This workshop explores how the 5 + 3 senses integrate into learning, focusing on the child with learning differences.

We will experience 1st-hand how that chaos feels, and explore how you can re-direct a child's learning to try to catch up with their peers.
"Tell me and I forget, teach me and I remember, involve me and I learn"

Anat Daniel would say, “the brain learns experience”
Sensory Disorientation (for you!)

- Crossing mid-line (off-center Chinese finger puzzle)
- Lights (flickering, humming)
- Touch/Tactile (1 glove)
- Sounds (1 ear plug, ambient noise higher)
- Vision out of whack (trade glasses with someone)
  - Ick Factor (don’t like someone else’s glasses?)

(1) In collaboration with Alma Liotta, OT.R., and Rosemary Slade, O.T.R. Thank you so much for your ideas!
Sensory Disorientation (for you!)(1)

- Crossing mid-line (off-center Chinese finger puzzle)
- Lights (flickering, humming)
- Toothpick (burden to expressive language)
- Touch/Tactile (1 glove)
- Sounds (1 ear plug, ambient noise higher)
- Vision out of whack (trade glasses with someone)
  - Ick Factor (don’t like someone else’s glasses?)

Four children in every classroom see print this way. They can’t control their eye movements at close distances, making reading and attention almost impossible. As the print blurs and moves, they stumble over words, lose their place, and can’t comprehend. Out of desperation, they give up and quit. Is it any wonder they struggle in school?

- And now, YOU MUST OBEY ME !!
- Auditory Processing off? What if you can’t process quickly enough?

- So, are you comfortable in your own skin?

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(1) In collaboration with Alma Liotta, OTR. Alma, thank you so much for your ideas!
It All Fits Together

If you are lucky

- No incline
- At Rico’s
- After school
- “By myself”
Except When It Doesn’t

How does all the learning fit together?
Learning & Importance of Early Interventions

Today’s learning is better than tomorrow’s

Want some early signs?
http://www.cdc.gov/ncbddd/actearly/index.html
Intervention

As in “to intervene”,

to interrupt what is happening accidentally and

make it purposeful.

From the Latin "intervenire," meaning “to come between,” the verb intervene means just that:

to get involved, to jump in the middle of something, to interfere.
Some Learning Vocabulary

- **Scaffolding** (structure, mental framework) (1)
  (Memory triggers, you build or they build)
- **Prior Knowledge** (something your child already knew)
- **Learning Builds on Learning**

- **In The Flow** (Dr. Mihaly Csikszentmihalyi)
- **Intrinsic Motivation**

- **Meta Cognition** ("I am thinking about my thinking")

Cheese Graphic from Wikimedia Commons. http://commons.wikimedia.org/wiki/File:NCI_swiss_cheese.jpg
Clip art from PowerPoint library; Book graphic from Amazon.com.
Organized vs. Disorganized Learning

How much of the wiring is unique to that child?

Who says the circuits are standardized?
Why “Early” Intervention?

What if the myelin sheathing or coating was incomplete or faulty? (1)

Auto-immune, nutrition, healing, sleep, fatty insulation over the neural wiring

Epigenetic switches; methylation switches genes (protein coverings) off. (2)

0-3 months: touch & feel (minimum of myelin; “slow” traveling senses)

3-12 months: visual (ultra-fast traveling senses)

12-36 months: (vestibular/balance, 3-D learning, “extremely sensitive to myelination interference”)

- Human Growth Hormone (IGF)
- Myelin Sheathing
- Sleep (deep sleep needed to build human repair hormones)

(1) The processes of myelination, de-myelination and re-myelination.
(3) Dr. Kendal Stewart, NeuroSensory Centers of Texas
Why is the Child’s Learning Interrupted?

