

Vocational Preparatory Instruction

Staff Self-Training Program

Learning Styles Module

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LEARNING STYLES
TABLE OF CONTENTS

	PAGE
Pre-Test	1
Introduction	2
History	4
Learning Styles	8
Learning Styles Strategies	10
Teaching Styles	13
Teaching Styles Strategies	14
Post-Test	23
References	24
Appendix A (Pre-Test Answer Key)	26
Appendix B (Post-Test Answer Key)	27

PRE-TEST

1. Define the term "Learning Style"
2. Name the four basic learning styles
3. Which style is preferred?
4. When should the VPI student's learning style be assessed?
5. How is VPI instruction different from traditional classroom teaching?
6. What is your learning style? How does it affect your VPI instruction of students?
7. VPI is the newly designated title through Workforce Development for what was previously known as "S.A.I.L." True or false
8. An LCP (Literacy Completion Point) is used for indication of completion of Basic Skills Remediation in the VPI Lab. True or false
9. A Learning Manager in a school district VPI Lab must have Florida Teacher Certification and a minimum of a Bachelor's Degree. True or false
10. Initial Basic Skills Assessment must take place within the first six (6) weeks following admission to the program. True or false
11. Students must enroll and take part in remediation exercises prior to re-testing for basic skills. True or false

LEARNING STYLES

INTRODUCTION

Interest in how people learn is not a new concern. Philosophers of ancient Greece and Rome formulated ideas about learning that were to influence educators for centuries. Aristotle's mnemonic techniques of association and visual imagery are still in use today, and are a good way to help special needs students learn.

Learning style can be defined as a consistent pattern of behavior with a certain amount of variability. It is the way individuals concentrate on, absorb, and retain new or difficult information or skills (Thome). When people learn, they use learning styles that are uniquely their own, but make adjustments, depending on the nature of the task and the teaching style being used.

One important fact must be noted: No one type of learning style is better or worse than any other type. Each type occurs at a different frequency in the general population; some types are therefore more common.

(* *Deluxe Personality*)

**WHAT IS LEARNING
STYLE?**

Four basic psychological types are identified as far back as 450 B.C. – but modern psychologists have divided each of these four types into four more sub-types to create 16 different types of learners. Each of these types, shown below, shares similar psychological themes and values with other types: thus people of varied different types can end up in the same careers or lifestyles. Each of these types has a different approach to learning and is consequently motivated by different factors. Knowledge of learning styles, whether you are teaching others or receiving instruction, can help you to prevent losses of productivity that can occur at school or on the job.

(*Deluxe Personality)

<ul style="list-style-type: none"> • Field Dependent global external motivation and rewards 	<ul style="list-style-type: none"> • Field Independent Details internal motivation and rewards
<ul style="list-style-type: none"> • Innovative Reasoning 	<ul style="list-style-type: none"> • Analytic Reasoning
<ul style="list-style-type: none"> • Common Sense Concrete Experiential 	<ul style="list-style-type: none"> • Dynamic Creative Intuition
<ul style="list-style-type: none"> • Visual / Auditory Reception 	<ul style="list-style-type: none"> • Tactile / kinesthetic hands on, participatory
<ul style="list-style-type: none"> • "Right Brained" non-linear 	<ul style="list-style-type: none"> • "Left-brained" linear processing
<ul style="list-style-type: none"> • Serialist Sequential 	<ul style="list-style-type: none"> • Holistic Hierarchical
<ul style="list-style-type: none"> • Concrete Perceiver Experiences 	<ul style="list-style-type: none"> • Abstract Perceiver Analysis
<ul style="list-style-type: none"> • Active Processors Application 	<ul style="list-style-type: none"> • Reflective Processors Reflection

- <http://reach.ucf.edu/~fctl/research/lr.html>

Traditional instruction has always emphasized abstract receiving and reflective processing, where learner centered instruction allows for all receiving and processing styles. In learning centered instruction, curriculum emphasizes the skills of intuition, feeling, sensing, imagination and syntheses, as well as the traditional styles of analysis, reason, and sequential problem solving. Instruction should be designed to connect with all learning styles by using alternating combinations of experience, reflection, conceptualization, and experimentation.

(* UCF Faculty Center for Teaching and Learning)

Over the years, teachers have come to realize that different students learn in different ways. VPI prescriptions are written with the individual student's learning style in mind. Instructors can enhance their instructional program and students' learning experiences if they know more about the relationship of learning styles with teaching methods. The student's learning style should be assessed within the first week of enrollment in the lab.

HISTORY

VPI personnel have participated in learning styles activities for almost twenty years, starting with the Second Special Needs Conference in Winter Park in 1981, when Dr. Suanne Knopf introduced participants to the Myers-Briggs Type Indicator. The Myers-Briggs Type Indicator, which is based on the work of Carl Jung, has been thoroughly researched and has been found useful in a number of settings including education, business and industry.

