

Multiple Intelligences and Learning Styles

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Independent Chapter Review

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Contents [hide]

- 1 Introduction
- 2 Multiple Intelligences Section
 - 2.1 Multiple Intelligences Scenario
- 3 What is Multiple Intelligences Theory?
- 4 The Eight Intelligences
 - 4.1 Verbal/Linguistic
 - 4.2 Logical/Mathematical
 - 4.3 Visual/Spatial
 - 4.4 Bodily/Kinesthetic
 - 4.5 Naturalistic
 - 4.6 Musical Intelligence
 - 4.7 Interpersonal
 - 4.8 Intrapersonal
- 5 Multiple Intelligences in the Classroom
 - 5.1 Planning and Implementing Student-Centered Lessons
 - 5.2 Planning and Implementing a Teacher-Centered Lesson
 - 5.3 Benefits of Multiple Intelligences
- 6 Learning Styles Section
 - 6.1 Scenario
- 7 Learning Styles
 - 7.1 The Visual Learning Style
 - 7.2 The Aural Learning Style
 - 7.3 The Reading/Writing Learning Style
 - 7.4 The Kinesthetic/Tactile Learning Style
 - 7.5 Learning Strategies for Each Learning Style
- 8 Educational Implications for Learning Styles
- 9 References
- 10 Citation

[Click Here to Play the Multiple Intelligences Presentation](#)

Caption: This Narrated PowerPoint presentation describes how a single piece of math content might be addressed from each of the 8 intelligences Howard Gardner proposes [Click Here to for the script of this Multiple Intelligences Presentation in MS Word](#). By Darren West, Joe Pearce and Moira Chance (2010)

Introduction

Various theories on learning have been developed with increasing frequency in the last few decades. In order to understand the relationship between these theories, Curry's onion model (Curry, 1983) was developed with four layers – personality learning theories, information processing theories, social learning theories, and multidimensional and instructional theories.

Personality learning theories define the influences of basic personality on preferences to acquiring and integrating information. Models used in this theory include [Myers-Briggs Type Indicator](#), which measures personality in dichotomous terms – extroversion versus introversion, sensing versus intuition, thinking versus feeling, and judging versus perception, and the [Keirsey Temperament Sorter](#), which classifies people as rationals, idealists, artisans, or guardians.

Information processing theories encompass individuals' preferred intellectual approach to assimilating information, and includes [David Kolb's model of information processing](#), which identifies two separate learning activities: perception and processing.

Social learning theories determine how students interact in the classroom and include [Reichmann's and Grasha's types of learners](#): independent, dependent, collaborative, competitive, participant, and avoidant.

Multidimensional and instructional theories address the student's environmental preference for learning and includes the Learning Style Model of [Dunn and Dunn](#) and the multiple intelligences theory of Howard Gardner. This chapter focuses on this type of learning theory by Howard Gardner.

Multiple Intelligences Section

This is supposed to be a flash animation. You'll need the flash plugin and a browser that supports it to view it.

Caption: This is a questionnaire created with Flash to give users a profile of their multiple intelligences. It assesses the eight intelligences that are fully accepted by educators in the classroom. The eight intelligences are verbal, logical, spatial, kinesthetic, musical, interpersonal, intrapersonal and naturalistic. The ninth would be Existential, but this is not a confirmed intelligence. This is NOT a scientific assessment. There is no validity to this test at all. We include it to simply help you think about your own abilities. By Myung Hwa Koh, Li Zhu and Seow Chong Wong (2003).

Multiple Intelligences Scenario

Ms. Cunningham, a seventh grade American History Teacher, is preparing a unit on the American Civil Rights Movement of the 1950's and 1960's. The teacher has created a succession of lessons to be completed over a two-week period to enhance her students' understanding of the events, organizations, and individuals that were crucial to the movement. When the unit is over, Ms. Cunningham wants her students to have a complete picture of the historical period. She designs a variety of activities that give the students the opportunity to explore historical and cultural aspects of the 1950's and 1960's, and to fully identify with those who were involved in the Movement. In order to reach her instructional goals, the students will read selected excerpts from the textbook and listen to various lectures about the Movement. In addition to the aforementioned, the students will complete several

navigation

- [Main Page](#)
- [Submission Guidelines](#)
- [Instructors](#)
- [Recent changes](#)
- [Help](#)

search

tools

- [What links here](#)
- [Related changes](#)
- [Special pages](#)
- [Printable version](#)
- [Permanent link](#)
- [Page information](#)

exploratory tasks about the Civil Rights movement as well.

