

Understanding Learning Styles: Creating Learning Connections

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Learning Outcomes:

- Describe how the brain affects learning.
- Describe three different instruments used to assess learning styles.
- Describe how educators can use learning styles in an educational setting.
- Identify how learning styles assist in student retention and the QEP.

Outline:

1. An Introduction to Learning (Basics on the learning process, memory & retention)
2. A Learner's Perspective: A View from the Desk (Learning styles in the classroom)
3. An Instructor's Perspective: A View from the Podium (Application to the classroom setting)

Learning Process Basics



Education builds a treasure chest for the individual. Its power lies in the mind throughout one's lifetime. It provides the brain with the ability to convert words, ideas, and new information into effective problem-solving actions. Education through life acts as a continuing series of booster shots.
(Ron Kotulak, *Inside the Brain*)

Basic Brain Facts: weighs 3 lbs, size of small grapefruit, fits into palm of your hand, works constantly, uses 20% of our calories, speed of speech= 110-140 words/minute, speed of thought= 400-600 words/minute, brain can only process one function at a time, brain can listen for attention for 90 minutes or listen for retention for 20 minutes. There must be a physical connection made in order for learning to occur. These physical connections result in neural pathways. The number of pathways in the brain is estimated to be over 100 times the number of atoms in the universe. Pathways are created every time we use our brains in thinking through problems.

Factors Influencing Learning: novelty, meaningful, relevance, tied to emotions, connected to environmental factors (stress & fear= negative impact). Information that affects survival or generates emotion is processed ahead of information for new learning.

Memory & Retention




Teaching without an accompanying experience is like filling a lamp with water- Something has been poured in, but the result is not illuminating.
(Anonymous)
Nothing we learn in this world is ever wasted. (Eleanor Roosevelt)

Memory= the process by which students acquire information for retention.

Retention= the process by which long term memory preserves learning in such a way that it can be located and

retrieved.
3 Phases of Memory - the brain goes through both physical and chemical changes each time it learns. The 3 phases in the memory process are: short term (immediate) memory, working memory, and long term memory
Short Term Memory: Acts as a notepad, time period measured in less than a second, 99% of sensory information is filtered (discarded), holds information just long enough for a decision to be made regarding what to do with it.
Working Memory: acts as a workbench, area where conscious processing takes place, limited capacity, capacity increases with age, temporary, depends on “hooks” from previous learning, makes the decision as to whether new information is sent to long term memory by asking 2 questions: Does the new information make sense? Does the new information have meaning?
Long Term Memory: information must be stored in long term memory if it is to ever be recalled, requires 24 hours to transfer from working to long term memory, area where storing and retrieving information takes place.
It is possible to increase the number of items that working memory can handle through process known as <i>chunking</i> .

A Learner’s Perspective: A View from the Desk

	<p><i>One out of every three Americans is suffering from some form of mental illness. Think of two of your best friends. If they are ok, then it must be you!</i> (George Carlin, comedian)</p>
<p>Learning style assessments serve to provide a road map for their learning success, provide a tool for them to use to overcome their previous challenges, they are NOT a ticket to passing. Helps to reduce their frustration, focus on their strengths, gives them a plan for success.</p>	
<p>Self-assessment results in taking charge of their lives.</p>	
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<p>Brain-Based Learning= Left Brain/Right Brain/Whole Brain or Hemispheric Dominance, uses what is known about memory to focus instruction toward meaningful learning instead of toward memorization. Left & Right hemispheres have some distinctly different functions that are not easily interchangeable. Left brain learners focus on logical thinking, analysis, and accuracy. Right brain learners focus on aesthetics, feeling, and creativity. Whole brain learners are equally adept at using both modes.</p>	
<p>Self-assessment results in taking charge of their lives.</p>	

VAT
Visual/Auditory/Tactile (Tactual)

Visual	Auditory	Tactile/Kinesthetic
<ul style="list-style-type: none"> •See and read •Like pictures •Diagrams •Illustrations •Use highlighters •Holistic and reflective 	<ul style="list-style-type: none"> •Use hearing •Listen to instructions •Listen to music and talk on the phone •Learn best when they see and hear assignments 	<ul style="list-style-type: none"> •Learning by doing •Well coordinated •Write out information •Create experiences •Build things •Like projects •Draw, doodle, etc

