Piaget L7

Formal Operational Stage (11 – adult [15])

- Up to 15 because children think differently after age 15
  - Which is why there is an extra stage
- Stage where children move from primary to high school;
  - That transition
  - Primary school
    - Has common curriculum;
      - All children must attempt to master
    - Preparation for child's intellectual, personal & social skills
      - To prepare for high school
  - High school
    - Concerned w/ more options
      - Eg. What courses to take, managing own time, coping w/ multiple teachers, larger load of homework, testing

Differences

    - Present children with many new & different situations
    - Many problems cannot be solved by using hand on experience
      - Like primary school
      - Eg. In concrete stage
        - Concreate meaning manipulating, touching etc.
          - Can't always do this in high school
    - For students to conduct themselves effectively, students need mentor system to analyse each situation & see how it interacts w/ other variables
      - Have to work through set of possibilities, predict outcome & hypothesis abstractedly
        - Called **Hypothetico-deductive reasoning**
          - If this ability is reached, it is a milestone for the 4th stage
          - An understanding of this would allow adolescent to understand analogy
            - Eg. More holidays = more money spent on entertainment
              - Children will not understand how = sign is put w/ words
                - They only use = sign in Maths
            - Eg. Dog is to paw as horse is to hoof
            - Eg. Math concepts – pronumerals a = 5, b = 2
              - Letters equal number in a pronumeral

- **Formal operational stage**
    - Thought becomes more abstract
        - Incorporates thought of formal logic;
            - Ability to generate abstract propositions, to have multiple hypothesis & possible outcomes for the hypothesis
                - Thinking becomes less tied to concrete reality
                    - Can start to acquire formal logic system;
                        - Eg. Can handle proportions
                            - Eg. This ½ of this, this is 1/3 of this
                                - They know it is a number/part, but can mean something different depending on the size
                        - Shows progress from concrete stage to formal operational stage
- **Automation**
    - Important for learning
    - Automatically remembering learning methods
    - Speeds up learning
- Active participation
    - Does not need to physically engage
        - Mentally doing problem solving
            - However not a great amount of manipulation
- Motivation to invent
    - From interaction from enviro
    - Eg. If teacher explicitly shown learner how division problem can be converted to addition
        - Maybe learner may not remember procedure well
        - Child has started what to do himself
- Cognitive growth
    - From self direction