Keiser Collegiagte System

Faculty Development Newsletter

Special Edition on MULTIPLE INTELLIGENCES

The instructional techniques presented in this newsletter focus on the principles of Howard Gardner's Theory of Multiple Intelligence, as proposed in his now classic work, The Frames of Mind: The Theory of Multiple Intelligences (1983). Most instructors deliver course content without regard to the way the student learns. A simplistic example would be having a visually oriented learner listen to audiotapes as the primary delivery method. Institutional growth will occur if we can foster success of existing students thereby increasing student retention and lowering attrition. The goal, therefore, is to "focus on the quality of existing students and their learning skills . . . " (Changes, n.d. para 4)

It is understood that the students go to class, the teacher will teach and the student will learn. Little regard is placed on the factors that will make the student successful. The philosophy has been to put a student in class and either they will learn or they will not learn. If we are able to identify how an individual learns, we can then tailor the presentation of material toward that learning preference and foster student success.

Why does an instructor need to be concerned about a student's learning preference? If the instructor has an increased awareness of learning styles they hopefully will deliver the course content utilizing a variety of delivery methods. This will increase the likelihood that the information presented will be received in the way the students can assimilate it into long-term memory. This will enable the students to utilize that information, not only for immediate recall on tests, but to make that information part of their personal and/or professional life.

College instructors are experts in their chosen fields. However, most are not trained educators. They tend to instruct by lecturing or telling students what they need to know rather than allowing the students to discover the information for themselves. Instructors should be aware that students retrieve old information and assimilate new information in a variety of ways and that their delivery methodologies should also proceed accordingly. By instructing with student strengths in mind, students can function more efficiently, learn faster and make the material more meaningful.

In his writings Gardner challenged the traditional view of intelligence. The traditional view of intelligence, according to Gardner (1993),

is "the ability to answer items on tests of intelligence." (p.15). Gardner (1983) theorized "there exists at least some intelligences, that these are relatively independent of one another, and that they can be fashioned and combined in a multiplicity of adaptive ways by individuals and cultures." (p. 9). The abilities Gardner associated with intelligence dealt with problem solving, generating new problems and creation of something or a service that is valued by society. (Campbell, Campbell and Dickinson , 1999, p. xv)

The table below, developed by the Oregon Technology Educational Council, alphabetically lists Gardner's eight intelligences, citing examples of professions individuals with these preferences might pursue and a brief description of each. (Theories, nd, para 10)

Table 1 - Descriptions of Multiple Intelligences

Intelligence	Examples	Discussion
Bodily-kinesthetic	Dancers, athletes, surgeons, crafts people	The ability to use one's physical body well.
Interpersonal	Sales people, teachers, clinicians, politicians, religious leaders	The ability to sense other's feelings and be in tune with others.
Intrapersonal	People who have good insight into themselves and make effective use of their other intelligences	Self-awareness. The ability to know your own body and mind.
Linguistic	Poets, writers, orators, communicators	The ability to communicate well, perhaps both orally and in writing, perhaps in several languages.
Logical-mathematical	Mathematicians, logicians	The ability to learn higher mathematics. The ability to handle complex logical arguments.
Musical	Musicians, composers	The ability to learn, perform, and compose music.
Naturalistic	Biologists, naturalists	The ability to understand different species, recognize patterns in nature, classify natural objects.
Spatial	Sailors navigating without modern navigational aids, surgeons, sculptors, painters	The ability to know where you are relative to fixed locations. The ability to accomplish tasks requiring three-dimensional visualization and placement of your hands or other parts of your body.

Why Multiple Intelligences?

Why should we concern ourselves with the theory of multiple intelligences and incorporate it into today's classroom? There are those who feel that the traditional method of college instruction has worked well for hundreds of years and there is no need to change what has worked. However, exactly what is the traditional teaching methodology in most colleges? Most traditional college classes are conducted with the professor lecturing or telling the student what he or she thinks the students need to know, and the student feverishly taking notes while trying to absorb and retain the information long enough so they can recall it during the testing period. Is this really learning? Just because it worked in the past does not mean that we should not attempt to improve upon the system. "We can realize that school does not have to be the way we remember it." (Campbell, Campbell and Dickinson, 1999, p. 349)

The approach taken by the multiple intelligences theory is "child-centered" (Hoerr, nd, para 1). The child centered approach refers to educators investigating how student learn and then develop curriculum, revise instruction methods, and develop assessment vehicles based on this investigation.

