

LEARNING STYLES

Theories and Implications for Teaching Learning



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Horizon Research Publishing, USA

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PREFACE

Individuals learn in different ways. ‘Learning styles’ is a term used to express individual differences in the processes of learning. In accepting individual differences, we should consider the concept ‘learning styles’. Knowledge about the concept of learning styles is of particular significance in promoting learning and learning experiences.

Learning of a person is more influenced by his styles of learning because everyone has a preferred style for learning. Students can maximize their learning if they are aware of their own style. Knowledge of one’s own style will also help the learner to learn in his/her way using his/her best strategies for learning.

Knowledge of learning styles will help the teacher in delivering effective presentations to diverse learners in the class. Thus a teacher can determine what is best for the students. The teacher can also take care of the mismatch that may happen while handling the classes. The learning styles of students can be determined using various learning style inventories. This will help the teacher to get an idea about the learning styles of the students in the class and to prepare accordingly.

A learning theory can be considered as an explanation that describes how information is absorbed, processed and retained during learning. There are different learning theories that give a better idea of the purpose behind teaching and learning.

The aim of education is to promote learning. To make learning successful, the educators should incorporate diversity in to their styles of teaching to satisfy different learners. Teaching cannot be successful without knowledge of learning styles. An understanding of learning styles helps the educators and also the learners to become successful in the endaeavour of teaching learning process.

This book on learning styles is presented in three sections. The first section gives an introduction about learning styles, section two discusses the different theories of learning styles and the third section discusses the educational implications of learning styles. Tables and figures are also incorporated for more clarity. The authors hope that the book will be very helpful for teachers, students and also to the researchers in the field of education.

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INTRODUCTION

The brain of a person receives information through all the five senses. Among the five, three senses that are eyes, ears and skin help the most in forming her/his learning style. Learning style is a group of characteristics, attitude and behaviors that define our way of learning. Learning style is a particular way in which the mind receives and processes information. It is an integral concept that bridges the personality to cognitive dimensions of an individual.

Learning Style classifies different ways in which people learn how they approach information. By recognizing and understanding one's own learning style, techniques better suited to learning can be used. Thus the speed and quality of learning can be increased. Knowledge of one's learning style is very important as it helps a person to be more productive and creative, to increase achievement, to improve problem solving skills, to make better decisions, and to learn more effectively.

There is no student who uses exclusively one style or another. Most of the students utilize a variety of modalities in learning. It is very important to expand their abilities to use as many learning styles as possible so that they can succeed in all the situations of learning.

In this book, we have discussed learning styles with its theories and educational implications leading to have a comprehensive knowledge about the application of these theories in the teaching-learning process.

INTRODUCTION

Chapter 1. A Glimpse on Learning Styles

“Learning is the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping experience and transforming it” Kolb (1984).

Learning is a complex process where teacher, learning material, student’s motivation and several other aspects interact with each other. There are many things and skills that we learn unconsciously or without thinking. But there are also lots of things that we learn consciously and use different strategies to learn (Verkkotutor, 2005). These strategies we usually use by doing what feels good and right and how we learn best.

There is no single right way to learn in a specific situation. Everyone has his/her own style of learning which can also vary from one situation to another. Because of the variety of learning theories and styles, one can choose flexibly different strategies and styles in situations so as to use the most efficient one. The better one is aware of his own learning styles, the better he can use them to his advantage in learning (Verkkotutor, 2005).

Pupils learn differently and it is true that learners differ in the way they learn. This dissimilarity is due to the fact that learners prefer different learning styles, have different learning motivation and differ from each other in self-confidence (Vainionpää, 2006). Learning styles classify different ways pupils learn and how they approach information; like acting and reflecting; vision and audition; memorizing and visualizing; reasoning logically and intuitively.

The term “learning styles” refers to the concept that individuals differ in regard to what mode of instruction or study is most effective for them.

The concept of learning styles has steadily gained influence in recent years. Learning style is the way in which each learner begins to concentrate on, process, absorb, and retain new and difficult information (Dunn and Dunn, 1993). The interaction of these elements occurs differently in everyone. Therefore, it is necessary to determine what is most likely to trigger each student’s concentration, how to maintain it, and how to respond to his or her natural processing style to produce long term memory and retention.

