**Problem Solving & Intelligence**

**Module: Introduction**

**Subtopic:** **Operational Definition of Intelligence  
-Intelligence:** the cognitive ability of an individual to learn from experience, reason well, remember important information, and cope with the demands of daily living  
-intelligence involves the ability to perform cognitive tasks and the capacity to learn from experience and adapt

**Module: Problem Solving**

**Subtopic: Deductive and Inductive Reasoning  
-Deductive:** Idea🡪Conclusion  
-**Inductive:** Fact🡪Idea  
- the Arch of Knowledge involves creating theories and adapting those theories through experimentation

**Subtopic: Insight Problems  
-**problems that require you to think outside the box  
-**Functioning Fixedness:** our difficulty seeing alternative uses for common objects

**Module: A History of Intelligence Testing**

**Subtopic: The Qualities of a Test  
-Reliability:** a reliable test produces the same result if one person takes it multiple times  
-repeated test produces consistent results  
-**Validity:** a valid test measure only the trait is supposed to be measuring

**Subtopic: Francis Galton  
-**recorded how quickly subjects could respond to sensory motor tasks by reaction time; faster time, more intelligent

**Subtopic: Stanford-Binet Intelligent Test  
-**produced test that included 30 short tasks related to everyday life (name parts of body, compare lengths and weights, name objects in a picture and define words); all of these tasks required reasoning  
-this test was adjusted for different ages

**Subtopic: Charles Spearman & “G”  
-**people who performed well on classical intelligence tests performed well on all kinds of tasks—vocabulary, math, special abilities and so on  
-one generalized intelligence ‘G’  
-only people with minimum ‘G’ should be allowed to vote and only individuals with a base ‘G’ level should be allowed to reproduce

**Subtopic: Multiple Intelligences  
-**Howard Gardner proposed a multiple intelligence test  
-8 different intelligences: verbal, mathematical, musical, spatial, kinesthetic, interpersonal, intrapersonal, and naturalistic  
-each intelligence is independent of others

**Module: Human Intelligence**

**Subtopic: The Weschler Scales  
-**Weschler Adult Intelligence Scale (WAIS) and the Weschler Intelligence Scale for Children (WISC)  
-scales are standardized to produce an intelligence quotient for each individual  
-ID is based on result of large samples of people who have taken the test  
-IQ is relative to the performance of the rest of the population

**Subtopic: Genetic and Environmental Contributions  
-**there is a role for genes in the development of intelligent   
-environmental factors must also play an important role too

**Subtopic: The Flynn Effect  
-The Flynn Effect:** raw IQ test scores have been on the rise since 1932  
-increased quality in schooling has played a large role in the increase  
-also increased access to books, TV and the internet  
-increased nutrition and health

**Module: Piaget and Intelligence Development**

**Subtopic: Jean Piaget  
-Schema:** a mental framework for interpreting the world around us  
-**Assimilation:** incorporating new information into existing schemas  
-**Accommodations:** modifying existing schemas to fit incompatible information

**Subtopic: The Four Stages of Development  
-**Sensorimotor, preoperational, concrete-operational, and formal operational stages  
-children must pass through the stages in the same sequential order and no stages can be skipped

**Subtopic: The Sensorimotor Stage  
-**0🡪2years  
-object permanence  
-realization that objects continue to exist when no longer visible

**Subtopic: The Preoperational Stage  
-**2🡪7 years  
-object permanence  
-egocentrism- difficulty understanding the world from perspective other than his own  
-seriation-difficulty ordering a series of objects logically (shortest to longest)  
-reversible relationships- difficulty (has a brother, doesn’t realize that she is the sister)  
-conservation-difficulty (same amount of milk but 2nd glass is narrower, they would choose the narrower because it looks like it has more)

**Subtopic: The Concrete Operational Stage  
-**7🡪11 years  
-can perform all the tasks the preoperational child had problems with  
-unable to think in abstract terms or reason based on hypotheses

**Subtopic: The Formal Operational Stage  
-**11+ years  
-able to think in abstract terms, work with hypotheses and do everything else that make up the range of adult cognitive abilities  
-begin to develop interest in games, books or online games (can understand theoretical world of games)  
-**decalage:** children develop in a different order than Piaget’s original order

**Module: Biases and Heuristics**

**Subtopic Confirmation Bias  
-Confirmation Bias:** our tendency to seek out information that supports our hypothesis  
-should look for options that disconfirm hypothesis

**Subtopic: The Availability Heuristic  
-Availability Heuristic:** our tendency to base our decisions on the first thing that comes to mind

**Subtopic: The Representativeness Heuristic  
-Representativeness Heuristic:** our tendency to assume what we see is representative of a larger category