

### Learning Styles

By Suzanne C. Miller

***"The process of learning requires not only hearing and applying, but also forgetting and then remembering again"- John Gray***

Research suggests that faculty who are sensitive to their students learning styles reach students more quickly and more easily than those who force all students to adapt to the traditional read/lecture only approach (keep in mind our discussion of memory). Use of learning styles is key to enhanced memory. It is also important to keep in mind that each student's memory retrieval strategies are linked to the way their brain functions (brain-based learning). This is not to say that we should not encourage students to explore all learning styles and enhance all of their learning skills. Instead it suggests that student will learn more quickly and with less emotional resistance if we consider the learning style that is most natural for them. The more we can enhance learner success, the more likely we are to retain students and to inspire them to continue their education.

<http://www.4faculty.org/includes/digdeeper/lesson4/learningstyles.htm>

#### **STEP 1**

Take one or more Learning Styles tests to determine which learning style(s) are your strong suits.

#### **STEP 2**

Read the corresponding summary of study techniques that will help you get the most out of your efforts. Focus on choosing curriculum or materials that meet these needs. For example, if you are a Visual/non-verbal, select a textbook that is multi-color with photos, pictures and charts included in the text (eye appealing). If you are a Visual/Verbal, your text can be more black and white since you learn easily with words. Try adding in one new technique every week or two until you are processing and retaining at lightning speed.

**Visual Nonverbal Learning Style** (Pictures and symbols in place of words)

You learn best when information is **presented visually and in a picture or design format**. In a classroom setting, you benefit from instructors who use **visual aids** such as film, video, maps and charts. You benefit from information obtained from the **pictures and diagrams** in textbooks. Online you need **images and color cues** to help remember information and to retain your full attention. Repetitive use of the same icons can be very helpful. You tend to like to work in a quiet room and may not like to work in study groups. When trying to remember something, you can often visualize a picture of it in your mind. You may have an artistic side that enjoys activities having to do with visual art and design.

The more visual aids provided, the more likely visual/nonverbal learners are to enjoy the course and succeed. Visual/nonverbal learners often become impatient with long instructions not enhanced by visual cues. So, as much as possible, translate the instructor's words and ideas into symbols, pictures, and diagrams. An important note: visual/nonverbal learners have often been criticized by "serious" academics because they like pictures and find that they **learn more from video presentations than from lectures**.

**Your primary INTAKE methods should include:**

Lecturers who use gestures and picturesque language  
Pictures, videos, posters, slides  
Flow charts and graphs  
Textbooks with diagrams and pictures  
Symbols and white space

1. Mark up the margins of your textbook with key words, symbols, and diagrams that help you remember the text. Use highlighter pens of contrasting colors to "color code" the information. Take care to mark only important things – if you mark EVERYTHING then nothing stands out.
2. Use outlining or mapping to help make sense of reading assignments. Use pictures and symbols to replace words. Reconstruct the images in different ways trying different spatial arrangements. Then, redraw your pages from memory.
3. As much as possible, translate words and ideas into symbols, pictures, and diagrams. To study for a test, do something you can see: draw pictures, graphic organizers, make time lines ... then post your notes in a place you often see like the bathroom wall so you can recall the pictures made by your notes.
4. Always write down your assignments in one central assignment book.
5. Seeing learners can be tempted to watch too much television because it is visual. Be careful that you don't (and especially not while you are studying)!
6. Use index cards to make flash cards of key information that needs to be memorized. Draw symbols and pictures on the cards to facilitate recall. Use highlighter pens to highlight key words and pictures on the flashcards. Limit the amount of information per card, so your mind can take a mental "picture" of the information. You can color-code or categorize them, separate them into "know" and "don't know yet" piles, or play a memory game with them.
7. When learning mathematical or technical information, make charts to organize the information. When a mathematical problem involves a sequence of steps, draw a series of boxes, each containing the appropriate bit of information in sequence.
8. Use large square graph paper to assist in creating charts and diagrams that illustrate key concepts.
9. Use the computer to assist in organizing material to be memorized. Using word processing, create tables and charts with graphics that help you to understand and retain course material. Use spreadsheet and database software to further organize material that needs to be learned.
10. Look online at the textbook's companion website and make note of what is available.