It is Gardner's (1999) contention that individuals are all different, we all possess different minds and "education works most effectively if these differences are take into account rather than denied or ignored." (p 91). Gardner (1993) earlier described education as following a "factory model" where all students were fed the same curriculum, education was in an assembly line fashion, and the teacher importance was minimized since they were "cogs in a massive bureaucratic apparatus." (p 82) Hoerr (nd) points out that

> using MI transforms the role of the teacher. In traditional schools, teachers typically rely on – are often tied to – textbooks and other mandated curriculum materials. In these situations, the name of the game is often scoring well on standardized tests, period. (para 2)

Assessment and Multiple Intelligences

In today's educational environment Gardner (1993) feels that there is too much emphasis in standardized testing such as the I.Q. test when he states, "the I.Q. movement is blindly empirical." (p 17). He feel this test plays a minor role in

predicting how a student will perform in school and does not address how the mind works, what the processes of learning are, what problem solving techniques are used and is simply an accounting of whether the correct answer was selected. Gardner (1983) goes on to state, "the intelligence test reveals little about an individual's potential for further growth." (p 18). Besides the non predictive mature of the standardized tests, the resulting scores on an I.Q. test or the SAT becomes part of the individuals history and follows that person for the remained of his or her life. Society will then evaluate that person's abilities based on that score and prejudge their potential for success. "This number is likely to exert appreciable effect upon the future, influencing the way in which (his or) her teachers think of (him or) her and determining her eligibility for certain privileges. (Gardner, 1983, p 3)

The I.Q. test developed by Binet (today known as the Stanford-Binet Test) had the initial function of uncovering the individual's intellectual shortcomings which allowed for development of appropriate tutoring. The test was used in the United States to rank students according to their capabilities. The average score was 100. Therefore, depending on where you scored, you would be place in a gifted, regular or special class. "Though there was some reservation about coding students by a test-determined score, the IQ test went on to become a near-national standard." (Traditional, nd, para 2).

Assessment by short answer multiple choice test have been criticized by students, educators and researchers alike. The table below compares the traditional view of intelligence and the multiple intelligence view.

Table 2 - Assessment: Traditional View Versus Multiple Intelligences

Traditional view of "Intelligence"	**"Multiple Intelligences Theory"**
Intelligence can be measured by short-answer tests: Stanford-Binet Intelligence Quotient Wechsler Intelligence Scale for Children (WISCIV) Woodcock Johnson test of Cognitive Ability Scholastic Aptitude Test	Assessment of an individual's multiple intelligences can foster learning and problem-solving styles. Short answer tests are not used because they do not measure disciplinary mastery or deep understanding. They only measure rote memorization skills and one's ability to do well on short answer tests. Some states have developed tests that value process over the final answer, such as PAM (Performance Assessment in Math) and PAL (Performance Assessment in Language)
People are born with a fixed amount of intelligence.	Human beings have all of the intelligences, but each person has a unique combination, or profile.
Intelligence level does not change over a lifetime.	We can all improve each of the intelligences, though some people will improve more readily in one intelligence area than in others.
Intelligence consists of ability in logic and language.	There are many more types of intelligence which reflect different ways of interacting with the world
In traditional practice, teachers teach the same material to everyone.	M.I. pedagogy implies that teachers teach and assess differently based on individual intellectual strengths and weaknesses.
Teachers teach a topic or "subject."	Teachers structure learning activities around an issue or question and connect subjects. Teachers develop strategies that allow for students to demonstrate multiple ways of understanding and value their uniqueness.

(Tapping, nd).

Utilization of the multiple intelligence process, where the emphasis is on understanding, creativity and self-exploration, will also have a positive effect on the standardized test results since standardized test results are still an identifying factor in our society. Hoerr (nd) states:

> The effectiveness of MI is supported by the findings of a study conducted by Harvard's *Project Zero*. In interviewing the principals of 41 schools using MI, 78% of them said that their schools had realized gains on standardized achievement scores and 63% attributed the growth to "practices inspired by MI theory." (Not surprisingly, the use of MI paid other benefits in these schools as well: 78% of the schools reported improved performances by students having learning difficulties, 80% reported improvement in parent participation, and 81% reported improved student discipline.) (para 10)

Gardner (1993) feels that students and teachers initiative are stifled by short answer and multiple choice tests "and should be replaced by more probing, open ended forms of assessment." (p 82) He equates the scores on these types of test as if a physician can cure a patient by repeatedly taking the person's temperature. Short answer or multiple choice tests only measure the individuals ability to recall facts "and that a person who can only spit back facts cannot be expected to solve an unfamiliar problem or to create something new. (Gardner, 1993, p 84)

Gardner's (1993) view of assessment is an environment where he "would like to see college instructors embrace a wider range of evaluation instruments." (p 185) He suggests projects beyond the typical term paper and fells that students should have the opportunity to have input in the evaluation of their own work.