To begin the unit the teacher uses a KWL chart on the overhead to spur discussion and start the students' "juices" flowing. A KWL chart is a visual representation of what students already know, what they want to know, and what they learned at the end of a lesson. This activity is completed as a class. The students take turns sharing the tidbits of information that they already know about the Civil Rights movement. This information is on major figures, events and places involved in the Civil Rights movement. Upon establishing what basic prior knowledge the students possess, it is now time to begin discovering new information and confirming previously held information about the Civil Rights movement. Ms. Cunningham then lectures on the basic events, people, and places involved in the majority of the Civil Rights movement in order to provide students some framework within which to begin placing their new information.

She closes the first lesson by asking the students to create a timeline using the dates of events she has provided. This will be a working outline to be used throughout the unit. During a subsequent lesson, students are asked to share their outlines with their classmates in small groups. They should make corrections and comments on the outlines as needed. Ms. Cunningham gains class consensus of the proper order for their working outline as she places an enlarged version on the classroom wall.

The culmination of this unit will be a final project in which students create a portfolio containing work on three mini-projects. All students will listen to the same guest lecturers, view the same video taped footage and participate in the same class discussions during the first half of each class. The remainder of each class period will be reserved for work on personal exploration pertaining to their portfolio pieces. Ms. Cunningham has provided a list of possible activities and a rubric for each suggested activity in order to support and to guide the student's work. She has also arranged her room so that "art" materials are in a central location; mapping and graphing information is grouped together and there is a section replete with reading and research materials.

Mrs. Cunningham's students will have many options for creating something that can be included in their portfolios. Students will have the option to write letters to members of the community who were teenagers during the Civil Rights Movement, asking them to share their memories and experiences about life during the time period. Students may work in teams to prepare speeches based on period issues for their fellow classmates. Students may consult with the school's Media Specialist or more knowledgeable other to find resources for the class, including popular music from the time period. They may also learn and share dances that were popular during the 1950's and 1960's. If they choose, students may include music in the plays they write and act out for their classmates. With the assistance of the Art instructor, students may opt to work together to create a mural that represents key figures of the Civil Rights Movement such as Rosa Parks and Martin Luther King Jr., with accompanying biographical information about each leader. Students may also create a map representing key events. Students may also work in groups to prepare short plays to enact for the class based on the readings and what they learn from the guest speakers. Afterwards, Mrs. Cunningham will moderate discussion sessions about the plays. All students will keep a record of their thoughts and feelings about the mini-lessons they completed. This journaling process will provide a synthesis of the materials with which they dealt. As one final measure, students present their portfolios to their classmates.

James, a student whose proclivities lean towards creative visual projects expresses interest in working on the mural of Civil Rights leaders. Mrs. Cunningham feels that James needs to shift gears and concentrate on other activities in the classroom. The teacher suggests that James work on creating the map and / or timeline. At the teacher's encouragement, James begins to work on the other projects, but his attention continues to drift towards the students painting the mural. He contributes some excellent ideas and shows so much interest in the details and creation of the mural, that the teacher allows him to shift his focus back towards the visual project.

In another seventh grade classroom, Mr. Smith taught a unit on the Civil Rights Movement by assigning textbook readings and lecturing the students on the historical events surrounding the Movement. Students were given sentence completion pop quizzes throughout the course of the lesson. The teacher showed videotaped programs to the class and each student wrote a short research paper about a Civil Rights leader or prominent figure. At the end of the unit, students were given a multiple choice and essay test.

What is Multiple Intelligences Theory?

Howard Gardner's theory of Multiple Intelligences utilizes aspects of cognitive and developmental psychology, anthropology, and sociology to explain the human intellect. Although Gardner had been working towards the concept of Multiple Intelligences for many years prior, the theory was introduced in 1983, with Gardner's book, *Frames of Mind*.

Gardner's research consisted of brain research and interviews with stroke victims, prodigies, and individuals with autism. Based on his findings, Gardner established eight criteria for identifying the seven (he has subsequently added an eighth and is considering a ninth) separate intelligences. The eight criteria used by Gardner to identify the intelligences are listed below:

- Isolation by brain damage/neurological evidence
- The existence of prodigies, idiot savants, and exceptional individuals
- Distinguishable set of core operations
- Developmental stages with an expert end state
- Evolutionary history and plausibility
- Susceptibility to encoding in a symbol system
- Support from experimental psychological tasks
- Support from psychometric research

For a more detailed look at these eight criteria, visit <http://surfaquarium.com/MI/criteria.htm>.

Originally, the theory accounted for seven separate intelligences. Subsequently, with the publishing of Gardner's *Intelligence Reframed* in 1999, two more intelligences were added to the list. The intelligences are Verbal/Linguistic, Logical/Mathematical, Visual/Spatial, Bodily-Kinesthetic, Musical, Interpersonal, Intrapersonal, Naturalistic, and Existential.