- Importance of Human Growth Hormone
- Layers of Learning
- Meet Them Where They Are
Develops from large to small. Mid-line out.
Different from Visual-Motor Function which develops from bottom up: whole body, to lower body, to upper body, to trunk, neck, head, eyes. (1)

Motor & Visual-Motor Function have to integrate. More on Eyes later.
How might Oral Motor Deficits affect learners?
Sensory Integration and the Brain

“What I hear, I forget. What I see, I remember. What I do (what I experience, my reality), I understand” (1)

Neural Synapse

Anatomy of a Neuron

Neural Synapses
http://www.khanacademy.org/science/biology/human-biology/v/neuronal-synapses--chemical

Brain Plasticity

Graphic from Wikimedia Commons.
http://commons.wikimedia.org/wiki/File:Chemical_synapse_schema_cropped_az.jpg
Sensory Integration

1. Sight
2. Sound
3. Taste
4. Smell
5. Touch

There are 3 more:
1. Vestibular (balance)
2. Proprioceptive (body position)
3. Tactile (different from touch)

Sensory Seeking vs.
Sensory Averse/Avoiding
How The Brain Transports Messages (or doesn’t)

One Gigantic Freeway System? (going as fast as 250 m.p.h.)

Midline Crossover, Movement & Primitive Reflexes

(You are born with some motor functions (movements) that automatically happen, and then they integrate into something bigger)

If you are lucky. If not, they are “retained”.
Mid-Line Crossover (1) (2)
- Gross motor, fine motor, left-right movements.
- Needed for reading, math, eye tracking, and further reflex integration

Some (but not all) Primitive Reflexes (3) (instinctive, in brain stem)
1. Asymmetric Tonic Neck Reflex (Arm & leg extend toward stimulation; bent on the other side. Right ear usually up due to language/speech in the left brain. Left ear catches ambient sounds; right ear focuses on “close communication. Necessary for eyes to cross midline and for eye sight to extend past arms length)
2. Tonic Labyrinthine Reflex (head stretching forward & down, and backward & down. Develops ears & eyes; “vestibulo-ocular” reflex that affects balance & vision. Rather like an early Superman)
3. Symmetrical Tonic Neck Reflex (Head, neck and limb movements for rocking on floor with hands and knees and then crawling on hands and knees). It also helps the baby crawl in a cross lateral manner. This reflex supports the development of midline body posture and gross motor development. It also helps to develop precise motor coordination as well as intentional movement. It is also profoundly connected to vision- binocular vision, adaptation of near to far vision. Scooting doesn’t count because there is not cross lateral movement in prone.) The body needs a foundation to integrate STNR: First, ATNR, then TLR then STNR.
4. Landau Reflex (3-D vision, which eventually becomes the Tendon Guard reflex; starts before 2 and goes until 8 or 9 y/o. The world “standing up”. Needs jumping, rocking, skipping, hopping, swinging, twirling, rolling and all things “physical play” to fully integrate)
Primitive Reflexes

We are born with primitive (automatic) reflexes, which then mature into higher-level reflexes integrated into the central nervous system.

- **Video on Primitive Reflexes, Movement & Sensory Integration**
  http://www.autismone.org/content/affecting-sensory-processing-and-primitive-reflexes-chiropractic-and-cranial-sacral-therapy-0

  We use Quantum Reflex Integration (QRI - cold lasers)

- **Brain Gym ®**
  http://www.made2movetherapy4kids.com/about-us.html

- **Primitive Reflexes (Wikipedia)**
  http://en.wikipedia.org/wiki/Primitive_reflexes
Hearing, Listening, Ears & Auditory Transduction

Wait! I have a question!
Auditory Brainstem Response (ABR) Test
http://www.hearingcenter.com/httpdocs/services/abr.html

But what if something else was happening?

Difference between Hearing & Listening = Paying Attention or “Attending” (1,2)
Auditory Hypersensitivity (false neuroception; constant state of fight or flight, sensory processing). “Music touches more of the brain than anything else”, and “may predate language”.

http://www.autismone.org/content/auditory-hypersensitivity-and-autism-spectrum-disorders-treatable-condition-0

Tomatis vs. Berard (1)

Red Alert?

“Am I safe in my environment?”