“Learning Styles” has been regarded as one of the most important factors that control the way pupils learn. There is also a propensity to match students’ learning styles to the “teaching styles” of concerned teachers. In the realm of instructional design, the emphasis has gradually shifted towards achieving a match between the way learning resource materials are presented and the learning styles of the learners themselves. There is a strong tendency for teachers and course designers to pay closer attention to students’ learning styles – by diagnosing them, encouraging students to

Chapter 2. Herrmann Brain Dominance Model (Whole Brain Model) (1972)

Herrmann Brain Dominance Model is based on the split-brain research (left/right brain theory) and triune model (rational brain, intermediate brain and primitive brain) differentiating thinking by the right and left brain hemispheres, as well as cerebral and limbic sections. The main focus of this model is to enhance self-understanding. This model also aims to enable creative thinking through the use of this model.

Herrmann's Whole Brain Model is also a learning style model which claims that the brain dominance causes differences in learning styles. The model mainly aims to activate all parts of brain during learning process. Besides classically known cerebral right and left brain hemispheres, the model divides also the limbic system, which has an important function in

The Whole Brain Model builds on the left brain/right brain theory. These parts consist of the two cerebral pairs (hemispheres) and two limbic pairs. The two left side structures combine to represent what is called the left brain thinking. The two right side pairs combined represent right brain thinking.

transferring of information that comes to brain, into the right and the left hemispheres. Therefore, the model claims that brain has four quadrants which have different functions and named these as A, B, C and D quadrants.

The model divides the brain into four separate quadrants; namely the upper right A quadrant, the lower right B quadrant, left lower C quadrant and left upper D quadrant. The upper quadrants mostly concern with cognitive and intellectual operations, and the lower quadrants concern with instincts and emotional operations. While learning, individuals may use dominantly one or a few of A, B, C and D quadrants or they may use their whole brain (Herrmann, 1988). Difference in the learning styles of the individuals is due to different brain dominances.

2.1. Four Quadrants

The thinking activities of these four quadrants of distinct groups are:

Quadrant A: (Left Cerebral) – Individuals with primary preferences to this quadrant are *theorists*. They like problem solving. These students are mathematical, technical, analytic, and logic. They like lectures, facts, details, critical thinking, textbooks and readings. They tend to avoid emotion, intuition and ambiguity and learn from data or a teacher.

Quadrant B: (Left Limbic) – These are planning, controlled, conservative, administrative, and organizational pupils. Individuals with primary preferences to this quadrant are *organizers*. They prefer to learn by checklist, outlines, exercises and problem solving with steps, policies and procedures. These pupils are very efficient

Chapter 3. Grasha and Reichmann Learning Style (1974)

The areas of specialization of Anthony Grasha who is a Professor of Psychology at the University of Cincinnati are cognitive and social processes in human behavior, learning and teaching styles, cognitive processes in stress and coping, and in conflict resolution. Grasha and Reichmann (1996) consider learning styles as social interactions. They define them as different roles that students have in interaction with classmates, teachers and course content. According to them, learning styles can be identified through social and emotional dimensions such as attitudes toward learning, teachers, classmates and classroom. Instead of considering the overall assessment of the personality (because the personality is constant, while styles are individuals' preferences) or cognitive characteristics, the proponents of this model present a model based on students' responses to the real classroom activities. Grasha and Reichmann classify learning styles into six categories, each of which has its own characteristics.

Six categories of Learning Styles according to Grasha and Reichmann are

- Avoidant
- Participative
- Competitive
- Collaborative
- Dependent
- Independent

3.1. Categories of Learning Styles

1. **Avoidant:** These students tend to be at the lower end of the grade distribution. They are characterized as having high absenteeism, organize their work poorly, and take little responsibility for their learning. These learners are not enthusiastic about learning content. Also they are not interested in attending class. They do not cooperate with students and teachers in the classroom. Avoidant learners are uninterested and overwhelmed by what goes on in class.
2. **Participative:** These learners are characterized as willing to accept responsibility for self-learning and relate well to their peers. They are good citizens in class. They enjoy going to class and take part in the course activities as much as possible. Participative learners are typically eager to do as much of the required.
3. **Competitive:** These students are described as suspicious of their peers leading to competition for rewards and recognition. They learn material in order to perform better than others in the class. What thinking leads them is that they must compete with other students in a course for the rewards that are offered. Another characteristic of this type of learners are that they like to be the center of attention and to receive recognition for their accomplishments in class.

