



THE IMPACT OF SENSORY PROCESSING ON LEARNING AND BEHAVIOUR

Kathryn Edmands
Actionkidz Ltd
Occupational Therapist
Ph:03 355 4401

actionkidz@paradise.net.nz

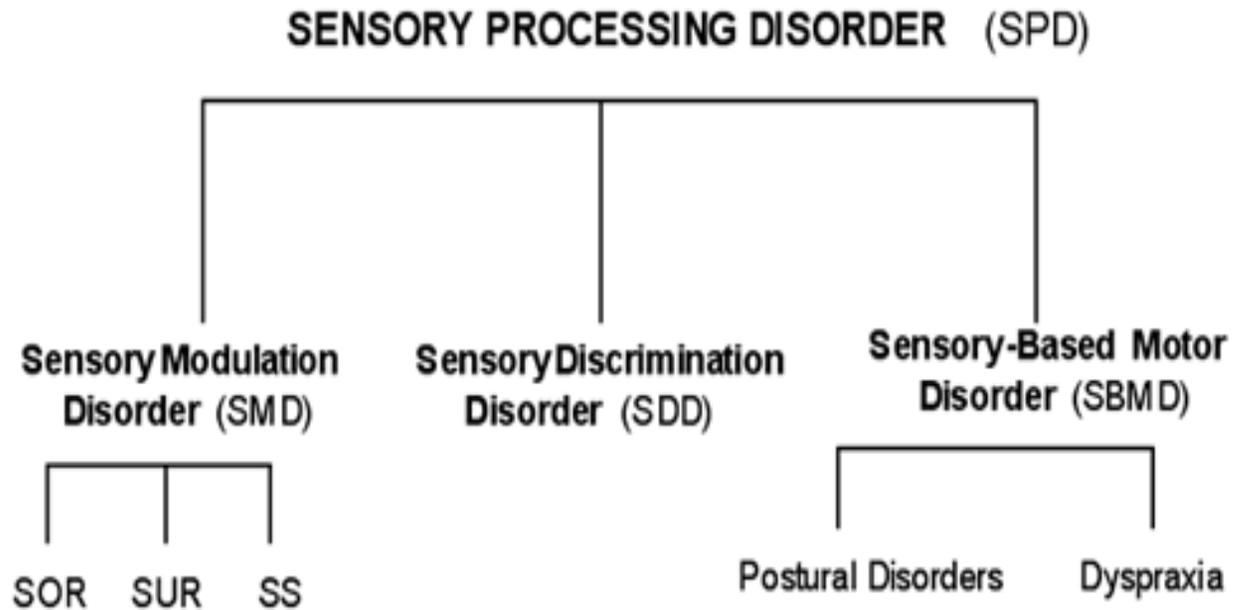
THE SEVEN SENSES

- AUDITORY - Hearing
- VISUAL - Sight
- VESTIBULAR - Movement
- TACTILE - Touch (both light touch and deep pressure touch)
- OLFACTORY - Smell
- GUSTATORY - Taste
- PROPRIOPCEPTION – This refers to sensory information telling us about the position, force, direction and movement of our own body parts

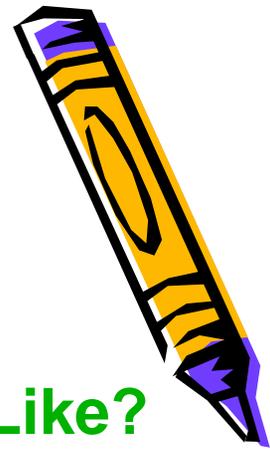
SENSORY PROCESSING DISORDER (SPD)

- Also known as Sensory Integration Dysfunction (SID)
- Neurological Disorder causing difficulties with processing information from seven senses
- People with SI Dysfunction or SPD misinterpret everyday sensory information, such as touch, sound, & movement; are unable to discriminate the fine qualities of sensation, or have awkward motor or behavioral responses to sensory input to the extent that participation in daily life activities is restricted (Miller & Schaaf, in press)
- It is hoped that this differential diagnosis will be formally recognised and accepted into DSM-V

A New Taxonomy for the Identification of Sensory Processing Disorders



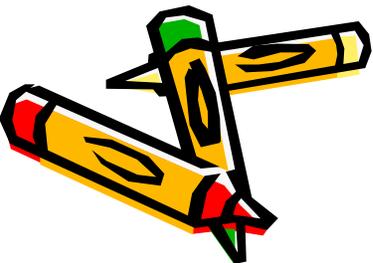
SOR = Sensory Over -Responsivity
SUR= Sensory Under -Responsivity
SS= Sensory Seeking / Craving



What does Sensory Processing Disorder Look Like?