*You want the whole picture so you are probably holistic rather than reductionist in your approach.. You are often swayed by the look of an object. You are interested in color and layout and design and you know where you are in your environment. You are probably going to draw something.*

## Visual Verbal Learning Style

You learn best when information is **presented visually and in a written format**. If you are a visual/verbal learner you probably prefer the opportunity to **read and reflect at your leisure** rather than having a face-to-face workshop covering the same materials. This type of learner can excel online or in courses which emphasize reading. In a classroom setting, you benefit from instructors who use the blackboard (or overhead projector) to list the essential points of a lecture, or who provide you with an **outline to follow along with during lecture** either on paper or with PowerPoint. You benefit from information obtained from textbooks and class notes. You tend to like to study by yourself in a quiet room. You often see information "in your mind's eye" when you are trying to remember something.

### Your primary INTAKE methods should include:

lists  
headings  
dictionaries  
glossaries  
essays

definitions  
handouts  
textbooks  
readings - library  
notes (often verbatim)

teachers who use words well and have lots of information in sentences and notes  
manuals (computing and laboratory)

1. To aid recall, make use of "color coding" when studying new information in your textbook or notes. Using highlighter pens, highlight different kinds of information in contrasting colors. **Highlight** or underline the main ideas in textbooks whenever possible. Use highlighter pens of contrasting colors to "color code" the information. Take care to mark only important things – if you mark EVERYTHING then nothing stands out.
2. Use outlining or mapping to help make sense of chapter reading assignments. Organize any diagrams, charts etc into words (ex: The trend is ...) Write lists in outline form (a,b,c , 1,2,3) Arrange your words into hierarchies and points.
3. To study for a test, reduce your notes into a learnable package (usually 3:1) and copy your notes again and again, rewrite the ideas and principles into other words.
4. Write out responses to each learning objective found in the introduction to each lesson. This will help you remember vital information. If you are bored with paper, write or draw on a computer, chalkboard or dry erase board as you study.
5. Always write down your assignments in one central assignment book.
6. Seeing learners can be tempted to watch too much television because it is visual. Be careful that you don't (and especially not while you are studying)!
7. Write out sentences and phrases that summarize key information obtained from your textbook and lecture. The very act of writing words helps reinforce the material.
8. Make flashcards of vocabulary words and concepts that need to be memorized. Use highlighter pens to emphasize key points on the cards. Limit the amount of information per card so your mind can take a mental "picture" of the information.
9. When learning information presented in diagrams or illustrations, write out explanations for the information.
10. When learning mathematical or technical information, write out in sentences and key phrases your understanding of the material. When a problem involves a sequence of steps, write out in detail how to do each step.
11. Make use of computer word processing. Copy key information from your notes and textbook into a computer. Use the print-outs for visual review.
12. Before an exam, make yourself visual reminders of information that must be memorized. Make "stick it" notes containing key words and concepts and place them in highly visible places --on your mirror, notebook, car dashboard, etc.
13. Look online at the textbook's companion website and make note of what is available.

*You like this page because the emphasis is on words and lists.*

*You believe the meanings are within the words, so any talk is OK but this handout is better. You are heading for the library.*

## Tactile/ Kinesthetic Learning Style

You learn best when physically engaged in a "hands on" activity. In the classroom, you benefit from a lab setting where you can manipulate materials to learn new information. Since you learn best when physically active, sitting in a lecture course can be challenging. You learn best when you can be physically active in the learning environment. You benefit from instructors who encourage in-class demonstrations, "hands on" student learning experiences, and field work outside the classroom. Keep in mind that this is very difficult to accomplish in most school-type settings. This type of learner often says, *"I really need to be actively and physically involved when I'm learning, or nothing sinks in. This is a real challenge in college, especially in traditional lecture classes. But I take notes, and I also draw pictures all over my notebook pages—anything to keep my hands busy during lecture. Somehow this helps me stay focused on what the instructor is saying."*