Introduce new material for this modality through reading, video	Introduce new material for this modality through lectures, cassettes, tapes, radio, or discussion	Introduce new material for this modality through task cards, electroboards, body games, lab materials
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VARK (Visual/Aural-Auditory/ Read-Write/ Kinesthetic)

Preference	Input	Processing	Output
Visual	pictures, videos, posters, slides, flow charts diagrams, graphs, symbols, highlighting, underlining	replace words with symbols, reconstruct images in different ways	draw diagrams, recall pictures, write exam answers, practice turning visuals back to words
Aural/Auditory	attend discussions/tutorials, discuss topics, explain ideas & visuals to others, use tape recorder	expand notes by talking to other students, read notes aloud, explain your notes to others, record notes onto tape and listen to them	practice writing answers , listen to recorded notes and write them down, imagine talking to the examiner, speak your answers aloud
Read-Write	create lists, headings, glossaries, review handouts, library readings, notes, lab manuals, review definitions, compose essays	write words repeatedly, read notes both aloud and silently, rewrite ideas and principles in your own words, organize diagrams, and charts into words	write exam answers, practice multiple choice questions, write summary paragraphs, compose lists, arrange your notes into topical points or into hierarchies
Kinesthetic	make use of all of your senses, participate in labs, field trips, collections, trial & error experiments, look for application problems and examples of principles	use a large number of examples in your summaries of notes, talk about your notes to other students, use pictures that illustrate an idea, review lab experiments/lab manual, review information from field trips	write practice answers in paragraph form role play exam situation before time for the exam- you will want to experience the exam so that you can understand it.

Brain Dominance **Left Brain, Right Brain, Whole Brain**



Left Brain Dominance	Right Brain Dominance	Whole Brain
Intellectual Remembers names Experiments systematically and with control Prefers solving problems by breaking them down into parts, then	Intuitive Remembers faces Responds to demonstrated, illustrated or symbolic instructions Experiments randomly and with less restraint	Individuals with high scores in both left brain and right brain categories indicates an active ability to utilize both left and right brain characteristics

approaching the problem sequentially, using logic Makes objective judgments, extrinsic to person, looks to others	Prefers solving problems by looking at the whole, the configurations, then approaching the problem through patterns, looks at sameness	
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Strategies for Brain Based Learning


The left and right hemispheres of the brain have some distinctly different functions that are not easily interchangeable. To teach to both sides of the brain, instructors should:

- present concepts verbally and visually
- consider using diagram-mind mapping/ concept mapping
- discuss concepts logically and intuitively
- avoid presenting conflicting messages
- design activities and assessments for both hemispheres
- encourage visual note-taking (timelines, stick man, expository visuals, mind mapping)

Teaching strategies designed for the left hemispheric skills include: organizing the room, providing bulletin boards, erasing the board well between topics, allow students to read, write, and compute often, stress time and calendars, teach students to create goals, ask “what if” type questions. Teaching strategies designed to enhance right hemispheric skills include: giving students options, using multimedia, tying lessons together, role play, time for reflection, use of metaphors and similes, hands-on activities.

Left Hemisphere		Right Hemisphere
Associated with: analysis, speech, time sequence, linear elements, logical processing		Associated with: creativity, patterns, wholes, context, images, and connections.
Recognizes: words, letters, and numbers.		Recognizes: faces, places, and objects.

A Closer Look at MBTI

	<p><i>The person who can make hard things easy is the educator.</i> (Ralph Waldo Emerson)</p> <p><i>Teaching is an act of courage, and as such, it is an act of love.</i> (Paulo Freire)</p>
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Myers-Briggs- Jung MBTI, 4 Dimensions of Personality= Extravert vs Introvert, Sensing vs Intuitive, Feeling vs Thinking, Judger vs Perceiver

Extravert vs Introvert: where they get their energy

Sensing vs Intuitive: how they gather information

Feeling vs Thinking: how they make decisions

Judging vs Perceiving: how they view the outside world

MBTI Applications=Teaching, Career/Work, Relationships, Spirituality, Personal Growth

Whatever the circumstances of your life, the understanding of type can make your perceptions clearer, your judgments sounder, and your life closer to your heart's desire (Isabel Briggs Myers, 1923).

