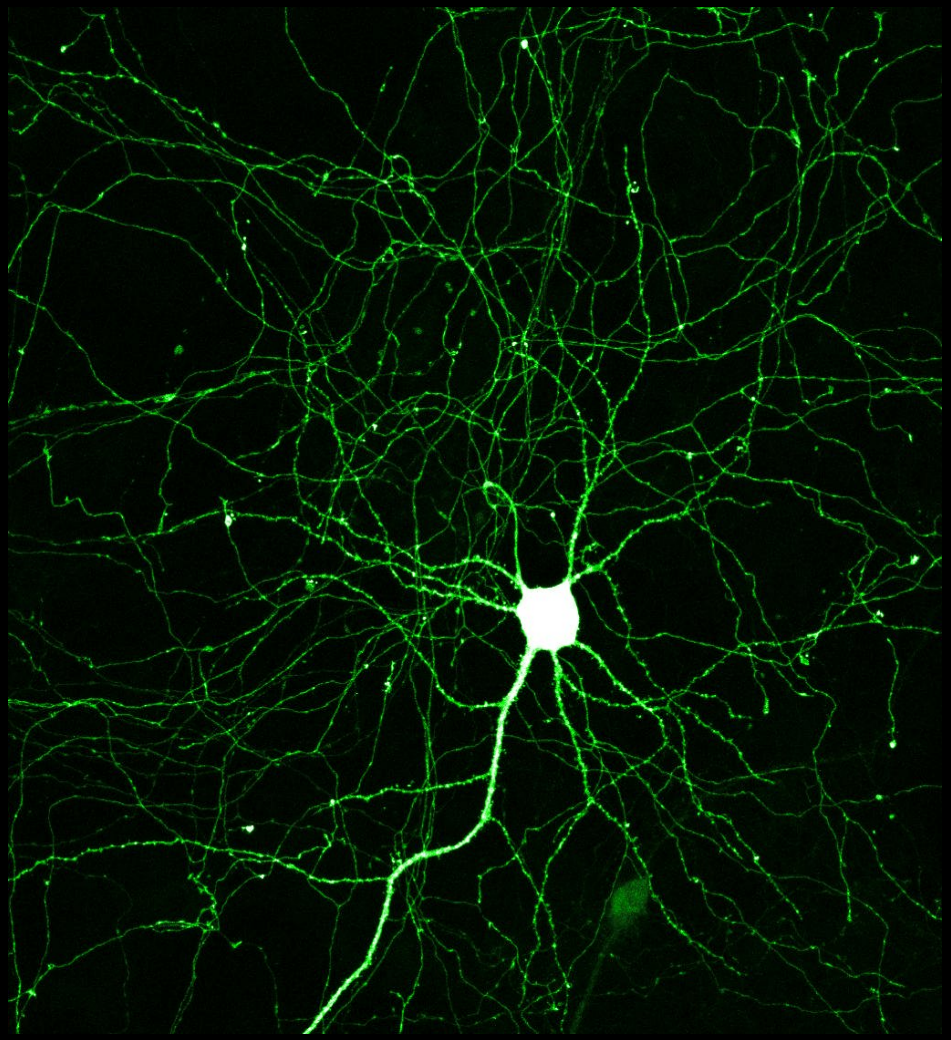
Supporting Availability for Learning

Children and Youth with DeafBlindness / Multiple Disabilities



Chris Russell, MS. Ed., TVI
Project Coordinator, NYDBC
Christopher.russell@qc.cuny.edu

NYDBC NEW YORK DEAF-BLIND COLLABORATIVE

New York Deaf-Blind Collaborative

Overview

- Contexts
- Availability to Learn
- Assessment of Biobehavioral States
- Sensory channels and supporting availability
- Intro to Interaction Techniques

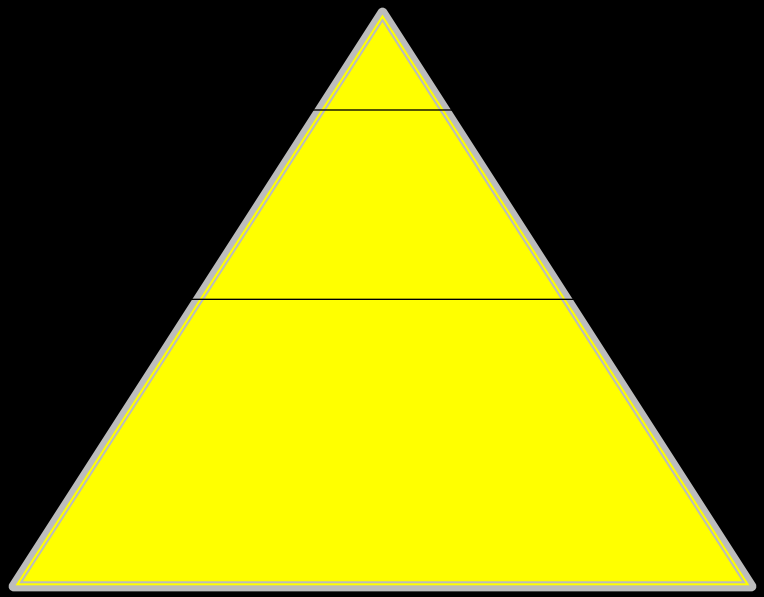
Population Overview

- 2016 National DB Child Count
- 10,749 age 0-21 DB
  - Approximately 90% have 1 or more additional disabilities
  - Most common: cognitive impairments (66-69%), orthopedic impairments (59-61%), and complex health care needs (51-52%)
  - In 2005: 13.1% had four or more additional disabilities
  - In 2016, 43% had four or more additional disabilities.
  - Around 30% had CVI; another 14% unknown for CVI