### Your primary INTAKE methods should include:

all your senses - sight, touch, taste, smell, hearing  
laboratories  
field trips  
field tours  
examples of principles  
lecturers who give real-life examples

applications  
hands-on approaches (computing)  
trial and error  
collections of rock types, plants, shells, grasses...  
exhibits, samples, photographs...  
recipes, solutions to problems, previous exam papers

1. Use maps, globes, games and puzzles to study whenever possible.
2. Your lecture notes may be poor because the topics were not 'concrete' or 'relevant'. Put plenty of examples into your summary. Use case studies and applications to help with principles and abstract concepts. Use pictures and photographs that illustrate an idea. Recall the experiment or field trip. Convert your "notes" into a learnable package by reducing them (3:1)
3. Talk to another 'K' person about things in your notes. When reviewing new information, copy key points onto a chalkboard, easel board, or other large writing surface. "Teach" the information you learn to your family by using a chalkboard to write or draw the concepts. Facts that must be learned should be written several times. Keep a supply of scratch paper for this purpose. Taking and keeping lecture notes will be very important. Make study sheets.
4. Have someone talk through the information with you while you do something active: shoot baskets, jump rope, or just walk around. When you sit to study, get up frequently and take breaks.
5. Have a parent or teacher help you develop a system to get and stay organized.
6. To help you stay focused on class lecture, sit near the front of the room and take notes throughout the class period. Don't worry about correct spelling or writing in complete sentences. Jot down key words and draw pictures or make charts to help you remember the information you are hearing.
7. When studying, walk back and forth with textbook, notes, or flashcards in hand and read the information out loud.
8. Think of ways to make your learning tangible, i.e. something you can put your hands on. For example, make a model that illustrates a key concept. Spend extra time in a lab setting to learn an important procedure. Spend time in the field (e.g. a museum, historical site, or job site) to gain first-hand experience of your subject matter.
9. To learn a sequence of steps, make 3'x 5' flashcards for each step. Arrange the cards on a table top to represent the correct sequence. Put words, symbols, or pictures on your flashcards -- anything that helps you remember the information. Use highlighter pens in contrasting colors to emphasize important points. Limit the amount of information per card to aid recall. Practice putting the cards in order until the sequence becomes automatic.
10. Make use of the computer to reinforce learning through the sense of touch. Using word processing software, copy essential information from your notes and textbook. Use graphics, tables, and spreadsheets to further organize material that must be learned.
11. Listen to audio tapes on an ipod while exercising. Make your own tapes containing important course information.
12. Look online at the textbook's companion website and make note of what is available.

*You want to experience the exam so that you can understand it.*

*The ideas on this page are only valuable if they sound practical, real, and relevant to you.*

*You need to do things to understand.*

## Auditory/ Verbal Learning Style

You learn best when information is presented auditory in an oral language format. In a classroom setting, you benefit from listening to lecture and participating in group discussions. You also benefit from obtaining information from audio tape. When trying to remember something, you can often "hear" the way someone told you the information, or the way you previously repeated it out loud. You learn best when interacting with others in a listening/speaking exchange.

### Your primary INTAKE methods should include:

attend classes

attend discussions and tutorials

discuss topics with others

discuss topics with your teachers

explain new ideas to other people

use a tape recorder

remember the interesting examples, stories, jokes...

describe the overheads, pictures and other visuals to somebody who was not there

leave spaces in your notes for later recall and 'filling'