Gardner's theory challenges traditional, narrower views of intelligence. Previously accepted ideas of human intellectual capacity contend that an individual's intelligence is a fixed entity throughout his lifetime and that intelligence can be measured through an individual's logical and language abilities. According to Gardner's theory, an intelligence encompasses the ability to create and solve problems, create products or provide services that are valued within a culture or society. Originally, the theory accounted for

seven separate intelligences. Subsequently, with the publishing of Gardner's *Intelligence Reframed* in 1999, two more intelligences were added to the list. The nine intelligences are outlined in more detail in the section below. Listed below are key points of Gardner's theory:

- All human beings possess all nine intelligences in varying degrees.
- Each individual has a different intelligence profile.
- Education can be improved by assessment of students' intelligence profiles and designing activities accordingly.
- Each intelligence occupies a different area of the brain.
- The nine intelligences may operate in consort or independently from one another.
- These nine intelligences may define the human species.

Gardner, a Professor of Education at Harvard University, and other researchers and educators continue to work towards a more holistic approach to education through Project Zero. For more information on the projects and research involved in Project Zero, visit the website at <http://www.pz.harvard.edu>.

Although the theory was not originally designed for use in a classroom application, it has been widely embraced by educators and enjoyed numerous adaptations in a variety of educational settings. Teachers have always known that students had different strengths and weaknesses in the classroom. Gardner's research was able to articulate that and provide direction as to how to improve a student's ability in any given intelligence. Teachers were encouraged to begin to think of lesson planning in terms of meeting the needs of a variety of the intelligences. From this new thinking, schools such as the Ross School in New York, an independent educational institution, and the Key Learning Community, a public magnet school in Indianapolis emerged to try teaching using a Multiple Intelligences curriculum. The focus of this part of the chapter will be on lesson design using the theory of Multiple Intelligences, and providing various resources that educators may use to implement the theory into their classroom activities.

The Eight Intelligences

Verbal/Linguistic

Verbal/Linguistic intelligence refers to an individual's ability to understand and manipulate words and languages. Everyone is thought to possess this intelligence at some level. This includes reading, writing, speaking, and other forms of verbal and written communication. Teachers can enhance their students' verbal/linguistic intelligence by having them keep journals, play word games, and by encouraging discussion. People with strong rhetorical and oratory skills such as poets, authors, and attorneys exhibit strong Linguistic intelligence. Some examples are T.S. Eliot, Maya Angelou, and Martin Luther King Jr. Traditionally, Linguistic intelligence and Logical/Mathematical intelligence have been highly valued in education and learning environments.

Logical/Mathematical

Logical/Mathematical intelligence refers to an individual's ability to do things with data: collect, and organize, analyze and interpret, conclude and predict. Individuals strong in this intelligence see patterns and relationships. These individuals are oriented toward thinking: inductive and deductive logic, numeration, and abstract patterns. They would be a contemplative problem solver; one who likes to play strategy games and to solve mathematical problems. Being strong in this intelligence often implies great scientific ability. This is the kind of intelligence studied and documented by Piaget. Teachers can strengthen this intelligence by encouraging the use of computer programming languages, critical-thinking activities, linear outlining, Piagetian cognitive stretching exercises, science-fiction scenarios, logic puzzles, and through the use of logical/sequential presentation of subject matter. Some real life examples people who are gifted with this intelligence are Albert Einstein, Niels Bohr, and John Dewey.

Visual/Spatial

Visual/Spatial intelligence refers to the ability to form and manipulate a mental model. Individuals with strength in this area depend on visual thinking and are very imaginative. People with this kind of intelligence tend to learn most readily from visual presentations such as movies, pictures, videos, and demonstrations using models and props. They like to draw, paint, or sculpt their ideas and often express their feelings and moods through art. These individuals often daydream, imagine and pretend. They are good at reading diagrams and maps and enjoy solving mazes and jigsaw puzzles. Teachers can foster this intelligence by utilizing charts, graphs, diagrams, graphic organizers, videotapes, color, art activities, doodling, microscopes and computer graphics software. It could be characterized as right-brain activity. Pablo Picasso, Bobby Fischer, and Georgia O'Keeffe are some examples of people gifted with this intelligence.

Bodily/Kinesthetic

Bodily/Kinesthetic intelligence refers to people who process information through the sensations they feel in their bodies. These people like to move around, touch the people they are talking to and act things out. They are good at small and large muscle skills; they enjoy all types of sports and physical activities. They often express themselves through dance. Teachers may encourage growth in this area of intelligence through the use of touching, feeling, movement, improvisation, "hands-on" activities, permission to squirm and wiggle, facial expressions and physical relaxation exercises. Some examples of people who are gifted with this intelligence are Michael Jordan, Martina Navratilova, and Jim Carrey.