Utilization of Multiple Intelligences provides a multitude of assessment vehicles. It is not necessary to completely rewrite and existing curriculum to conform to multiple intelligences. "But you can make an effort to address each student's strengths and weaknesses by using creative alternatives to traditional testing in your classroom." (Pearson, para 10)

The table below lists specific assessment strategies "that can make assessment productive and fun": (Pearson, nd, para 8)

Multiple Intelligences	Assessment Technique
Linguistic	• Ask students to write in a journal regularly. • Give oral exams and/or essay tests. • Emphasize creative writing – have students write poems, plays, and stories.
Logical / Mathematical	• Assign science labs and experiments. • Have students complete logic problems and games.
Bodily / Kinesthetic	• Challenge students to write and perform plays. • Have students build models or use other hands-on techniques to show what they learned.
Visual/Spatial	• Invite students to create collages, murals, and posters. • Encourage students to illustrate their ideas using maps, charts, and graphs. • Help students use school equipment to make a video or slide show.
Interpersonal	• Stage a classroom debate. • Have students work collaboratively to brainstorm and prepare a project.
Intrapersonal	• Ask students to identify their own academic strengths and weaknesses. • Have students think of personal goals and give progress reports.
Musical	• Challenge students to identify and explain patterns in music or poetry. • Ask students to write new lyrics to familiar melodies or to compose a new song.
Naturalist	• Ask students to keep environmental journals and to share their observations. • Invite students to lead classmates on a nature walk to point out interesting plants and animals they found during independent study.

Table 3 - Specific Assessment Strategies

Bruce Campbell, (nd) conducted an action research project during the 1989-1990 school year to determine how students reacted to multiple intelligences-based instruction. "Student behavior, attitudes, and abilities to work in non-traditional ways such as with music, movement, visual arts and cooperation were studied." (para 2)

These are the ten hypotheses of the study that were validated: (para 4).

1. The students displayed increased independence, responsibility and self direction over the course of the year.
2. Students previously identified as having behavioral problems made significant improvement in their behavior.
3. Cooperative skills improved in all students.
4. Ability to work multimodally in student presentations increased throughout the school year with students using a minimum of three to five intelligence areas in their classroom reports.
5. The more kinesthetic students particularly benefited from the active process of moving from center to center every fifteen to twenty minutes.
6. Leadership skills emerged in most students. Several students who had not previously displayed leadership abilities took the lead with their groups in the Music Center, the Building Center, the Art Center and particularly in the Working Together Center
7. Parents reported frequently that behavior improved at home, more positive attitudes about school were exhibited, and attendance was increased.
8. Daily work with music and movement in content areas helped students retain information. At the end of the year, all students were able to remember several songs created as early as September which contained specific academic information.
9. The role of the teacher changed as the year progressed, becoming less directive and more facilitative, more diversified, less of a taskmaster and more of a resource person and guide.
10. Students became progressively more skilled at working effectively in this unique and non-traditional classroom format.

Benefits of Implementing a Multiple Intelligences Oriented Program

There are a multitude of benefits associated with the implementation of a multiple intelligences oriented program.

- Because instruction is oriented to the individuals learning preference, learning is more effective
- "Studies show that many students who perform poorly on traditional tests are turned on to learning when classroom experiences incorporate artistic, athletic, and musical activities." (Tapping, nd)
- Learning resembles real word situations since the presentation is based on the student need, interest and talents
- Because of the real word situation students are more actively involved as learners
- Students can demonstrate their strong points and talents thereby becoming motivated to succeed and raise their self-esteem
- Students can create solution when they are taught to understand
- Learning through the use of multiple intelligences "excites students about learning, but it also allows a teacher to reinforce the same material in a variety of ways." (Brauldi, 1996, para 14).
- According to Hoerr (2002) student find learning is fun through this type of education thereby making school less boring. If students are bored less, discipline problems are also lessened. (para 10)

Multiple Intelligences: Strategies in the Classroom

The following list provides a survey of the techniques and materials that can be employed in teaching through the multiple intelligences. This material was culled from a variety of sources that are listed in the Reference section of this paper. The material has been segmented according to the specific multiple intelligence. These listing would provide a valuable resource for the classroom instructor.

VERBAL/LINGUISTIC INTELLIGENCE

Verbal/Linguistic Intelligence is related to words and language both written and spoken, dominates most Western educational systems. Verbal linguistic intelligence is awakened by the spoken word, by reading someone's ideas thoughts, or poetry, or by writing one's own ideas, thoughts, or poetry, as well as by various kinds of humor such as "plays on words," jokes, and "twists" of the language. Students who demonstrate strength in the language arts: speaking, writing, reading, and listening are verbal/linguistic. These students have always been successful in traditional classrooms because their intelligence lends itself to traditional teaching.

Individuals with this verbal/linguistic of intelligence:

- enjoy writing, reading, telling stories or doing crossword puzzles.
- have a mastery of language
- have the ability to effectively manipulate language to express oneself rhetorically or poetically. It also allows one to use language as a means to remember information.
- have a sensitivity to spoken and written language, the ability to learn languages, and the capacity to use language to accomplish certain goals.
- authors, journalists, poets, lawyers, orators and comedians are obvious examples of people with linguistic intelligence.