http://nationaldb.org/reports/national-child-count-2016

Impact of Deaf-Blindness and Incidental Learning

Typical Sensory Access

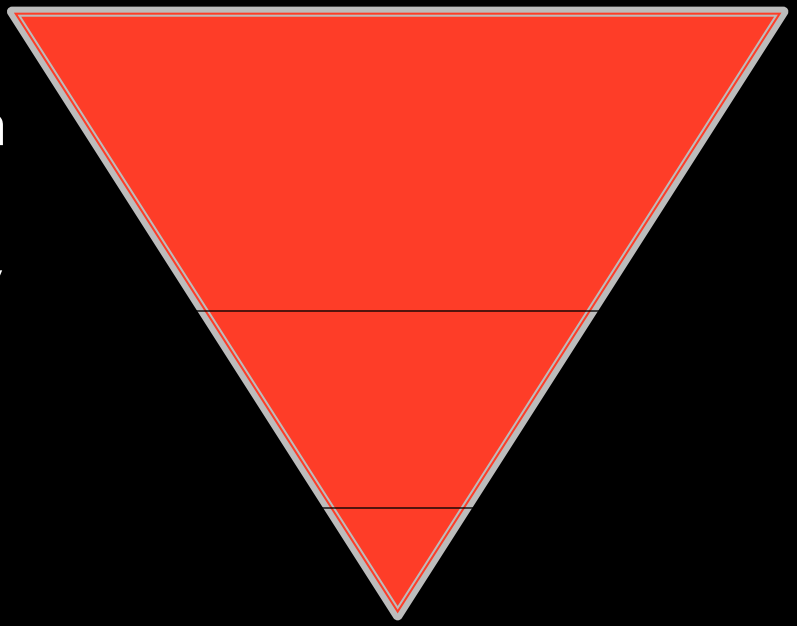


Direct Instruction

Secondary Learning

Incidental Learning

Congenitally Deaf-Blind



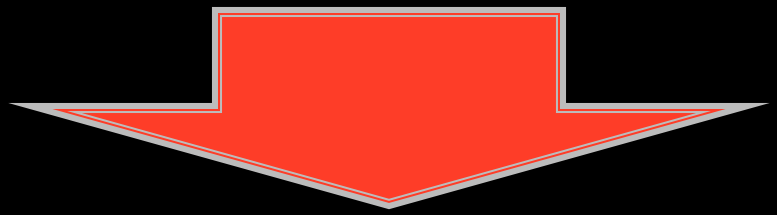
(Bruce, 2005; van Dijk, 1999; Miles & Riggio, 1999; Alsop, 2010)

Distance Senses

Near Senses

Impact of Deaf-Blindness / Multiple Disabilities

- Sensory deficits
- Lack of social experiences
- Processing delays
- Unconventional forms of communication
- History of others doing FOR instead of WITH
- History of negative experiences with touch



Learned helplessness, stress, behaviors

Profound Intellectual and Multiple Disabilities (PIMD):

- Impact of additional physical and motor impairments
- Seizures and neurological impairments
- Cognitive disabilities and learning challenges
- Sensory impairments to CNS
- Difficulty regulating and maintaining equilibrium