1. Your notes may be poor because you prefer to listen. You will need to expand your notes by talking with others and collecting notes from the textbook. Convert them into a learnable package by reducing them 3:1.
2. Read your notes out loud or explain them to another hearing learner.
3. Complete your reading assignments AFTER your teacher discusses the material, whenever possible.
4. Read *difficult* passages aloud instead of silently.
5. Put your summarized notes onto tapes and listen to them. Play the tape at home and when you are riding in the car. When you think you know the material, recite it along with your tape.
6. Use music to help you learn. Put the information to a tune you already know, or make up your own song or jingle. If you prefer, you can create rhymes or poems to help you.  
*Example: In fourteen-hundred-ninety-two, Columbus sailed the ocean blue.*
7. Have someone quiz you or study with a friend and go over the information aloud.
8. Study in a quiet place with no outside distractions. Spend time in quiet places recalling the ideas.
9. Join a study group to assist you in learning course material. Or, work with a "study buddy" on an ongoing basis to review key information and prepare for exams.
10. When studying by yourself, talk out loud to aid recall. Get yourself in a room where you won't be bothering anyone and read your notes and textbook out loud.
11. Use audio tapes such as commercial books on tape to aid recall. Download online lectures. Or, create your own audio tapes by reading notes and textbook information into a tape recorder. When preparing for an exam, review the tapes on your car tape player or on an ipod whenever you can.
12. When learning mathematical or technical information, "talk your way" through the new information. State the problem in your own words. Reason through solutions to problems by talking out loud to yourself or with a study partner. To learn a sequence of steps, write them out in sentence form and read them out loud.
13. Look online at the textbook's companion website and make note of what is available.

*You prefer to have this page explained to you.*

*The written words are not as valuable as those you hear.*

*You will probably go and tell somebody about this.*

**Plan on reading about 10 pages of Psych per class day.** Make flashcards or condensed notes as you read. If you take the time to outline main ideas, briefly define terms, list the pros and cons of the theories or techniques presented, etc. (preferably in your own words, with examples) I know you will absorb and remember material better than if you just read and highlight. A daily effort will always be a better strategy of learning than cramming.

## Active Learner Note Taking Skills:

Learning is more engaging if we are **active learners**. This means building into the learning process *thinking* as a way of dealing with concepts, ideas, experiments, that in turn are linked and unlinked and reconnected. Study techniques that promote thinking are considered cognitive in nature, as opposed to rote memorization. Use these suggestions to devise your own study goals. This is the road to becoming a lifelong self-learner.

Generally, cognitive study methods involve **thinking through** the material repeatedly. When reading an assignment, study plans might include:

1. list important concepts
2. mark most important lines
3. answer questions orally or in writing
4. explain text in own words
5. look for examples out of your own experiences
6. make an outline or table of contents
7. write out subtitles
8. identify concepts and compare with each other
9. define words that are not defined
10. write summaries
11. write words down from memory and discover relationship between them
12. find main themes
13. discover author's viewpoint
14. write a sketch as an aid in memorizing; reproduce text with the help of your sketch
15. make comparisons with previously learned material and concepts, ideas, relationships
16. answer questions with the help of a dictionary, but without recourse to text
17. read to understand material; study to understand (as if you need to teach it to someone else)

[http://www.4faculty.org/includes/digdeeper/lesson4/study\\_methods.htm](http://www.4faculty.org/includes/digdeeper/lesson4/study_methods.htm)

# Learning Cycle

The following learning cycle integrates areas mentioned both in Bloom's and critical thinking taxonomies and in the field of cognitive processing. It begins with holding concentrated attention, the task fundamental to all learning, and moves through comprehension, conceptualization and practical application, which, as a whole, forms a cycle of learning, as questions lead to more questions, and knowledge involves self-reference and self-knowledge.

My assumption is that the more we integrate the ways to develop specific cognitive processes into lesson plans, the more we will assist students in developing and refining those processes which are prerequisites to many academic tasks; thus, the lesson will contribute to student success. The ways suggested below are meant as components to be *included* in teacher-custom-designed content lessons, not as substitutes for the teacher's lesson.

**Process - followed by -** Ways to further develop that specific process

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## **Concentrated Attention**

Reflection; active listening; reading; journals; computer-assisted instruction; drawing; making oneself responsible for presenting information to others or accountable in some important way

## **Comprehension**

Paraphrasing and summarizing information from lectures, readings, discussions, etc.; understanding vocabulary; apprehending information from effort (SQ5R: Survey, Question, Read, Record, Recite, Review and Reflect); annotating

## **Organizing Information**

Categorizing; concept formation; a structured notetaking method (i.e., the Cornell 6-R method: Record, Reduce, Recite, Reflect, Review, Recapitulate); outlining chapters; making a table of contents; creating diagrams and/or mnemonigrams (pictures integrating important key concepts from notes and lectures to use in preparation for tests)