(*SAIL NEWSLETTER, Sept. 28, 1990)

The Myers-Briggs Type Indicator® designates one's personality type, based upon a classification scheme which posits four basic scales and two types within each scale. Thus, there are sixteen Myers-Briggs types possible. The scheme is based upon the intuitions of Carl Jung, whose gifted insight revealed that all people at all times are best understood in terms of extroversion/introversion, sensation/intuition, and objective/subjective. The latter category has since been subdivided into two classes by revisionists: feeling/thinking, and perceiving/judging.

(* *Skeptic's Dictionary: the Myers-Briggs Type Indicator*)

Wysiwyg://26/http://skepdic.com/myersb.html

Jung also held that each type had an auxiliary function, as well as the dominant function. For the sake of balance, the auxiliary for a psychologically healthy individual was a perceiving function if the dominant was a judging function and a judging function if the dominant was a perceiving function. Furthermore, a person would use the auxiliary in the opposite way as the dominant function. Extroverts would rely on the auxiliary for introverting, and introverts would rely on it for extroverting.

The introduction of the auxiliary split each of Jung's types into two, effectively giving us Myers-Briggs' sixteen psychological types. For example, Introverted Thinkers would be divided into Introverted Thinkers with Intuition as an auxiliary and Introverted Thinkers with Sensing as an auxiliary. The Myers-Briggs types are based on four sets of opposing preferences. These are extraversion vs. introversion (E vs. I), intuition vs. sensing (N vs. S), thinking vs. feeling (T vs. F), and perceiving vs. judging (P vs. J). The preference for extraversion or introversion indicates the way in which a person uses his dominant function. The preference for perceiving or judging indicates which function (the dominant or the auxiliary) the

WHAT IS THE
MYERS-BRIGGS
TYPE
INDICATOR®?

WHAT DID JUNG
DISCOVER ABOUT
LEARNING
STYLES?

person relies on for extroverting. As already indicated, the dominant and the auxiliary together include both a perceiving function and a judging function. P's rely on the perceiving function for extroverting, and J's rely on the judging function for extroverting. The preference for thinking or feeling indicates the preferred judging function, and the preference for sensing or intuition indicates the preferred perceiving function.

Using this information, we can determine the Jungian type that corresponds to each Myers-Briggs type. Take, for instance, this personality type: INTP. The "I" indicates that the subject uses dominant function for introverting. The "P" indicates that that the subject relies on preferred perceiving function for extroverting. The dominant function is the preferred judging function. Therefore, an INTP is an Introverted Thinker with Intuition as an auxiliary. Each Myers-Briggs type can be translated into its corresponding Jungian type in like manner. Here is a table of what each type corresponds to:

- [INTP](#): Introverted Thinker with auxiliary Intuition
- [ISTP](#): Introverted Thinker with auxiliary Sensing
- [INFP](#): Introverted Feeler with auxiliary Intuition
- [ISFP](#): Introverted Feeler with auxiliary Sensing
- [INTJ](#): Introverted Intuitior with auxiliary Thinking
- [INFJ](#): Introverted Intuitior with auxiliary Feeling
- [ISTJ](#): Introverted Sensor with auxiliary Thinking
- [ISFJ](#): Introverted Sensor with auxiliary Feeling
- [ENTJ](#): Extraverted Thinker with auxiliary Intuition
- [ESTJ](#): Extraverted Thinker with auxiliary Sensing
- [ENFJ](#): Extraverted Feeler with auxiliary Intuition
- [ESFJ](#): Extraverted Feeler with auxiliary Sensing
- [ENTP](#): Extraverted Intuitior with auxiliary Thinking
- [ENFP](#): Extraverted Intuitior with auxiliary Feeling
- [ESTP](#): Extraverted Sensor with auxiliary Thinking
- [ESFP](#): Extraverted Sensor with auxiliary Feeling

(* *The DDLI Support Page*)

<http://www.geocities.com/SiliconValley/Vista/8405/ddli.html>

Classifying people did not originate with Jung, of course. Remember the four temperaments? Each of us, at one time, would have been considered to be melancholic, sanguine, phlegmatic, or choleric. These classifications go back at least as far as the ancient physician Hippocrates in the middle of the fifth century B.C. He explained the four temperaments in terms of dominant "humors" in the body. The melancholic is dominated by yellow "bile" in the kidneys; the sanguine by the

blood; the phlegmatic by phlegm; and the choleric by the black bile of the liver. Hippocrates was simply adding to the ancient Greek insight that all things reduce to earth, air, water, and fire. Each of the four elements had its dualities: hot/cold and dry/moist. A person's physical, psychological, and moral qualities could be easily understood by his temperament, his dominant 'humors,' the four basic elements, or whether he was hot and wet or cold and dry, etc. This ancient personality type-indicator "worked" for over one thousand years.

Modern psychology has come a long way since the time of Hippocrates. Today, psychologists have developed numerous assessment and diagnostic tests which are much more sophisticated and scientific than those of our primitive ancestors.