Complex Health Care Needs

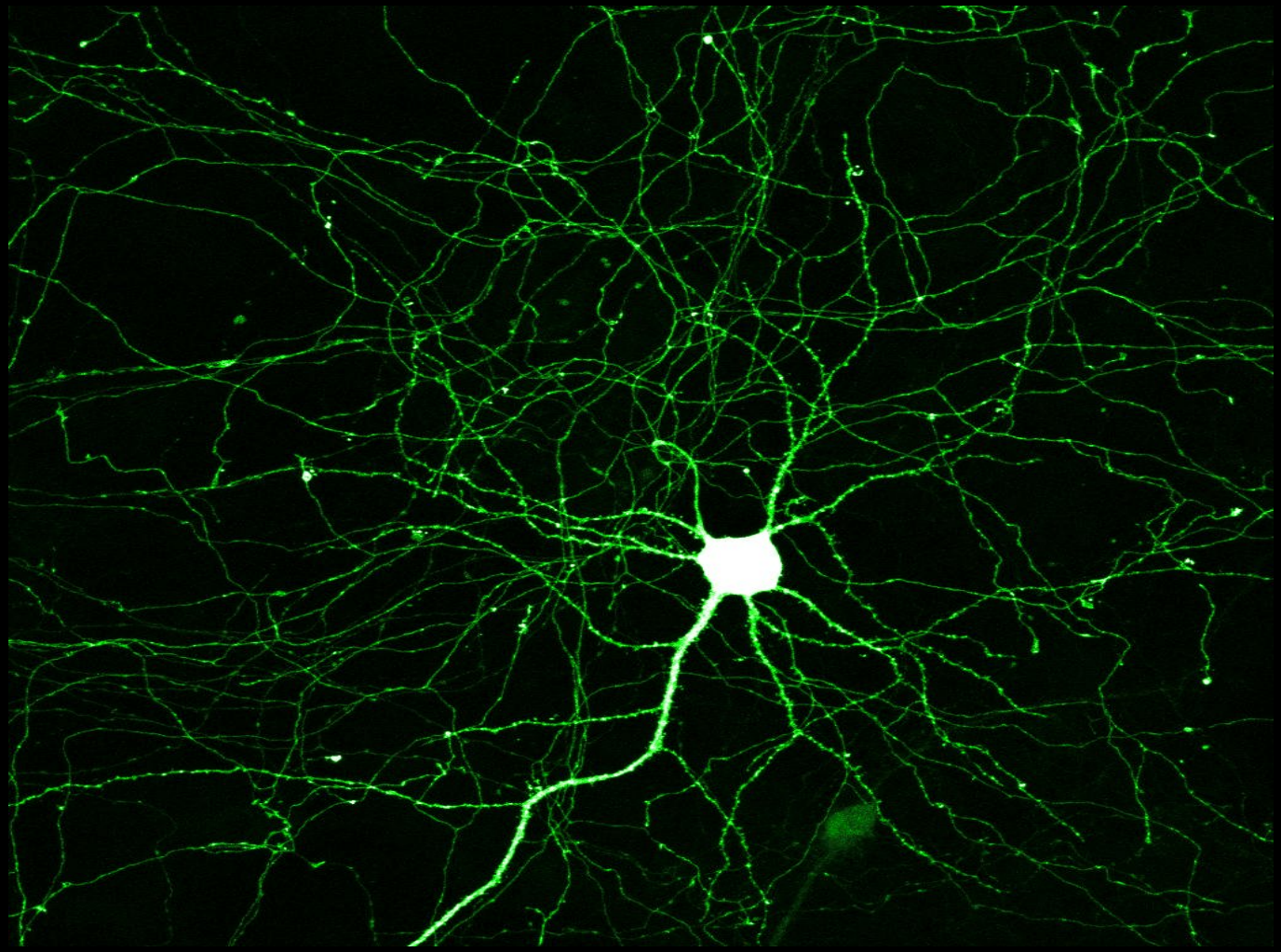
Availability for Learning

How do you know if your child is *available for learning*?

- How can you tell that the child is:
  - Alert?
  - Attending?
  - Responsive or responding?
  - Processing information?
  - Retaining information?

What *is* learning?

Learning is physical change in the brain.



(Slide from Susan Edelman, 2015)

http://encefalus.com/neurology-biology/neuromarketing-neuropolicy-center-emory/

How do you know if your child is learning?

- Habituation – getting used to something
  - Eg something that used to make you startle, or be distracted, but now you don't notice it
- Association – spoon and pudding example
- Anticipation – shift in state given a cue
- Surprise – "a mismatch in expectations"

(Robbie Blaha, TSBVI)

Orienting Reflex

- "A reflexive alerting to significant things"
- Shift in state
  - Agitated to calm, drowsy to alert

- NOT the same as "defensive startle"

- What does it look like for each child?
- Involve the family in identifying

(Blaha et al., TSBVI; Nelson et al., 2002)

Video Example – Pre-intentional communication / orienting reflex

https://vimeo.com/27152677

- What is the student's orienting reflex to attend/calm?
- What prompted the child's orienting reflex?

Children with Limited/No Motor Control

What do:

- Pre-intentional behaviors / reflexes
- Temperature
- Heart-rate
- Breathing pattern

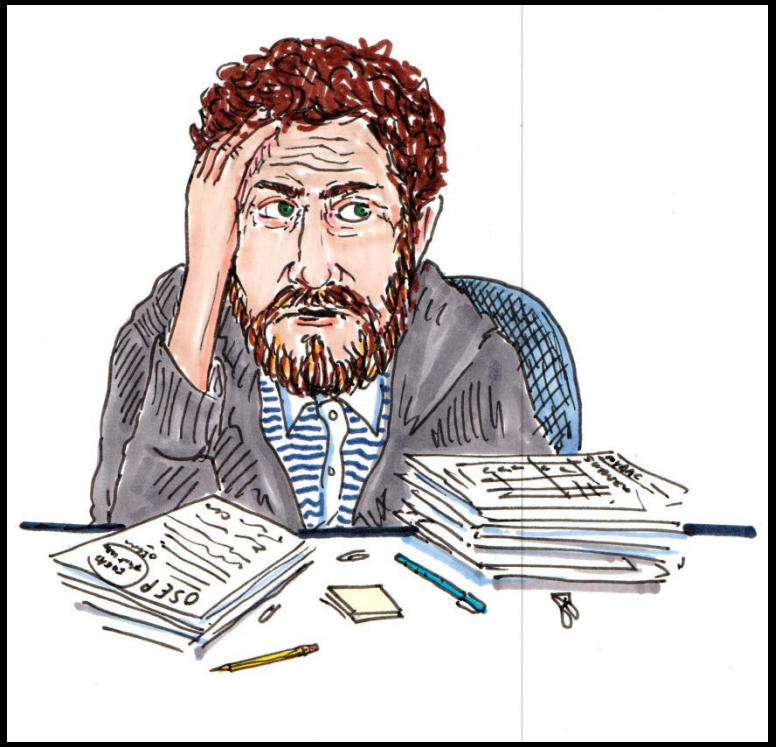
…tell us about availability for learning?