Naturalistic

Naturalistic intelligence is seen in someone who recognizes and classifies plants, animals, and minerals including a mastery of taxonomies. They are holistic thinkers who recognize specimens and value the unusual. They are aware of species such as the flora and fauna around them. They notice natural and artificial taxonomies such as dinosaurs to algae and cars to clothes. Teachers can best foster this intelligence by using relationships among systems of species, and classification activities. Encourage the study of relationships such as patterns and order, and compare-and-contrast sets of groups or look at connections to real life and science issues. Charles Darwin and John Muir are examples of people gifted in this way.

Musical Intelligence

Musical intelligence refers to the ability to understand, create, and interpret musical pitches, timbre, rhythm, and tones and the capability to compose music. Teachers can integrate activities into their lessons that encourage students' musical intelligence by playing music for the class and assigning tasks that involve students creating lyrics about the material being taught. Composers and instrumentalists are individuals with strength in this area. Wolfgang Amadeus Mozart and Louis Armstrong are examples.

Interpersonal

Although Gardner classifies interpersonal and intrapersonal intelligences separately, there is a lot of interplay between the two and they are often grouped together. Interpersonal intelligence is the ability to interpret and respond to the moods, emotions, motivations, and actions of others. Interpersonal intelligence also requires good communication and interaction skills, and the ability show empathy towards the feelings of other individuals. Teachers can encourage the growth of Interpersonal Intelligences by designing lessons that include group work and by planning cooperative learning activities. Counselors and social workers are professions that require strength in this area. Some examples of people with this intelligence include Gandhi, Ronald Reagan, and Bill Clinton.

Intrapersonal

Intrapersonal Intelligence, simply put, is the ability to know oneself. It is an internalized version of Interpersonal Intelligence. To exhibit strength in Intrapersonal Intelligence, an individual must be able to understand their own emotions, motivations, and be aware of their own strengths and weaknesses. Teachers can assign reflective activities, such as journaling to awaken students' Intrapersonal Intelligence. Its important to note that this intelligence involves the use of all others. An individual should tap into their other intelligences to completely express their Intrapersonal Intelligence. Those who are often associated with this intelligence are Sigmund Freud, Plato, or Virginia Woolf.

There is a ninth intelligence that has yet to experience full acceptance by educators in the classroom. This is Existential intelligence, which encompasses the ability to pose and ponder questions regarding the existence – including life and death. This would be in the domain of philosophers and religious leaders.

The table below summarizes the strengths, learning preferences, and needs that correspond to the intelligences.

Table 1. Summary of the Eight Intelligences

Intelligence Area	Strengths	Preferences	Learns best through	Needs
Verbal / Linguistic	Writing, reading, memorizing dates, thinking in words, telling stories	Write, read, tell stories, talk, memorize, work at solving puzzles	Hearing and seeing words, speaking, reading, writing, discussing and debating	Books, tapes, paper diaries, writing tools, dialogue, discussion, debated, stories, etc.
Mathematical/ Logical	Math, logic, problem-solving, reasoning, patterns	Question, work with numbers, experiment, solve problems	Working with relationships and patterns, classifying, categorizing, working with the abstract	Things to think about and explore, science materials, manipulative, trips to the planetarium and science museum, etc.
Visual / Spatial	Maps, reading charts, drawing, mazes, puzzles, imagining things, visualization	Draw, build, design, create, daydream, look at pictures	Working with pictures and colors, visualizing, using the mind's eye, drawing	LEGOs, video, movies, slides, art, imagination games, mazes, puzzles, illustrated book, trips to art museums, etc.
Bodily / Kinesthetic	Athletics, dancing, crafts, using tools, acting	Move around, touch and talk, body language	Touching, moving, knowledge through bodily sensations, processing	Role-play, drama, things to build, movement, sports and physical games, tactile experiences, hands-on learning, etc.
Musical	Picking up sounds, remembering melodies, rhythms, singing	Sing, play an instrument, listen to music, hum	Rhythm, singing, melody, listening to music and melodies	Sing-along time, trips to concerts, music playing at home and school, musical instruments, etc.
Interpersonal	Leading, organizing, understanding people, communicating, resolving conflicts, selling	Talk to people, have friends, join groups	Comparing, relating, sharing, interviewing, cooperating	Friends, group games, social gatherings, community events, clubs, mentors/ apprenticeships, etc.
Intrapersonal	Recognizing strengths and weaknesses, setting goals, understanding self	Work alone, reflect pursue interests	Working alone, having space, reflecting, doing self-paced projects	Secret places, time alone, self-paced projects, choices, etc.
Naturalistic	Understanding nature, making distinctions, identifying flora and fauna	Be involved with nature, make distinctions	Working in nature, exploring living things, learning about plants and natural events	Order, same/different, connections to real life and science issues, patterns

Multiple Intelligences in the Classroom

There are many ways to incorporate Multiple Intelligences theory into the curriculum, and there is no set method by which to incorporate the theory. Some teachers set up learning centers with resources and materials that promote involving the different intelligences. For example, in the above scenario, Ms. Cunningham creates an area with art supplies in her classroom. Other instructors design simulations that immerse students into real life situations. Careful planning during the lesson design process will help to ensure quality instruction and valuable student experiences in the classroom.