Chapter 4. Schmeck, Ribich, and Ramanaiah Learning Styles (1977)

In 1977, researchers Schmeck, Ribich, and Ramanaiah first published Inventory of Learning Processes (ILP) to examine the cognitive activities students use while studying (Schmeck & Geisler-Brenstein, 1991). The inventory was used to investigate “the behavioral and conceptual processes which students engage in while attempting to learn new material” (Ribich & Schmeck, 1979, p. 516). The ILP was originally created with 62 true/false statements. Schmeck and Geisler-Brenstein revised ILP in 1991 (ILP-R) by adding an additional 118 statements. In addition, response options were converted to a 6-point Likert scale.

4.1. Dimensions

The ILP-R is used to collect student responses to four dimensions of their involvement in studying: **Academic Self-Concept** (how a student approaches learning from an emotional basis); **Reflective Processing** (how a student expresses and asserts himself through learning); **Agentic Processing** (how a student focuses personally on the task of learning); and **Methodical Study** (what methods a student uses to process information) (Schmeck & Geisler-Brenstein, 1991).

The dimension of Academic Self-Concept is based upon four subscales within the ILP-R. These four subscales are used to measure the student’s intrinsic motivation for learning, self-efficacy in the learning process, ability to learn through non-reiterative processing, and self-esteem.

Whether a student’s self-concept as a learner is healthy can be determined by the responses to each of these subscales (Schmeck & Geisler-Brenstein, 1991).

The second dimension, Reflective Processing, is based on three subscales within the ILP-R. The student’s ability to use deep processing of information while learning, elaborative processing by connecting concepts to past experiences and information already processed, and self-expression while learning can be measured using this. (Schmeck & Geisler-Brenstein, 1991).

Agentic Processing is the third dimension. It is based on three subscales within the ILP-R. These subscales are used to measure the student’s desire for authority, order, and adherence to a stated plan, the student’s ability to use serial processing by moving from one completed learning task to another, and the student’s ability to retain facts. A high score in this dimension is an indicator to succeed with objective tests (Schmeck & Geisler-Brenstein, 1991).

The final dimension, Methodical Study, has no subscales and is used to draw information about the student’s study skills and habits. A student who scores high in this area tends to study frequently and over-study for tests, although he may not be

Chapter 5. Dunn and Dunn Learning Style (1978)

One of the oldest and most widely used approaches to learning styles is proposed by Rita and Kenneth Dunn (1978). They observed the distinct differences in the ways students responded to instructional materials presented. They considered some developmental characteristics into consideration while determining learning styles. These are biological and individual developmental characteristics of the individuals. In order to make instruction more appropriate, some ways can be found because of the differences in biological and individual developmental characteristics. That is, some students learn through listening, some through experiencing and some primarily through watching. The important thing is that teacher has to determine the ways in which the student learns in the process.

The model is represented through five stimuli which are environmental, emotional, sociological, physiological, and psychological (Mitchel, 2009). According to Dunn and Dunn, each stimulus contains individual elements which contribute to mastering academic skills.

5.1. Five Stimuli

Some students like to learn alone, while others prefer learning in groups. Some others learn from a teacher. The Dunn and Dunn Learning Style Model is based on the theory that each person has his/her strengths when it comes to learning (Mitchel, 2009). The model is represented through five stimuli which are environmental, emotional, sociological, physiological, and psychological (Mitchel, 2009).

Elements such as sound, light, temperature, and design are the environmental variables. The emotional variable consists of motivation, persistent, responsibility, and structure. Included in the sociological variable, are self, pair, peers, team, adult, and varied. The physiological variable consists of perception, intake, time, and mobility. The psychological variable has three components that contain global-analytic processors, hemisphericity, and impulsive-reflective.

5.2. The Elements and Key Questions

The elements and key questions for each learner of this model are presented in Table 5.1

Chapter 6. NASSP Model of Learning Styles (1980)

In the 1980's, the National Association of Secondary School Principals (NASSP) formed a task force to study learning styles. Three broad categories of learning style are defined-cognitive, affective, and physiological-and 31 variables, including the perceptual strengths and preferences from the VAK model of Barbe and colleagues, and also many other variables such as need for structure, types of motivation, time of day preferences, and so on.