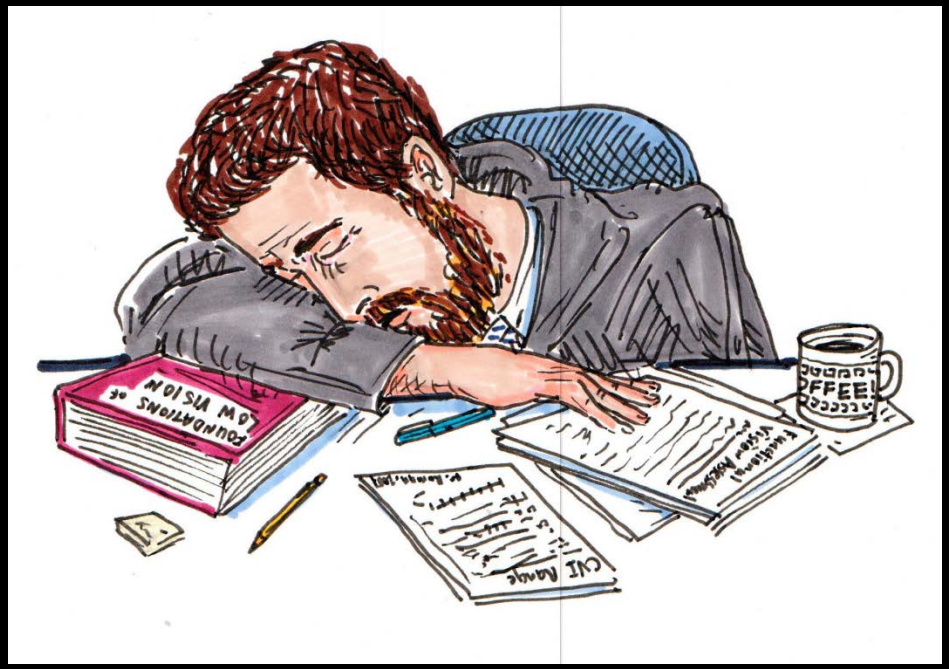
and about visual / auditory / tactile attending…

Pre-intentional IEP Goals?

Given a light touch on the shoulder, and shown the concrete symbol for a new activity, then given the verbal prompt "It's time for _____ (activity)" and 10 seconds processing time before any additional prompting, Sarah will demonstrate increased anticipation to show understanding of the transition between activities by reducing the elevation of her heart rate and breathing (*specific measurements?*).

When are we *NOT* learning?





When is a behavior preventing availability for learning?

When is a behavior supporting availability for learning? (“Sensory Break”)

Video Example – Mealtime Lesson

https://vimeo.com/143911325

- Purposes of sensory-seeking leisure activities
- Proximity & non-intrusive contact
- Supporting availability

When is the child ready for an activity?

Study (Green et al., 1994):

- 98% trainers (teachers): Reported it was helpful to conduct training when students were alert vs non-alert
- 69% reported postponing training due to non-alertness

How can we promote alertness when a child is non-alert?

Calming and Alerting Stimuli

CHANNEL	CALMING	ALERTING
Vestibular	Slow rhythmic rocking	Fast irregular spinning
Tactual	Firm touch, warmth	Light touch coolness
Auditory	Soothing music, quiet rhythm	Fast loud music
Olfactory	Pleasant scents	Strong pungent odors
Visual	Dim light	Bright Light

What calms and alerts *you*?

(Sam Morgan, adapted from Guess et al., 1988)

Biobehavioral States: What are they?

- States refer to the condition of a person at a particular moment
- Biobehavioral refers to the influences on a child's state
  - Internal Factors
  - External Factors

Internal and External Factors that Influence Availability to Learn

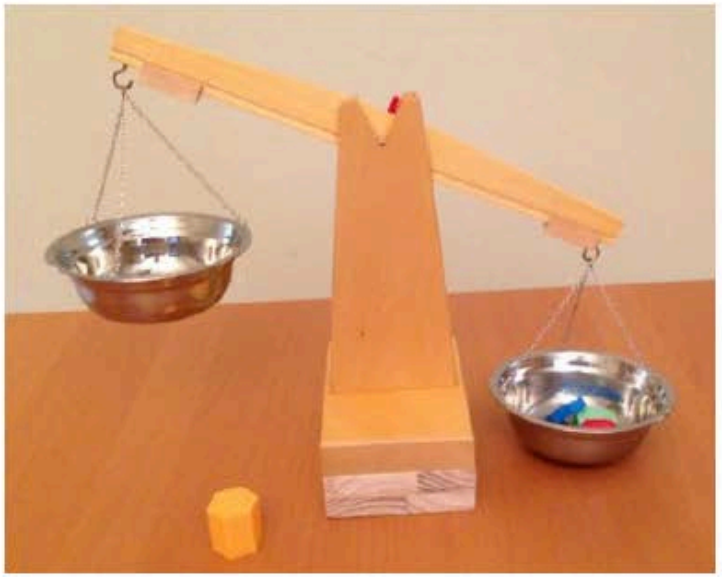
A student's availability to learn changes moment by moment based on the balance between what is happening inside him and what is happening outside him.

