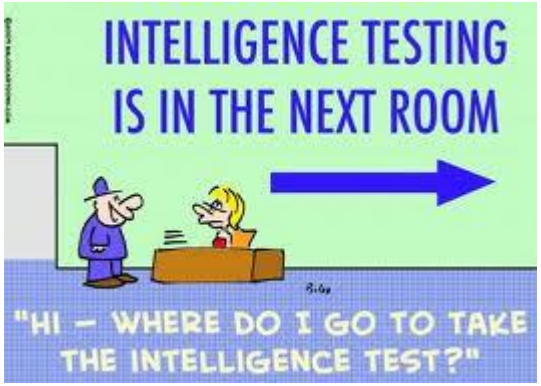
Learning Differences and Learning Needs

Mata kuliah Psikologi Pendidikan

Semester Genap, 2012-2013

Universitas Pembangunan Jaya

Intelligence



- Definitions
- IQ testing
- Approaches to intelligence
- Heredity and Intelligence
- The Extremes of Intelligence

Intelligence(s)

- Multiple definitions of intelligence:
  - Expressed in different domains
    - The absent-minded professor
  - Intelligence is functional
    - Directed at solving problems
  - Intelligence is defined and shaped by culture
  - "What intelligence tests measure…"

Intelligence Testing

- Psychometric approach: devise tests to measure a person's cognitive level relative to others in a population
  - First popularized by Sir Francis Galton
    - Mass testing at an exposition
    - Galton devised correlation procedure to examine relation between simple measures of intelligence
    - Simple measures of intelligence did not correlate with social class
  - Binet and Simon devised a test to measure intellectual development in children
    - Devised "mental age" concept": MA = average age at which children achieve an actual score

Intelligence Quotient

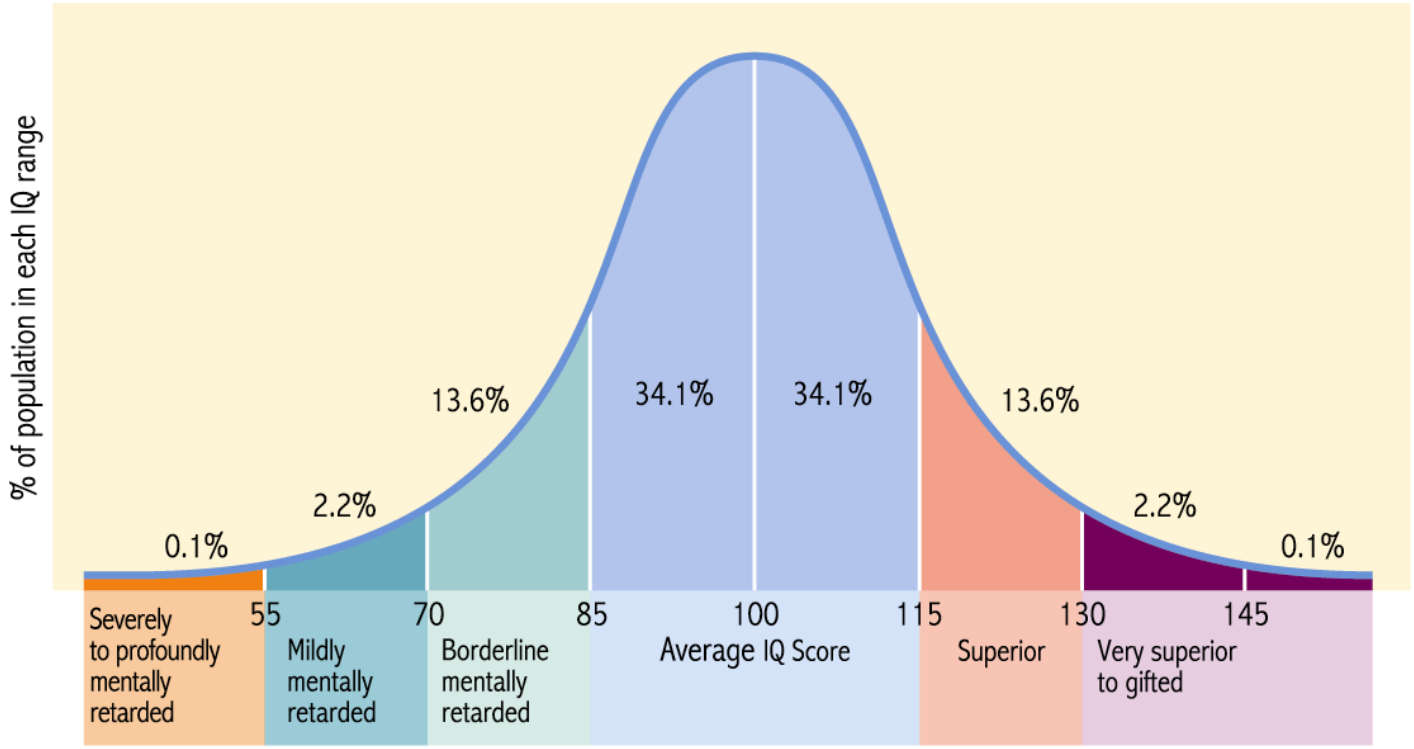
- To allow for comparison of test scores among persons, L. Terman devised the concept of intelligence quotient (IQ):

$$IQ = (MA/CA) \times 100$$

MA = mental age

CA = chronological age

Frequency Distribution of IQ Scores



(Figure adapted from Anastasi & Urbina, 1997)

Validity Issues for IQ Tests

- IQ test scores predict ability to succeed in school (valid use)
- IQ tests are often criticized because of:
  - Minimal theoretical basis (no underlying construct was used to devise tests)
  - Cultural bias
    - Scores depend on language, cultural experiences
      - Immigrants from Europe were deemed mental defectives because they had poor test scores
      - Tests were administered in English to non-English-speaking immigrants…..

Approaches to Intelligence

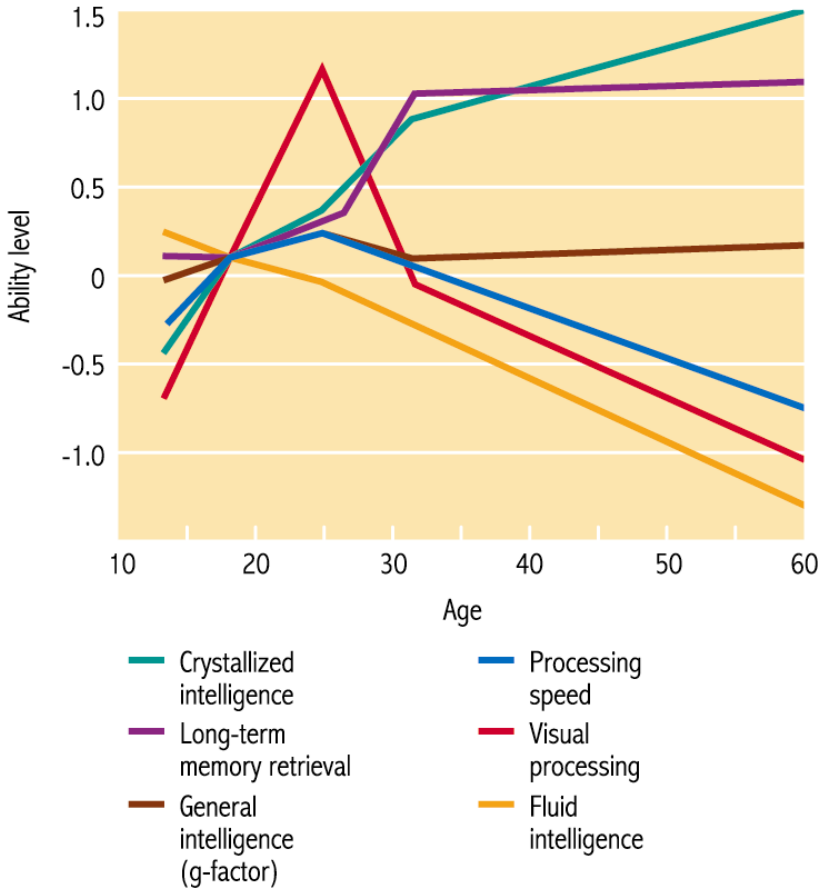
- Psychometric approach: statistical techniques are used to define intellectual skills and abilities
- Information-processing: examine mental processes
- Multiple intelligences: notion that intelligence is a function of multiple systems