Other instructional models, such as project-based and collaborative learning may be easily integrated into lessons with Multiple

Intelligences. Collaborative learning allows students to explore their interpersonal intelligence, while project-based learning may help structure activities designed to cultivate the nine intelligences. For instance, Ms. Cunningham uses aspects of project-based learning in her classroom by allowing students to plan, create, and process (through reflection) information throughout the Civil Rights unit, while also integrating activities that teach to the intelligences. This particular instructional model allows students to work together to explore a topic and to create something as the end product. This works well with Multiple Intelligences theory, which places value on the ability to create products. By collaborating with the Media Specialist to give students the opportunity to choose from a variety of resources to complete their assignments, Ms. Cunningham uses aspects of resource-based learning, an instructional model that places the ultimate responsibility of choosing resources on the student.

It is important for teachers to carefully select activities that not only teach to the intelligences, but also realistically mesh with the subject matter of the lesson or unit. Multiple Intelligences theory should enhance, not detract from what is being taught.

Disney's website entitled [Tapping into Multiple Intelligences](#) suggests two approaches for implementing Multiple Intelligences theory in the classroom. One is a teacher-centered approach, in which the instructor incorporates materials, resources, and activities into the lesson that teach to the different intelligences. The other is a student-centered approach in which students actually create a variety of different materials that demonstrate their understanding of the subject matter. The student-centered approach allows students to actively use their varied forms of intelligence. In a teacher-centered lesson, the number of intelligences explored should be limited to two or three. To teach less than two is nearly impossible since the use of speech will always require the use of one's Verbal/Linguistic intelligence. In a student-centered lesson, the instructor may incorporate aspects of project-based learning, collaborative learning, or other inquiry-based models. In such a case, activities involving all nine intelligences may be presented as options for the class, but each student participates in only one or two of the tasks.

Ms. Cunningham incorporates both student-centered and teacher-centered activities into her unit on the Civil Rights Movement. The teacher-led lecture is a standard example of a teacher-centered activity. The lecture teaches to students' Verbal/Linguistic Intelligence. The viewing of the videotape is another example of a teacher-centered activity. This activity incorporates Visual/Spatial Intelligence into how the unit is learned. It is important to note that many activities, although designed to target a particular intelligence, may also utilize other intelligences as well. For example, in Ms. Cunningham's classroom the students may work together on creating a mural of Civil Rights Leaders. This is a student-centered activity that directly involves Visual/Spatial intelligence, but also gives students a chance to exercise their Interpersonal Intelligence. The journal assignment, also a student-centered activity, is designed to enhance students' Intrapersonal Intelligence by prompting them to reflect on their feelings and experiences in relation to the Civil Rights movement. This activity also taps into Verbal/Linguistic Intelligence. The timeline and map assignments are student-centered activities that are designed to enhance students' Logical/Mathematical Intelligence, but they also delve into Visual/Spatial Intelligence. Students must collect and organize information for both the timeline and the map therefore using their Logical/Mathematical intelligence. In creating these items, students must think visually as well. By incorporating dance into one lesson, Ms. Cunningham is able to promote awareness of her students' Bodily-Kinesthetic intelligence. By showing videos of popular dances from the time period, or inviting an expert from the community to talk about the social aspects of dance, Ms. Cunningham might incorporate a teacher-centered activity. Having students learn and perform dances is a student-centered way of teaching through Bodily-Kinesthetic intelligence. The short plays that students prepare involve Bodily-Kinesthetic intelligence, as well as Interpersonal and Verbal/Linguistic intelligences. Class discussions provide an opportunity for students to exercise both areas of their personal intelligences, as well as to reinforce the subject matter.

Planning and Implementing Student-Centered Lessons

This type of lesson revolves around student created materials. The types of activities and assignments that support student-centered lessons can be easily designed in concert with many of the inquiry-based models discussed in the text of this book. One of the most important aspects of student-centered lessons is allowing students to make choices. Teachers should encourage students to exercise their weaker intelligences, but allow them to explore their stronger areas as well. In Ms. Cunningham's class, the student named James is very strong in Visual/Spatial Intelligence and always leans towards this type of project. The teacher encourages James to participate in other activities, but when it is obvious that his interest lies in working on the mural Ms. Cunningham allows him to work on the project.