Characteristics of a verbal/linguistic individual

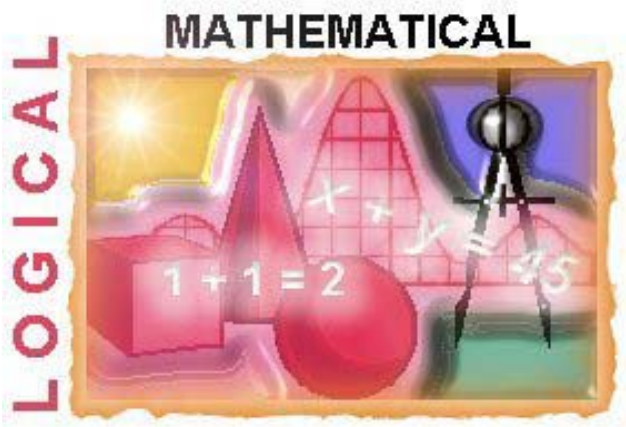
- enjoys word play. making puns, tongue-twisters, limericks, crosswords, Scrabble
- reads everything—books, magazines, newspapers, even product labels
- can easily express themselves either orally or in writing, i.e. you're a good story-teller or writer
- pepper conversations with frequent allusions to things they've read or heard
- sometimes have to ask them to explain a word they've used
- preferred subjects such as English, history and social studies
- hold their own in verbal arguments or debates
- likes to talk through problems, explain solutions, ask questions
- can readily absorb information from the radio or audio cassettes
- they understand the order & meaning of words

Linguistic classroom activities

- use story telling to explain
- write a poem, myth, legend, short play, or news article about
- create a talk show radio program
- conduct an interview
- lectures, debates
- large- and small-group discussions
- use 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

Logical/Mathematical Intelligence Often called "scientific thinking," this intelligence deals with inductive and deductive thinking/reasoning, numbers, and the recognition of abstract patterns. Logical mathematical intelligence is activated in situations requiring problem solving or meeting a new challenge as well as situations requiring pattern discernment and recognition. Associated with what we call scientific thinking. Such people are good at figuring things out, analyzing things, and solving problems in subjects like math and science. They probably like things like figuring out patterns, matching things that are alike, math, science, crossword puzzles, and solving problems**.** Typically those with logical/mathematical intelligence do well in traditional classrooms where teaching is logically sequenced and students are asked to conform.



Individuals with logical/mathematical intelligence:

- are interested in patterns, categories and relationships
- are drawn to arithmetic problems, strategy games and experiments
- have the ability to detect patterns, reason deductively and think logically
- are associated with scientific and mathematical thinking
- have the capacity to analyze problems logically, carry out mathematical operations, and investigate issues scientifically
- have the ability to reason and calculate, to think things through in a logical, systematic manner.
- have the skills highly developed in engineers, scientists, economists, accountants, detectives and members of the legal profession

Characteristics of a Logical-Mathematical individual

- enjoys working with numbers and can do mental calculations
- is interested in new scientific advances
- can easily balance a checkbook; do the household budget
- likes to put together a detailed itinerary for vacations or business trips
- enjoys the challenge of brain teasers or other puzzles that require logical thinking
- tends to find the logical flaws in things people say and do
- math and are/were among their favorite subjects in school
- can find specific examples to support a general point of view
- takes a systematic, step-by-step approach to problem-solving
- needs to categorize, group or quantify things to properly appreciate their relevance

Logical-Mathematical classroom activities

- translate ideas into a mathematical formulas
- design and conduct an experiment
- make up syllogisms to demonstrate
- make up analogies to explain
- describe the patterns or symmetry
- 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

BODY/KINESTHETIC INTELLIGENCE

Body/Kinesthetic Intelligence is related to physical movement and the knowing/wisdom of the body. Derived from the brain's motor cortex, which control bodily motion. Body/kinesthetic intelligence is awakened through physical movement such as in various sports, dance, and physical exercises as well as by the expression of oneself through the body, such as inventing, drama, body language, and creative/interpretive dance. Such people are good at things like sports, dance, gymnastics, karate, and boxing. They are also good at working with their hands. They are likely to have good body control and coordination. These are students who experience learning best through activity: games, movement, hands-on tasks, building. These students are often labeled "overly active" in traditional classrooms where they are told to sit and be still!

Individuals with body/kinesthetic intelligence:

- process knowledge through bodily sensations
- are often athletic, dancers or good at crafts such as sewing or woodworking
- have the ability to use one's mental abilities to coordinate one's own bodily movements
- challenges the popular belief that mental and physical activity are unrelated
- uses one's whole body or parts of the body to solve problems
- has the ability to use mental abilities to coordinate bodily movements
- has ability obviously displayed for athletic pursuits, dancing, acting, artistically, building and construction,
- are people who are physically talented–"good with their hands"

Characteristics of a bodily-kinesthetic individual

- likes to take part in a sports or regularly perform some kind of physical exercise
- is quite adept at 'do-it-yourself'
- likes to think through problems while engaged in a physical pursuit such as walking or running
- does not mind getting up on the dance floor
- likes the most thrilling rides at the amusement park or theme park
- needs to physically handle something to fully understand it
- most enjoyable classes in school were physical education and any handicrafts lessons
- uses hand gestures or other kinds of body language to express yourself
- likes rough and tumble play and activity
- needs to tackle a new learning experience 'hands on' rather than reading a manual or watching a video.

