

Professional
Development
for *Successful*
Classrooms

Instructional Strategies for Diverse Learners

Wendy Conklin, M.A.



SHELL EDUCATION

Multiple Intelligences

"It's not how smart you are, but how you are smart."

—René Diaz-Lefebvre

Teachers across the nation are repeatedly finding it challenging to teach the new generation of students who demand constant entertainment. Television, music videos, and especially computer games are just the tip of the iceberg when listing what preoccupies students' minds. How can schools possibly compete with this mirage of fast and entertaining information? Do we as educators cave in to the habits of bribing and entertaining students in the hopes of keeping their attention? What is the secret to increasing students' confidence, helping them become self-directed learners, and thus instilling the love of learning? If we merely bribe and entertain students, we are only feeding the problem, and it will worsen. Instead, we should offer students activities that engage their natural talents and gifts.

How can we find out their natural talents and gifts? Understanding your students is the first step in being able to do this. What makes them tick? What do they enjoy? How do they learn best? How do your students best express what they know?

Just in the past few years, researchers have provided various ways to understand students. One way is to build lesson plans around the model of *Multiple Intelligences*. This model seeks to nurture the broad range of talents in students. It identifies and categorizes eight different intelligences. Today, this information is readily available to teachers who can use this information to create curriculum that nurtures these intelligences in students.

What Are Multiple Intelligences?

The multiple intelligence model is based on the work of one primary researcher named Howard Gardner. He has identified eight intelligences, which include verbal/linguistic; logical/mathematical; bodily/kinesthetic; intrapersonal; interpersonal; musical/rhythmic; visual/spatial; and naturalistic. Researchers say that everyone possesses each of these intelligences, but some intelligences are more developed than others.

In most classrooms, intelligence is measured logically/mathematically and verbally/linguistically. But some teachers are finding that Gardner's theory of multiple intelligences is like a breath of fresh air. Teachers who learn about this theory finally begin to understand why they teach the way they do. The tendency is to teach according to one's own intelligence preference (Gardner, 1993).

Here is a quick review of the eight intelligences:

Musical/Rhythmic Intelligence—the ability to recognize and compose musical tones, rhythms, and pitches. Generally, these people like to sing, play an instrument,

hum tunes, compose music, and listen to music. They are good at remembering melodies and noticing sounds. They learn best when there is rhythm, melody, and/or music associated with learning.

Visual/Spatial Intelligence—the ability to create mental images and pictures in order to solve problems. These individuals generally like to draw, design, build, day-dream, do art projects, create architecture, and watch videos. They are good at visual imagery, mazes, puzzles, reading charts, maps, and other graphic organizers. They learn best when they can visualize, dream, and work with color, pictures, and graphic representations of information.

Bodily/Kinesthetic Intelligence—the ability to use movement for learning. These people like to touch, talk, use body language, and move around. They are usually good at physical activities like acting, athletics, and dance. They learn best with "hands on" activities where they can touch and move, processing through bodily senses.

Verbal/Linguistic Intelligence—involves expertise with language. People strong in the verbal/linguistic intelligence can express themselves well rhetorically and can use language as a means to remember information. Generally, they like to read, write, and tell stories. They tend to be good at memorizing names, places, and dates. They learn best when they say, hear, or see words.

Logical/Mathematical Intelligence—involves reasoning deductively and thinking logically. This intelligence is generally associated with scientific and mathematical thinking. People strong in logical/mathematical intelligence like to work with numbers, explore patterns, do experiments, and solve problems. They are typically good at math, reasoning, problem solving, and logic. They learn best when they can sequence, categorize, classify, and work with patterns and numbers.

Interpersonal Intelligence—the ability to understand the feelings and intentions of others. Generally, these people have lots of friends and enjoy joining groups and talking to others. They are good at understanding people, solving conflicts, teaching, management, and are often leaders. They learn best when they are allowed to share, relate, and cooperate with others.

Intrapersonal Intelligence—the ability to understand one's own feelings and motivations. Generally, these people like to work alone and pursue their own interests. They are good at understanding themselves, psychology, counseling, and tend to be goal-oriented. They learn best on their own with individualized projects and self-paced instruction.

Naturalist Intelligence—the ability to classify natural phenomena and have an ongoing curiosity and knowledge of the natural world. Generally, these people love to be outdoors. They are good with natural history, plants, and animals. They learn best when they can go outside and explore in nature's classroom.

Why Use Multiple Intelligences?

The reason why so many educators love the multiple intelligence model best is because it is a flexible way of designing curriculum and creating learning environments. It gives a basic framework for each of the eight intelligences, and then teachers form their own unique lesson plans around it, providing various learning experiences for their students.