(* *Skeptic's Dictionary: the Myers-Briggs Type Indicator*)
Wysiwyg://26/http://skepdic.com/myersb.html

The next step was the **4MAT** System developed by Dr. Bernice McCarthy presented at the Florida Developmental Education Association (FDEA) Conference in St. Augustine on March 4, 1982. The 4MAT System is based on left and right brain hemisphere, and emphasizes staff development. Dr. McCarthy tells us, that if all teachers taught in each of the four learning styles 25% of the time, all students in any class on any subject would be reached. Instead of focusing on the student's learning style, she focused on staff development - training all teachers to include all four learning styles in presenting each learning task.

In the 4-MAT system, the four major learning styles are:

Imaginative Learners:

These learners perceive information concretely and process it reflectively. They are imaginative thinkers and believe in their own experiences. They have difficulty making decisions, and they seek meaning and clarity.

Analytic learners:

These learners perceive information abstractly and process it reflectively. They learn by thinking through ideas and need to know what experts think. They also need details, and enjoy traditional classrooms.

WHAT IS THE
4-MAT SYSTEM?

Common Sense Learners:

These learners perceive information abstractly and process it actively. They integrate theory and practice. They apply common sense; if they believe something works they will use it. They resent being given answers, and they value strategic thinking.

Dynamic Learners:

These learners perceive information concretely and process it actively. They learn by trial and error, are enthusiastic about new things, and are risk takers. They are manipulative and pushy, and to them, school is tedious and frustrating.

At the Annual Special Needs Conference in Tampa on October 14, 1987, Dr. Arthur Shapiro of The University of South Florida made a presentation entitled, "Understanding the Learning Process" and included the Gregorc Style Delineator: A Self Assessment Instrument for Adults. The Gregorc was developed by Anthony F. Gregorc, Ph. D. and produces a Style Profile according to dominant style characteristics of the four mediation channels: concrete sequential, concrete random, abstract sequential, and abstract random. The form is adult, inexpensive, paper and pencil, and self scored.
(*SAIL NEWSLETTER, Sept. 28, 1990)

Center for Innovative Teaching Experience, CITE, is a learning style inventory developed by the State of Kansas Department of Education at the Murdock Center. It was introduced at the 1990 FDEA Conference in Tampa. CITE is available from many vendors, a vocationally related CITE is also available. A tally of responses on the 45 items produces a preference for major learning style, minor learning style and negligible learning style, according to these categories: visual language; visual numerical; auditory language; auditory numerical; kinesthetic-tactile; social-individual; social-group; expressiveness-oral; and expressiveness-written. The inventory can be administered individually or in groups, and is available in written, computer, and audio-visual format.

CITE is available from PESCO International, 1-800-431-2016, www.pesco.org

The Learning Style Inventory (LSI) of Dr. David A. Kolb measures four learning modes: Concrete Experience (CE), Reflective Observation (RO), Abstract Conceptualization (AC), and Active Experimentation (AE). These refer to learning from feeling, learning by watching and listening, learning by

WHAT IS THE GREGORC?

WHAT IS CITE?

WHAT IS THE LSI?

thinking, and learning by doing. The LSI is a reliable, research-based, self-scoring test that can be completed and scored in less than 30 minutes. This popular 12-item assessment tool based on Experiential Learning Theory. The LSI identifies the Four Learning Style Types as Converger (thinking), Diverger (feeling), Assimilator (watching), and Accommodator (doing).

The LSI:

- Identifies preferred learning styles
- Explores the opportunities different styles present in problem solving and decision making
- Is used in actual training design
- Offers an effective "icebreaker" in group dynamic or team-building programs
- Can be useful in determining career paths

LSI self-scoring booklets are also available in French (Repertoire des Styles D'Apprentissage) and Spanish (Inventario Autoevaluativo y su Interpretacion).

(*SAIL NEWSLETTER, Sept. 28, 1990)

LEARNING STYLES

Learning styles have many aspects. When discussing learning styles, it is helpful to distinguish their cognitive, affective, and physiological aspects.

The cognitive aspect includes the ways the learners decode, encode, store and retrieve information. Do they process information by focusing or scanning, randomly or sequentially, concretely or abstractly? Individuals usually fall somewhere along the line between the two poles, but have the capacity for using each operation to some degree. Given time and direct instruction, the learner can probably switch orientations. The nature of the mediation will depend on the task and the learner. The teacher may need to ask more questions, to paraphrase, to give more explicit directions, to set different time limits (something very helpful for LEP students and students with disabilities), or to provide alternative methods or materials. The more the teacher knows about the student's learning style, the more likely the student is to learn. Therefore, it is important to encourage VPI students to tell their vocational instructors about their preferred learning styles.

Affective aspects of learning style include emotional and personality characteristics related to such areas as motivation, attention, control, interests, willingness to take risks,

**IS THE LSI
AVAILABLE IN
SPANISH OR
FRENCH?**

**WHAT ARE SOME
DIFFERENT
ASPECTS OF
LEARNING
STYLES?**

persistence, responsibility, and sociability. Knowledge of this aspect of learning can help educators understand why praise and external reinforcement have a positive effect on some learners but a negative on others. Another effective aspect is the type of group in which a person learns best.

