Provide an introductory paragraph. b. Establish and support a central idea with a topic sentence at or near the beginning of the first paragraph. c. Include supporting paragraphs with simple facts, details, and explanations. d. Conclude with a paragraph that summarizes the points.

Grade 5.1. Edit and revise to improve the meaning and focus of writing by adding, deleting, consolidating, clarifying, and rearranging words and sentences.

Lesson Time: 1-2 30 minute sessions

General Goal(s): The students understand how to revise and edit their three paragraph essay using peer help.

Specific Objectives:
- Complete three paragraph drafted essay
- Revise their writing with a partner
- Read and share their writing with the class (optional for students who are comfortable)

Required Materials: essay drafts, pencils, erasers, reflective journals

Anticipatory Set (Lead-In):
1. Discuss the purpose of writing their essays and this is to monitor their own sensory needs and make their own sensory goals.
2. This is also to understand what they can utilize when they need a sensory break.

Step-By-Step Procedures:
1. Begin the session by showing the editing rubric.
2. Discuss how to work with a peer to help each other revise and improve their rough draft such as saying nice things, asking questions, and accepting comments without becoming angry.

Guided Practice:
1. Have the students buddy up and switch papers and read each other’s papers silently.
2. They can use colored pencils to make comments and suggest changes.
3. Circle the room and make sure the students are discussing spelling, capitalization errors, and punctuation.
4. Have the students check that there are at least five sentences in each paragraph with a topic sentence, two details, commentary, and closing sentence.

**Plan for Independent Practice:** The students will have their work returned and will rewrite their essay.

**Closure (Reflect Anticipatory Set):** Discuss how the student’s felt about the writing activity such as what they liked most, what they learned about sensory and the writing process, and what they might do differently in their writing.

**Assessment Based On Objectives:**
1. Check that the students completed their editing and revising, completed their self and peer editing checklist, and revised their three paragraph essay.
2. Use the five point rubric to check the students’ writing.
3. Extend this writing activity by having the students type their essays and practice using spell check and the thesaurus.

**Adaptations (For Students with Learning Disabilities):** Have students dictate and write sentences. Have students draw pictures to represent ideas.

**Extensions (For Gifted Students):** Write more detailed sensory sentences. Utilize the computer to work ahead for lesson four.

**Possible Connections To Other Subjects:** reading
Table 3.1

**My Sensory Preference Menu**

<table>
<thead>
<tr>
<th>When?</th>
<th>What Sensory Activities?</th>
<th>What does this look like?</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.jpg" alt="Image" /></td>
<td><img src="image2.jpg" alt="Image" /></td>
<td><img src="image3.jpg" alt="Image" /></td>
</tr>
<tr>
<td><img src="image4.jpg" alt="Image" /></td>
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<td><img src="image9.jpg" alt="Image" /></td>
</tr>
<tr>
<td><img src="image10.jpg" alt="Image" /></td>
<td><img src="image11.jpg" alt="Image" /></td>
<td><img src="image12.jpg" alt="Image" /></td>
</tr>
</tbody>
</table>
Table 3.2

Name______________________ Date________________

Name______________________

**Editing Checklist for Self and Peer**

<table>
<thead>
<tr>
<th></th>
<th>Self Review</th>
<th>After completing each step place a check here</th>
<th>Peer Review</th>
<th>After completing each step place a check here</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Punctuation</strong></td>
<td>1. I read my written piece aloud to see where to stop or pause for periods, question marks, exclamation marks, and commas.</td>
<td>![Checkmark]</td>
<td>I read the author’s piece aloud to see where to stop or pause for periods, question marks, exclamation marks, and commas.</td>
<td>![Checkmark]</td>
</tr>
<tr>
<td></td>
<td>2. Quotation marks are included where needed.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Capital Letters</strong></td>
<td>I checked that capital letters begin each sentence including special nouns.</td>
<td></td>
<td>I checked for capitals at the beginning of sentences and special nouns.</td>
<td></td>
</tr>
<tr>
<td><strong>Grammar</strong></td>
<td>I have checked my sentences and there is a noun (action word) and a verb (naming word) in each sentence.</td>
<td></td>
<td>There is a noun (action word) and a verb (naming word) in each sentence.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>I have checked that I have no run-on sentences.</td>
<td></td>
<td>There are no run-on sentences.</td>
<td></td>
</tr>
<tr>
<td><strong>Spelling</strong></td>
<td>I have checked my spelling and fixed the words that did not look right.</td>
<td></td>
<td>Spelling is correct.</td>
<td></td>
</tr>
</tbody>
</table>