

SPN1022

Learning Science and Mathematics

# Multiple Intelligences Gardner

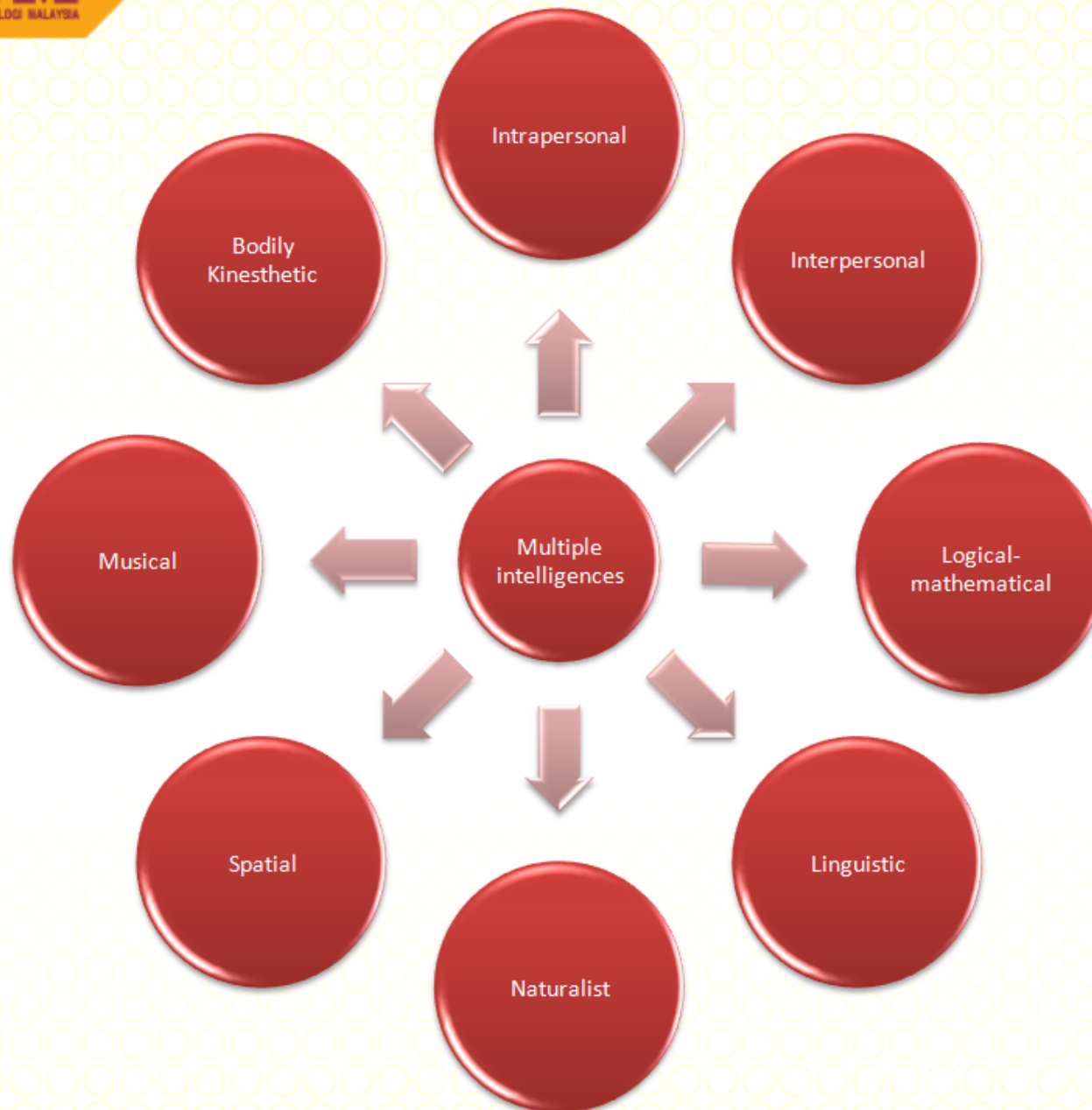
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# Verbal-Linguistic Intelligence

## ("word smart")

- The "word smart" people learn best through language including speaking, writing, reading, and listening.
- They use language to express what is on their minds and to understand other people.
- They are able to explain, convince, and express themselves verbally or in writing.
- They enjoy writing and creating with words.

# Logical-mathematical intelligence

## ("number/reasoning smart")

- The "number smart" people learn best through numbers, reasoning, and problem solving.
- They are able to create and manipulate visuals and mental pictures from various perspectives.
- They like to weigh, measure, calculate, and organize data.
- They are good at making an analogy or debating an issue.