The physiological aspects of learning include the following: sensory perception (visual, auditory, kinesthetic, taste and smell); environmental factors (noise level, light, temperature, room arrangement); need for food during study; and times of day for optimum learning. All of these physiological aspects affect the way a student learns and processes information.

Learning styles are a combination of nature and nurture. Even though learning style has been defined as a consistent pattern of behavior, it does change with age and experience. Cognitive styles tend to move in the direction of greater abstraction and field independence, but only in technical societies like the United States. While the learning style is initially based on inheritance and prenatal influences, a person's learning predisposition is subject to qualitative changes resulting from maturation and environmental stimuli.

**IS A PERSON
BORN WITH A
CERTAIN TYPE
OF LEARNING
STYLE?**

LEARNING STYLES STRATAGIES

There are many ways to help students understand and build on their learning style. After identifying the student's learning style(s), discuss the style with the student and inform them of some of the ways to enhance learning. The following are suggestions to assist students in understanding their learning style and activities to enhance learning:

By Sue Ellen Read, Ph. D.
 Northeastern State University
 Adapted from Dr. Rita Dunn
 St. John's University, NY

Sound Preference:

No Sound

Needs Sound

Recommendations:

Provide a "silence zone" where student can concentrate.

Provide background music - preferably classical baroque music.

Light Preference:

Low Light

Bright Light

Recommendations:

Permit study with soft lights.

Provide extra illumination. For some who need bright light, artificial light is preferred. Others may need natural light. Those who need natural light can be aided by using full spectrum light bulbs.

Temperature Preference:

Cool

Warm

Recommendations:

Permit student to work in cooler sections of the classroom.

Permit student to work in warmer sections of classroom or let student wear a sweater or extra clothing.

Design Preference:

Formal

Informal

Recommendations:

Provide a straight chair and a hard surface for books & papers.

Permit student to study on the floor, couch, easy chair or a beanbag.

Sociological Preference:

Alone

Authority

Recommendations:

Allow student to work alone.

Provide frequent interaction and direction with authority figure.

Peer

Allow students to work with a peer or group. Check periodically to make sure that the students are on task.

Structure Preference:

Needs More

Recommendations:

Go over assignment directions and map out a plan for work completion. Periodically check progress.

Needs Little

Permit choice and options and establish flexible time limits.

Responsible:

Is Not

Recommendations:

Provide short assignments; check work often. Explain why what you want the student to do is important to you. Speak collegially, rather than authoritatively. Give choices.

Is

Be specific; permit self-pacing & self-checking. Provide feedback as needed.

Persistence:

Is

Recommendations:

Provide uninterrupted work or leisure-reading periods.

Is Not

Allow frequent breaks during concentration periods.

Motivation Preference:

Teacher

Recommendations:

Explain how good work will please the teacher. If necessary, interact with teacher to get assignments.

Parent

Needs praise and feedback from supervising parent figure.

Self

Permit self-pacing and self-checking. Provide a variety of instructional resources.

Not Motivated

Establish specific, attainable short-term goals. Provide frequent praise & feedback. Help the student understand how assignment applies to own life.

Perceptual Preference:

Visual

Recommendations:

Learner must see what they are trying to remember. List assignments; provide written directions. When appropriate, use pictures & videos to help understanding.

Auditory

Provide tape-recorded books. Tape record spelling list, first pronouncing the word, then pausing to let the learner write it down and finally providing the correct spelling.

Emphasize phonics and linguistic reading

Tactual	approaches. Encourage student to talk through problems. Get hands involved in learning. Use materials like Flip Charts, Task Cards, Electro-boards, Pick and Answer, puzzles, and paper letters and numerals. Permit frequent use of the chalkboard, flannel board, magnetic board, typewriter and computer.
Kinesthetic	Get the whole body involved in learning. To improve spelling, have the student make the letters with his/her body; provide cardboard squares or letters for student to walk on while spelling each letter. Have learner act out scenes. Use rhythm & rap to memorize formulas, lists and processes. Put gestures to stages or lists to be committed to memory. Allow learner to walk or rock while reading. Discuss or verbalize lists while shooting basketball, jumping rope, etc.

Intake Preference:

Does Not Require

Does Require

Recommendations:

Permit student to choose their own snack time if they wish.

Keep on hand nutritious snacks & liquids; allow frequent snack breaks.

Mobility Preference:

Does Not Require

Requires

Recommendations:

Allow to remain stationary while concentrating.

Allow undisruptive movement.

Time Preference:

Morning

Afternoon

Evening

Recommendations:

Get difficult work done in the morning. Have important information sharing in the a.m.

Allow difficult work to be performed in the afternoon. Share important information during the afternoon.

Let work be done after 6:00 p.m. Share important information at night.