Listed below are steps to implement a student-centered lesson or unit:

- Carefully identify instructional goals, objectives, and instructional outcomes.
- Consider activities that you can integrate into the lesson or unit that teach to the different intelligences. Teachers need not incorporate all nine intelligences into one lesson.
- When gathering resources and materials, consider those which will allow students to explore their multiple intelligences.
- Specify a timeframe for the lesson or unit.
- Allow for considerable element of student choice when designing activities and tasks for the intelligences
- Design activities that are student-centered, using inquiry-based models of instruction.
- Provide a rubric for student activities. You might consider having students help create rubrics.
- Incorporate assessment into the learning process.

In an effort to maximize students' interest in both the subject matter and their own learning proclivities, teachers may wish to teach their students a little bit about Multiple Intelligences. Teachers can brief the class about each type of intelligence and then follow up with a self-assessment for each student. In this way, students will be able to capitalize on their strengths and work on their weaker areas. Disney's Tapping Into Multiple Intelligences website includes a self-assessment.

Planning and Implementing a Teacher-Centered Lesson

Structured, teacher-centered activities provide an opportunity for teachers to introduce material and establish prior knowledge and student conceptions. Teachers may lecture students, show informational videos and posters, perform drills, pose problem-solving exercises, arrange museum visits, and plan outings to concerts. There are all examples of teacher-centered activities. All of these activities integrate the Multiple Intelligences into the subject matter being taught. Teacher-centered lessons should be limited to a few activities that provide a foundation for students to later complete more exploratory tasks in which they can demonstrate understanding of the material. A teacher may choose to start an instructional unit or lesson with teacher-centered activities and then follow up with subsequent student-centered lessons. Teachers may follow these steps when designing and implementing a

teacher-centered lesson:

- Identify instructional goals and objectives
- Consider teacher-centered activities that teach to students' Multiple Intelligences. In a teacher-centered lesson, limit the number of activities to two or three.
- Consider what resources and materials you will need to implement the lesson. For example, will you need to schedule a museum visit or to consult the Media Specialist for videos or other media?
- Specify a timeframe for the lesson or unit.
- Provide an opportunity for reflection by students
- Provide a rubric to scaffold student activities
- Integrate assessment into the learning process

Assessment is one of the biggest challenges in incorporating Multiple Intelligences in the classroom. Ms. Cunningham's students are given the option of working on several mini-projects during the course of the Civil Rights unit. At the end of the unit, their performance is assessed through a portfolio that represents their work on these projects. It is very important for assessment to be integrated into the learning process. Assessment should give students the opportunity to demonstrate their understanding of the subject matter. One of the main goals of acknowledging and using Multiple Intelligences in the classroom is to increase student understanding of material by allowing them to demonstrate the ways in which they understand the material. Teachers need to make their expectations clear, and may do so in the form of a detailed rubric.







Benefits of Multiple Intelligences




Using Multiple Intelligences theory in the classroom has many benefits:

- As a teacher and learner you realize that there are many ways to be "smart"
- All forms of intelligence are equally celebrated.
- By having students create work that is displayed to parents and other members of the community, your school could see more parent and community involvement.
- A sense of increased self-worth may be seen as students build on their strengths and work towards becoming an expert in certain areas
- Students may develop strong problem solving skills that they can use real life situations

Multiple Intelligences: Classroom Application (Table added by Brandy Bellamy and Camille Baker, 2005)

Table 2. Multiple Intelligences: Classroom Application (Table added by Brandy Bellamy and Camille Baker, 2005)

	Teacher Centered	Student Centered
 Verbal/Linguistic	<ul style="list-style-type: none"> ■ Present content verbally ■ Ask questions aloud and look for student feedback ■ Interviews 	<ul style="list-style-type: none"> ■ Student Presents Material ■ Students read content and prepare a presentation for his/her classmates ■ Students debate over an issue
 Logical/Mathematical	<ul style="list-style-type: none"> ■ Provide brain teasers or challenging questions to begin lessons. ■ Make logical connections between the subject matter and authentic situations to answer the question "why?" 	<ul style="list-style-type: none"> ■ Students categorize information in logical sequences for organization. ■ Students create graphs or charts to explain written info. ■ Students participate in webquests associated with the content
 Bodily/Kinesthetic	<ul style="list-style-type: none"> ■ Use props during lecture ■ Provide tangible items pertaining to content for students to examine ■ Review using sports related examples (throw a ball to someone to answer a question) 	<ul style="list-style-type: none"> ■ Students use computers to research subject matter. ■ Students create props of their own explaining subject matter (shadow boxes, mobiles, etc...) ■ Students create review games.
 Visual/Spatial	When presenting the information, use visuals to explain content: PowerPoint Slides, Charts, Graphs, cartoons, videos, overheads, smartboards	<ul style="list-style-type: none"> ■ Have students work individually or in groups to create visuals pertaining to the information: ■ Posters; timelines; models; powerpoint slides; maps; illustrations, charts; concept mapping
 Musical	<ul style="list-style-type: none"> ■ Play music in the classroom during reflection periods ■ Show examples or create musical rhythms for students to remember things 	<ul style="list-style-type: none"> ■ Create a song or melody with the content embedded for memory ■ Use well known songs to memorize formulas, skills, or test content
	<ul style="list-style-type: none"> ■ Be aware of body language and facial 	<ul style="list-style-type: none"> ■ Encourage collaboration among peers ■ Group work strengthens interpersonal