Bodily-Kinesthetic classroom activities

- create a movement or sequence of movements to explain
- make task or puzzle cards
- build or construct
- plan and attend a field trip
- bring hands-on materials to demonstrate
- creative movement, mime
- hands-on thinking
- 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
- create manipulatives
- virtual reality software
- kinesthetic concepts
- physical education activities
- communicating with body language/ hand signals
- tactile materials and experiences
- body answers

VISUAL/SPATIAL INTELLIGENCE

Visual/Spatial Intelligence relies on the sense of sight and being able to visualize an object, and includes the ability to create internal mental images/pictures. Visual/spatial intelligence is triggered by presenting the mind with and/or creating unusual, delightful, and colorful designs, patterns, shapes, and pictures, and engaging in active imagination through such things as visualization guided imagery, and pretending exercises. These are students who learn best visually and organize things spatially. They like to see what you are talking about in order to understand. They enjoy charts, graphs, maps, tables, illustrations, art, puzzles, and costumes - anything eye catching.

Individuals with visual/special intelligence

- think in images and pictures
- may be fascinated with mazes or jigsaw puzzles, or spend free time drawing, building, playing with Legos or daydreaming
- has the ability to manipulate and create mental images in order to solve problems
- are is not limited to visual domains as visual/spatial intelligence is also formed in blind individuals
- has the potential to recognize and use the patterns of wide space and more confined areas
- has ability to think in pictures, visualize a future result or to imagine things in your mind's eye
- have a good sense of direction
- architects, sculptors, sailors, photographers and strategic planners are examples of people with visual/special intelligence

Characteristics of visual/spatial intelligence

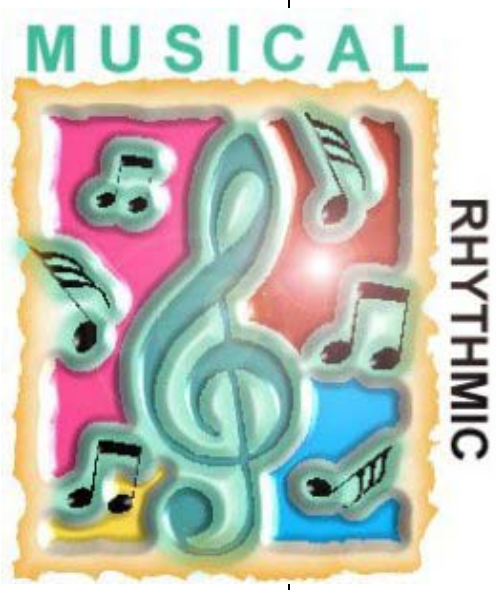
- has an appreciation of the arts
- tends to make a visual record of events with a camera or camcorder
- finds themself doodling when taking notes or thinking through something
- has no problem reading maps and navigating
- enjoys visual games such as jigsaw puzzles and mazes
- quite adept at taking things apart and putting them back together
- likes lessons in art and preferred geometry to algebra
- often makes their point by providing a diagram or drawing
- can visualize how things look from a different perspective
- prefers reading material that is heavily illustrated

Visual classroom activities

- create a slide show, videotape, or photo album
- create a piece of art that demonstrates
- invent a board or card game to demonstrate
- illustrate, draw, paint, sketch, or sculpt
- use 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

MUSICAL INTELLIGENCE

Musical Intelligence is the ability to make or compose music, to sing well, or understand and appreciate music. To keep rhythm. It's a talent obviously enjoyed by musicians, composers, and recording engineers. But most of us have a musical intelligence which can be developed. Think of how helpful it is to learn with a jingle or rhyme (e.g. "Thirty days has September..."). This intelligence is based on the recognition is based on the recognition of tonal patterns, including various environmental sounds, and on a sensitivity to rhythm and beats. Musical/rhythmic intelligence is turned on by the resonance or vibrational effect of music and rhythm on the brain, including such things as the human voice, sounds from nature, musical instruments, percussion instruments, and other humanly produced sounds. Students who learn well through songs, patterns, rhythms, instruments and musical expression. It is easy to overlook children with this intelligence in traditional education.



Individuals with Musical Intelligence:

- are always singing or drumming to themselves
- are usually quite aware of sounds others may miss
- are often discriminating listeners
- have the capability to recognize and compose musical pitches, tones, and rhythms. (Auditory functions are required for a person to develop this intelligence in relation to pitch and tone, but it is not needed for the knowledge of rhythm.)
- involves skill in the performance, composition, and appreciation of musical patterns
- musical intelligence runs in an almost structural parallel to linguistic intelligence.