TEACHING STYLES

Teachers can influence style changes in students by modeling many styles themselves. By using probing questions, teachers can supply stimulation for cognitive development. Two helpful questions are "What did you learn" and "Tell about what you read." Both allow students to use their preferred cognitive and affective style modes, which creates a feeling of success without focusing on the **RIGHT** answers. Teachers can also probe to bring out main ideas, key concepts, etc.

We must remember that we tend to teach the way we learn. It is interesting to note that teachers tend to choose areas of teaching based on their personal learning proclivities: abstract, sequential, analytical learners tend to teach math and science.

Everyone needs to know his or her learning style, realizing that it may change over time and even during daily interactions. Consider how differently you would give directions to the nearest hospital if asked by: (1) a man with a pregnant woman in the car; (2) an inebriated adolescent; or (3) a person who speaks very little English. The goal is to have both teacher and student become aware of their learning style so they can continuously adjust, adapt or modify as necessary for maximum learning.

In teaching students to learn, we must first give them information about their basic learning characteristics and make them aware that it is possible to teach oneself. This can enable students to feel more in control of their destinies. Teachers should have a variety of teaching styles from which to draw, and they should be based on both content and skill objectives of the lesson. By using variety, teachers provide a model of flexibility for students.

One of the contributions of learning style research is to help educators realize that all people possess ways to learn despite their ability level. We have to realize that there is no right or wrong way to learn, but there are styles that are more appropriate for some than for others. It is true that in our society, reflective, abstract, sequential thinking seems to be favored for most school tasks and prestigious jobs, but we all possess latent learning styles that are not used until a situation demands them.

**WHAT CAN
TEACHERS DO TO
INFLUENCE STYLE
CHANGES?**

**WHY SHOULD WE
KNOW OUR OWN
LEARNING STYLE?**

TEACHING STYLES STRATEGIES

One common complaint about the modern educational system is that it is based on the assumption that everyone has the same learning style. If you are a teacher, knowing whether a student is a conceptual thinker (intuitive) or a concrete thinker (sensing) may mean the difference between success or failure in reaching that person.

(* *Deluxe Personality*)

The ARCS model, developed by Keller, an American researcher (Keller 1987), is an acronym for Attention, Relevance, Confidence and Satisfaction.

Attention: This is the need to arouse and sustain both the learner's curiosity and perceptual arousal. For example, this can be done by starting the lesson with an alarming statistic. The teacher must ask themselves questions. How can I provide novelty and surprise? How can I stimulate curiosity? How are my students motivated? The teacher needs to provide a range of methods and media to vary the presentation and meet the needs and learning styles of a mixed audience.

Relevance: Instruction needs to relate to the learner's needs. Make the lessons familiar, goal oriented and motive matching. The teacher needs to make the objectives and purposes of the lesson as clear as possible, and match them to the audience's needs and motives. This may mean reshaping the curriculum in order to make the content meaningful and understandable, clearly relating to the students' backgrounds and knowledge.

Confidence: Learner's challenges need to match to learner's capabilities. The student must have an expectation for success. Make the challenge for varying skill levels, provide feedback to the student, and promote an internal sense of control.

Satisfaction: This implies both intrinsic and extrinsic rewards, including equity, or the use of fair and consistent evaluation standards. When planning lessons, make use of newly gained knowledge or skills. Provide positive feedback to sustain the desired behavior.

(**J.M. Keller*)

<http://ouray.cudenver.edu/~nflrjeun/ARCS.html>

WHAT IS
THE ARCS
MODEL?

The ARCS model can be used as the starting point to produce a checklist and then to evaluate the tasks that were set, and find out what features make them more or less motivating.

(* *Reshaping the Curriculum: The role of motivation*)

OTHER FACTORS THAT AFFECT LEARNING

The time of day affects learning in 70% of the population. Any time (morning, afternoon, or evening) is going to be the wrong time of day for 23% of the class. Motivation, math scores, etc. are all affected by time. The Time Profile, a 15-statement energy level chart taken from Rita Dunn's How to Raise Independent and Professionally Successful Daughters, may be used to determine a good match between time of day and best concentration. The profile is helpful in personal planning, matching people for teamwork, and offering education in the evening for students who can benefit from it.

Sound, light, temperature, design, motivation, persistence, responsibility, structure, intake, time, mobility, perceptual strength or modality, and sociological and psychological factors affect learning styles. Most special needs students are tactual/kinesthetic and visual/spatial learners. It is recommended that teachers use more symbols, pictures, and illustrations with these students.

SOUND

Total quiet is not everyone's style. Twenty percent need sound to concentrate (Pizzo study), e.g. tapping pencil or foot, smacking gum, humming, listening to the radio or TV. Make rules to allow for individuals' learning styles, i.e., (Rule 1: You must not disturb others). Some people can mentally block out noise (sound) without aids. Others benefit from "white noise." For those who need quiet, consider soft earplugs, earphones or ear protectors (OSHA type).

LIGHT

Some need bright, some need dim. Traditional bright light over the left shoulder is not necessary for learning. Do not impose bright light upon all students. Many read, study, and learn better in dim light. Dim light does not "hurt" eyes. Therefore, try normal daylight (low light for remedial readers). Let students choose their own light when possible. Some may choose to work in carrels without lights turned on. Try using colored transparency overlays, colored lenses, etc. Fluorescent lighting tends to make learning more difficult for some learners.