## **Analysis**

Noting similarities and differences; culling out essentials from particulars; conceptual analysis (levels from abstract to concrete); concept diagram; linguistic analysis using criteria from class; visual mapping and/or outlining; problem analysis; task analysis (applied to any type of lesson, text structure, system or process); analyzing data in light of rules, formulae, hypotheses or predictions; analyzing cases in light of chosen principles

## **Synthesis**

Putting whole together; identifying patterns and relationships; devising graphic organizers illustrating integrated network of ideas; developing theories; thinking through problem and devising possible alternative solutions; creating a new model, product or method

## **Reasoning/Evaluation**

Coming to conclusions about data, patterns and interpreting ideas using criteria or logic of discipline; syllogistic and other structured reasoning; elements of reasoning; justifying conclusions with reasons; selecting best solution to problem using criteria; evaluating reasoning

## **Application**

Imagining, thinking through, and planning, how to use or test ideas, theories, solutions in life and doing so; considering implications of reasoned plan; using feedback and lessons gained from trying to apply ideas in life; reflection

## **Metacognition/Self-Evaluation**

Being aware of self as learner (how one learns, strengths, limitations, and style), the requirements of the setting or given task, and choosing a strategy to fulfill task; monitoring how it works and making adjustments; devising executive strategies; writing about one's goals and how one progresses toward actualizing goals in a journal; devising checklists tailored to one's situation and learning profile; monitoring own progress by keeping a log of grades, points, feedback from teachers, checklists,

inventories, quizzes, tests, and any other helpful information to use as feedback for self-assessment; designing questions to ask of teachers, tutors and mentors to gain feedback and suggestions

### **Self-Knowledge**

Seeing self as a lifelong learner capable of selecting and enacting a self-chosen discipline; journal keeping in some form to record lessons and foster assimilation

[http://www.4faculty.org/includes/digdeeper/lesson4/learning\\_cycle.html](http://www.4faculty.org/includes/digdeeper/lesson4/learning_cycle.html)

## ***Cognitive Study Methods***

Learning is more engaging if we are **active learners**. This means building into the learning process *thinking* as a way of dealing with concepts, ideas, experiments, that in turn are linked and unlinked and reconnected. Study techniques that promote thinking are considered cognitive in nature, as opposed to rote memorization. Encourage students to use the categories in Bloom's Taxonomy to devise study goals.

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# Cognitive Load Theory

Knowledge about our memory functions has given rise to a theory of learning called *Cognitive Load Theory*. This theory is built on a number of fundamental theses, and on this basis it is possible to increase the efficiency of the learning process by sidestepping the limitations of the working memory in a number of ways.

The fundamental theses of this theory are as follows.

- There is a fundamental limitation to the working memory, which acts as a bottleneck in the learning process.
- If the capacity of the working memory is exceeded, a part of or all the information will be lost.
- In learning situations, the cognitive load must be limited for the learning process to run effectively.
- All information must pass through the working memory and be processed consciously before it reaches the long-term memory.

In order to bypass this limitation and thus to increase the efficiency of the learning process it is possible to reduce the load on the working memory, for example by:

- using different aids (pens, paper, computers)
- dividing the information into smaller units (chunking)
- combining sounds and images, as these are processed separately. However, in this case it is very important to ensure that the sounds and images complement each other so that they do not cause *split attention*.

Which stages and phases do we pass through when acquiring new knowledge?

- The cognitive stage—learning. We learn how to perform a new action, such as shifting gears when driving a car.
- The associative stage—training. We practice and become better at carrying out the action; our tables become more and more comprehensive.
- The autonomous stage—automation. We have reached a stage in which we carry out the action more or less unconsciously.

In this case, expertise means that a person has built up an extensive table with regard to a particular area and can carry out certain actions with a high degree of automation. Novices require a much higher level of conscious attention in all phases of the process, which means that novices will act more slowly and be more prone to making mistakes.

[http://www.4faculty.org/includes/diqdeeper/Lesson3/cognitive\\_load\\_theory.htm](http://www.4faculty.org/includes/diqdeeper/Lesson3/cognitive_load_theory.htm)

# Cognitive Domain Learning Objectives