(24/7; the brain never shuts off), 31db or more interferes with sleep. Get the app to measure bedroom db level.
Auditory Transduction

How ears are supposed to work

Auditory Transduction YouTube video
http://www.youtube.com/watch?v=PeTriGTENoc

Text from Wikipedia:
#Transduction

http://www.aitinstitute.org/
http://aithelps.com/
and many more if you search
“80-90% of all info absorbed by the brain is visual” (1)

Eyes (1, 2)

Vision uses all the other senses. Vision usually becomes the dominant sense, using sensory integration messages from eyes, body & brain. Vision “drives imagination, creativity, and many types of intelligences”. (2)

Two Parts of the Visual System that Integrate
1. Focal/Central Vision (conscious awareness, “what is that thing?”) (not integrated = hyperfocus on specific thing)
2. Ambient/Peripherial Vision (subconscious awareness, “where is my foot?”, feeds proprioceptive) (not integrated = dazed, distracted)

Essential Visual Skills
- Acuity (sharpness & clarity, at any distance)
- Focusing (you can maintain clarity while changing distances, “accommodation”)
- Fixation, Tracking (look at and accurately follow something moving. Pursuits in tracking can be smooth or saccadic (jumps ahead)
- Binocular Vision (both eyes move together as 1 team, otherwise leads to out-of-balance messages)
- Teaming (you can move, aim, and work the eyes as a team)
Eyes

Eyes are “one of the most nutritionally demanding organs of the body, profoundly affected by nutrient deficiency, and is often the first place disease appears, such as diabetes”.

More Words to Know

Visual Motor Integration  (the brain gets balanced data from vision & other sensory inputs; responds with motor function)
• Myopia  (nearsightedness)
• Amblyopia  (“Lazy Eye”, vision from one eye has less clarity than the other, for no apparent health reason)
• Strabismus  (“Wandering Eye”, usually from traumatic birth, infection, fever, something bad that happens)
• Snellen Test  (20 ft. away, basic eye chart, visual acuity/clarity only)
• Prism Lenses  (temporary vision intervention; lenses are concave or convex, bend light to strengthen the eyes)
What John’s Vision Therapy Looks Like

http://visionhelp.wordpress.com/
http://pavevision.org/
http://visiontherapyathome.com/

http://visiontherapystories.com/
http://www.pdppro.com/
http://oepf.org/

http://visionandlearning.org/
http://covid.org/
http://optometrists.org/
Language vs. Communication

The **intent** to communicate is key.

Communication can be non-verbal, body language, emotions audibly expressed, facial expressions, laughter, grunts, signing, and much more.

*Wait! I have a question!*

*Picture Exchange (PECS)*

*Ever hear Mr. Bean actually talk?*
Learning is also driven by motor function:

- Gross Motor
- Fine Motor
- Oral Motor
“I re-learned everything through music”

DannyVaughan.com
Music’s Effect on the Brain

Music on the mind

When we listen to music, it’s processed in many different areas of our brain. The extent of the brain’s involvement was scarcely imagined until the early nineties, when functional brain imaging became possible. The major computational centres include:

CORPUS CALLOSUM
Connects left and right hemispheres.

MOTOR CORTEX
Movement, foot tapping, dancing, and playing an instrument.

PREFRONTAL CORTEX
Creation of expectations, violation and satisfaction of expectations.

NUCLEUS ACCUMBENS
Emotional reactions to music.

AMYGDALAE
Emotional reactions to music.

SENSORY CORTEX
Tactile feedback from playing an instrument and dancing.

AUDITORY CORTEX
The first stages of listening to sounds. The perception and analysis of tones.

HIPPOCAMPUS
Memory for music, musical experiences and contexts.

VISUAL CORTEX
Reading music, looking at a performer’s or one’s own movements.

CEREBELLM
Movement such as foot tapping, dancing, and playing an instrument. Also involved in emotional reactions to music.

http://daniellevitin.com/publicpage/books/this-is-your-brain-on-music/
Music in Learning
Interventions

These 3 interventions are worth every penny. My son loves them.
I use this shamelessly to reinforce good choices for social learning for peer modeling.

Wait! I have a question!
A Word or Two on TouchMath®

Our own lovely love/hate relationship of learning
Social Sensory Learning Activities

Wonderwild, Bouncin Bears, Safari Stop, McDonalds, Chik Fila, Childrens Museum, Parks, Flips Gymnastics, SkyZone, etc.