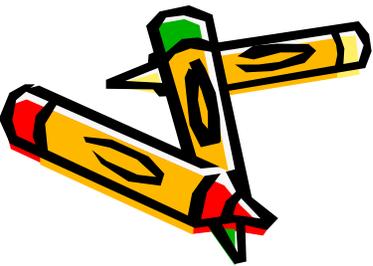
The three most common types of SPD are:

- Individuals who avoid sensory sensations
- Individuals who seek out sensory sensations
- Individuals who have motor skills problems



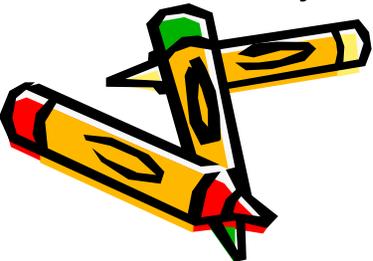
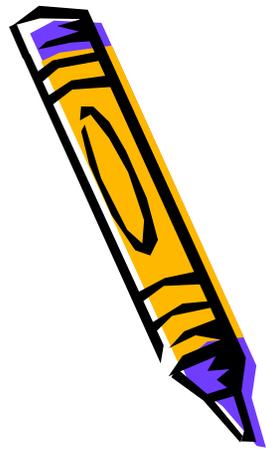
1. Sensory Avoiding Behaviour

- Some individuals are over-responsive to sensation
- Their nervous systems feel specific sensation too easily or too intensely
- These individuals often have a ‘fight or flight’ response to sensation which is a condition known as “Sensory Defensiveness”
- They may try to avoid or minimize sensations. Examples of this, include individuals who withdraw or react aggressively to touch or fear movement or heights



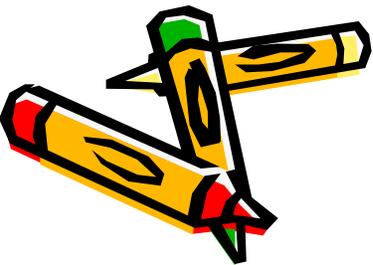
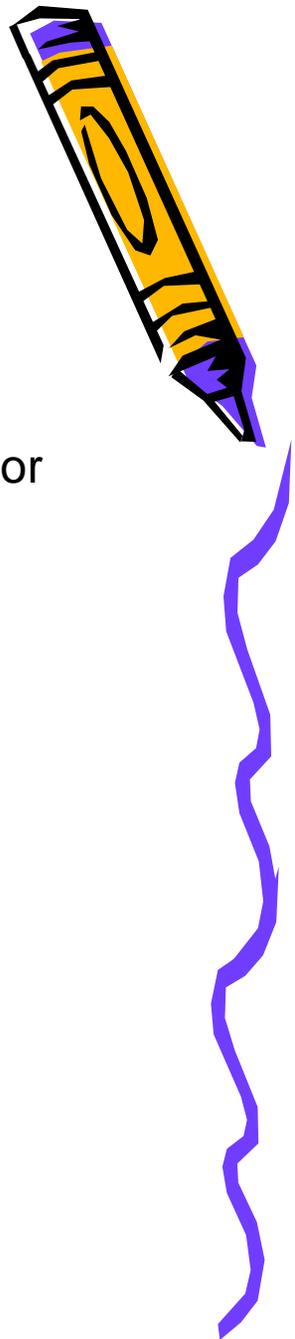
2. Sensory Seeking Behaviour

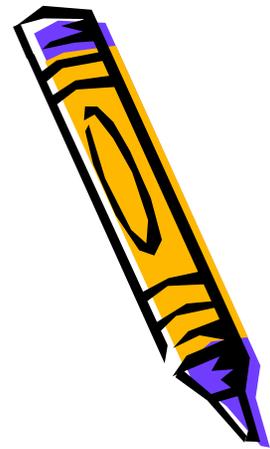
- Some individuals are under-responsive to sensation
- Their nervous systems do not always recognize the sensory information that their brain receives
- As a result they appear to constantly need and crave sensory stimulation
- Some behaviours seen include hyperactivity and impulsivity as they constantly seek more sensation, taking part in unsafe activities such as climbing to high
- They often do not show any fear or they enjoy sounds that are too loud for others to tolerate
- Individuals can experience a combination of sensory difficulties where they avoid some sensory stimuli and crave others