Factor Analytic Approach to Intelligence testing

- Statistical approach in which test items are examined using factor analysis
  - Looks for items that correlate together (are a common factor)
- How many factors?
  - Thurstone: one common factor “g”
  - Spearman: two factors:
    - “g” for general intelligence
    - “s” for specific intelligence

Fluid versus Crystallized Intelligence

- Fluid: Refers to mental processes rather than specific information (declines with age)
- Crystallized: a persons knowledge base (increases with age)

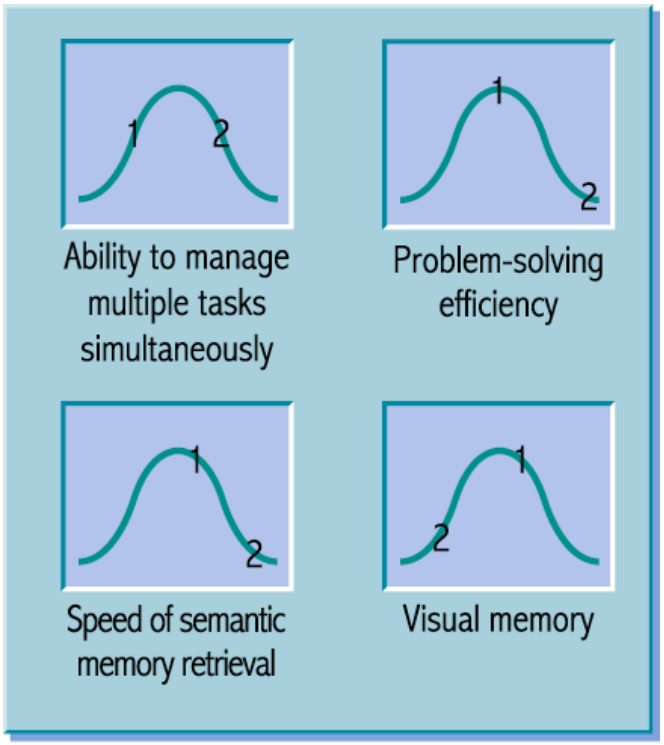


(Figure adapted from J. Horn & J. Knoll , 1997, p. 72)

Information-Processing Approach

- Examines the processes that underlie intelligent behavior
  - Speed of processing: how rapidly a person can perform a mental task
    - Is a strong correlate of IQ scores
  - Knowledge base: persons with a strong knowledge base in an area are better able to perform a mental task
  - Ability to apply mental processes: can a person acquire and use new mental strategies?

The Information-Processing Approach to Intelligence Assessment



Memory and problem-solving abilities

Theory of Multiple Intelligences

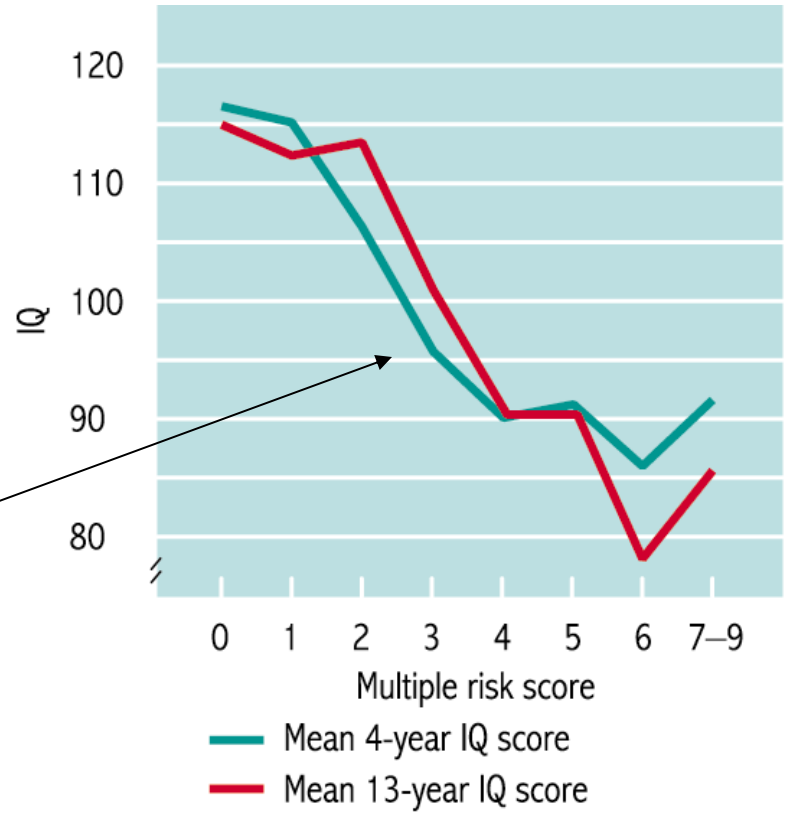
- Howard Gardner notes that mental abilities appear to be independent:
  - Brain damage alters one mental ability, but not others
  - Savants have differing levels of intelligence
  - There are differing courses of development of abilities
    - Mozart could write music before he could read...

Gardner's View of Intelligences

- Gardner argues for at least 7 different intelligences
  - Musical
  - Bodily/kinesthetic
  - Spatial
  - Verbal
  - Logical/mathematical
  - Intra-personal
  - Social

The Nature-Nurture Controversy

- What are the factors that influence IQ?
  - Environmental: factors such as parental education, mental status, nutrition
    - Risk factors are associated with reduced IQ scores
  - Genetic: notion that intelligence can be inherited



(Figure adapted from Sameroff et al., 1993, p. 89)

Heritability of IQ

- Asks whether genetic variation can explain variation in IQ scores
- Research strategies:
  - Twin studies: compare IQ scores in MZ and DZ twins
  - Adoption studies: compare similarity of IQ scores of adopted children with adopted family and with biological family
- Results suggest a heavy influence of genetics on individual IQ scores

Race and IQ

- Issue: although there is a heavy genetic component for *individual* IQ scores, is there a similar genetic component that would explain *group* differences in IQ scores?
  - Is the 15 point average difference in IQ scores between US blacks and whites a genetic or environmental issue?
    - Nutritional issues
    - Economic deprivation (adoption study)
    - No relation between ancestry and IQ scores

