

SENSING ACTING LEARNING

Using the Sensory Learning Kit to
provide instruction to sensorimotor
stage learners

Piaget

- **Sensorimotor 0-2 typical**
 - Exploring: using sensing and acting systems in the here and now to gain knowledge
- **Preoperational 2-7 typical**
 - Naming, categorizing, and predicting: using symbolic thinking about the past, present, and future to organize information about the world
- **Operational 7 up typical**
 - Reasoning: learning the underlying structure and rules of thinking about the world (semantics, math, logic, ethics, etc.)

Goal

- The goal of instruction at the sensorimotor stage is **coherence**: the learner's ability to understand what is happening around him so that he can participate in it.

Nelson, 2011

Zone of proximal development (ZPD)

The upper end of the zone must be a stretching of an existing skill, not a leap into a zone beyond the learner's horizon of awareness (Jacobs, 2001).

Cognitive process

- Acquisition (sensory information)
- Storage
- Retrieval
- Use

Sensorimotor stage cognitive skills

- Attention
- Exploration
- Search (object permanence)
- Cause and effect
- Imitation
- Means/ends (tool use)
- Spatial mapping

How sensory information becomes knowledge

- Storing
 - Sensory memory
 - Working memory
 - **Long term memory**
 - Procedural memory

(Assimilation)
- Organizing
 - Like/dislike
 - Familiar/unfamiliar Recognition
 - Comparison
What is it like?
 - Categorization
What does it do?

(Accommodation)

Gibson

- Action systems and sensing systems work together to allow infants to “discover what the world affords and what to do about it.”
 - Phase 1: 0-5 months
 - Sensing. Acting is primarily oral. Grasp is reflexive.
 - Phase 2: 5-9 months
 - Acting expands as ability to use hands emerges. Reaching, grasping, and fingering are used to gain information about properties of objects as they are banged, squeezed, thrown, etc.
 - Phase 3: 9 months +
 - Ambulation expands opportunities for exploration. Acting becomes less random, more goal oriented.

Sensing: Taking in information at the sensorimotor stage

- External systems
 - Primary systems for learning
 - Tactual (with or without vision)
 - Visual (with touch)
 - Secondary systems for learning
 - Auditory
 - Gustatory
 - Olfactory
- Internal systems
 - Proprioceptive
 - Vestibular

Acting Seeking more information

- | | |
|---|---|
| <ul style="list-style-type: none"> • Exploration schemes <ul style="list-style-type: none"> – Mouthing – Raking/batting – Shaking – Banging – Squeezing – Throwing – Dropping – Taking out/ Putting in – Taking apart/putting together | <ul style="list-style-type: none"> • Exploratory procedures <ul style="list-style-type: none"> – Lateral motion <ul style="list-style-type: none"> • texture – Pressure <ul style="list-style-type: none"> • hardness – Static contact <ul style="list-style-type: none"> • temperature – Enclosure <ul style="list-style-type: none"> • Shape/size/volume – Unsupported holding <ul style="list-style-type: none"> • weight – Contour following <ul style="list-style-type: none"> • Exact shape |
|---|---|

Acting

More mental than motor

- Preparation- mental (many parts of brain)
 - Ideation, intention
 - Long term memory
- Initiation- mental (frontal lobes) and muscular
 - Muscles receive and react to first electric impulses from cranial nerves related to executive function
- Execution- muscular and mental (cerebellum)
 - Procedural memory
- Recovery- mental (many parts of brain)
 - Feedback, accommodation

Using the Sensory Learning Kit to provide instruction

- Three skill levels
 - Quiet Alert (Attention)
 - Acquiring sensory information about things passively
 - Cognitive skill: anticipation
 - Active Alert (Exploration)
 - Acting to probe sensory potentials
 - Cognitive skills: exploration, object permanence, cause and effect, imitation)
 - Partial Participation (Function)
 - Sensing and acting to achieve a specific goal
 - Cognitive skills: means/ends, spatial relationships

Deciding where to start Step 1 (SLS Part 1)

- Review existing information about physical and sensory functioning
 - Assessment folder
 - FIE reports
 - SLP, OT, PT, AT, V, A, etc.
 - Medical reports
 - Parent interview

Deciding where to start Step 2 (ASP)

- Look at arousal states
 - If the learner shows typical levels of alertness, proceed to the next step
 - If the learner shows atypically high levels of extended states (sleepy/drowsy/fussy/ agitated), assess arousal states
 - Is there a typical pattern of arousal related to time of day?
 - Are there media, ambient environmental, and/or social factors related to certain states?

Deciding where to start Steps 3 and 4 (SRR, LSG)

- Look at responses to sensory input in each sensory system
- Assess systems related to
 - positive and negative reactions to input (summary by channel in SLG)
 - response delays (summary by channel in SLG)
 - response levels: attention, exploration, function (summary by channel in SLG)

Designing instruction Step 5 (App/Aver list)

- Choose learning media items
 - Items from appetite list with strongest positive responses
 - Use items as topics for activities
 - Vibration becomes topic for “mat game” routine
 - Lotion becomes topic for lotion routine
 - Mirror becomes topic for grooming routine

Designing instruction Step 6 (LP Worksheet)

- Script the step sequence
 - Opening (use an object to label the activity)
 - Write step sequence from learner's point of view (don't worry about independent performance)
 - No more steps than the learner can remember
 - Closing (clear signal that the activity is finished)

Designing instruction Step 7 (LP Worksheet)

- Decide
 - Where the activity will take place
 - How often it will occur (minimum 1x daily)
 - Who will teach
 - What materials will be used
 - How the student will be positioned

Designing instruction Step 8 (LP Worksheet)

- Conduct diagnostic teaching phase (3-5 trials)
- Plan accommodations, modifications, and supports
- Write as little as possible. If some acc/mod/sups are standard (hand-under-hand support) do not write them every time. If they are unique to the step, make a note (foam grip on toothbrush)

Designing instruction Step 9 (LP Worksheet)

- Embed IEP objectives
 - Look for steps in the routine related to communication, social, and motor skills
 - Embed one objective for every three steps, at most (distributed trials)
 - A sequence of repeating steps provides practice and is desirable when practical

Implementing instruction Step 10 (LP)

- Plan documentation
 - When
 - Schedule (2 times weekly)
 - Every time hard to do, may be less reliable
 - If intermittent, consecutive trial wording in IEP must be considered
 - What kind: yes/no, frequency, duration, anecdotal
- Take documentation on IEP steps only

Implementing instruction Step 11 and 12 (LP)

- Partner begins structured instructional phase
- Team members provide continuing observation, in person or by video, to evaluate effectiveness of acc/mod/sups, pacing, etc.)
- Begin data collection
- Revise routines according to data indicators (about one change per week)
 - Change accommodations, goals, settings, positions. etc.)

Implementing instruction Step 13 (LP)

- Expand routines
- New goals may be embedder
- Steps may be added
- Materials, places, and instructors may change

Broadening Instruction Steps 14, 15, and 16 (LP, Guidebook appendix I)

- Develop new routines
- Use anticipation calendars
- Expand calendar strategies