Growing Good Communicators

Sensory foundations for concepts and symbols

What is communication?

- A joint interaction between a message sender and a message receiver
- Concepts about people, actions, and objects must be established before messages about them can be sent and received (SLK)
- Tools for sending and receiving messages develop from non-symbolic to symbolic (SAM)

Communication and semantic development

- Tulving object perception model
  - Sensory component processing
  - Comparison
  - Evoked memory
  - Addition of semantic attributes
    - Understanding use
    - Understanding the relationship of objects to others
    - Naming (receptive comprehension)

Cognitive growth

- Billions of sensory experiences are required
- Typical infants and toddlers are voracious information seekers; their brains double in size during their first year of life
- Without intervention (TVIs), learners with visual impairments and additional disabilities have less access to information, fewer experiences, and delayed growth

Cognitive performance levels

- Traditional-predictive
  - Gifted
  - Average
  - Significantly sub-average
    - Mild
    - Moderate
    - Severe
    - Profound
- Developmental-behavioral/sequential (Piagetian model)
  - Sensorimotor
  - Preoperational
  - Operational

Sensory experiences and concept growth

- Sensorimotor stage: egocentric
  - Attraction/aversion
  - SLK
- Late Sensorimotor/Early Preoperational stage: gradually more generic
  - Executive function aversion over-ride
  - SAM

Why are concepts important?

- Concepts are the units of knowledge that build coherence*
- The human brain is neurologically predetermined to search for coherence
- Lack of coherence produces stress and results in avoidance

*The feeling that what is happening one's environment makes sense

Three sensorimotor concept levels (SLK)

- Attention
  - Deliberate attending to one thing while ignoring other things
- Exploration
  - Manipulating objects to probe sensory attributes which, if stored in memory, result in recognition
- Function
  - Demonstrating understanding of the typical use of an object

Sensing
Taking in information (SLK Attention)

- External Systems
  - Tactual: Primary source of information about the world at the sensorimotor stage
  - Visual: Paired with tactual for meaning
  - Auditory: Paired with tactual and visual for meaning
  - Gustatory
  - Olfactory
- Internal Systems
  - Proprioceptive
  - Vestibular

Sensory barriers to successful concept development

- Physical discomfort
- Stress (Incoherence, bonding problems)
- Aversion
- Pacing
- Complexity
- Boredom

Acting
Seeking more information (SLK Exploration)

- Exploration schemes
  - Mouthing
  - Raking/batting
  - Shaking
  - Banging
  - Squeezing
  - Throwing
  - Dropping
  - Taking out/ Putting in
  - Taking apart/putting together
- Exploratory procedures
  - Lateral motion
    - texture
  - Pressure
    - hardness
  - Static contact
    - temperature
  - Enclosure
    - Shape/size/volume
  - Unsupported holding
    - weight
  - Contour following
    - Exact shape

Three sensorimotor/early preoperational communication levels

- Intrinsic emotional responses to sensory input (cry/laugh)
  - SLK Attention Level
- Unconventional responses with intentional communicative intent (kick legs to get partner's attention)
  - SLK Exploration Level
- Conventional communicative responses (reach for or point to desired object)
  - SLK Function Level, SAM, Tactile Connections, STACS

Understanding Organizing information (SLK Function & SAM)

- Basic concepts emerge, but are based on the learner's personal experience
- Concepts are one-dimensional and rigid
- Symbols with concrete referents are used to facilitate thinking about things in memory but not present
- Basic concepts are expanded through assimilation and accommodation

Referents

Concrete

- An object, person, action, or place
- Given the symbol for it, the learner can touch it, point to it, do it, or go to it (direct sensory experience)

Abstract

- A thing that cannot be touched, pointed to, done, or moved to
- Words about quantity (more, less, etc.)
- Words about color
- Words about emotions
- Words about categories and systems (fruit, government, etc.)

Communication routines (SLK Function)

- Ensure partner availability
- Promote alertness with highly motivating learning media
- Apply accommodations specifically and consistently
- Provide the repetition necessary for establishing new behaviors

First concept categories

- People: the self and others
- Objects: tangible things
- Actions: body movement of the self and others
- Places: where things are, contexts for groups of things

First vocabulary

- Receptive
- Words provided by others (Heard, seen or touched)
  - First, used for emotional content and person identification
  - Later, used for symbolic content (meaning)
  - A typical two year old understands the meaning of about 200 words and says about 20

First conventional receptive symbols

- Words
  - Single Words paired with concrete referents
- Objects
  - Presented in communication contexts (schedules, choice boards, experience stories, etc.)
- Actions
  - Mimicked with communicative intent

How is meaning related to symbols?

- A symbol is meaningful if it calls to mind the thing to which it refers
- The symbol develops meaning by being paired with the actual thing to which it refers in here and now experiences (SLK Function Routines)

Symbols

- Iconic
  - Objects
  - Parts of objects
  - Photos (specific)
  - Pictures (generic)
  - Mimicked actions
- Arbitrary
  - Pictograms
  - Graphics
  - Words (spoken or written)
  - Numbers

How is meaning affected by sensory and motor impairment?

- “delays in active exploration or variations in concrete experiences” result in
  - Absent and incomplete concepts
  - Objects experienced out of context and without intended function
  - Words without meaning
    - **Concrete referents are missing**

Help is needed to

- Make sense out of random experiences (coherence)
- Provide the breadth of experiences required for good concept and scheme development
- Expand from a self-referential point of view to an “other-oriented” point of view

SAM levels: the help hierarchy

- Concepts about the learner's own body
- Concepts about people, objects, and actions touching the learner's body
- Concepts about people, objects, actions, and places beyond the learner's body
- Schemes about people-object-action-place relationships in events beyond the learner's body

Using the Gap Inventory

- Identifies basic concepts that are not part of the learner's experience and need to be added
  - Establishes present levels of performance
  - Indicates priority goals
    - Sample: In 36 weeks, given instruction on concept development in four environments, the student will identify named objects and people and perform named actions for 70% of the items selected in the Gap Inventory.
  - Measures achievement

How do we teach concepts and receptive vocabulary

- SARA
  - Words paired with things that are part of direct sensory experiences in natural environments (routines)
- SAM Games
  - Words learned in natural contexts used in communication contexts (generalization, practice)

Which is it: natural context or communication context?

- Bath tub
- Fire station
- Calendar box
- Craft table
- Experience story
- Refrigerator
- Sam game