 Interpersonal	expressions <ul style="list-style-type: none"> ■ Offer assistance whenever needed ■ Encourage classroom discussion 	connections <ul style="list-style-type: none"> ■ Peer feedback and peer tutoring ■ Students present to the class ■ Encourage group editing
 Intrapersonal	<ul style="list-style-type: none"> ■ Encourage journaling as a positive outlet for expression ■ Introduce web logging (blogs) ■ Make individual questions welcome ■ Create a positive environment. 	<ul style="list-style-type: none"> ■ Journaling ■ Individual research on content ■ Students create personal portfolios of work
 Naturalistic	<ul style="list-style-type: none"> ■ Take students outside to enjoy nature while in learning process (lecture) ■ Compare authentic subject matter to natural occurrences. ■ Relate subject matter to stages that occur in nature (plants, weather, etc) 	<ul style="list-style-type: none"> ■ Students organize thoughts using natural cycles ■ Students make relationships among content and the natural environment (how has nature had an impact?) ■ Students perform community service

Learning Styles Section

Scenario

A group of four city planners in Boston is working on a project to improve the methods of repairing streets. They have spent a lot of time in the field looking at streets and learning about the stresses they receive, how engineers currently deal with those problems, and the public's perceptions of street conditions. Some improvements have been made including a new system of diagnosing problems and new methods of repairing the streets. The final stage of their project is to determine how to educate the city's employees on these improvements.

Jessica believes that showing maps of where the various sidewalks in various states of decay would be helpful. She also wants to use a flow chart to represent the new repair process. Maybe a computer instruction guide could be utilized in the employee education program.

Patrick feels that the planners need to discuss these improvements with the city's employees. A question and answer session could also be implemented in an attempt to answer any questions concerning the new system of diagnosing problems and new methods of repairing the streets.

Will has already begun work on an extensive training manual, which will provide a concrete resource to guide employees in training and for later reference. The manual will be available in hard copy and on the web.

Claire thinks that the city employees would benefit the most from a multimedia presentation as well as a CD-ROM with links to other useful information. She also wants the employees to go into the field and see some of the streets that were used as models in the new program. If that is not possible, pictures could be provided as examples to give the employees a concrete idea of the improvements.

Learning Styles

The term "learning styles" is commonly used throughout various educational fields and therefore, has many connotations. In general, it refers to the uniqueness of how each learner receives and processes new information through their senses. The National Association of Secondary School Principals defines learning style as, "the composite of characteristic cognitive, affective, and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment." Other phrases are used interchangeably with learning styles. Some include perceptual styles, learning modalities, and learning preferences.

Each person is born with certain preferences toward particular styles, but culture, experience, and development influence these preferences. The four most common learning styles are visual, aural, reading/writing, and kinesthetic/tactile. Most people learn through all modalities, but have certain strengths and weaknesses in a specific modality. Some people have an equal propensity for more than one style, which is titled as the multimodal style. This preference can be determined through various testing instruments. Once a person's learning style is ascertained, accommodations can be made to increase academic achievement and creativity, as well as improve attitudes toward learning.

What is your learning style? [Take the VARK Questionnaire!](#)

The Visual Learning Style

Visual learners process information most effectively when the information is seen. Depictions can include charts, graphs, flow charts, and all the symbolic arrows, circles, hierarchies and other devices that instructors use to represent what could have been presented in words. These learners think in pictures and have vivid imaginations. Most people are classified as visual learners.

Jessica is a visual learner. Her suggestions focus on the use of visual aids to increase information processing.

The Aural Learning Style

Aural learners process information most effectively when spoken or heard. These learners respond well to lectures and discussions and are excellent listeners. They also like to talk and enjoy music and dramas. When trying to recall information, aural learners can often "hear" the way someone told them the information.

Patrick is an aural learner. His need to discuss the new improvements points to the benefits of obtaining information in an oral

language format.