External factors:

- Lighting (location and type)
- Background noise
- Smells
- The number of people and their movement around the student
- Tactual input
- Physical supports, positioning, or equipment

Internal factors:

- How the student feels physically & emotionally
- Medical conditions
- Illness or pain
- Impact of medications
- Amount of sleep the night before
- Impact of visual, auditory, and tactile abilities on learning
- Sensory processing or sensory integration difficulties



(Scoggin et al., 2014; OHOA Module 5)

Bio Behavioral States:

CAROLINA RECORD OF INDIVIDUAL BEHAVIOR

- Deep sleep
- Intermediate sleep
- Active sleep
- Drowsy
- Quiet awake
- Active awake
- Fussy awake
- Mildly agitated
- Uncontrollably Agitated

D. GUESS ET AL 1988, 1993

- Sleep States
  - Inactive
  - Active
- Indeterminate States
  - Drowsy
  - Daze
- Preferred awake state
  - Inactive alert
  - Active alert
- Other awake States
  - Awake active Stereotypic
  - Crying agitated

Assessment of Biobehavioral States

- Purpose: To generate information that supports an intervention plan
  - Increase availability for learning
  - *Modify internal and external factors*
  - The environment and presentation of materials
  - Communication & interactions
  - Schedule and timing
  - Biophysical management plan: meds, food/liquid, sleep, positioning

ASSESSMENT OF VOLUNTARY MOVEMENT COMPONENT

Adapted from work done by

JANE KORSTEN & DIXIE DUNN of RESPONSIVE MANAGEMENT INC.

By Robbie Blaha and Stacy Shafer: TSBVI Outreach, 1996

NAME: *SUSIE* DATE: *9/18/96* STAFF: *MS. JONES*

	State	Leg	Mouth	Eye	Ear	Cheek	Chin	Neck	Head	Arm	Shoulder	Hand	Foot	Other
Position #1 *Supine*	Initial *D* Changes *MA* Main *MA*	R V	V	V			V		V	R V	R V	R V	R V	
Position # 2 *Side-Lying*	Initial D Changes *MA,FA,AA* Main *AA*	R V	V				V		V	R IN		R IN	R V	
Position #3 *Wheel-chair*	Initial *AA* Changes *D* Main *AA*	R V	V	V			IN		IN					

Blaha & Shafer, 1996. www.tsbvi.edu

State Assessment: Levels of Arousal

Smith, M., & Shafer, S. (n.d.). *State assessment: Levels of arousal.* Retrieved March 26, 2003, from http://www.tsbvi.edu/Outreach/seehear/archive/biobehav.htm

STATE ASSESSMENT (Levels of arousal)

	7:30	8:00	8:30	9:00	9:30	10:00	10:30	11:00	11:30	12:00	12:30	1:00	1:30	2:00	2:30	3:00	3:30	4:00	4:30	COMMENTS
SUNDAY																				
MONDAY																				
TUESDAY																				
WEDNESDAY																				
THURSDAY																				
FRIDAY																				
SATURDAY																				
SUNDAY																				
MONDAY																				
TUESDAY																				
WEDNESDAY																				
THURSDAY																				
FRIDAY																				
SATURDAY																				

Directions:

Mark the state the child was predominantly in at the end of each half hour interval.

0 – Seizure
1 – Deep Sleep
2 – Intermediate Sleep
3 – Active Sleep
4 – Drowsiness
5 – Quiet Awake
6 – Active Awake
7 – Fussy Awake
8 – Mild Agitation
9 – Uncontrollable Agitation

Assessing Bio Behavioral States: What are the steps?

Part 1

Gather information about the 24 hours before observation

Part 2

- Observation and assessment of states, environments, and input

Part 3

- Summarize and develop strategies for intervention

Food and Liquid Information
Each time the student eats something, drinks something, or is tube feed, enter the following information on the grid.

type	time start	time stop	amount	comment
yogurt - 2	9A	9:20A	2 oz	resisting, "spitting"
baked chicken rice & carrots - pureed - milk added	11:45A	12:30P	almost all - approx. 8 oz of pureed food + liquid	
pears - pureed			approx 2oz milk	
milk 2 cup				Quiet & awake - most of the time
milk	1:30P	1:35P	Sips	opened her mouth slightly when food offered - occ. "spitting or pushing

Medication Information

Each time the student takes a prescription or over the counter medication

Type	Time	Amount	Comment
Tegretol Suspension	8:20 a.m.	200 mg	
Dimetap Elixir	8:20 a.m.	10 cc	for congestion
Dimetap Elixir	12:30 p.m.	10 cc	
Tegretol Suspension	4:30 p.m.	200 mg	
Dimetap Elixir	4:30 p.m.	10 cc	

Seizure Information
Each time a seizure occurs, enter the following information on the grid.

start time	stop time	description	comment
8:57A	8:57 - 30 seconds -	startle, head to R, L arm thrashing	
12:20P	12:21 - 75 seconds	shriek, head to R arms thrashing, crying	

Sleep Information

Start Time	Stop Time	Location	Comments
9:00 p.m.	12:00 p.m.	Bedroom	Cried to request in bed change in position
12:15 p.m.	3:20 p.m.	"	"
3:28 p.m.	6:15 p.m..	"	Playing quietly in bed when checked at 6:15

(Smith & Shafer, TSBVI)

State Key: _ = Seizure; S = Sleep; D = Drowsiness; QA = Quiet Awake;
AA = Active Awake; FA = Fussy Awake; MA = Mild Agitation;
UA = Uncontrollable Agitation.