3. Motor Skills Problems

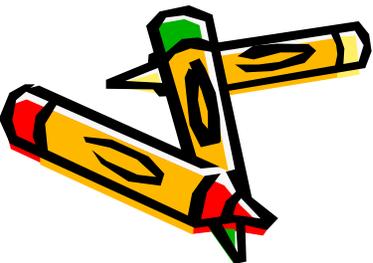
- Some Individuals who have difficulty with processing sensory information also experience difficulty with forming a goal or idea, or developing new motor skills
- These individuals tend to have poor handwriting skills
- Have difficulty with initiating motor movements
- May seem to be manipulative and controlling
- Will often try and mask their motor planning problems

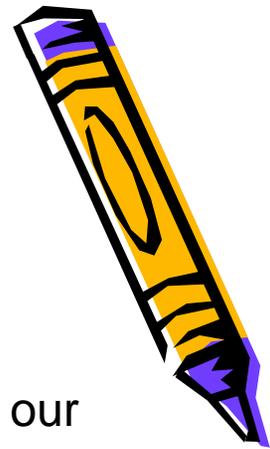




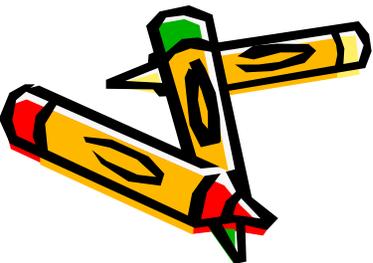
The individual with poor auditory processing may;

- Be irritated by, or fearful of noises such as car alarms, toilets flushing, lawn mowers, school bells and be observed to hold hands over ears to protect ears from sound
- Be unable to “screen out” background noise in order to concentrate on specific sounds or someone talking to them. They may make excessive noise in order to block out sound or talk incessantly
- Have trouble attending to, understanding, or remembering what they hear. They may frequently ask for things to be repeated, or only be able to follow one or two instructions at a time
- Have trouble speaking and articulating clearly



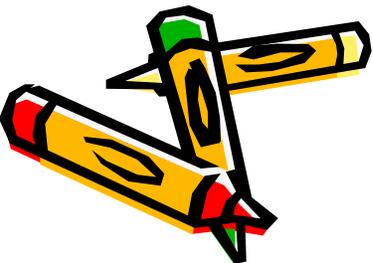
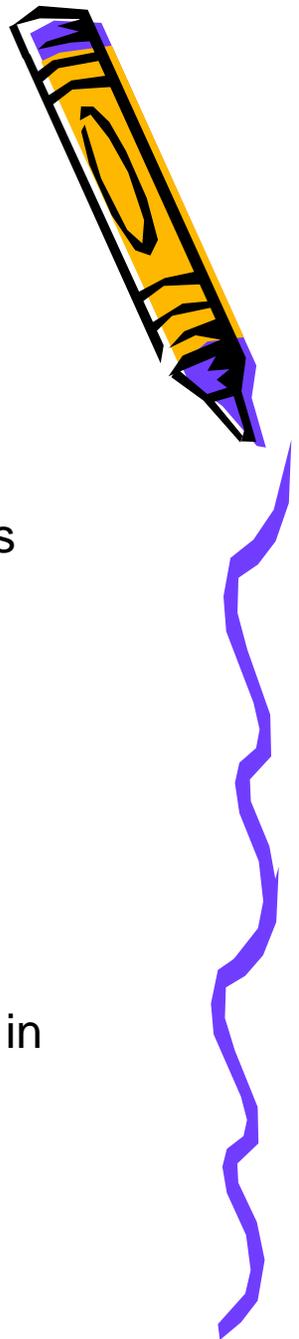


- Language Production is one of the challenging tasks that we ask our brain and body to do
- It is the result of the sensory systems working well together
- Some individuals produce more language when they have movement opportunities that are 'just right' for their body eg gently bouncing on a Swiss ball, sitting on an air cushion or using a 'fidget' toy in their hands
- Some individuals need sensory supports to calm their systems. For example, doing 'heavy' work on the way to a language based activity, or use listening input in the background that reinforces language sequencing