6.1. The Construct of the Learning Style

Thus the learning style is a composite of cognitive, affective, and physiological factors that indicate how a learner approaches learning. They have defined learning style as “a gestalt-not an amalgam of related characteristics but greater than any of its parts. It is a composite of internal and external operations based in neurobiology, personality, and human development and reflected in learner behavior.”

The main views of this model are

- Cognitive styles are preferred ways of perception, organization and retention.
- Affective styles represent the motivational dimensions of the learning personality; each learner has a personal motivational approach.
- Physiological styles are bodily states or predispositions, including sex-related differences, health and nutrition, and reaction to physical surroundings, such as preferences for levels of light, sound, and temperature.

According to the NASSP task force, styles are hypothetical constructs that help to explain the learning (and teaching) process. They posited that one can recognize the learning style of an individual student by observing his or her behavior. Learning has taken place only when one observes a relatively stable change in learner behavior resulting from what has been experienced.

A cognitive processing model was adopted by the task force developing the National Association of Secondary School Principals' (NASSP) Learning Style Profile (LSP). There are 23 independent scales in LSP representing four higher order factors: cognitive skills; perceptual responses; study preferences; and instructional preferences. The subscales are on: (1) analytic skill; (2) spatial skill; (3) discrimination skill; (4) categorizing skill; (5) sequential processing skill; (6) memory skill; (7) visual perceptual response; (8) auditory perceptual response; (9) emotive perceptual response; (10) persistence orientation; (11) verbal risk orientation; (12) verbal spatial preference; (13) manipulative preference; (14-17) study time preference (early morning, late morning, afternoon, or evening); (18) grouping preference; (19) posture preference;

Chapter 7. Honey and Mumford Learning Style (1982)

Peter Honey and Alan Mumford, identified four distinct learning styles or preferences: Activist, Theorist, Pragmatist and Reflector. Individuals naturally prefer these learning approaches and they recommend that in order to maximize one's own personal learning each learner ought to:

- understand their learning style
- seek out opportunities to learn using that style

7.1. Characteristics of Learning Style

The characteristics of the four learning styles are summarized in a table.

Table 7.1. Honey and Mumford's Learning Style

Learning Style	Description of Honey and Mumford's learning style theory	Characteristics
Reflectors	Reflectors like to stand back to ponder experiences and observe them from many different perspectives. They collect data, both first hand and from others, and before coming to any conclusion, they prefer to think about it thoroughly. The thorough collection and analysis of data about experiences and events is what counts. So they tend to postpone reaching definite conclusions as long as possible. Their philosophy is to be cautious. They are thoughtful pupils. These pupils like to consider all possible angles and implications before making a move. Reflectors are learned by observing and thinking about what happened.	<ul style="list-style-type: none"> • Careful • Good listener • Holds back from participation • Methodical • Does not jump to conclusions • Slow to decide • Thorough and thoughtful
Theorists	Theorists adapt and integrate observations into complex but logically sound theories. A vertical, step-by-step logical way is adopted to think problems. They assimilate disparate facts into coherent theories. They tend to be perfectionists. They are interested in analysis and synthesis. They are keen on basic assumptions, principles, theories models and systems thinking. Their philosophy poses rationality and logic. "If it's logical, it's good". Questions they frequently ask are: "Does it make sense?" "How does this fit with that?" "What are the basic assumptions?" In order to learn, they need models, concepts and acts. They feel uncomfortable with subjective judgments.	<ul style="list-style-type: none"> • Disciplined • Intolerant of subjective, intuitive ideas • Logical • Low tolerance of uncertainty, ambiguity • Objective • Parental in approach • Rational
Activists	Activists involve themselves fully and without bias in new experiences. They are open-minded, not skeptical. This tends to make them enthusiastic about anything new.	<ul style="list-style-type: none"> • Flexible • Gets bored with consolidation • Happy to give things a