Characteristics of musical individual

- can play a musical instrument
- can manage to sing on key
- can remember a tune after hearing it just a couple of times
- often listens to music at home and in your car
- usually taps in time to music
- can identify different musical instruments
- theme music or commercial jingles often pop into their head
- cannot imagine life without music
- often whistles or hums a tune
- likes a musical background when you're working

Musical classroom activities

- give a presentation with appropriate musical accompaniment
- sing a song
- indicate the rhythmical patterns
- explain how the music of a song is similar
- make an instrument and use it to demonstrate
- 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
- supermemory music

INTERPERSONAL INTELLIGENCE

Interpersonal Intelligence operates primarily through person-to-person relationships and communication in which such things as effective communication, working together with others for a common goal, and noticing distinctions among persons are necessary and important. Has the ability to work cooperatively in a group as well as the ability to communicate, verbally and non-verbally with other people. They are also good at sharing their opinion, and demonstrate a heightened sense of understanding the opinions and feelings of others. They are noticeably people oriented and outgoing, and do their learning cooperatively in groups or with a partner. As students they may have typically been identified as "talkative" or " too concerned about being social" in a traditional setting.

Individuals with Interpersonal Intelligence:

- are leaders among their peers
- are good at communicating
- seem to understand others' feelings
- able to motivate others
- able to sense feelings, motives and intentions of others
- are concerned with the capacity to understand the intentions, motivations and desires of other people
- works effectively and relates with others
- tent to enter fields such as educators, salespeople, religious and political leaders, therapists and counselors
- able to display empathy and understanding for others

Characteristics of an interpersonal individual

- enjoys working with other people as part of a group or committee
- takes great pride in being a mentor to someone else
- other people tend to come to them for advice
- prefers team sports—such as basketball, softball, soccer, football—to individual sports such as swimming and running
- is a social butterfly and would much prefer to be at a party rather than home alone watching television
- has several very close personal friends
- communicates well with people and can help resolve disputes
- has no hesitation in taking the lead; showing other people how to get things done
- talks over problems with others rather than trying to resolve them alone

Interpersonal classroom activities

- conduct a meeting to address issues
- intentionally use social skills to learn about a topic
- participate in a service project to
- teach someone
- practice giving and receiving feedback
- use technology
- 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

INTRA-PERSONAL INTELLIGENCE

Intra-personal Intelligence relates to inner states of being, self-reflection, metacognition (i.e. thinking about thinking), and an awareness of spiritual realities. This intelligence is awakened when we are in situations that cause introspection and require knowledge of the internal aspects of the self, such as awareness of our feelings, thinking processes, self-reflection, and spirituality. People highly developed in this intelligence are probably good at understanding other people's feelings; focusing and concentrating, and thinking things through. They may be particularly good at things like closing their eyes and reflecting about how they feel about things; focusing, concentrating, and understanding how other people feel. They may like meditating and thinking about things. These individuals are especially in touch with their own feelings, values and ideas. They may tend to be more reserved, but they are actually quite intuitive about what they learn and how it relates to themselves.

Individuals with Intra-personal Intelligence:

- may be shy
- are very aware of their own feelings and are self-motivated
- has the ability to understand one's own feelings and motivations
- entails the capacity to understand oneself, to appreciate one's feelings, fears and motivations
- has an effective working model of themselves and to be able to use such information to regulate our lives
- has the ability for self-analysis and reflection
- able to quietly contemplate and assess one's accomplishments, to review one's behavior and innermost feelings, to make plans and set goals, the capacity to know oneself
- philosophers, counselors, and many peak performers in all fields of endeavor have this form of intelligence

Characteristics of an Intra-personal individual

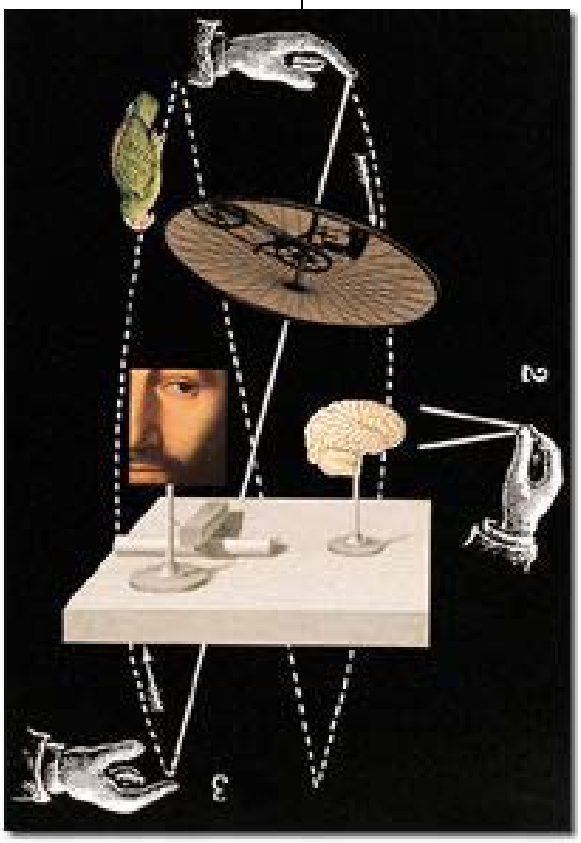
- keeps a personal diary or log to record your innermost thoughts
- often spends 'quiet time' reflecting on the important issues in their life
- sets their own goals — knows where they are going
- are independent thinkers — knows their own mind, makes up their own mind
- has a private hobby or interest which they do not really share with anyone else
- likes to go fishing by themselves or take a solitary hike
- are happy with their own company
- their idea of a good vacation is an isolated hilltop cabin rather than a five-star resort and lots of people
- has a realistic idea of their own strengths and weaknesses
- has attended self-improvement workshops or been through some kind of counseling to learn more about themselves
- works for themselves — or contemplated 'doing their own thing.'