Mental Retardation

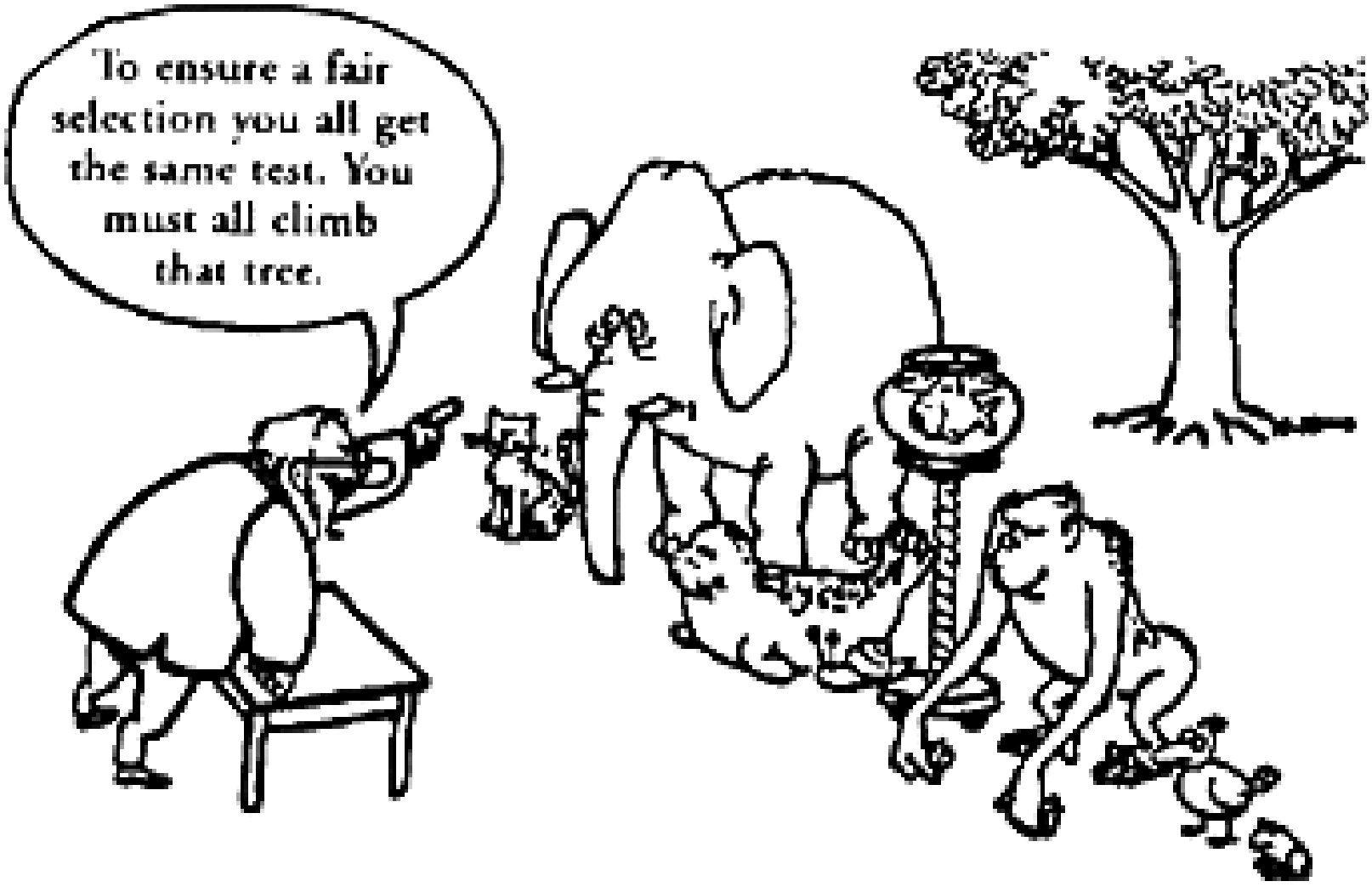
- Sub-average intellectual and adaptive functioning is termed mental retardation (IQ score less than 70)
- Causes of retardation include:
  - Genetic disorder: Down syndrome (extra 21st chromosome)
  - Environmental issues
    - Damage incurred during birth process
    - Head injury
    - In utero exposure to alcohol or cocaine

Creativity

- Creativity refers to the ability to produce valued outcomes in a novel way
- Research strategies:
  - Study imminent people (e.g. Einstein)
  - Devise measures of creativity
    - Divergent thinking test
    - “How many uses for a brick?”

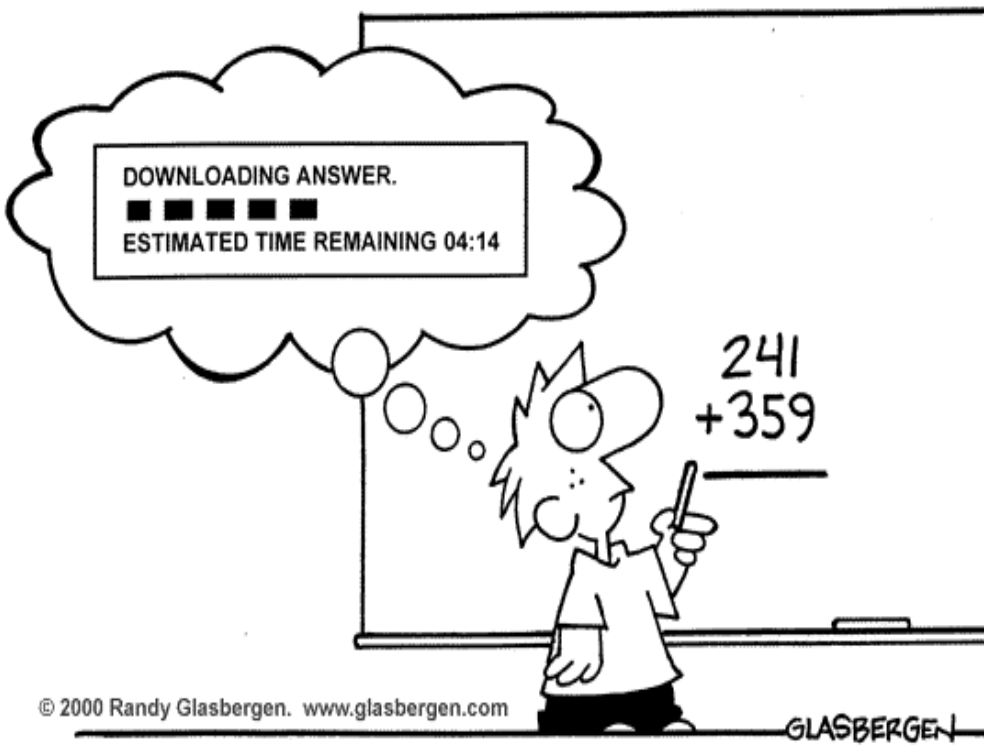
Copyright

Learning Styles and Multiple Intelligences


To ensure a fair selection you all get the same test. You must all climb that tree.

What are learning styles?

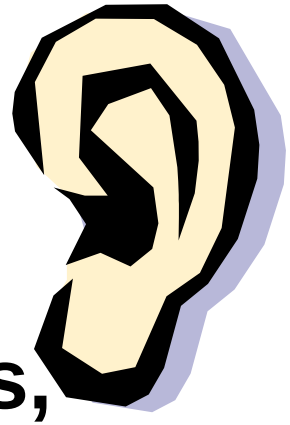
- Learning styles are simply different approaches or ways of learning.
- **What are the types of learning styles?**
  - **Visual Learners**
  - **Kinesthetic**
  - **Audio**



Visual Learners:

- ***learn through seeing...***
- **need to see the teacher's body language and facial expression to understand.**
- **prefer sitting at the front**
- **think in pictures and learn best from visual displays including: diagrams, illustrated text books, overhead transparencies, videos, flipcharts and hand-outs.**
- **during a lecture or discussion, visual learners often take detailed notes.**

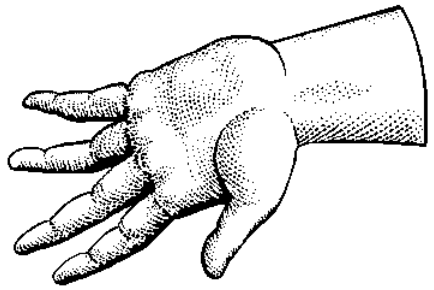
Auditory Learners:



- ***<u>learn through listening...</u>***
- **learn best through verbal lectures, discussions, talking things through and listening to what others have to say**
- **written information may have little meaning until it is heard.**
- **benefit from reading text aloud and using a tape recorder.**

Tactile/Kinesthetic Learners:

- ***learn through , moving, doing and touching...***
- **learn best through a hands-on activities and exploring the physical world around them.**
- **They may find it hard to sit still for long periods and may become distracted by their need for activity and exploration.**



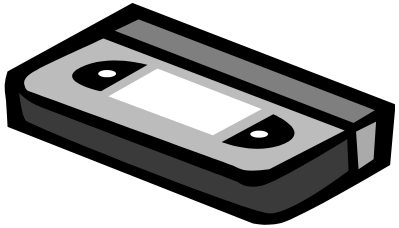
There is another way we learn. It has more options and will be a better way for you to tell how you learn

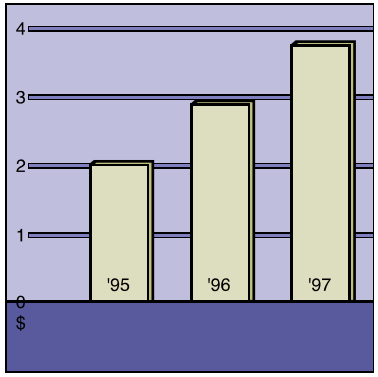
Multiple Intelligences

- **7 areas**
  1. Visual/Spatial Learner
  2. Verbal Learner
  3. Logical/Mathematical Learner
  4. Bodily/Kinesthetic Learner
  5. Intrapersonal Learner
  6. Interpersonal Learner

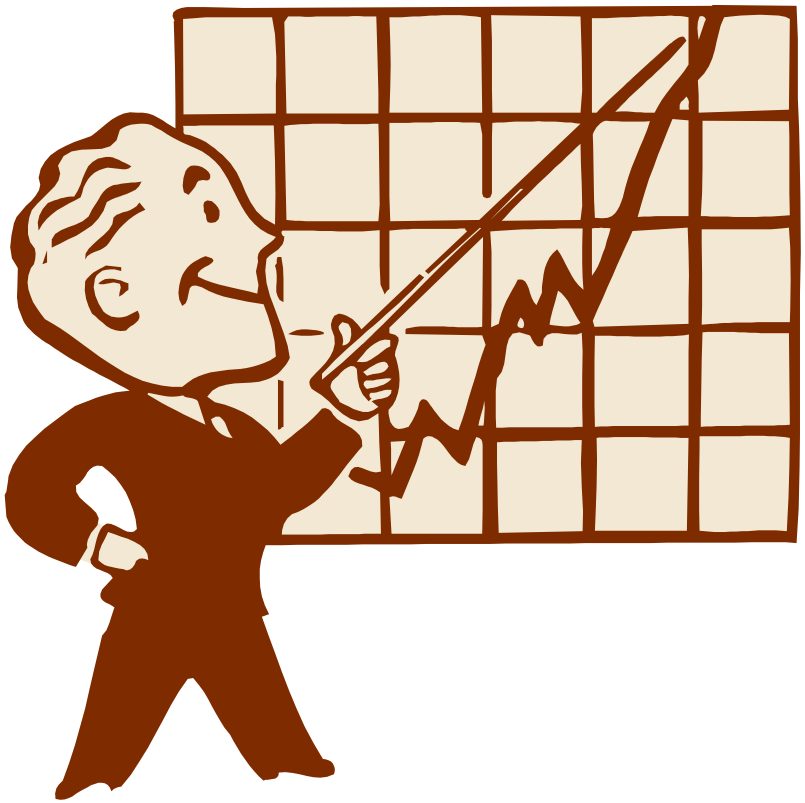
Visual/Spatial Learners

- **Ability to see the visual. These people think in pictures and creating pictures in their head to help them remember information. Sometimes they enjoy looking at maps, charts, pictures, videos, and movies.**





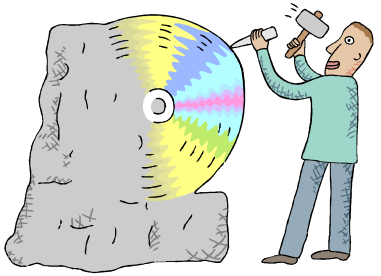
Their Skills Include



- puzzle building, reading, writing, understanding charts and graphs, a good sense of direction, sketching, painting, creating visual metaphors and analogies (perhaps through the visual arts), manipulating images, constructing, fixing, designing practical objects, interpreting visual images.

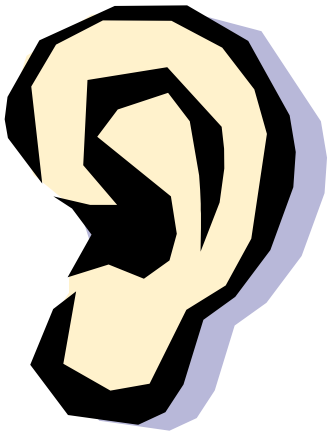
Possible Career Interests

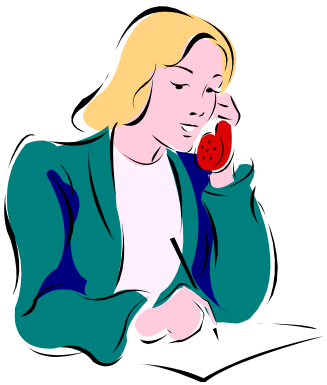
- navigators
- sculptors
- visual artists
- inventors
- architects
- interior designers
- mechanics
- engineers



Verbal Learning

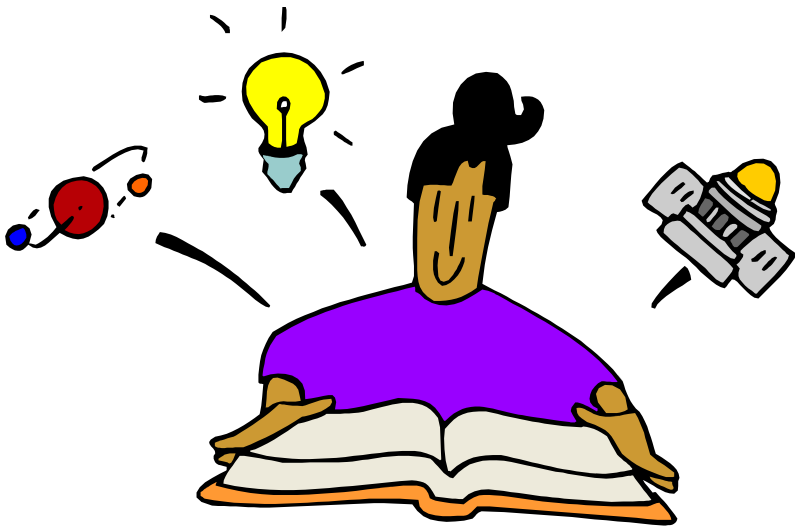
- They use words and language. These learners have good hearing skills and normally are good at talking/speaking. They think in words rather than pictures.