	<p>Their philosophy is “I’ll try anything once”. They tend to act first and think for the consequences afterwards. Their days are filled with activity. Brainstorming is used to tackle problems. They are busy with the activities throughout the day. They tend to thrive on the challenge of new experiences but these pupils are bored with implementation and long term consolidation.</p>	<p>try</p> <ul style="list-style-type: none"> • Open-minded • Optimistic about change • Rushes into action without preparation • Takes immediate obvious action • Takes unnecessary risks
<p>Pragmatists</p>	<p>They are keen on trying out ideas, theories and techniques to see if they work in practice. They positively search out new ideas. Pragmatists take the first opportunity to experiment with applications.</p> <p>They want to try out new ideas in practice. They like to get on with things and act quickly and confidently on ideas that attract them. They are essentially practical, down-to-earth pupils who like making practical decisions and solving problems.</p>	<ul style="list-style-type: none"> • Business-like - gets to the point • Does not like theory • Impatient with waffle • Keen to test things out in practice • Practical, down to earth, realistic • Rejects ideas without clear application • Task and technique focused

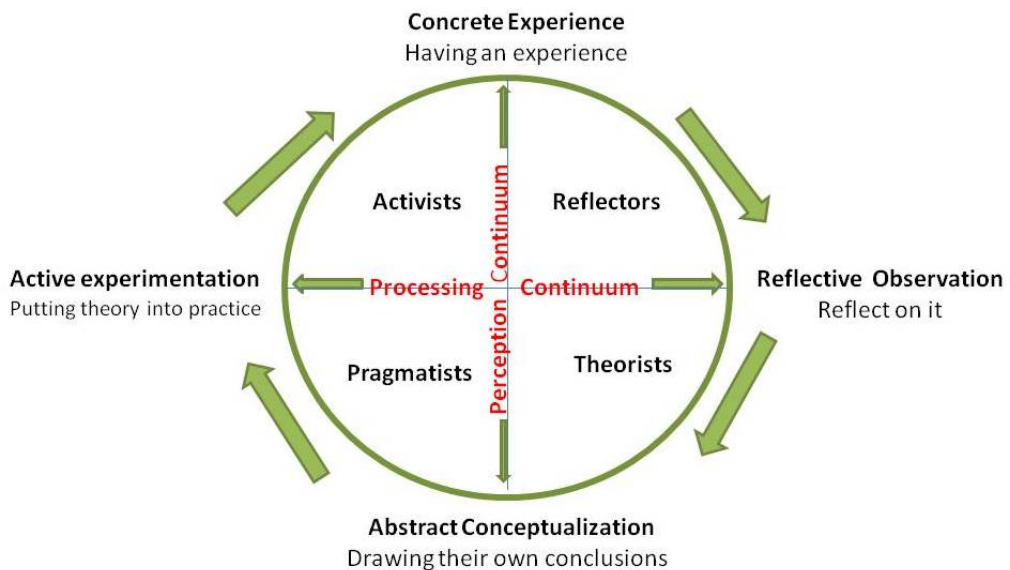


Figure 7.1. Honey and Mumford’s learning style

Chapter 8. Gardner's Theory of Multiple Intelligences (1983)

Intelligence is defined as “the ability to solve problems or to create products that are valued within one or more cultural settings” (Frames of Mind: The Theory of Multiple Intelligences, 1983). The theory of multiple intelligences, developed by psychologist Howard Gardner in the late 1970's and early 1980's, posits that individuals possess eight or more relatively autonomous intelligences. Individuals draw on these intelligences, individually and corporately, to create products and solve problems that are relevant to the societies in which they live (Gardner, 1983, 1993, 1999, 2006b, 2006c). The eight identified intelligences include linguistic intelligence, logical-mathematical intelligence, spatial intelligence, musical intelligence, bodily-kinesthetic intelligence, naturalistic intelligence, interpersonal intelligence, and intrapersonal intelligence (Gardner, 1999).