WHAT ELSE
AFFECTS
LEARNING?

TEMPERATURE

Some students are cool, others warm, some are just right. Look at the way students dress for the classroom. What temperature is necessary for concentration? Have the student dress appropriately for them; some may need to carry a sweater or jacket to be comfortable in air-conditioned rooms. The center of the classroom tends to be warmer. Try having fans in the classroom so students who are warmer can sit in front of the fans. If the temperature is not right, the student cannot concentrate, and therefore learning will not take place.

DESIGN

Formal versus informal. Take a look at your classroom; chairs are exactly the same size, students are not. Some students have their knees in their face and others cannot reach the floor. Ten percent of students need informal design and the need increases with adolescence. The need may be higher for vocational education students (and adult learners). Seventy percent of special needs students need informal design. In addition to desks, let students choose rather to sit at tables, chairs or even on the floor. (Remember the rule - do not disturb others)

MOTIVATION

Interest and motivation will offset any elements of learning style.

PERSISTENCE

This is the only element related to IQ. When given choices about how the task can be done, many students do better and understand the material. The more learning style elements are met, the more time-on-task will increase.

RESPONSIBILITY

The desire to do what they should do. Many of our students are non-conforming. Try the following hints: (1) Explain why the task is important. (2) Talk to the student as an adult. (3) Give the student choices about how the task is to be done.

STRUCTURE

Many students hate "wasting time" on structure details. They are ready to get to work. On the other hand, some students cannot start an assignment without sufficient structure. They may ask many questions, even after the instructor has informed them of the assignment. As a teacher, you may have to set deadlines for students so they can stay on task and not procrastinate.

SOCIOLOGICAL

Sixty seven percent of teachers are affected. Students perform better when allowed sociological preference. Many students do well alone. Most gifted students do well alone but can work cooperatively with true peers.

COOPERATIVE LEARNING (3 types)

PAIR Two work together
PEERS With minorities this begins with 3rd grade level
TEAM Larger groups

ADULT Many special needs students like to learn with the teacher (but only with collegial teachers, not authoritative teachers.)

VARIED Sociological preference may vary according to the learning task.

PHYSICAL (Apparently imposed by nature, i.e. birth, genetics)

PERCEPTUAL STRENGTH or MODALITY

Types of learners. Sounds, words, things, objects.

1. TACTUAL/KINESTHETIC. Example: A baby... touch, feel, taste.

2. VISUAL (two types):

Visual Print = sees 5
Visual Spatial = *****

Most special needs students are tactual/kinesthetic and visual/spatial learners. Use more symbols, pictures, and illustrations with them. Special needs students like to draw on chalkboard and do projects (drawing, etc.) to show understanding.

3. AUDITORY

Female infants remember (recognize) voices earlier than boys, develop vocabulary, and do better in school since schools are auditory (lectures, talking). Boys tend to have trouble with sound differential (phonics). Note: Females also intuit better; therefore, study for tests with a female.

MULTI-MODAL Some people are multi-modal.

INTAKE Sixty percent need nibbling. The need increases during adolescence. The student can use this knowledge for homework if not allowed in school. For exams in school, the teacher might bend the rules and allow these students to suck on hard candy, which is quiet and not messy.

MOBILITY Build mobility into the classroom. Some people (especially kinesthetic students) need to move. (Cannot be still for long. Let students work at different stations. Let students stand. Strongly kinesthetic students can read and write while walking. Some students need to pace, i.e. walk up and down (can do this with homework if not permitted at school).

TIME You can use the Time Profile, which is a 15-statement energy level chart taken from Rita Dunn's How to Raise Independent and Professionally Successful Daughters. It concerns time of day and best concentration. It says a lot about personal planning, matching people for teamwork, and about offering education in the evening and who can benefit from it.

MODALITY is the hardest to deal with. One way for the teacher to start using more modality is to take curriculum lesson plans and examine them according to tactual/kinesthetic, visual, and auditory. Analyze and apply additional modality where holes are. Expand curriculum to include more modalities: e.g. global/analytic, small groups, options for task completion, and more illustrations.

We have known for some time that the left side of the brain is primarily responsible for verbal behavior. However, in the zeal to ensure mastery of reading skills, schools have focused on the use of narrowly prescribed approaches to reading (skill management and code emphasis systems) that suit the analytic and logical processing mode of the left hemisphere. We are now aware that right hemisphere input helps children focus on the holistic aspects of reading; right hemisphere input also complements their preferred use of the processing mode of the right hemisphere.

The dominant processing style of the right side of the brain is holistic, intuitive, visual/spatial. It excels in the perception of configurational information (information represented through flow charts, time lines, graphs, semantic maps, etc.) The right side of the brain also indicates superiority in many tasks

requiring the use of tactile, kinesthetic and auditory modalities, the creation of imagery and creativity, and the tuning of one's emotional state.