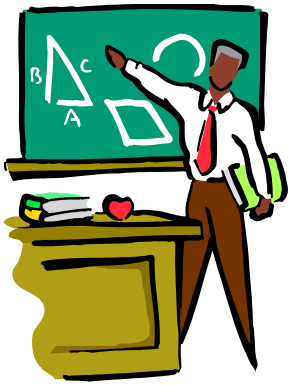


Their Skills Include

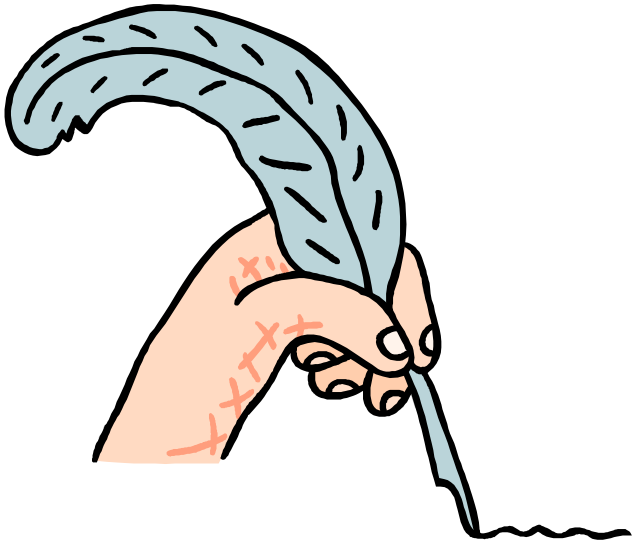
- **listening, speaking, writing, story telling, explaining, teaching, using humor, understanding the meaning of words, remember information, and can convince someone to see their point of view.**



Possible Career Interests



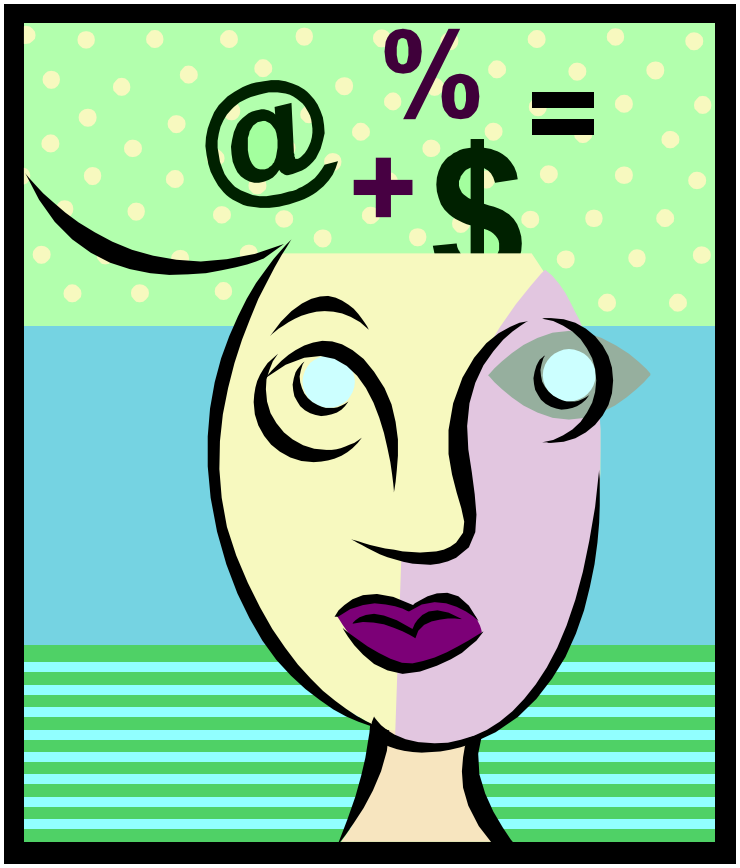
- Poet
- Journalist
- writer
- teacher
- lawyer
- politician
- translator



Logical/Mathematical Learning

- Have the ability to use reason, logic (common sense) and numbers. These people think in patterns making connections between pieces of information. They are curious about the world around them, ask lots of questions, and like to do experiments.

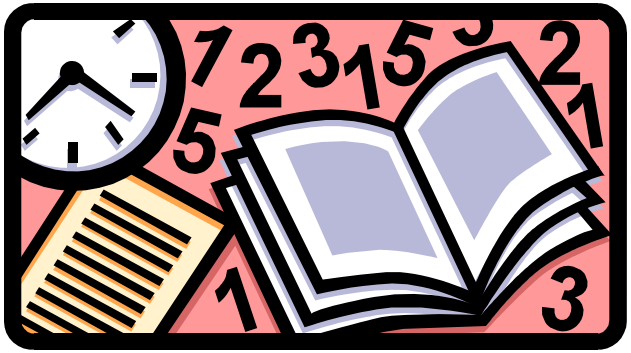
Their Skills Include



- problem solving, classifying and categorizing information, working to figure out the relationship of objects to each other, doing controlled experiments, questioning and wondering about natural events, performing complex mathematical calculations, working with geometric shapes

Possible Career Paths

- Scientists
- engineers
- computer programmers
- researchers
- accountants
- mathematicians

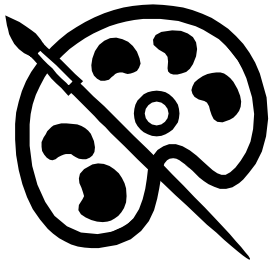


Bodily/Kinesthetic Learning

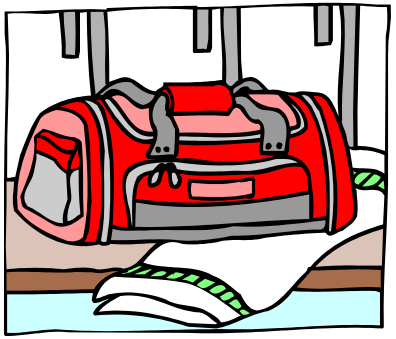
- **ability to control body movements and handle objects well. Try to do things that involve movement. They have a good sense of balance and eye-hand co-ordination. (e.g. ball play, balancing beams). Through interacting with the space around them, they are able to remember and process information (hands-on).**

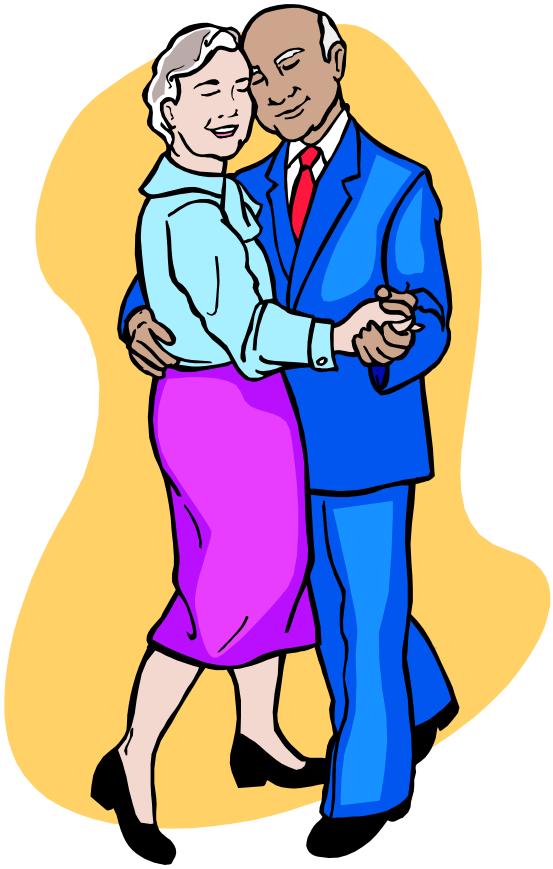
Their Skills Include

- **dancing, sports, hands on experimentation, using body language, crafts, acting, miming, using their hands to create or build, expressing emotions through the body**