***Different Drummers
(David Keirse, 1998)***

***If I do not want what you want, please try not to tell me that my want is wrong.
Or if I believe other than you, at least pause before you correct my view.***

***Or if my emotion is less than yours, or more, given the same circumstances, try not to ask me
to feel more strongly or weakly.***

Or yet if I act, or fail to act, in the manner of your design for action, let me be.

***I do not, for the moment at least, ask you to understand me. That will come only when you
are ready to give up changing me into a copy of you.***

***I may be your spouse, your parent, your offspring, your friend, or your colleague. If you will
allow me to be any of my own wants, or emotions, or beliefs, or actions, then you open
yourself, so that some day these ways of mine might not seem so wrong, and might finally
appear to you as right— for me. To put up with me is the first step to understanding me. Not
that you embrace my ways as right for you, but that you are no longer irritated or
disappointed with me for my seeming waywardness. And in understanding me, you might
come to prize my differences from you, and, far from seeking to change me, preserve and
even nurture those differences.***

Myers-Briggs Type Indicator

The authors of the Myers-Briggs Type Indicator (Katherine Cook Briggs and her daughter Isabel Briggs Myers) developed this instrument based on the work of Swiss psychiatrist Carl G. Jung. After more than 50 years of research and development, this instrument is now considered to be the most widely used assessment for understanding normal personality differences and is administered more than two million times each year for a wide variety of purposes, including:

- ✓ Self-understanding & development
- ✓ Career development and exploration
- ✓ Organization development
- ✓ Team building
- ✓ Leadership training
- ✓ Problem solving
- ✓ Relationship counseling
- ✓ Education and curriculum development
- ✓ Academic counseling
- ✓ Diversity and multicultural training

Results gained from taking the Myers-Briggs Type Indicator (MBTI) indicate the differences in people resulting from four distinct categories:

- 1) Where the individual prefers to focus their attention and where they get their energy (Extraversion or Introversion)
- 2) The way in which they prefer to take in information (Sensing or iNtuition)
- 3) The way in which they prefer to make decisions (Thinking or Feeling)
- 4) How they orient themselves to the external world (Judging or Perceiving)

Keep in mind that the meaning of these terms differs somewhat from the everyday use of these words, for example:

“extravert” does not refer to “talkative” or “loud”

“introvert” does not refer to “shy” or “inhibited”

“feeling” does not mean “emotional”

“judging” does not mean “judgmental”

“perceiving” does not mean “perceptive”¹

All possible combinations of the preferences (=16)			
ISTJ	ISFJ	INFJ	INTJ
ISTP	ISFP	INFP	INTP
ESTP	ESFP	ENFP	ENTP
ESTJ	ESFJ	ENFJ	ENTJ


Myers Briggs Type Indicator

Where you focus your attention & get energy (E/I)	
Extraversion	Introversion
Focus on the outer world of people & activity, direct their energy outward and receive energy through interactions with others or from taking action	Focus on their own inner world of ideas & experiences, direct their energy inward & receive energy from reflections on their thoughts, memories, and feelings
Attuned to external world, communicate by talking, work out ideas through talking them through, learn best by doing/discussing, broad interests, sociable, expressive, readily take initiative in work or relationships	Drawn to their inner world, communicate in writing, work out ideas by reflecting on them, learn best by reflection/ mental “practice”, focus on interests, private, contained, take initiative when issue is important to them
How do you prefer to take in information? (S/N)	
Sensing	INTuition
Take in information that is real and tangible, observant about what is going on around them, attuned to practical realities	Take in information by seeing the big picture, focus on relationships & connections between facts, grasp patterns, attuned to seeing new possibilities
Oriented to present realities, factual, concrete, focus on real/actual, observe & remember specifics, build carefully toward conclusions, understand ideas/theories through practical applications, trust experience	Oriented to future, imaginative, verbally creative, focus on patterns & meanings in data, remember specifics as they apply to a pattern, move quickly to conclusions, follow hunches, clarify ideas/theories before putting them into practice, trust inspiration
How do you make decisions? (T/F)	
Thinking	Feeling

¹ From “Introduction to Type: A Guide to Understanding Your Results on the Myers-Briggs Type Indicator”, by Isabel Briggs Myers (1998).