Intra-personal classroom activities

- describe qualities you possess that will help you
- set and pursue a goal
- describe one of your personal values about
- write a journal entry
- assess your own work
- 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
- self-teaching programmed instruction
- exposure to inspirational/ motivational curricula
- self-esteem activities
- journal keeping
- goal setting sessions

NATURALIST INTELLIGENCE

Naturalist Intelligence has the ability to recognize plants, animals, and other parts of the natural environment, like clouds, rocks, plant-life, and other things relating to the natural environment. Such people may like hiking, camping, fishing, digging for fossils, or other activities relating to the natural environment. This intelligence may be revealed through the interests of students who become experts on dinosaurs and adults who pursue such interests as hunting, botany, and anatomy. A highly developed Naturalist Intelligence is exemplified by the Native American Indians who lived in harmony with nature, the Africans who tilled the fields and farms, the Buffalo Soldiers of the western expansion, and the American cowboy who pioneered and settled the western United States. The traditional classroom has not been accommodating to these students.



Individuals with Naturalist Intelligence:

- have the ability to recognize flora and fauna
- to make other consequential distinctions in the natural world
- uses this ability productively–for example in hunting, farming, or biological science
- farmers, botanists, conservationists, biologists, environmentalists would all display aspects of the intelligence.

Characteristics of Naturalist individuals

- keeps or like pets
- can recognize and name many different types of trees, flowers and plants
- has an interest in and good knowledge of how the body works—where the main internal organs are, for example, and you keep abreast on health issues
- are conscious of tracks, nests and wildlife while on a walk and can 'read' weather signs
- could envision themselves as a farmer or maybe likes to fish
- a keen gardener
- has an understanding of, and interest in, the main global environmental issues
- keeps reasonably informed about developments in astronomy, the origins of the universe and the evolution of life
- are interested in social issues, psychology and human motivations
- considers that conservation of resources and achieving sustainable growth are two of the biggest issues of our times

Naturalist classroom activities

- create observation notebooks
- describe changes in the local or global environment
- care for pets, wildlife, gardens, or parks
- use binoculars, telescopes, microscopes, or magnifiers
- draw or photograph natural objects

The table provided below is a way of jogging the thought process of how subject matter can be incorporated into the curriculum and ways that understanding can be demonstrated utilizing the different multiple intelligences. The column titled Ways of Demonstrating Understanding can provide appropriate assessment tools to illustrate student comprehension of the material.

Multiple Intelligence	Incorporated into subject matter	Way of demonstrating understanding
Verbal-Linguistic	Books, stories, poetry, speeches, author visits	Writing stories, scripts, poems, storytelling
Mathematical-Logical	Exercises, drills, problem solving	Counting, calculating, theorizing, demonstrating, programming computers
Musical	Tapes, CD's, concert going	Performing, singing, playing, composing
Visual-Spatial	Posters, art work, slides, charts, graphs, video tapes, laser disks, CD-ROMs and DVDs, museum visits	Drawing, painting, illustrating, graphic design, collage making, poster making, photography
Bodily-Kinesthetic	Movies, animations, exercises, physicalizing concepts, rhythm exercises	Dance recital, athletic performance or competition
Interpersonal	Teams, group work, specialist roles	Plays, debates, panels, group work
Intra-personal	Reflection time, meditation exercises	Journals, memoirs, diaries, changing behaviors, habits, personal growth
Naturalist	Terrariums, aquariums, class pets, farm, botanical garden and zoo visits, nature walks, museum visits	Collecting, classifying, caring for animals at nature centers

The table below compares what individuals of the different intelligences love to do and the things the need to do what they love. Items in the Need column can be converted into classroom activities. (Armstrong, 1994, para 7)