Possible Career Paths

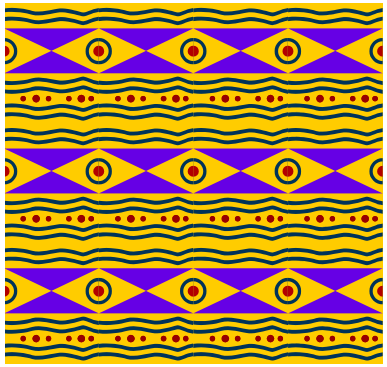




- Athletes
- physical education teachers
- dancers
- actors
- firefighters
- artisans

Musical Learners

- **Can make and appreciate music. These learners think in sounds, rhythms and patterns. They immediately respond to music either appreciating or criticizing what they hear. Many of these learners are extremely sensitive to environmental sounds (e.g. crickets, bells, dripping taps).**



Their Skills Include

- **singing, whistling, playing musical instruments, recognizing tonal patterns, composing music, remembering melodies, understanding the structure and rhythm of music**

Possible career paths

- Musician
- disc jockey
- singer
- composer

Intrapersonal Learning

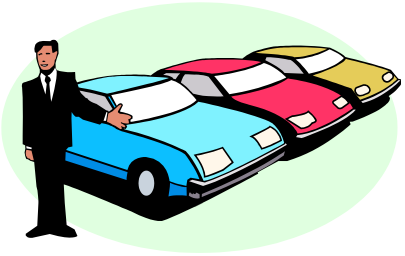
- **Can relate and understand others. These people try to see things from other people's point of view in order to understand how they think and feel. They often have a strange ability to sense feelings, intentions and motivations. They are great organizers. They try to keep peace in-group settings and want cooperation. The use of verbal (speaking) and non-verbal language (eye contact, body language) is used often**

Their Skills Include

- seeing things from other perspectives, listening, feeling bad for others in bad situations, understanding other people's moods and feelings, counseling, cooperating with groups, noticing people's moods, communicating both verbally and non-verbally, building trust, conflict resolution, create good relationships with others.

Possible Career Paths

- Counselor
- salesperson,
- politician
- business person



Interpersonal Learners

- **These people reflect on their actions and know themselves very well. These learners try to understand their own feelings, dreams, relationships with others, and strengths and weaknesses.**

Their Skills Include

- **Recognizing their own strengths and weaknesses, reflecting on and studying themselves, have awareness of their feelings, desires and dreams, evaluate their thinking patterns, understanding their role in relationship to others**

Possible Career Paths

- Researchers
- theorists
- philosophers

Bibliography

- Some of this information was taken from LD Pride by Liz Bogod: http://www.ldpride.net/learningstyles.MI.htm#Learning%20Styles%20Explained

What is a learning disability?

Having trouble:

- Processing information
- Organizing information
- Applying information

Types of Learning Disabilities

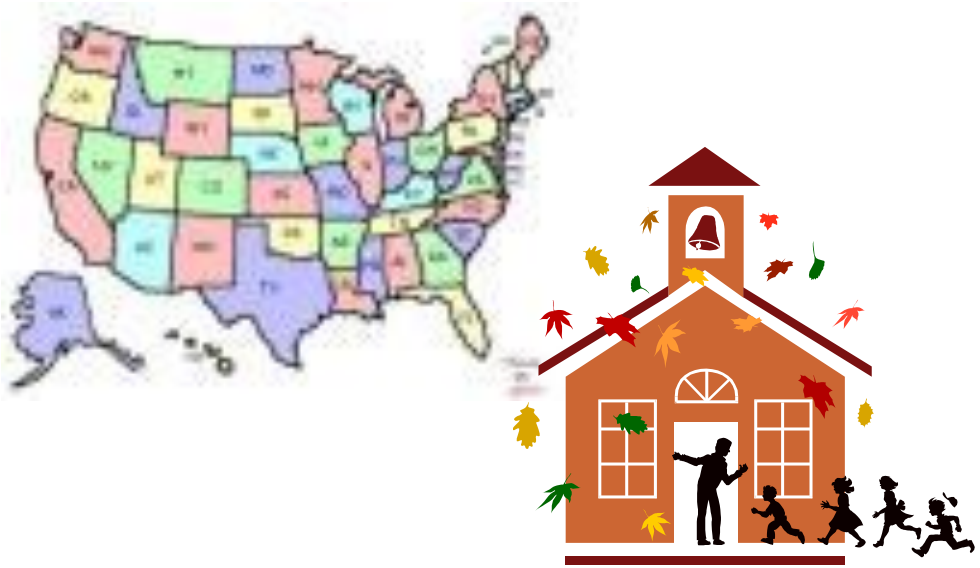
- **Dyslexia**
  A language and reading disability
- **Dyscalculia**
  Problems with arithmetic and math concepts
- **Dysgraphia**
  A writing disorder resulting in illegibility
- **Dyspraxia (Sensory Integration Disorder)**
  Problems with motor coordination
- **Central Auditory Processing Disorder**
  Difficulty processing and remembering language-related tasks
- **Non-Verbal Learning Disorders**
  Trouble with nonverbal cues, e.g., body language; poor coordination, clumsy
- **Visual Perceptual/Visual Motor Deficit**
  Reverses letters; cannot copy accurately;
- **Language Disorders (Aphasia/Dysphasia)**
  Trouble understanding spoken language; poor reading comprehension

Causes or Presumed causes of Learning Disabilities

- NO real causes
- Might be caused by:
  - Hereditary
  - Teratogenic
  - Medical
  - Environmental

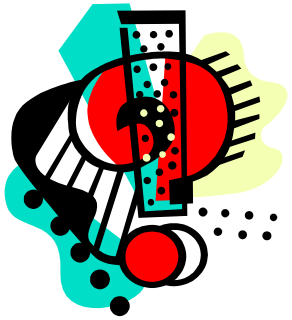
Incident Rates

- Estimated 15 % of the U.S. population
- 6 % to 8 % of school age population



Does my student have ADD or ADHD?

- **Hyperactive**
- **Impulsive**
- **Fidgety**
- **Inattentive**
- **Disorganized**



- **Unreasonable emotional negativity**
- **Emotional outbursts**
- **Frustration over minor issues**
- **Bedwetting**
- **(All characteristics may vary with age)**

Approaches to diagnose ADD and ADHD

- Evaluate student's behavior
- Continuous performance test (CPT)
- Diagnosis should be based on multiple pieces of information and observations

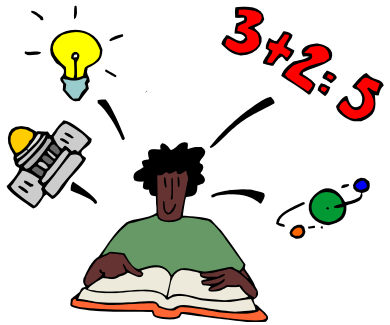
Approaches used to diagnose dyslexia

- Today, only *after* a student has reading difficulties can dyslexia be diagnosed
- Dyslexia may have "biological roots"
- Psychological testing can determine if a child has dyslexia

Characteristics of Learning Disabilities

How will I know if my student has a LD?

- **Most students exhibit uneven areas of ability**
- **Student is physically "normal"**
- **Average or above average intelligence**
- **Commonly found in gen ed classes: dyslexia and ADD/ADHD**
- **Many LDs need to be medically diagnosed**



Does my student have dyslexia?

- Reading characteristics
- Writing characteristics
- Numbers/Sequencing

Celebrities with dyslexia

- Tom Cruise

- Walt Disney

- Henry "The Fonz" Winkler

- Magic Johnson

Celebrities with ADD/ADHD

- Ty Pennington

- Ellen Degeneres

- Robin Williams

- Tracy Gold

INSTRUCTIONAL IDEAS: ASSISTANCE WITH AUDIO AND VISUAL ASPECTS OF LEARNING

Teachers may find the following helpful:

- Repeat and summarize oral lecture notes and give students written versions of key points.
- Verbalize what is being written on the chalkboard and read aloud material contained in handouts.
- Send students a copy of booklist for upcoming semester/school year so that students can "get a jump on" the reading assignments.

