CI 512: Teaching and Learning
Week 1, Day 2 – 7/21/2011
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Class Notes

Topics: Classical Learning Theories, Behaviorism

- course information and changes
  - syllabus change to reflect additional standardized criteria for synthesis paper evaluation from CI department
    - more information will be available before synthesis paper is due
  - course content is more focused on learning theories than their implementation
  - new calendar with major highlights, theories, and due dates available on Wiki site
  - standard grading distribution: A = >90, B = >80, C = >70, etc.
    - plus and minus grades generally not given except in extenuating circumstances
  - office hours: email to make appointment outside of office hours if they don't work for you
  - talk to Carolyn or Ron sooner rather than later if struggling or feeling overwhelmed with the course

- Snapshots
  - 1st draft: one story, one interpretation (due Tuesday 7/26)
    - describe a personally significant learning experience in one, well-written paragraph, then interpret it through behaviorism lens
  - 2nd draft: two stories, two interpretations
  - final draft: three different personal experiences, each interpreted in 2-3 ways

- Classical Learning Theories
  - Plato, Lock, Freud
  - history of educational psychology stems from philosophy
    - became a discipline at the turn of the 20th century
  - we won't be using these theories as many of them have been re-interpreted, but they're important because they're the roots of the modern discipline
- Plato
  - earliest in educational thought
  - hypothesized that everyone had knowledge before being born, then drank from the River Lethe and forgot some or all of it; amount of forgetfulness after coming to Earth is influenced by how much water was drunk
    - the less a person drank, the wiser they would be on Earth
    - this is probably an allegory, rather than a reflection of his actual views on learning
  - believed that learning is a passive process and that virtue and reason are the most important to teach/learn
    - may be classified as an idealist because of this

- Plato's Allegory of the Cave (from *The Republic*)
  - http://www.youtube.com/watch?v=69F7GhASOdM
  - people are turned one way, and must turn themselves to learn
  - in the cave, there is an expert mentor and an "ignorant" student
    - power dynamics between student and teacher persisted and were common for a long time
  - group discussion questions after watching:
    - how is learning symbolized in this allegory?
    - how does teaching take place?
  - group discussion answers:
    - common perspective between students and teachers is necessary
      - to effectively teach the chained prisoners, the freed prisoner should have walked in front of them to reach them from the same perspective
      - teachers are the freed prisoner experiencing reality; they can see the real world applications and utility of what they're studying, but students are "chained to the cave wall" and can't understand reality or may not to, so must teach from their perspective
    - simple explanations of the real world don't translate into an understanding of the real world; must experience it to achieve true understanding
    - it helps if prisoners (students) have heard of the real world before experiencing it, as it makes them more prepared for the real world and leads to less of a shock for them when they go out into it
    - the freed prisoner is a student himself, so students sometimes make the best teachers

- Locke
  - early philosopher
  - believed in "tabula rasa", or blank slate
    - people are born with empty minds, and are biologically wired with the capacity and want to learn
  - learning occurs through simple ideas that come from direct experience, which are then combined to form more complex ideas
  - Locke falls directly in the nurture side of the nature vs. nurture debate

- Rothstein quote (see presentation slides), explained through Lockean educational theory:
  - professional parents had more experience from which to draw, offering it to their children, which caused them to be able to form an increased number of simple ideas, and in turn, an increase in complex ideas, than children from the other two categories
    - in addition, professional parents have more time to spend on teaching children, as well as the means to give them more experiences
  - Plato view of this: words already exist in children's minds, parents help children discover them
  - Lockean theory: vocabulary distribution is a product of the environment and the parents that children are exposed to and not of any innate ability of the children

- Freud
    - emotion and education interplay
    - teaching is going against the natural desires of the child
        - id and ego are constantly battling

Discussion of readings: Phillips and Soltis, Brownell, and Resnick

- Behaviorism:
    - what are the primary features of behaviorism?
    - how do behaviorism tenants align with current standardized test practices?
- Brownell
    - what types of learning is drill and practice most effective at?
    - what types of learning is drill and practice most ineffective at?
- Resnick
    - reaction to drill and practice
- Group discussion of questions above:
    - a positive of drill and practice is that it establishes automaticity (automatic recall)
        - increases and contributes to efficient functioning
        - establishes base-line to be used for basics of more complex thought
    - drill and practice is essentially behaviorism, but behaviorism does not necessarily include drill and practice
    - drilling is frequently disguised as games in computer-based drilling (e.g., Number Munchers)
        - doesn't seem to make a greater impact compared to paper-based drilling
            - this might be different now because kids today are much more tech-savvy than in the 1960s
        - advantages:
            - adjustment to player skill and knowledge via game levels
            - instant feedback
        - today, there are a huge number of math apps, and progress is being made towards more interactive drill-based math apps
    - drill and practice as method of teaching is not effective and doesn't lead to quantitative thinking
        - useful for practice after sound initial instructions
    - standard testing forces drilling to be a teaching method
        - doesn't test actual knowledge and understanding of subject matter
    - teaching critical thinking instead of behaviorism can actually increase test scores
    - standardized testing is actually conditioning teachers and students to value things that are on the test (behaviorism in effect)
    - there is no motivation in standardized tests because no feedback (or at least no effective, useful feedback)

- Behaviorism
  - primarily is a lens for research
  - theory on what consists of learning
    - studies the exhibited behavior that determines and signals learning
    - internal processes not observable or verifiable, so not studied
  - animal and human learning are similar

- Behaviorism lenses for views of learning
  - classical conditioning (Pavlov)
    - involuntary response
    - http://www.youtube.com/watch?v=hhqumfpxuzI
  - operant conditioning (Thorndike)
    - voluntary response
    - positive and negative reinforcement
    - types of rewards
    - Skinner: studied schedule of rewards and found intermittent rewards are more effective than constant rewards

- Information processing
  - education is tied to it
  - limited amount of short-term memory
  - drills make skills automatic, thus freeing up space in short-term memory
    - e.g., driving while talking, reading, arithmetic, teachers: writing on board while talking
  - Miller outlined some capacity for working memory theory
    - can memorize bits of information (7±2)
    - re-coding bits into chunks can greatly increase memory