Learners who prefer to see and feel the "big picture" rather than the details, can be unintentionally discriminated against in our reading classes. The processing mode of the left hemisphere is essentially what many teachers require of children during reading time, and why one school principal conceived of school as being "left-brained." When children are urged to sound it out, to tell the literal meaning of what they have read, asked to look up words in the dictionary, or to analyze sentence parts to figure out an exact meaning, they activate the logical, computer-like left hemisphere.

In very young children, each hemisphere appears to be equally developed in language and speech functioning. By the time youngsters reach school age, the left side begins to dominate for language processing, a distinction nurtured by most part to whole reading practices. Studies reveal that reflective children prefer a left hemispheric, analytic cognitive style, while impulsive children used a right hemispheric, global cognitive style for differing thinking tasks. Data suggests that impulsive children were found more frequently in the lower socio-economic group, and that relational thinkers are largely urban, inner-city Black children, who prefer a global, holistic mode of problem-solving.

Following is a list of general characteristics of analytic (left brain) and global (right brain) individuals that should be considered when planning/delivering instruction:

Analytic (Left Brain)

No sound
Bright light
Formal design
Words
Verbal
Respond to word meaning
No intake
Plan ahead
Recall facts and dates
Sequential
Process information
Outlines well
Respond to logical appeal
Trust logical appeal
Tidy and organized
Punctual: time conscious
Recall people's names
Speak with few gestures
Reflective

Global (Right Brain)

Music/Sound
Low light
Informal design
Pictures, symbols, illustrations
Nonverbal
Respond to word pitch, feeling
Intake
Spontaneous
Recall images and patterns
Random
Process in chunks
Ties everything at the end
Respond to emotional appeal
Trust gut reaction and intuition
Disorganized
Random: late to meetings
Recall people's faces
Gestures often
Impulsive

The reflective student needs time to think things through. To control the impulsive and give the reflective more time, wait before asking for a response.

The global student is more likely to have poor reading, spelling, computational skills and study habits. Written work tends to be bizarre, but often creative. They generally have lower self-esteem and tend not to score well on IQ and standardized achievement tests. (**SAIL NEWSLETTER, Sept. 28, 1990*)

The following are several suggestions that do not require specialized techniques or training, to aid in teaching the global learner:

1. Use pictures and objects. This will tie the use of language to non-verbal experiences.
2. Use drama, pantomime, music, art and construction projects from which activities can be developed. This helps the student associate the meanings of new words with the actual lived experience. Rather than continue to provide poor readers with remedial training requiring left-hemisphere processing, involve them in right-hemisphere activities that will give them a sense of success. Make lessons real!
3. Use configurational materials such as flow charts, time lines, graphs, semantic maps and word boundary clues to aid the right side of the brain in the holistic perception of the content to be learned. Something as simple as an outline of the lecture can help by providing structure.
4. Use tactual stimulation and kinesthetic movement for students whose learning styles prohibit them from learning words through normal visual and auditory means.
5. Involve the student in the use of imagery and visual strategies that allow the right brain to simultaneously recall, all at a time, a mental picture from an assignment.
6. Present overviews to lessons and units, stressing the main ideas.
7. Use open-ended questions and assignments.
8. Teach globals to use devices that make the activity more acceptable to them. (i.e., tapes for visuals)
9. Allow globals to take breaks, and provide short-term assignments.
10. Provide small group activities. Globals usually like to learn in groups.

**WHAT ARE
SOME
SUGGESTIONS
FOR TEACHING
THE GLOBAL
LEARNER?**

While most functions of the left hemisphere are concerned with convergent production (getting the right answer), functions of the right hemisphere are principally involved with divergent production, which involves imagery, the vehicle through which creativity occurs.

We must remember that we tend to teach the way we learn. It is interesting to note that teachers tend to choose areas of teaching based on their personal leaning proclivities. Abstract, sequential, analytical learners tend to teach math and science.

Teachers should have a variety of teaching styles from which to draw and they should be based on both content and skill objective of the lesson. By using variety, teachers provide a model of flexibility for students.

One of the contributions of learning style research is to help educators realize that all people possess ways to learn despite their ability level. We have to realize that there is no right or wrong way to learn, but there are styles that are more appropriate for some than for others. It is true that in our society, reflective, abstract, sequential thinking seems to be favored for most school tasks and prestigious jobs, yet we all possess latent learning styles that are not used until a situation demands them.

Encourage students to discuss their learning styles with their academic and vocational instructors, or plan regular meetings with instructors to discuss student progress and needs. Once the student and instructor understand the individual's learning style, the student usually finds it easier to learn.

If students are auditory, have them read into a tape recorder and listen to what they recorded. If they are visual, have them refer to books with many illustrations on the subject, draw charts, and take notes in class. If they are tactual, encourage the student to handle and examine subject materials and to take notes and rewrite them in condensed form.

Prescriptions should be developed based on the student's learning style. **ALL** students should use a variety of materials/media that match their learning style, throughout their program.