ASSISTANCE DURING ASSESSMENTS:

The teacher may wish to:

- Choose an alternate exam site away from the general education classroom. Ensure that this alternate locale is free from auditory and visual distracters.
- Avoid confusing or complicated language and/or consider a substitute exam/assessment.
- Allow student extra time to complete exams/assignments, especially if there are unique demands regarding reading and writing skills.

ADDITIONAL INSTRUCTIONAL IDEAS

Teachers should:

- Supporting learning with visuals
- Stressing step-by-step instructions

For students with ADHD, teachers should:

- Give only one assignment at a time.

TECHNOLOGY USED

COMPUTERS:

- For writing assignments, students with LD should be allowed to use a computer (if available) so that they can get spelling support through the spell check program.
- Students with dyslexia may find that writing assignments are more easily completed on a computer.
- Consider trying computer software, like Kurzweil 3000, which reads textbooks and other materials to students.

OTHER ASSISTIVE TECHNOLOGY

Teachers may:

- Allow students to use calculators during Math, when the goal is concept attainment (and not *automaticity* of math facts)
- Allow students to tape record lectures and/or tape notes for students.
- Allow students who cannot speak clearly to use a speech synthesizer

Assessment:

- Allow for alternate forms of assessment by allowing students to demonstrate learning through such things as portfolios, slide presentations, photographic essays, or taped interviews.

INTERESTING TIDBITS

POTPOURRI

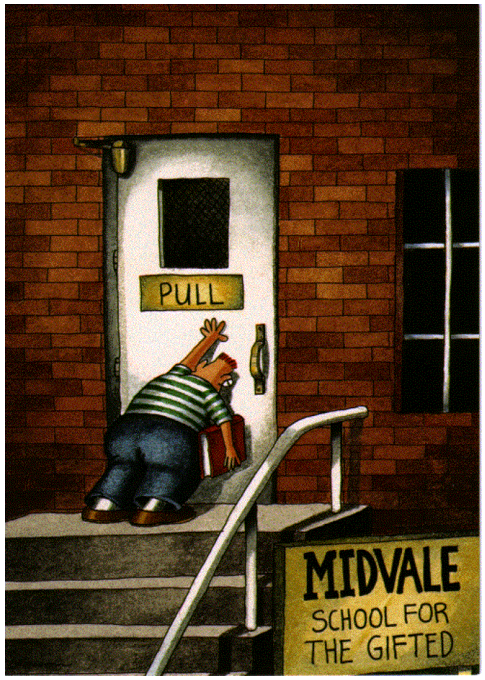
- Because many people with dyslexia are right-brained thinkers, they may be more artistic and creative, becoming poets, actors, inventors, and artists.
- Children with dyslexia use "almost five times as much brain area as other children while doing a simple language task" (Silverstein et al., 2001, p. 22).
- "In the past, doctors…tried to prevent [children with disabilities] from being born; they…also…tried to stop some [people with disabilities] from having children of their own" (Flynn, 1998, p. 11).

INTERESTING TIDBITS

EMOTIONAL ISSUES

- Students with learning disabilities may suffer from emotional problems/depression, and/or low self-esteem. This may cause students to withdraw from social interaction.
- These same students may turn to drugs or alcohol for relief from feelings of low self-worth.
- As many as 35% of students with learning disorders, drop out of High School (Girod, 2001, p. 31).
- "Teenagers with dyslexia …[are] more likely to…think about and to attempt suicide than other young people their age" (Landau, 2004, pp. 48-9).

The Gifted and Talented



Who is Gifted and Talented?

- Someone who shows, or has the potential for showing, an exceptional level of performance in one or more areas of expression
- About 5% of the student population (3 million children)

Why We Need Gifted Education

- Gifted learners must be given stimulating educational experiences appropriate to level of ability.
- Only 1/2 of gifted learners receive education appropriate to their needs.
- Gifted education programs fulfill both individual and societal needs.

Assessment

- Testing vs.Assessment
  - Age Dependent
  - Parent Information

- Intellectual Ability
  - IQ Testing
    - Weschler Intelligence Scale for Children, 3rd ed.
    - Stanford-Binet: Fourth ed.
    - Stanford-Binet: Form LM

Assessment

- Educational Ability
  - Group Standardized Tests normed at grade level
  - Individualized assessments
    - Woodstock-Johnson
    - Kaufman Test of Individual Achievement
- Other Abilities
  - Art, Music, etc.
  - Portfolio and Project Assessment

Characteristics of Gifted and Talented Students

• Learn Quickly and Easily • Able to use abstract thought and critical reasoning	• Become bored and frustrated • Dislike repetition • Receive negative adult attitudes to smartness
• Exhibit Verbal Proficiency	• Dominate Discussions • Difficulty with listening skills
• Have a high energy level	• Become frustrated with inactivity and lack of challenge

Characteristics

•Be extremely persistent •Concentrate on tasks of high interest for extended periods of time	•Disrupt class routine •Resist interruptions or schedules •Perceived as stubborn or uncooperative
•Exhibit unusual emotional depth and intensity •Be highly sensitive •Be acutely perceptive	•Be unusually vulnerable •Perceived as immature •Be confused if thoughts and feelings not taken seriously

Characteristics

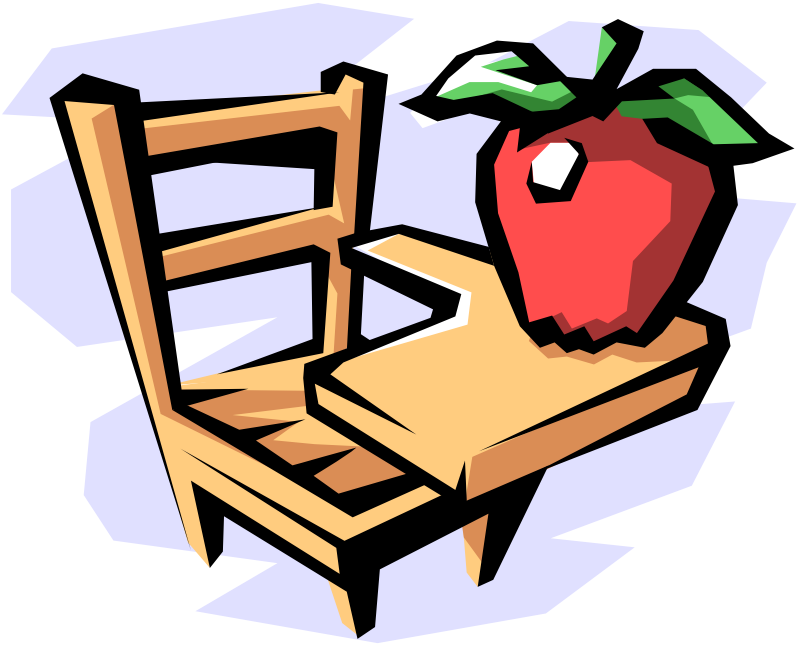
•Aim at perfection	•Feel frustrated •Fear failure
•Exhibit independence and nonconformity	•Challenge and question indiscreetly •Exhibit rebellious behavior
•Heightened self-awareness •Relate more to older children and adults	•Social isolation •Low self-esteem due to seeing differences from peers as bad •Seen as a “show off”

Characteristics

•Keen sense of humor	•Use humor inappropriately or to attack others •Frustration when humor not understood
•Possess unusual imagination	•Seen as “weird”

What Causes Giftedness?