Many educators have come to think of multiple intelligences as a philosophy of how children learn. It provides avenues by which all students can achieve success. Sue Teele from the University of California, Riverside sums up Gardner's goal of the multiple intelligence model by saying that "multiple intelligences provides for different windows into the same room. We need to unleash

the creative potential in all our schools in order to open as many windows as possible for every student in every classroom to succeed." She concludes by emphasizing that "the future mandates that we all move forward together in a way that builds on both our mutual strengths and respects our unique differences" (Teele, 1994, p. 17).

Howard Gardner believes that students possess all eight of the multiple intelligences. Some are just better developed than others. Teachers can use multiple intelligences as a strategy that challenges students to take control of their own learning. When students understand how they learn best, they will also understand their weaknesses. While it is good to have activities that enhance students' natural talents, teachers can also use the information about each student to encourage him/her to develop his/her weak intelligences. More often than not, students will take on this responsibility and work toward developing their weak intelligences.

Certain schools that have adopted the multiple intelligence model schoolwide have reported a rise in standardized test scores. Studies conducted by Linda and Bruce Campbell (1999) in six schools, ranging from elementary to high school, have shown an increase in standardized test scores. These schools are in various locations all over the country and range demographically, from inner city to suburban, magnet schools to public schools, low-class to middle- and upper-class neighborhoods, and low population of minority students to a high population of minority students.

Some research suggests that certain pathways of learning are stronger at certain stages of development. Sue Teele (1994) devised a survey titled the "Teele Inventory for Multiple Intelligences" (TIMI). She gave it to over 6,000 students. Her research found that verbal/linguistic intelligence is strongest in kindergarten through third grade. It declines dramatically thereafter. The logical/mathemati-

cal intelligence is strongest in first through fourth grade. It also declines dramatically thereafter. The visual/spatial and bodily/kinesthetic intelligence was shown to be dominant throughout elementary and middle school. In addition, middle school children also show a preference for musical/rhythmic and interpersonal intelligences.

What does Teele's information mean? It means that if elementary teachers want to use the best strategies, they must present lessons that incorporate verbal/linguistic, logical/mathematical, visual/spatial, and bodily/kinesthetic activities. If middle school teachers want to use the best strategies, they must present lessons that incorporate visual/spatial, bodily/kinesthetic, musical/rhythmic, and interpersonal activities. Sadly, in many classrooms, the middle school teacher instructs with lectures and mere readings of texts. This is exactly opposite of how middle school students learn best. For a general overview of Teele's findings, see Figure 7.1 on page 111.

The lists on pages 112 and 113 provide ideas for products for the multiple intelligences.

Figure 7.1: Dominant Strengths by Grade Level

	Picture Smart Visual/spatial	Word Smart Verbal/linguistic	Body Smart Bodily/kinesthetic	Self Smart Intrapersonal	People Smart Interpersonal	Music Smart Musical/rhythmic	Number Smart Logical/Mathematical
Kindergarten	X	X	X	X			X
First grade	X	X	X				X
Second grade	X	X	X				X
Third grade	X	X	X		X		X
Fourth grade	X		X		X	X	X
Fifth grade	X		X		X	X	
Sixth grade	X		X		X	X	
Middle school	X		X		X	X	
High school	X		X		X	X	

Products For Multiple Intelligences

A dance/a letter/a lesson
 Advertisement
 Animated movie
 Annotated bibliography
 Art gallery
 Block picture story
 Bulletin board
 Bumper sticker
 Chart
 Choral reading
 Clay sculpture
 Code
 Collage
 Collection
 Comic strip
 Computer program
 Costumes
 Crossword puzzle
 Database
 Debate
 Demonstration
 Detailed illustration
 Diorama
 Diary
 Display
 Edibles
 Editorial essay
 Etching
 Experiment
 Fact tile
 Fairy tale
 Family tree
 Fiction story
 Film
 Filmstrip
 Flip book

Game
 Graph
 Hidden Picture
 Illustrated story
 Interview
 Jingle
 Joke book
 Journal
 Labeled diagram
 Large scale drawing
 Learning center
 Letter to the Editor
 Map with legend
 Mazes
 Mobile
 Model
 Mosaic
 Mural
 Museum exhibit
 Musical instruments
 Needlework
 Newspaper story
 Non-fiction
 Oral defense
 Oral report
 Painting
 Pamphlet
 Pantomime
 Papier mache
 Petition
 Photo essay
 Pictures
 Picture story for children
 Plaster of Paris model
 Play
 Poetry

Political cartoon
 Pop-up book
 Postage stamp
 (commemoratives)
 Press conference
 Project cube
 Prototype
 Puppet
 Puppet show
 Puzzle
 Radio program
 Rap
 Rebus story
 Recipe
 Riddle
 Role play
 Science fiction story
 Sculpture
 Skit
 Slide show
 Slogan
 Soliloquy
 Song
 Sound
 Story telling—tall tales
 Survey
 Tapes-Audio-Video
 Television program
 Time line
 Transparencies
 Travel brochure
 Venn diagram
 Web homepage
 Working hypothesis
 Write a new law
 Video film

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Multiple Intelligences Product Grid

This product grid categorizes different products under separate headings according to research from Howard Gardner's multiple-intelligences theory. Many are listed in more than one column and would look different according to which approach is taken by the student. These groupings appeal to student interests and strengths. This increases the students' involvement and the quality of the final product. Having a final product makes it easier to determine that students have completed tasks that are measurable and demonstrable.