Table 5 - Multiple Intelligences: What They Love to do and What They Need

Children who are strongly:	Love	Need
Linguistic	reading, writing, telling stories, playing word games, etc.	books, tapes, writing tools paper diaries, dialogues, discussion, debate stories
Logical-Mathematical	experimenting, questioning, figuring out puzzles, calculating, etc.	things to explore and think about, science materials, manipulatives, trips to the planetarium and science museum
Spatial	designing, drawing, visualizing, doodling, etc.	art, LEGOs, video, movies, slides, imagination games, mazes, puzzles, illustrated books, trips to art museums
Bodily-Kinesthetic	dancing, running, jumping, building, touching, gesturing, etc.	role play, drama, movement, things to build, sports and physical games, tactile experiences, hands-on learning
Musical	singing, whistling, humming, tapping feet and hands, listening, etc..	sing-along time, trips to concerts, music playing at home and school, musical instruments
Interpersonal	leading, organizing, relating, manipulating, mediating, partying, etc.	friends, group games, social gatherings, community events, clubs, mentors/apprenticeships
Intra-personal	setting goals, meditating, dreaming, being quiet,	Secret places, time alone, self-paced projects, choices

There were always students who seemed lost, not able to perform or just did not get it. It was usually perceived as a student problem. It was thought that the student was under prepared, not competent, not motivated or just plain lazy. However, what if the instructor was presenting material in a way that did not coincide with that student's preferred learning style? Therefore, the student's inability to connect may not have been the student's fault. This lack of connection between instructor and student can be avoided if the instructor delivers the course content by utilizing a variety of methodologies. This should then foster student success and therefore increase student retention.

References

Armstrong, Thomas. (1994). Multiple Intelligences In The Classroom. Alexandria, VA: Association for Supervision and Curriculum Development Retrieved on 06/03/03 from http://www.spannj.org/BasicRights/appendix_b.htm

Brualdi, Amy C. (1996). Multiple Intelligences: Gardner's Theory. ERIC Digest. ERIC Clearinghouse on Assessment and Evaluation Washington DC. Retrieved on 05/19/03 from: http://www.ericfacility.net/ericdigests/ed410226.html

Campbell, Bruce. (nd). The Research Results of a Multiple Intelligences Classroom. Retrieved on 06/02/03 from http://www.newhorizons.org/strategies/mi/campbell2.htm This document is an article that was previously published in New Horizons for Learning "On The Beam" Vol.XI No.1 Fall, 1990 p. 7 :254

Campbell, Linda, Campbell, Bruce and Dickinson, Dee. (1999). Teaching and Learning Through Multiple Intelligences, Second Edition. Boston, MA. Allyn and Bacon.

Campbell, Linda. (1997). Variations on a Theme: How Teachers Interpret MI Theory. Educational Leadership Volume 55 Number 1. Retrieved on 05/14/03 from: http://www.ascd.org/readingroom/edlead/9709/campbell.html on 05/14/03

"Changes in Higher Education". (n.d.). Retrieved on April 28, 2003 from http://pcrest.com/changes.htm

Exploring "The Theory of Multiple Intelligences". (nd). http://www.accelerated-learning.net/multiple.htm

Gardner, Howard. (1983). Frames of Mind: The Theory of Multiple Intelligences. New York, NY. Basic Books

Gardner, Howard. (1993). Multiple Intelligences: The Theory in Practice. New York, NY. Basic Books.

Gardner, Howard. (1999). Intelligence Reframed: Multiple Intelligences for the 21st Century. New York, NY. Basic Books.

It's Not How Smart You Are - It's *How* You Are Smart!: Howard Gardner's Theory Of Multiple Intelligences. (nd) Retrieved on 05/19/03 from: http://www.surfaquarium.com/mi.htm

Hoerr, Thomas. (2002). Applying MI in Schools. Retrieved on 06/02/03 from http://www.newhorizons.org/strategies/mi/hoerr2.htm

Kolb, David.. (nd) Learning Style Inventory. Retrieved on 05/19/03 from: http://pss.uvm.edu/pss162/learning_styles.html

Multiple Intelligence. (nd) Retrieved on 05/14/03 from http://www.rspublishing.com/Multiple%20Intelligences.html

Pearson Education Development Group. (nd). Using Multiple Intelligences in Testing and Assessment. Retrieved on 06/04/03 from http://www.teachervision.com/lesson-plans/lesson-4933.html.

Rose, Colin and Nicholl, Malcolm J. (nd). Test yourself—How are you smart? Retrieved on 05/14/03 from: http://www.accelerated-learning.net/learning_test.html

Smith, M. K. (2002). 'Howard Gardner and multiple intelligences', *the encyclopedia of informal education*. Retrieved on 05/19/03 from: http://www.infed.org/thinkers/gardner.htm.

The Seven Type of Intelligence. (nd). Retrieved on 05/14/03 from http://www.swopnet.com/ed/TAG/7_Intelligences.html

Tapping into Multiple Intelligences. (nd). Retrieved on 05/30/03 from http://www.thirteen.org/edonline/concept2class/month1/

Theories of Intelligence. (nd). Retrieved on 05/30/03 from http://otec.uoregon.edu/intelligence.htm

Traditional Intelligence in Education. (nd). Retrieved on 06/01/03 from http://www.edwebproject.org/edref.mi.histschl.html