Human Learning and Development Theories

Behaviorism

- a branch of psychology; had to prove itself as a science
- Traditional Views
  - generally perceived as outdated school of thought, but still relevant today (takes place in classrooms today although I thought it did not)
  - the process through which experience causes a change in behavior (ie. learning is observable)
  - emphasis is placed in the effects of external events on the individual (you are taught)
- Classical Conditioning
  - *stimulus generalization*: other items similar to the conditioned stimulus leads to the conditioned response
  - Pavlov with dog and Watson with Albert (and the white rat)
  - *conditioned stimulus (CS)* along with *unconditioned stimulus (UCS)* leads to a conditioned response
    - Classroom Use
      - we use classical conditioning in classrooms
      - conditioning becomes automatic; we don't even notice it
      - example: looking at PA system during announcements
  - *extinction*: occurs when a CS (white rat) is repeatedly presented by not following by USC (loud bang); the CR (crying) gradually decreases until it is "extinguished"
- Skinner
  - punishments and reinforcements (both postilve and negative)
  - *operant conditioning*: consequences of behavior influence probability of reoccurrence (we use this in the classroom); if consequences bad then behavior changes (theory of behavior modification)
  - *extinction burst (sattation)*: when we try to extinguish a behavior by ignoring it
- More Than Just Skinner
  - Needs to be taught today as a complex field
- A Science
  - constantly needs to prove itself as a valid scientific discipline
- Neobehaviorism
  - Bandura's social learning: focused on observational learning (see someone else being punished or rewarded and learn)
  - so experience or observation can influence learning/knowledge
  - We don't always act to the best of our knowlege
    - knowledge does not always impact action (eg. doctors not washing hands, speeding, drinking and driving, texting and driving, etc)
  - cognition bridges the environment/behavior connection (eg. violence and the Bobo doll)

Constructivist Views of Learning

- psychological (Piaget)
  - language reflects thinking
  - child is a "solitary scientist"
- Forms of Constructionism
  - social constructionism (sociological constructivism)
  - social constructivism (Vygotsky)
    - Zone of Proximal Development (ZPD)
      - speech: 1) private and 2) inner
    - Cognitive Development
      - depends on interaction with people in one's world
      - depends on the cultural tools provided to support thinking
        - real tools (rulers, computers)
        - symbols: numbers and language
      - culture is key
- Constructivist
  - learning as a constructivist process
- Piaget
  - Cognitivist
    - saw children as active learners
      - each stage is qualitatively different; need experience and time
      - different stages of development and learning
        - studied them in their natural environments
        - development readiness
          - need to be developmentally ready to learn
          - educational implications of Piaget's theory; if we want kids to learn, they need activity
            - they will not learn until they are ready (eg. concrete operational stage example: conservation)
            - Teaching Strategies
              - activity is key
              - provide evidence to contradict initial beliefs to modify structures on basis of new information
              - create conceptual change to challenge existing concepts to create cognitive disequilibrium
              - teachers should use developmentally appropriate practice to enable children to learn
            - cognitive development in any one stage depends on activity
              - children must engage in appropriate activities in order to learn
              - *adaptation*
                - *equilibration*: balancing what we know *(assimilation)* with what doesn't fit *(accommodation)*
                - *assimilation*: taking something new within schema you already know
                - *accommodation*: adjust to new knowledge to incorporate external reality
                - create cognitive conflict; challenge what they know *(disequilibrium)*
- Zone of Proximal Development (ZPD)
  - distance between what you can do on your own and what you can do with help from an adult (or more knowledgeable peer)
  - measures learning potential
    - focus on what they are just about to learn and not what they have already learned
    - measured through dialogue and observation as opposed to testing
  - tasks below the ZPD = no new learning and can get boring
  - tasks above the ZPD = no meaningful learning
  - as a teacher, I need to provide learning activities within each student's ZPD
    - Scaffolding
      - Bruner's term for an action that supports a learner
        - a glance
        - modeling
        - cueing
        - thinking aloud
      - asking (bigger) questions
        - similar to BC's refreshed curriculum
- Situated Learning
  - language facilitates development
  - thinking reflects knowledge
  - learning involves process of engagement in community of practice
    - Community of Practice
      - they are everywhere (many communities of practice)
      - social learning
      - common interest in a subject or problem
      - learners initially start on periphery (onlookers)
        - as learners become more confident, they move towards centre of community
      - collaboration over time
        - share ideas
        - build innovations
        - find solutions
    - model of learning by Lave and Wager
    - Teaching Strategies
      - do not have to be face to face to collaborate
        - Sugata Mitra: "New Experiments in Self-Teaching"
      - learning by doing
        - BC's refreshed curriculum is a move towards active participants in learning (active engagement)
        - have students reflect (explain their understanding)
        - can construct identities in relation to the communities as active participants
          - do not always have to be at centre of community for learning to take place
          - provide the cultural tools to support learning
        - use authentic taks; connect to real world
        - encourage students to constantly assess how activity is helping them gain understanding
          - guide them to question themselves and their strategies
            - help students become "expert learners"
            - students learn how they learn

Cognitive Views of Learning

- Historical Context
  - 1960s: shift from Behaviorism back to consciousness
    - what is consciousness?
    - how do we think?
    - how does cognition develop?
- Information Processing
  - interested in how and why we think
  - interested in how children think
  - thinking as information processing (task analysis)
  - *declarative knowledge*: knowing what (semantic memory and episodic memory)
    - *procedural knowledge*: knowing how (eg. learning how to drive; different than reading manual) *knowing how is not enough (eg. directions to build Ikea furniture)
      - *conditional knowledge*: knowing when and why (eg. when to use certain strategies in classroom for teaching; don't do same strategy every time)
- Memory
  - Processes of Memory
    - *habituation*: no longer paying attention to a stimulus (need this otherwise we would be using our short term memory too much)
      - the average adult can't remember 50% of what s/he has just read
        - the role of reviewing in memorization: recall with review has better rates
    - *dishabituation*: something changes so you need attention (eg. taking a different route home)
    - *automaticity*: processing information with little or no effort
  - *sensory (SM)*: fraction of a second to a few seconds
  - *working (short-term) memory (WM)*: up to 30 seconds; what you're doing right now (30 second chunks)
    - *long term memory (LTM)*: up to a lifetime (we may not always be able to find it; but a smell or trigger may come to remind you)
      - Schemas
        - *scripts*: schemas focusing on order of predictable events (eg. routines in classroom)
        - how memories are stored in LTM
        - chunked
        - many types of schemas
        - they are personal; each of us have different connections
          - *spread of activation*: what is connected to what; different understandings and different things we associate with make us understand and learn differently
      - as short term memory increases so does processing speed (2 digits at 2-3 years, 5 digits at 7 years old; 7 digits at 12-13 years old)
- Classroom Use
  - teachers can determine if students have learned a concept
    - short term memory has an effect on school achievement
      - language processing difficulties (spending time decoding); eg. if lesson is writing on story then let them type it or film it rather than write it out; legitimately ask the same question with prep time and signals; divide out questions that have multi-parts
  - use a lot of examples
    - non-examples prevent *overgeneralization* (eg. including airplanes in things that fly when describing birds)
    - less typical examples prevent undergeneralization (exclusion of a true member of a category)