Time	Activity	Ambient Conditions	Social Conditions
8:15	Arrival	Outdoors cold, windy, noisy chairlift in bus	Greeted by TA Linda
8:30	Breakfast	Normal temperature and lighting	0
8:45	Tooth-brushing	Noisy bathroom,very bright lighting	Hand-over-hand manipulation; L
9:00	Hair Drying	Normal temperature and lighting	Talking; Linda
9:15	Hair Brushing	Normal temperature and lighting	Talking; Linda
9:30	Drama Class	Dark stage area, echoes	Surrounded by peers
10:00	Changing	Normal temperature and lighting	Patting, talking; Linda
10:15	Mail Delivery	Many changes; different noise levels	Interaction with 6 different adults

(Smith & Shafer, TSBVI)

A New Tool for Holistic Assessment of Biobehavioral States & Availability for Learning

Assessment of Biobehavioral States: Supporting Availability for Learning for Students with Multiple Disabilities including Deaf-Blindness & Profound Intellectual & Multiple Disabilities

Chris Russell, MS. Ed., TVI

NYDBC NEW YORK DEAF BLIND COLLABORATIVE

CODING KEY

Behavior State Codes:
AI: Asleep-Inactive
AA: Asleep-Active
DR: Drowsy
DA: Daze
AWIA: Awake-Inactive-Alert
AWAA: Awake-Active-Alert
AWASS: Awake-Active-Self-Stimulatory
CR: Crying
Z: Seizures

Environmental Lighting (L):
Dk: Dark
Dm: Dim
BN: Bright natural (sun)
BL: Bright lamp/lightbulb

Sound Level (SL):
Q: Quiet
LB: Low background noise
HB: High level backgr. noise
N: Noisy, direct

Temperature (T):
C: Cold
Cl: Cool
W: Warm
H: Hot
VH: Very Hot (humid)

Position
SE: Seated
ST: Standing
PR: Prone
SP: Supine
SI: Side-lying
RP: Repositioning

Social:
A: Alone
P: Proximity (within 3')
PC: Physical Contact
HUH: Hand Under Hand
HOH: Hand Over Hand

Communication partner
N: No partner
T: Teacher
A: Aide
P: Peer

Coding systems partially adapted from:

Arthur, M. (2004). Patterns amongst behavior states, sociocommunicative, and activity variables in educational programs for students with profound and multiple disabilities. *Journal of Developmental and Physical Disabilities*, *16*(2), 125-149.

Guess, D., Mulligan-Ault, M., Roberts, S., Struth, J., Siegel-Causey, E., Thompson, B., ... & Guy, B. (1988). Implications of biobehavioral states for the education and treatment of students with the most profoundly handicapping conditions. *Research and Practice for Persons with Severe Disabilities*, *13*(3), 163-174.

Instructions for Completing the Assessment of Biobehavioral States:

1. Review the results of prior assessments, and conduct additional sensory, communication, and preferences assessment needed to gather student-centered information that will help guide biobehavioral assessment and intervention. See ***Additional Resources*** below.

2. **Background Information:** Collect background information within 24 hours of observation, with support of the family and/or home management team. (See page 3)

3. Pick a time interval for using the Observation forms. If assessing a half day or full day, you may want to use 15-minute or 30-minute intervals. If assessing a single contained activity, you may want to use 1-minute intervals.

4. **Observation Form:** On the observation form, complete data at the exact time interval selected above. Describe the activity briefly, and circle codes for data across all areas: Behavior State, Position, Environmental (ambient: Lighting, Temperature, Sound Level), Social Context, and Communication Partner. You may want to add additional notes on the side bar as needed.

5. Duplicate as many copies of the observation forms needed to complete data for the allotted time of the observation (whether a single activity, half day or full day).

6. **Informal Evaluation:** Note informal trends observed for each behavior state. Is there a time of day at which the student tends to be in a certain state? Are certain positions, environmental contexts, social contexts, or specific communication partner interactions associated with a specific behavior state?

7. **Recommendations:** Refer to the Recommendations form as a guide to provide the collaborative team (including the family) with clear recommendations for next steps in modifying the biophysical, environmental, and/or communication plan in order to increase the student's availability for learning.

Additional Resources Supporting Assessment and Intervention:

The Communication Matrix (assessment of expressive communication appropriate for learners with multiple disabilities)

Assessment of Learning & Communication in Children who are Deafblind or Who Have Multiple Disabilities (assessment guide)

HomeTalk: A Family Assessment of Children Who are Deafblind

WSDS Likes/Dislikes Form (informal sensory preferences assessment)

Sensory Channel Form (adapted by T. Anthony)

"Talking the Language of the Hands to the Hands" (Miles, 2003; Rev. Miles, Nelson & Pellerin, 2015)

Open Hands Open Access DeafBlind Intervener Modules (free online training modules for interveners and collaborative team members)

Biobehavioral Assessment **Background Information: To be completed for activity within 24 hours of observation/assessment** **NYDBC, 2018**

Food/Liquid Intake

Type of food/liquid	Time Start	Time Stop	Amount (ounces)	Comments

Elimination activity

Time	Urine (U) or BM	Comments

Medication information

Type	Time	Amount (cc / mg)	Comments Description of side effects

Seizure Activity

Start Time	Stop Time	Description	Comments (aura, state before and after seizure)

Sleep Information

Start Time	Stop Time	Location	Comments

Additional Comments:

Adapted from Smith, M., & Shafer, S. Assessment of biobehavioral states and analysis of related influences. See/Hear Newsletter. www.tsbvi.edu