The individual with poor visual processing may:

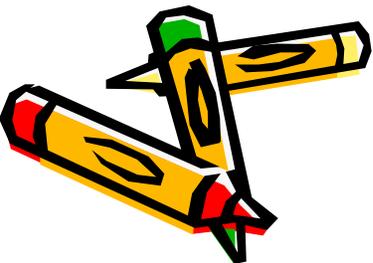
- Be oversensitive to light – preferring to be in the dark or avoid classrooms where there is fluorescent lighting
- Avoid eye contact
- Blink excessively or startle easily ie when a ball is thrown towards them
- Close or cover one eye or frequently squint
- Complain of seeing double or words moving on page
- Turn or tilt the head as they read across a page
- Have difficulty following a line of words
- Have difficulty with spatial relationship activities
- Be overwhelmed or uncomfortable with moving objects or people
- Withdraw from classroom participation and avoid group activities in which movement is required





Individuals with visual issues often have difficulties with sitting and writing

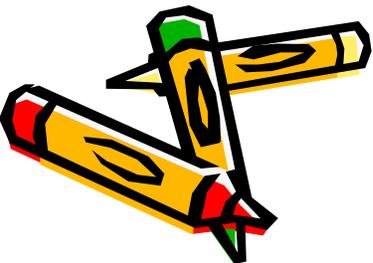
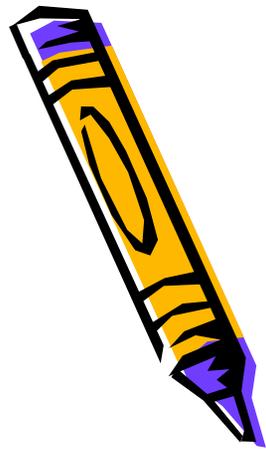
- Some individuals may have low muscle tone which affects their eye muscles, sitting muscles, shoulder and wrist and finger muscles that hold the writing tool
- These individuals fatigue in half the time
- Helpful tools may be an elevated writing board, an air cushion, pencil grips, use of assisted technology to help record information
- Look at seating so that the body feels secure
- Feet should be flat on the floor or on a footrest. The student's back should be well supported, hips and knees at 90 degrees



Visual Input: Calming or Stimulating?

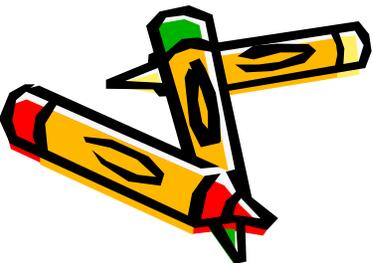
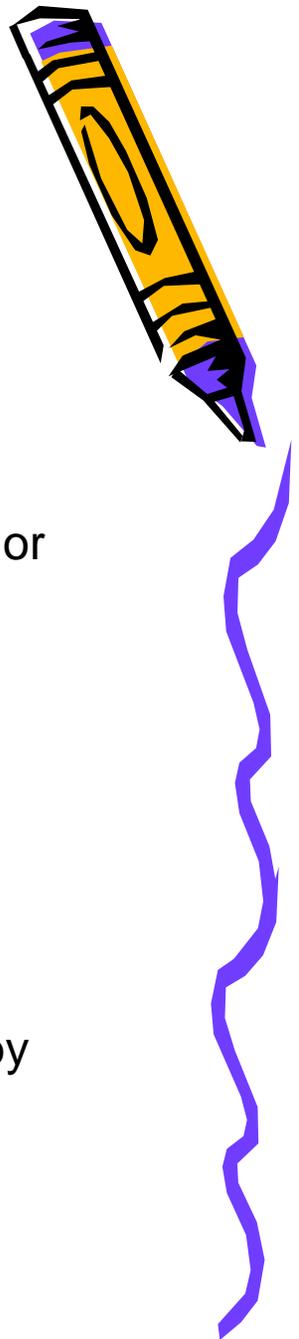
- Natural light versus fluorescent light
- Solid carpet versus loudly patterned carpet
- Cool colours versus hot colours
- Paper-cluttered space

- The first environment is more calming to those that are over-stimulated by visual input. The second environment is an exciting space to the majority of children but may require concentration stations and visual calmers to accommodate children who are easily stimulated by visual input