Birthday Parties

Blowing, drinking, taking turns, sharing

Anything messy outside

To share play with other kids
12 Step Action Plan

1. Recognize that something is interrupting your child’s learning, that they are not keeping up with other kids or the typical benchmarks of childhood development.
2. Realize that you cannot do it alone. (You might need help to keep from drowning.)
3. Ask for help. (You would help someone if they asked you for help, wouldn’t you?)
4. Find the strengths. (We feel connected to others because of shared affiliation.)
5. Evaluate your family and community dynamics. (Will you find help there? How will everyone work together?)
7. Make your plan. Develop your child’s team.
8. Make contacts with support groups.
9. Decide how you will navigate the system, for the benefit of your child.
10. Monitor your plan. Make adjustments when needed.
11. Stay focused on your child’s strengths, and what is best for his learning future and growing independence. If we over-protect and over-nurture, we enable dependence. The right balance of your emotional health and detachment will grow your child’s unique strengths and learning intelligences.
12. Decide how you will fit into your new community, and take action. (You may cycle back to Step #2 at this point.)

Standard 12 step plan modified by D. Zelt and G. Fisher
Your Vagus Nerve (1)

“Starts in the brain and runs, via numerous branches, to several thoracic and abdominal organs including the heart. Among its jobs is to send signals telling that organ to slow down during moments of calm and safety (1)”

But what if there is no sense of calm or safety?

Therapy Resources

- Occupational (OT)
- Physical (PT)
- Speech
- Vision Learning (VL)
- Therapeutic Listening (TL)
- Music
- Art
- Applied Behavioral Analysis (ABA)
- RDI, Purposeful Play, Floor Time
- Social
- Athletics (Flips Gymnastics, i9 Sports, etc.)
- Equine, Equestrian (riding horses)
- Hyperbaric
- BioMedical
- Nutritional
- Others

Wait! I have a question!
As We Part Today,

TED Talk: Stroke of Insight (parts of the brain)

TED Talk: Use Experts or Not?
http://www.ted.com/talks/noreena_hertz_how_to_useExperts_and_when_not_to.html

“Welcome to Holland” (poem)
http://www.our-kids.org/Archives/Holland.html

“Welcome to Holland” (YouTube)
http://www.youtube.com/watch?v=RqGQjoTn2xY

Remember, you are not alone!

6/13/2016
Our Learning Projects

GettingSorted.com  Improving the World of Learning Differences
Parent workshops with Lone Star College Montgomery - Academy of Lifelong Learning & others

Finding Light at the End of the Tunnel
Helping Families of Learning Differences Toward Self-Empowerment
outofTheTunnel.com

OURTRAININGCENTER.ORG  Workplace Readiness for Learning Differences as a Community Cooperative
501(c)(3) EIN:46-3532301

IFWeLearnDifferently.com  Blog & Coming ePersonal Workshops

Driveus.info  Online Community for Knowledge & Policy of Self-driving Cars

SpecialNeedsSibs.org  501(c)(3) EIN: 46-3532301

RethinkingJobs.com  Improving Workplaces with Neuro-Diversity, Educational Technology, Sensory Environments and WIOA Compliance
You Are Not Alone

Temple Grandin (all her sharing!)

https://www.youtube.com/watch?v=2wt1IY3foU

Crying in our coffee together

Medical history in the back
Support Groups & Resources
(and many more than these)

www.projectdocchouston.org
http://napcse.org/ (home page) and
http://napcse.org/exceptionalchildren/speechandlanguageimpairments.php
http://FEATHouston.org  (FEAT Houston)
http://www.houstonautismdisabilitynetwork.com/  (Northwest ASA Group)
http://www.autism-society.org/chapter1006  (http://health.groups.yahoo.com/group/NHC-ASA/)
http://www.psptx.org/  (Parents Supporting Parents)
http://socialskillsplayhouse.com/
Your School District
http://wordpress.dsap.org/  Down Syndrome Association of Houston
Panther Creek Inspirational Ranch http://pciranch.org/
Sires Club http://sire-htec.org/
LearningRX locations
http://cypressunited.org/ministry/special-needs/breaking-barriers1
http://cypressunited.org/ministry/special-needs/welcome
http://tourettetexas.org/
http://www.cdlusa.org/  (Cornelia de Lange Syndrome) (CdLS)
http://www.AutumnsDawn.org
http://www.dars.state.tx.us/ecis/index.shtml
http://www.autismspeaks.org/family-services/tool-kits/100-day-kit
References