Student: ______________________________ Date: ____________ Data Collectors: ____

Time	Activity	Behavior State	Position	Environmental (Ambient)	Social Context	Communication Partner
		AI AA DR DA AWAI AWAA CR Z	SE ST PR SP SI RP	L: Dk Dm BN BL T: C Cl W H VH SL: Q LB HB N	A P PC HUH HOH	N T A P
		AI AA DR DA AWAI AWAA CR Z	SE ST PR SP SI RP	L: Dk Dm BN BL T: C Cl W H VH SL: Q LB HB N	A P PC HUH HOH	N T A P
		AI AA DR DA AWAI AWAA CR Z	SE ST PR SP SI RP	L: Dk Dm BN BL T: C Cl W H VH SL: Q LB HB N	A P PC HUH HOH	N T A P
		AI AA DR DA AWAI AWAA CR Z	SE ST PR SP SI RP	L: Dk Dm BN BL T: C Cl W H VH SL: Q LB HB N	A P PC HUH HOH	N T A P
		AI AA DR DA AWAI AWAA CR Z	SE ST PR SP SI RP	L: Dk Dm BN BL T: C Cl W H VH SL: Q LB HB N	A P PC HUH HOH	N T A P
		AI AA DR DA AWAI AWAA CR Z	SE ST PR SP SI RP	L: Dk Dm BN BL T: C Cl W H VH SL: Q LB HB N	A P PC HUH HOH	N T A P
		AI AA DR DA AWAI AWAA CR Z	SE ST PR SP SI RP	L: Dk Dm BN BL T: C Cl W H VH SL: Q LB HB N	A P PC HUH HOH	N T A P
		AI AA DR DA AWAI AWAA CR Z	SE ST PR SP SI RP	L: Dk Dm BN BL T: C Cl W H VH SL: Q LB HB N	A P PC HUH HOH	N T A P

Comments: (Include specific ***time***):

Informal Evaluation:

Note any informal trends observed in each behavior state, in relation to: Time, Position, Environmental, Social Context, Communication Partner. For example, AA: Trend Position = Supine (Student was observed generally in Asleep-Active position when supine).
**Do not note trends unless observed specifically.*

Behavior State	Time	Position	Environmental (Ambient)	Social Context	Communication Partner
AI					
AA					
DR					
DA					
AWAI					
AWAA					
CR					
Z					

Recommendations for Intervention

- Biophysical Management Plan
- Social Contexts
- Student's Schedule
- Communication Partners
- Positioning
- Communication & Interaction Supports
- Environmental Modifications
- Materials & Instructional Routines

Biobehavioral Assessment: Guidelines for Recommendations

The goal of intervention is to increase the student's availability for learning. It may be necessary to modify the biophysical management plan and/or to make adjustments to the student's schedule, to the environment of the classroom and other instructional settings, to positioning, communication modes and practices used with the student, and to the actual materials presented to the student. The following guidelines are provided to support the development of meaningful, student-centered recommendations for intervention:

Biophysical management plan: Are there areas of the student's biophysical management plan that require further investigation in order to support increased availability for learning? Consider specific questions for the family and/or clinical specialists regarding concerns or areas of potential intervention including: food/liquid intake, elimination (schedule, routine, other supports), amount of sleep, seizure activity, impact of medication (including timing of administering medication).

Changes to the student's schedule: Are there specific changes to the student's schedule that would support increased availability for learning? For example, if the student is always fatigued after Physical Therapy, should a break be scheduled after this activity, as opposed to scheduling an academic activity or other related service immediately following PT?

Positioning: Are there changes to positioning and seating supports needed to promote availability for learning, both in general and during specific activities? The Positioning and Adaptations Tool (NYDBC, 2016) may be used by the team to plan positioning supports for each activity.

Environmental modifications and supports: Are there changes to the ambient environment of the classroom or other areas of the school/setting needed to promote availability for learning, both in general and during specific activities? Consider adaptations/modifications to: Lighting, Temperature, Sound Levels.

Social Context: Are there social contexts that should be planned and implemented to promote increased availability for learning? Consider: constant contact and tactile proximity, use of **hand under hand** supports and mutual exploration (instead of more intrusive and manipulative hand over hand).

Communication Partner: Does the student have a variety of communication partners, or is communication/interaction limited to one or two people throughout the day? Do communication partners have common forms/modes of communicating and interacting with the student? Are there additional considerations for supporting communication partners and team members to share common practices of interacting and communicating with the student?

Communication and Interaction Supports: Consider recommendations for specific interaction and communication supports, including: touch cues, name cues, tangible symbols, calendar systems, active learning interventions (Little Room, others).

Materials and Instructional Routines: Are there adaptations to materials and to instructional routines that would support increased availability for learning? Consider the extent to which materials and the presentation of materials affects the student's availability or causes fatigue. For students with cortical visual impairment, consider the extent to which materials impact the characteristics of Multisensory Complexity.

Additional evaluation recommended: Are there additional assessments or evaluations needed to support the student's program to increase availability for learning? Consider: Communication Matrix (assessment of pre-linguistic expressive communication, normed for students with multiple disabilities); functional vision assessment and learning media assessment (or CVI Range assessment for students with cortical visual impairment); sensory preferences assessment and sensory profiles (see ***Additional Resources***, p. 2).

Implications of Positioning

Positioning and Adaptations for Students with Deaf-Blindness and/or Multiple Disabilities

Chart for Planning Activities

Activity	**Position of Student** (Seated, standing, moving/walking, side-lying, supine, prone, kneeling, cross-legged, etc.)	**Physical adaptive equipment needed** (stander, assistive mobility device, adapted chair or attachment, pillow, tumble form, arm rest, cane, wheelchair, etc.)	**Extra adaptations and equipment needed for student to attend** (slant board, presentation of materials, visual adapt., etc.)	**Physical assistance provided by teacher** (Hand under hand, coactive movement, coactive manipulation, physical support, etc.)