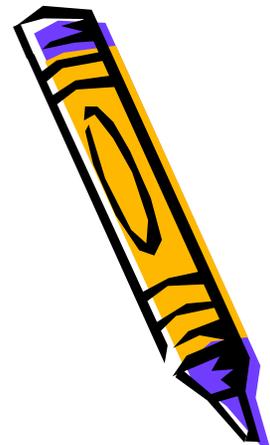


The individual with vestibular hyper sensitivities may:

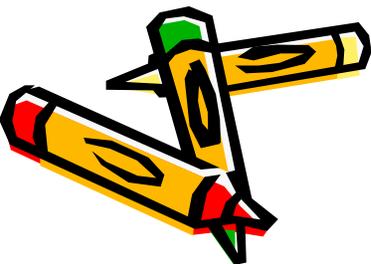
- Be easily overwhelmed by movement (e.g. be car sick)
- Be fearful of heights or slightly raised surfaces, such climbing up or down stairs/steps
- Avoid using playground equipment
- Dislike carrying out activities where their head is upside down
- Dislike trying new movement activities
- Enjoy movement when they initiate it, but dislike it when moved by others particularly if unexpected



The individual with vestibular hypo sensitivities may:

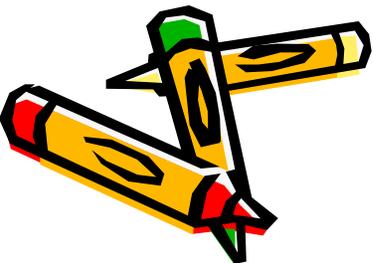
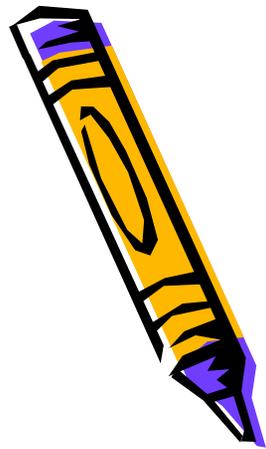


- Crave movement and does not feel dizzy when other people do, ie they are constantly swinging, spinning in circles etc
- Be a “thrill seeker”, climbing high with no fear of danger, enjoy fast moving or spinning equipment
- Need to keep moving as much as possible in order to function. The child may have trouble sitting still!
- Enjoy being upside down



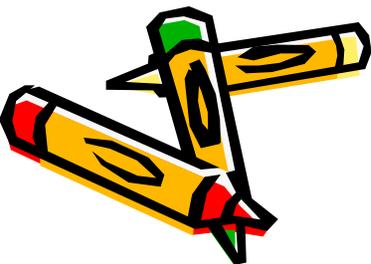
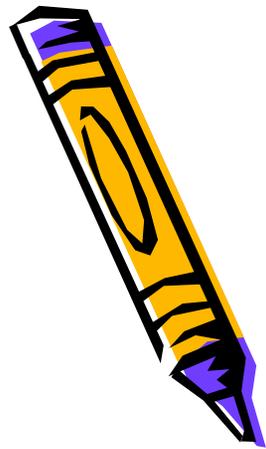
Heavy work calms and organizes the body

- Pushing, pulling, lifting, climbing all provide input to the receptors deep in the muscles and joints that provide calming input to the body
- Depending on the type of movement and how long you engage in it for the effects can last in the body for up to 2 hours
- Consider this over the course of the day that the individual is working



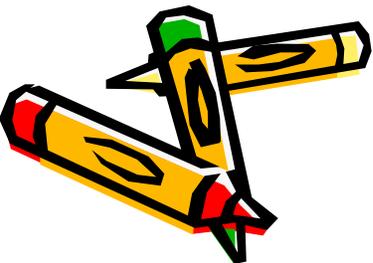
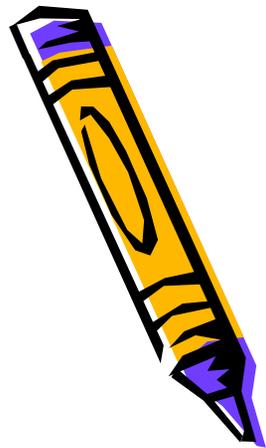
Best Movement for Calming and Organising