Verbal/Linguistic	Logical/Mathematical	Visual/Spatial	Bodily/Kinesthetic	Musical	Interpersonal	Intrapersonal	Naturalist
Advertisement	Advertisement	Animated movie	Calligraphy	Audio-video	Advertisement	Bulletin board	Artifact collecting
Annotated bibliography	Annotated bibliography	Art gallery	Charades	tape	Animated movie	Chart	Diorama
Bulletin board	Bibliography	Bulletin board	Collage	Choral reading	Bulletin board	Collection	Field study
Code	Chart	Bumper sticker	Costumes	Fairy tale	Chart	Comic strip	Field trip
Comic strip	Code	Cartoon	Dance	Film	Choral reading	Diary	Fossil collecting
Debate	Collection	Chart	Demonstration	Instrumental	Comic strip	Editorial essay	Insect collecting
Demonstration	Computer program	Clay sculpture	Diorama	Jukebox	Debate	Fairy tale	Leaf collecting
Diary	Crossword puzzle	Collage	Etching	Musical	Demonstration	Family tree	Original song
Editorial essay	Database	Costumes	Experiment	Poem	Editorial essay	Journal	Photo essay
Fairy tale	Debate	Demonstration	Film	Rap song	Fairy tale	Learning center	Rock collection
Family tree	Detailed illustration	Display	Flip book	Riddle	Film game	Poem	Scientific drawing
Fiction story	Demonstration	Etching	Food	Role playing	Interview	Riddle maze	Spelunking trip
Interview	Edibles	Film	Hidden picture	Song	Journal	collage	Time line
Jingle	Experiment	Filmstrip	Mosaic	Sound	Lesson	Time line	
Joke book	Fact file	Flipbook	Mural		Mazes		
Journal	Family tree	Game	Musical instruments		Museum exhibit		
Lesson	Game	Graph	Needlework		Pamphlet		
Letter	Graph	Hidden picture	Painting		Play		
Letter to the editor	Hidden picture	Illustrated story	Pantomime		Press conference		
Newspaper story	Labeled diagram	Maze	Papier mache		Role playing		
Non-fiction	Large scale drawing	Mobile	Plaster of Paris model		TV program		
Oral defense	Lesson	Model	Play				
Oral report	Map with legend	Mosaic	Poem				
Pamphlet	Mazes	Mural	Press conference				
Petition	Model	Painting	Puppet				
Play	Model	Papier mache	Radio program				
Poem	Petition	Photo essay	Role play				
Press conference	Play	Picture story for children	Transparencies				
Radio program	Prototype	Pictures	TV program				
Riddle	Puzzle	Play					
Science fiction story	Recipe	Political cartoon					
Skit	Riddle	Pop-up book					
Slogan	Survey	Prototype					
Soliloquy	Time line	Rebus story					
Story telling	Transparencies	Slide show					
TV program	Venn diagram	Story cube					
Write a new law	Working hypothesis	Transparencies					
	Write a new law	Travel brochure					
		TV program					
		Web home page					

Biology Lesson Ideas (Middle School Level)

Verbal/Linguistic—Any number of research projects like oral presentations, written projects/research papers, or poetry would fall under this domain. Students can select a part of the body (particular organ bones or muscular region) or a certain animal (microscopic, pets, or native), conduct research, and create a multimedia presentation, which is then shared with the class.

Visual/Spatial—Any biology-related art project would meet the needs of those who prefer this intelligence. This includes creating drawings, paintings, sculptures, collages, etc. If your students decide to prepare a multimedia presentation, they can use a drawing program on their computer. Otherwise students may prepare an oral presentation about the topic and draw a picture or complete an art project.

Bodily/Kinesthetic—Coordinate an outdoor game called "Survivor," which shows the predator/prey relationships among animals. Mark off an outdoor area. Assign students to be different animals—some herbivores and others carnivores. Students should know how the food cycle works in the animal kingdom, i.e. which animals eat other animals. The goal of the game is to collect the necessities of food and water while staying alive. If a player tags another player, that player "eats" them. The prey's food and water are passed on to its predator, and the prey is taken from the game area.

Musical/Rhythmic—Musically-inclined students could write a rap or song about one aspect of biology or create a song that uses body movements.

Interpersonal—Have students work in groups to complete one of these projects.

Naturalist—Assign students the task of classifying animals, learning the kingdom through species for an animal, and showing the relationships among animals (diagram).