The Reading/Writing Learning Style

Reading/Writing learners process information most effectively when presented in a written language format. This type of learner benefits from instructors that use the blackboard to accent important points or provide outlines of the lecture material. When trying to recall information, reading/writing learners remember the information from their "mind's eye." Many academics have a strong preference for the reading/writing style.

Will is a reading/writing learner. His comprehensive training manual allows the employees to utilize the written language format.

The Kinesthetic/Tactile Learning Style

Kinesthetic/Tactile learners process information actively through physical means. Kinesthetic learning refers to whole body movement while tactile learning refers only to the sense of touch. These learners gesture when speaking, are poor listeners, and lose interest in long speeches. Most students that do not perform well in school are kinesthetic/tactile learners. The crux of this learning style is that the learner is connected to real situations through experience, example, practice, or simulation.

Claire is a kinesthetic/tactile learner. Her method of instruction utilizes "hands on" demonstrations and field experiences.

Learning Strategies for Each Learning Style

The Visual Learning Style

- Replace words with symbols or initials.
- Translate concepts into pictures and diagrams.
- Underline or highlight your notes or textbooks with different colors.
- Practice turning your visuals back into words.
- Make flashcards of key information with words, symbols, and diagrams.

The Aural Learning Style


- Attend lectures and tutorials.
- Discuss topics with your instructor and other students.
- Put summarized notes on tape and listen to them.
- Join a study group or have a "study buddy."
- Tape record your lectures.
- When recalling information or solving problems, talk out loud.

The Reading/Writing Learning Style

- Write out important information again and again.
- Read your notes silently.
- Organize any diagrams into statements.
- Rewrite the ideas and principles in other words.
- Make flashcards of words and concepts that need to be memorized.

The Kinesthetic/Tactile Learning Style

- Sit near the instructor in classroom situations.
- Read out loud from your textbook and notes.
- Copy key points onto large writing surfaces (i.e. chalkboard or easel board).
- Copy key points using word processing software.
- Listen to audiotapes of your notes while exercising.
- Take in information through field trips, laboratories, trial and error, exhibits, collections, and hands-on examples.
- Put real life examples into your notes summary.
- Recall experiments and role-play.
- Use pictures and photographs that illustrate an idea.

[Click Here to Play the Presentation](#)  Caption: This PowerPoint presentation shows several concrete examples of the VARK learning styles applied to math, language arts, social studies and science.. By Rebecca Homan, Troy Perkins, Jean Pirkle, and Kathy Traylor (2005)

Educational Implications for Learning Styles

Teachers that rely on learning styles have opened their classrooms to more than one approach to intellectual work. The activities planned by these teachers are more student-centered than traditional activities and have engaged in learning-style based instruction.

The first step in implementing learning style-based instruction is diagnosing the individual learning styles of each student. A variety of methods exist for testing learning styles in a relatively quick manner. Many are available online, like the VARK Questionnaire listed above.

The second step is profiling group preferences and weaknesses. Are most of the students visual learners? Does your class have very few kinesthetic/tactile learners?

The third step is assessing current instructional methods to determine whether they are adequate or require more flexibility. If modifications need to be made, various activities can be developed and/or adapted to conform with learning styles. Three techniques have been proposed.

1. Teachers can add alternative activities that could replace or supplement ones. This could create increased opportunities for students to use different styles. For example, hands on activities can be conducted after a lecture to confirm abstract

concepts.

2. Teachers can also challenge students to develop skills in other areas by completing assignments that utilize all learning styles. For example, the students can complete multidimensional packets, which contain activities from each learning style.
3. Another approach to include learning styles in an education curriculum is to organize activities around complex projects. These projects would require that students use all learning styles. An example of a complex activity would be a project-based learning project.

When teaching an individual, teachers should present the most difficult concepts in the preferred style. Easier concepts should be introduced in a different style. When teaching an entire class, teachers should use all learning styles in their presentations if they are to reach every student. This can be fairly simple.

For example, Mrs. Erwin, a fifth grade teacher is going to teach a unit on Charlotte's Web. In order to accommodate all learning styles, she will have the students read sections of the book silently and out loud to others, act out various scenes, and complete a timeline of events on the bulletin board. Mrs. Erwin understands that students must be exposed to the concepts in a variety of ways to ensure full comprehension.

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Websites:

[An Explanation of Learning Styles \(thank you Molly Parker for sharing this\)](#)

[Concept to Classroom: Cooperative and Collaborative Learning](#)

[Concept to Classroom: Tapping into Multiple Intelligences](#)

[Education World: Multiple Intelligences: A Theory for Everyone](#)

[Gardner's Eight Criteria for Identifying Multiple Intelligences](#)

[Multiple Intelligences](#)

[Project Zero](#)

[Technology and Multiple Intelligences](#)

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