- Individual's bodies seek the stimulation their brains need
- Up and down movement equipment such as trampoline provide calming input
- Equipment that rocks and swings back and forward are calming as well
- Some children run round in circles. They are seeking rotational movement which is extremely stimulating. Their systems may be so low that they need stimulation to be able to participate or focus
- **NB** Some children with **SPD** will become physically ill if the input is not a match for their system. "Stop" always means "stop!"
- Children with significant neurological disorders such as seizures should always have medical clearance before using equipment



The Fidget is a Focus Tool

- Fidgets help to de-stress, improve concentration, promote ease with language
- Keeping movement happening in a small way that doesn't disrupt others is the key to maintaining attention and focus
- Sucking and chewing also helps assist with concentration – consider water bottles, or foods that require crunching or chewing such as popcorn, raw vegetable or fruit snacks such as carrots or apples

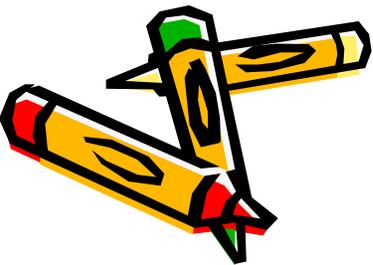
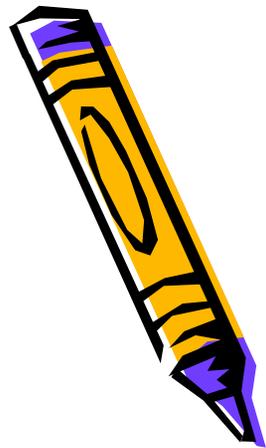


The individual with tactile defensiveness may:

- Avoid being touched by others. The individual may dislike being close to people and may withdraw from a group or stand at the back of the group, avoid crowds, get upset if someone bumps into them or brushes against them unexpectedly
- Seek touch when initiated or controlled by them but push people away if they become too close or arm themselves at all times with a stick or a toy
- Find certain types of clothes irritating, or are sensitive to clothing textures, labels in clothes or new clothes.
- Avoid using the palms of their hands and substances such as sand, paste, glue and mud. They may also rationalise verbally as to why they avoid tactile sensations eg “My mum told me not to get my hands dirty”
- Walk on their toes to minimize contact with the ground and avoid walking barefoot on grass or sand
- Be a fussy eater ie preferring certain textures such as crispy or mushy foods or refuse to eat hot or cold food

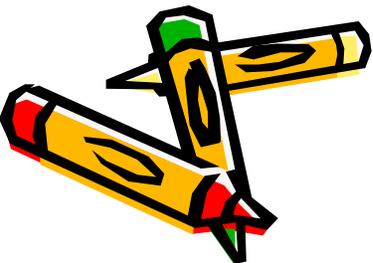
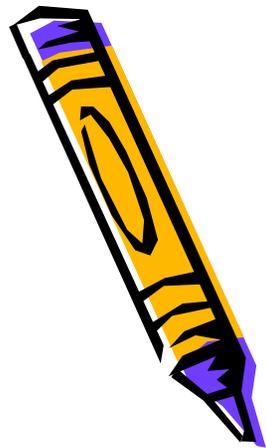
The individual who is under-responsive to touch may:

- Seem unaware of touch unless it is very intense, for example they may be unaware of a dirty face especially around the mouth and nose
- Show little or no reaction to pain from falls, bumping into objects, bruises etc
- Hurt other children while playing as they are not aware of how others perceive pain



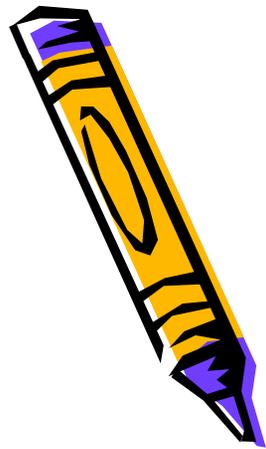
The individual with poor tactile discrimination may:

- Be unable to identify which part of their body has been touched without looking and be a 'messy' dresser with their shoes untied, clothes twisted on their bodies etc
- Be unable to perform certain motor tasks without using visual cues for example, doing up buttons
- Have difficulty holding and using tools such as pens, scissors and cutlery



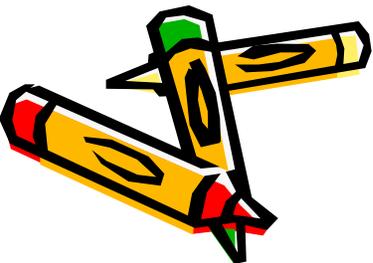
The individual with oral dysfunction may:

- Show strong preferences to certain tastes and smells
- Object to certain textures of food ie lumpy, mashed or foods that require chewing
- Object to certain temperatures of food ie very hot, lukewarm, ice cold
- Often gag when eating or have had a variety of feeding issues including reflux
- Demonstrate excessive licking, biting or sucking on non-food objects such as clothes, for example shirt sleeves, collars or crayons or the ends of pencils



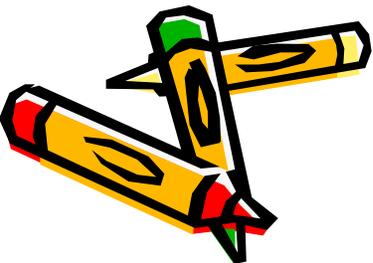
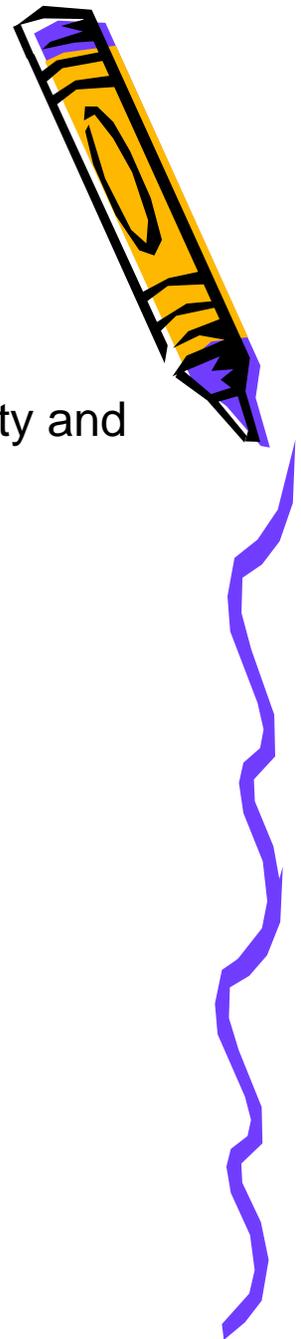
The individual with olfactory dysfunction may:

- Be oversensitive to smells and object to odours that others may not notice, eg ripe fruit in a fruit bowl, cooking smells, shower gel or shampoo that someone has used
- Be unable to cope with going to the toilet and the associated smells
- Be under sensitive to odours and be unable to detect smells that everyone else can smell
- Be picky eaters as they do not like the smell of the food



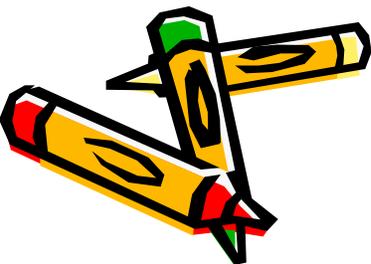
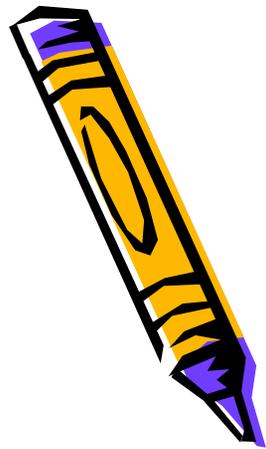
Make aromatherapy part of your sensory diet

- Aromatherapy can be used in calming behaviour, reducing anxiety and promoting concentration and memory
- Lavender essential oil is calming
- Peppermint or grapefruit essential oils are alerting
- Geranium essential oil helps improve mood and relieves anxiety
- Basil and Tangerine essential oils assists with mental clarity and concentration
- Rosemary essential oil assists with memory
- NB Everybody has different olfactory needs and sensitivities



3 essential areas for organisation in the classroom

- Is there a quiet area that the student can go to when working when the noise in the room is overwhelming?
- Is there a place that minimizes distractions and provides auditory supports that increase attention?
- Are there movement opportunities at regular intervals that make sure the body can support learning?



“Time-in” Versus “Time Out”

- Sometimes “time out” is effective for a different reason other than a behavioural approach
- When a student has an immature neurological system and is on ‘overload’ removing the student from the extra sensory input allows their system to calm down
- Think of how challenging it can be in a classroom environment with lots of other students, the teacher, buzzing fluorescent lights, visual art work around room, wool against skin etc