Identifying Sensory Preferences

Adapted Version of Koenig and Holbrook's Sensory Channel Form

(from *Learning Media Assessment of Students with Visual Impairments*, 1995, Texas School for the Blind)

V = visual; T = tactile; A = auditory; M = movement; S = smell

Child's Name: _____ DOB: _____

Completed By: _____ Date Completed: _____

Behavior	**Sensory Avenue(s) Utilized**
Behavior Observation #1	V T A M S
Behavior Observation #2	V T A M S
Behavior Observation #3	V T A M S
Behavior Observation #4	V T A M S

What calms the child? (describe)	V	T	A	M	S
What alerts the child? (describe)	V	T	A	M	S
What stresses the child? (describe)	V	T	A	M	S
What overloads the child? (describe)	V	T	A	M	S
What are the child's favorite toys? (describe)	V	T	A	M	S
What activities does the child anticipate? (describe)	V	T	A	M	S
What motivates the child to move? (describe)	V	T	A	M	S

"LIKES" INFORMATION

Child:	Date:

FOODS taste/ texture	SMELLS	TOUCH texture/ hugs/ fabrics light - heavy	MOVEMENT rock/ bounce swing	VIBRATION car ride toys/ appliances	SIGHTS lights/colors	SOUNDS voices/ music pitch/ loudness environmental

MUSCLES push - pull bear weight	PEOPLE	PLACES	ACTIVITIES	TOYS	SELF STIMULATION BEHAVIORS	OTHER

"DISLIKES" INFORMATION

Child:	Date:

FOODS taste/ texture	SMELLS	TOUCH texture/ hugs/ fabrics light - heavy	MOVEMENT rock/ bounce swing	VIBRATION car ride toys/ appliances	SIGHTS lights/colors	SOUNDS voices/ music pitch/ loudness environmental

MUSCLES push - pull bear weight	PEOPLE	PLACES	ACTIVITIES	TOYS	SELF STIMULATION BEHAVIORS	OTHER

Specific Strategies

Processing Time

Hand Under Hand

Touch Cues

Name Cues

Tangible Symbols

Active Learning, Little Room

Sensory Diets, Snoezelen Rooms

Positioning & Handling e.g. MOVE Model

Touch Cues

- A touch at a specific place on a student's body that is done consistently to convey information about an upcoming event
- Provide information, express wants/needs, give a directive, give feedback
- Concrete referent for sign when paired
- NOT meaningless prodding, prompting, or tapping

Examples of Touch Cues

- **Hello** Touch hand, shoulder or back.
- **Sit** Gentle pressure on shoulder, feel chair
- **Stand** Gentle upward pressure to elbow
- **Eat/Drink** Touch their fingers to their lips
- **Toileting** Gentle tap side/hip
- **Hand washing** Rub their hands together gently
- **Picking up from lying position** Tap or gently lift shoulders
- **On/off ankle orthotics** Light touch on shin
- **On/off glasses or cochlear** Light touch on side of head

Blaha, R., Shafer, S., & Smith, M. Thoughts on the assessment of the student with the most profound disabilities. See/Hear Newsletter, retrieved from www.tsbvi.edu

Guess, D., Ault, M., Roberts, S., Struth, J., Siegel-Causey, E., Thompson, B., Bronicki, G. J. B., & Guy, B. (1988). Implications of biobehavioral states for the education and treatment of students with the most profoundly handicapping conditions. Journal of the Association for Persons with Severe Handicaps, 13, 163-174.

Guess, D., Siegel-Causey, E., Roberts, S., Rues, J., Thompson, B., & Siegel-Causey, D. (1990). Assessment and analysis of behavior state and related variables among students with profoundly handicapping conditions. Journal of the Association for Persons with Severe Handicaps, 15, 211-230.

Guy, B., Guess, D., & Ault, M. (1993). Classroom procedures for the measurement of behavior state among students with profound disabilities. Journal of the Association for Persons with Severe Handicaps,18, 52-60.

Richards, S., & Richards, R. (1997). Implications for assessing biobehavioral states in individuals with profound disabilities. *Focus on Autism & Other Developmental Disabilities*, 12(2), 79-86

Richards, S., & Sternberg, L. (1993). Corroborating previous findings: Laying stepping stones in the analysis of biobehavioral states in students with profound disabilities. Education and Training.

Smith, M., & Shafer, S. Assessment of biobehavioral states and analysis of related influences. See/Hear Newsletter. Retrieved from www.tsbvi/edu

Simeonsson, R.J., Huntington, G.S., Short, R.J., & Ware, W.B. (1988). The Carolina record of individual behavior (CRIB): Characteristics of handicapped infants and children. Chapel Hill, NC: Frank Porter Graham Child Development Center, University of North Carolina at Chapel Hill.

Sternberg, L., & Richards, S. (1989). Assessing levels of state and arousal in individuals with profound handicaps: A research integration. Journal of Mental Deficiency Research, 33, 381-387.

Spangler, G., & Grossman, K. E. (1993). Biobehavioral organization in securely and insecurely attached infants. Child Development, 64, 1439-1450.

Wolff, P. H. (1959). Observations on newborn infants. Psychosomatic Medicine, 21, 110-118.

Questions?

Chris Russell
Project Coordinator, NYDBC
Christopher.russell@qc.cuny.edu