Look at logical consequences of a choice or action, remove themselves mentally from the situation to examine the pros & cons, energized by critiquing and analyzing what's wrong so they can solve the problem, goal is to find a standard or principle that applies in all similar situations	Consider what is important to them & others involved, mentally place themselves into the situation to identify with all involved, make decisions based on values, energized by supporting others, look for qualities to praise, goal is to create harmony & treat each person as a unique individual
Analytical, use cause & effect reasoning, use logic in problem solving, reasonable, strive for an objective standard of truth, can be "tough-minded", fair (want all treated equally)	Empathetic, guided by personal values, asses impact of decision on people, strive for harmony, compassionate, may appear "tenderhearted", fair (want everyone treated as an individual)
How do you deal with the outer world? (J/P)	
Judging	Perceiving
Prefer to live in a planned, orderly way, seek to regulate and manage their lives, want to make decisions, come to closure & move on, tend to be structured & organized, like to have things settled, sticking to a plan & schedule is important, energized by getting things done	Prefer to live in a flexible, spontaneous way, seek to experience life rather than control it, find detailed plans and final decisions to be confining, prefer staying open to new information & last-minute options, energized by their resourcefulness in adapting to demands of the moment
Scheduled, organized, systematic, methodical, make short & long-term plans, like to have issues decided, try to avoid last-minute stresses	Spontaneous, flexible, casual, open-ended, adapt/change course, like things loose & open to change, energized by last-minute pressures

An Instructor's Perspective: A View from the Podium

	<p><i>When choosing between two evils, I always like to try the one I've never tried before.</i> (Mae West, American actress)</p> <p><i>My problem lies in reconciling my gross habits with my net income.</i> (Errol Flynn, American actor)</p>
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4 Generations= Silent Generation, Baby Boomer Generation, X Generation, Net Generation

How can knowing learning style help students: helps them maximize their ability to learn and their learning potential, increases self-esteem, allows them to take control of their own learning

A basic understanding of the priorities and value systems of each of today's generations is a crucial element to help instructors better understand and relate to the learners in their classrooms. The specific values that define each generation have led to the popular habit of assigning labels to each distinct group. The four major current generations are:

- (a) the **"Silent" or Traditional Generation** (born between 1922 to 1945),
- (b) the **"Baby Boomer" Generation** (born between 1946 and 1964),
- (c) the **"Generation X" Generation** (born between 1965 and 1980), and
- (d) the **"Net Generation" (also referred to as "Generation Y (Why)," "Millennials," "Digital Generation," or "Echo Boomers"**- born between 1980 and 2003).

Class of 2009- Beloit College Survey

- Heart-lung transplants have always been possible.
- Pay-per-view television has always been an option.
- "Whatever" is not part of a question, but an expression of sullen rebuke.

- Digital cameras have always existed.
- They have always been challenged to try to distinguish between news and entertainment on cable TV. Weather reports have always been available 24 hours a day on TV.
- There has always been a screening test for AIDS.
- An automatic is a weapon, not a type of auto transmission.
- Pete Rose has always been a gambler and Paul Newman has always made salad dressing.
- The computer commands “Ctrl+Alt+Del” is as basic as “ABC.”
- Iraq has always been a problem.
- Test tube babies are now having their own babies.
- Computers have always been able to fit into their backpacks.
- Stores have always had scanners at the checkout.
- Directory assistance has never been free of charge.
- They have always been able to make phone calls from planes.
- A Southerner has always been President of the United States.
- Starbucks has always been around the corner if you need a caffeine fix.