# Spatial intelligence ("picture smart")

- The "picture smart" people have the ability to represent the spatial world in their minds.
  - So, they learn best visually and tend to organize their thinking spatially.
  - They like to think and create pictures.
  - They are also drawn to information that is presented in a visual form.
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# Bodily-Kinesthetic intelligence

## ("body smart")

- The "body smart" people use their whole body or parts of their body to solve a problem.
- They learn best through physical activity such as dance, hands-on tasks, constructing models, and any kind of movement.
- They are able to manipulate and control objects, as well as express their ideas through movement.

# Musical intelligence ("music smart")

- The "music smart" people think in music, hearing patterns, recognizing, remembering, and manipulating them.
  - They learn best through sounds including listening and making sounds such as songs, rhythms, patterns, and other types of auditory expression.
  - They are able to use inductive and deductive reasoning and identify relationships in data.
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# Interpersonal intelligence ("people smart")

- The "social smart" people learn best through interaction with other people through discussions, cooperative work, or social activities.
- They are able to create synergy in a room by being aware of the feelings and motives of others.
- They can be excellent leaders because they enjoy being part of a group.



# Intrapersonal intelligence

## ("self smart")

- The "self smart" people have a good understanding of themselves.
- Because they know who they are, what they can do, and what they want to do, they tend not to screw up.
- They learn best through meta-cognitive practices such as getting in touch with their feelings and self motivation.
- They are able to concentrate and be mindful. They prefer solitary activities.

# Naturalist intelligence

## ("nature smart")

- The "nature" people have sensitivity to other features of the natural world.
- So, they learn best through the interactions with the environment including outdoor activities, field trips, and involvement with plants and animals.
- They see the subtle meanings and patterns in nature and the world around them.

# Implication in Teaching and Learning Science and Mathematics



# Linguistic Intelligence

- lectures, debates
- large- and small-group discussions
- books, worksheets, manuals
- brainstorming
- writing activities
- word games
- sharing time
- storytelling, speeches, reading to class
- talking books and cassettes
- extemporaneous speaking
- journal keeping
- choral reading
- individualized reading
- memorizing linguistic facts
- tape recording one's words
- using word processors
- publishing (e.g., creating class newspapers)



# Logical-Mathematical Intelligence

- mathematical problems on the board
- Socratic questioning
- scientific demonstrations
- logical problem-solving exercises
- creating codes
- logic puzzles and games
- classifications and categorizations
- quantifications and calculations
- computer programming languages
- science thinking
- logical-sequential presentation of subject matter
- Piagetian cognitive stretching exercises
- Heuristic





# Spatial Intelligence

- charts, graphs, diagrams, and maps
- visualization
- photography
- videos, slides, and movies
- visual puzzles and mazes
- 3-D construction kits
- art appreciation
- imaginative storytelling
- picture metaphors
- creative daydreaming
- painting, collage, visual arts
- idea sketching
- visual thinking exercises
- graphic symbols
- using mind-maps and other visual organizers
- computer graphics software
- visual awareness activities
- optical illusions
- color cues
- telescopes, microscopes, and binoculars
- visual awareness activities
- draw-and-paint/computer-assisted-design software
- picture literacy experiences



# Bodily-Kinesthetic Intelligence

- creative movement, mime
- hands-on thinking
- field trips
- the classroom teacher
- competitive and cooperative games
- physical awareness and relaxation exercises
- all hands-on activities
- crafts
- body maps
- use of kinesthetic imagery
- cooking, gardening, and other "messy" activities
- manipulative
- virtual reality software
- kinesthetic concepts
- physical education activities
- communicating with body language/ hand signals
- tactile materials and experiences
- body answers



# Musical Intelligence

- musical concepts
- singing, humming, whistling
- playing recorded music
- playing live music on piano, guitar, or other instruments
- group singing
- mood music
- music appreciation
- playing percussion instruments
- rhythms, songs, raps, chants
- using background music
- linking old tunes with concepts
- discographies
- creating new melodies for concepts
- listening to inner musical imagery
- music software
- Super memory music





# Interpersonal Intelligence

- cooperative groups
- interpersonal interaction
- conflict mediation
- peer teaching
- board games
- cross-age tutoring
- group brainstorming sessions
- peer sharing
- community involvement
- apprenticeships
- simulations
- academic clubs
- interactive software
- parties / social gatherings as context for learning
- people sculpting



# Intrapersonal Intelligence

- independent study
- feeling-toned moments
- self-paced instruction
- individualized projects and games
- private spaces for study
- one-minute reflection periods
- interest centers
- personal connections
- options for homework
- choice time
- self-teaching programmed instruction
- exposure to inspirational/motivational curricula
- self-esteem activities
- journal keeping
- goal setting sessions