Post-Test

1. Can a student's learning style change?
2. What other factors affect learning?
3. What is the "sociological" aspect of learning for student?
4. What are the three aspects of learning styles?
5. MALD is an acronym for Modular Analysis of Learning Difficulties. True or false
6. A total of no more than three (3) LCPs can be earned per VPI student. True or false
7. Any Postsecondary Vocational student is eligible for VPI . True or false
8. Any student with an A.A. or A.S. Degree or higher is exempt from testing. True or false
9. The recommended "student to teacher" ratio for any VPI Lab is 15:1. True or false
10. Initial testing scores are valid for a period of two (2) years, unless there is a break of one year in attendance of the program. True or false
11. Special Needs Vocational Students fall into six (6) categories: List four (4) of the special population student classifications:

1) _____

2) _____

3) _____

4) _____

12. Student record documentation shall be maintained in auditable condition for a period of _____ years, or until the completion of the audit by the Department, whichever comes first.

References

- Cornett, Claudia E. What You Should Know About Teaching and Learning Styles. Library of Congress Card Catalog Number 82-063062 ISBN 0-87367-191-0, 1983, Phi Delta Kappa Educational Facility, Bloomington, Indiana.
- The Forgotten Half. The William T. Grant Foundation Commission, Washington, D.C. 1988.
- Hull, Dan and Dale Parnell. Tech Prep Associate Degree, A Win/Win Experience. CORD, 1991.
- Hull, Dan. Who Are You Calling Stupid? The Revolution That's Changing Education. CORD Communications, 1995.
- McCarthy, Bernice. Using the 4MAT System to Bring Learning Styles to Schools. October 1990.
- Programs for Special Needs, IMTS Program Guide. State of Florida, Department of Education, Tallahassee, FL 1983.
- Sinatra, Richard. Brain Processing: Where Learning Styles Begin. Early Years, February 1982.
- System for Applied Individual Learning, SPECIAL NEWSLETTER, Learning Styles and the SAIL/IMTS Program. The University of West Florida, September 28, 1990.
- Thome, Catherine C. Understanding Learning Style and Its Effect on Teaching and Learning.
- Thompson, Mary J. Selecting Teaching Methods based on Student's Learning Styles. Division of Workforce Development, Florida Department of Education. Tallahassee, FL.
- J.M. Keller,
<http://ouray.cudenver.edu/~nflejeun/ARCS.html>
- Skeptics Dictionary: the Myers-Briggs Type Indicator,
wysiwyg://26/http://skepdic.com/myersb.html
- The DDLI Support Page,
<http://www.geocities.com/SiliconValley/Vista/8405/ddli.html>
- Myers/Briggs Temperament Indicator,
wysiwyg://19/http://elvis.rowan.edu/~cusumano/MBTest.html
- Learning Styles, University of Central Florida,
<http://reach.ucf.edu/~fctl/research/ls.html>
- Reshaping the Curriculum: The role of Motivation,
http://utenti.tripod.it/learning_paths/Mypapers/Papermotivation.htm

From Learning Style to Teaching Styles,
http://utenti.tripod.it/learning_p..Questionnaires.Teachstylequest.htm

Personality Types - Learning Styles,
<http://www.dougdean.com/learningstyles/index.cfm>

Investigating Learning Styles: Learning Paths - My Papers,
http://utenti.tripod.it/learning_paths/Paperstyles.htm

Teacher Support and Teacher Challenge,
http://utenti.tripod.it/learning_paths/Mypapers/Papersupport.htm

Suggestions for Parents/Supervisors of Learner,
<http://arapaho.nsuok.edu/~oil/DOCS/parent.html>

Brain-Dominance Questionnaire,
http://utenti.tripod.it/learning_paths/Questionnaires/Lrquest.htm

**APPENDIX A
PRE-TEST ANSWERS:**

1. Learning style is a consistent pattern of behavior that determines how an individual can concentrate, absorb, or retain new or different information or skills.
2. Auditory, Visual, Kinesthetic, Tactile
3. No one style is preferred – no one type is better or worse than any other type
4. During the first week of enrollment in the VPI LAB (generally done during the initial interview)
5. VPI instruction is individualized in reference to the student needs, learning style, diagnostic, and Prescriptive information.
6. Determine your own style . . . Instructors often tend to use the way “they” learn in their approach of teaching others.
7. True
8. True
9. True
10. True
11. False

**APPENDIX B
POST-TEST ANSWERS:**

Answers

1. Yes, with age, maturity and life experiences
2. Sound/Light/Design/Sociological/Structure/Persistence/Motivatin/Perceptual/Intake/Mobility/Time
3. Whether a student learns better alone, or in a group
4. Cognitive, Affective, Physiological
5. True
6. True
7. True
8. False
9. True
10. True
11. Individuals with disabilities, economically disadvantaged, non-traditional training for employment (gender specific), Single parents including single pregnant females, displaced homemakers, individuals with other barriers to learning including limited English proficiency
12. Three to five years