Beloit College Mindset of the Class of 2012²

Characteristics of the Class of 2012:

- Has grown up in an era where computers & rapid communication is the norm
- Will hardly recognize the availability of telephones in their rooms since they have seldom used landlines during their adolescence
- Will continue to live on their cell phones & communicate via texting
- Have never “rolled down” a car window
- Few have shared a bedroom but have more than like checked out their roommate on Facebook, where they have shared their most personal thoughts with the whole world
- Multicultural, politically correct, “green” generation
- Has hardly noticed the threats to their privacy
- Never feared the Russians
- For these students, Sammy Davis Jr, Jim Henson, Ryan White, Stevie Ray Vaughan, and Freddy Krueger have always been dead
- Harry Potter could be a classmate
- Since they were in diapers, karaoke machines have been annoying people at parties
- GPS satellite navigation systems have always been available
- Coke & Pepsi have always used recycled plastic bottles
- Shampoo and condition have always been available in the same bottle
- Gas stations have never fixed flats but most serve cappuccino
- Electronic filing of taxes has always been an option
- All have had a relative or know of a friend’s relative who died comfortably at home with hospice
- Clarence Thomas has always been on the Supreme court
- Schools have always been concerned about multiculturalism
- There have always been gay rabbis
- IBM has never made typewriters
- They have never been able to color a tree using a raw umber Crayola crayon
- The Tonight Show has always been hosted by Jay Leno, they have never seen Johnny Carson live
- Caller ID has always been available on phones

² <http://www.beloit.edu/mindset/2012.php>

- The Green Bay Packers have almost always had the same starting quarterback
- Soft drink refills have always been free
- Offshore oil drilling in the US has always been prohibited
- Radio stations have never been required to present both sides of public issues
- Have grown up with bottled water
- Russia has always had a multi-party political system
- WalMart has always been a larger retailer than Sears and has always employed more workers than GM
- Fox has always been a major network
- Being a latchkey kid has never been a big deal
- Most phone calls have never been private
- Food packaging has always included nutritional labeling
- Were born the year Harvard Law Review Editor Barack Obama announced he might run for office some day
- There has never been a Berlin Wall
- Stadiums, rock tours and sporting events have always had corporate names
- Virtual reality has always been available when the real thing failed

What does this mean for you? Instructors need to: understand students with different sensory preferences will behave differently during learning sessions, recognize that they tend to teach the way they learn, note actions of different types of learners, avoid misinterpreting variations in learning style behavior as inattention or misbehavior, understand that their learning style affects learning.

Questions to ask: What do you want your students to know? What are your students going to do with what you are teaching them? (Begin with the End in Mind).

During a learning session, we remember **BEST** the information that comes **FIRST** (principle of primacy). We remember **SECOND BEST** the information that comes **LAST** (principle of recency), and LEAST the information that comes in the middle. Important not to allow prime learning time to become contaminated with less important information.

Rate of Retention of Material after 24 hours: Lecture=5%, Reading=10%, Audiovisual=20%, Demonstration=30%, Discussion group=50%, Practice by doing= 75%, Teach others/immediate use= 90%

Retention: No long term retention without rehearsal. Varies with length of time of the learning session. When anxiety is high, retention will decrease. Content should be repeated in different formats 6-9 times in order to maximize retention.

Faculty should assess the learning need, plan the learning activity, implement the learning activity, evaluate the results, take risks, try again!

Instructional tools: Concept mapping (provides a visual representation of how a student understands concepts and their relationships), COPE (Copy Other People's Examples), Team-building (Have someone help you do it), One Minute Test (What is the most important thing you learned today? What point remains least clear to you).

Student Learning Lesson Plan-

STUDENT LEARNING LESSON PLAN

Lesson Outcome(s): (Create 1-2 for each learning session)

What will you be teaching? Is it worth teaching?

Assessment (Traditional/Authentic):

How will you know students have learned the content? Did you begin with the end in mind?

Gaining attention:

How will you gain and maintain students' attention? Consider need, novelty, meaning, relevance and/or emotion.

Content Chunks:

How will you divide and teach the outcomes to engage students' brains? (Remember 20 minute sections)

Lesson Segment 1:

Activity: _____

Lesson Segment 2:

Activity: _____

Lesson Segment 3:

Activity: _____

Strategies:

How will you deliver the content?

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