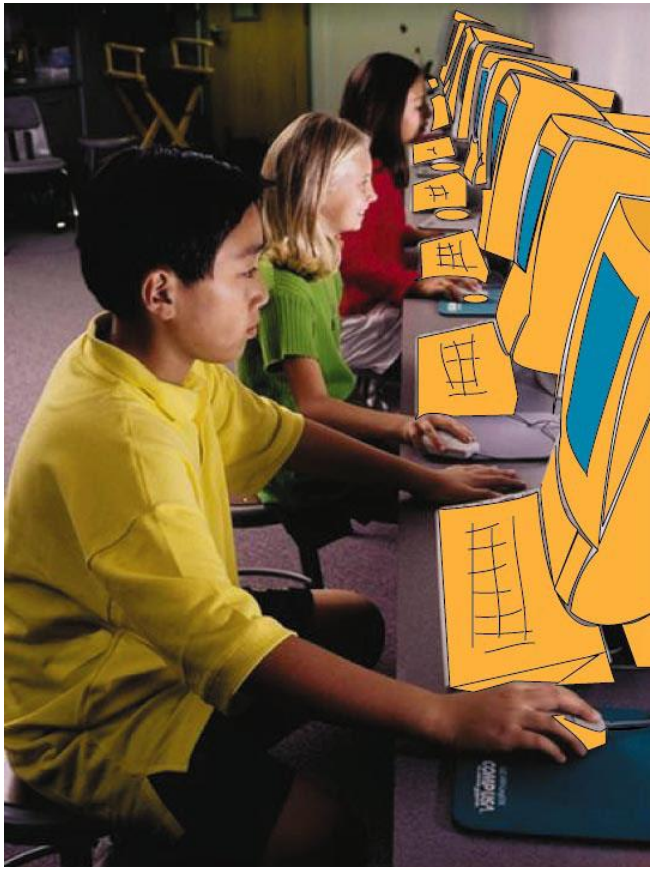
- Experience
- Biological Factors
- Social Factors
- No single factor that "causes" giftedness



Strategies for Teaching Gifted and Talented Students

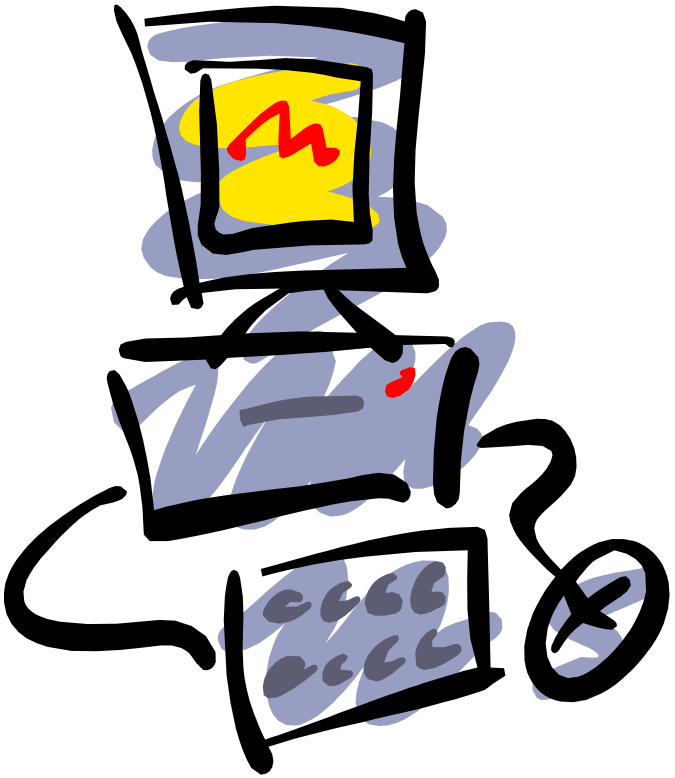
- Create alternative activities that go beyond the regular curriculum.
- Work with students to design an independent project that they would be interested in completing for credit.
- If possible, involve students in academic competitions in your area.
- Create tiered assignments, which have different expectations for different levels of learners.

Technology and Gifted and Talented Students



- Computers allow students to move at their own pace.
- Computers can be used to complete alternative activities and independent projects.

Technology and Gifted and Talented Students



- Many computer programs can be used to help students learn and master new material not covered in the regular classroom.
- There are some online educational programs for gifted and talented students, such as EPGY at Stanford University.

Common Myths

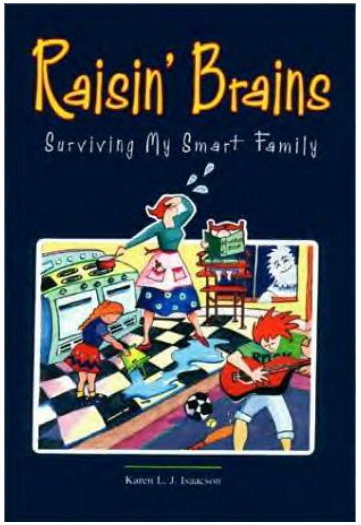
- Gifted students do not need help. If they are really gifted, they can manage on their own.
- The social and emotional development of the gifted student is at the same level as his/her intellectual development.
- The primary value of a gifted student lies in his/her brain power.

Common Myths

- Gifted students need to serve as examples to others, and they should always assume extra responsibility.
- Gifted students are naturally creative and do not need encouragement.

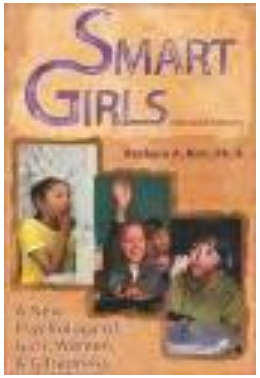
For More Information

- *Guiding the Gifted Child: A Practical Source for Parents and Teachers* (James T. Webb, Elizabeth A. Meckstroth, Stephanie S. Tolan)

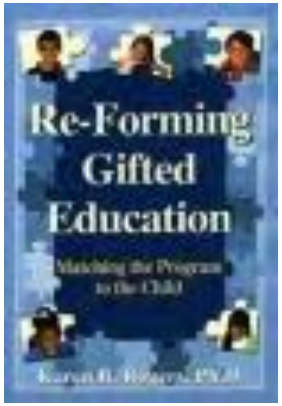


- *Raisin' Brains: Surviving My Smart Family* (Karen L. J. Isaacson)

For More Information



- *Smart Girls: A New Psychology of Girls, Women and Giftedness* (Barbara Kerr)



- *Re-forming Gifted Children: Matching the Program to the Child* (Karen B. Rogers)

Individualized Education Program (IEP)

TUGAS AKHIR PSIKOLOGI PENDIDIKAN

SED

- Wawancara Pak Gideon tentang Program
  - Ada atau tidak?
  - sasaran
  - Tujuan; umum dan instruksional-taksonomi bloom
  - Kegiatan
- Pilih target usia (5-7/kls 1 SD)
- Cari teori----tujuan
- Menyusun program ---kegiatan
  - Memanfaatkan barang-barang bekas untuk membuat sesuatu ----kegiatan

Time schedule

- Wawancara Pak Gideon---1-5-2013
- Diskusi-penyusunan prog 1/tujuan---2-5-2013, jam 15.00 WIB
- Diskusi-penyusunan prog 2/tujuan-kegiatan---6 & 8/5/2013
- Persiapan uji coba---13-15/5/2013
- Uji coba program tgl 17-5-2013
- Penyusunan laporan ----20-24/5/2013
- Pengumpulan laporan---28-5-2013