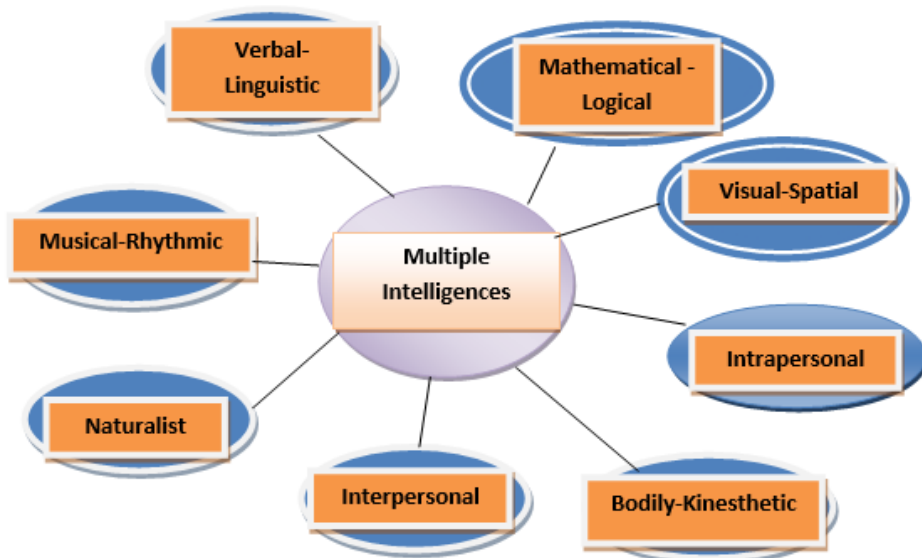


Figure 8.1. Multiple Intelligences as suggested by Gardner

Multiple intelligence theory was first published in Howard Gardner's book, *Frames of Mind* (1983), and became established as a classical model by which to understand and teach many aspects of human intelligence, learning style, personality and behavior- in education and industry.

Gardner initially developed his ideas and theory on multiple intelligences as a contribution to psychology. The theory was soon embraced by education, teaching and training communities, for whom the appeal was immediate and irresistible-a sure sign that Gardner had created a classic reference work and learning model. A description of eight intelligences is given.

Chapter 9. Kolb Learning Styles (1984)

According to Kolb (1984), learning involves the acquisition of abstract concepts that can be applied flexibly in a range of situations. In Kolb's theory, the impetus for the development of new concepts is provided by new experiences. According to Kolb (1984), "Learning is the process whereby knowledge is created through the transformation of experience" (p. 38).

9.1. Learning Styles

Kolb (1984) classified individuals into one of four learning styles based on a mathematical computation which derives from the individual's score on a self-report instrument which measures preferences for perception and processing. This style is then described in terms of individual behaviors. Kolb's learning model is based on two continuums that form a quadrant:

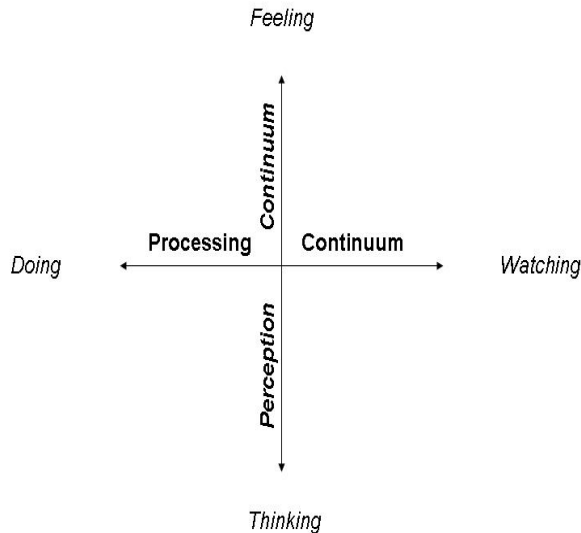


Figure 9.1. Continuum of learning according to Kolb

- Processing Continuum: Our approach to a task, such as preferring to learn by doing or watching.
- Perception Continuum: Our emotional response, such as preferring to learn by thinking or feeling.

The four combinations of perceiving and processing determine one of four learning styles of how pupils prefer to learn. Kolb believes that learning styles are not fixed personality traits, but they are relatively stable patterns of behavior that is based on their background and experiences. Thus, they can be thought of more as learning preferences, rather than styles.

Chapter 10. Gregorc Learning Style (1984)

Gregorc introduced his Energic Model of Styles, which is an introduction to his work in learning styles which began in 1969. This work evolved into the Mind Styles Model in 1984. This model uses perceptual and thinking/ processing modes to determine four preferred learning styles. It is a modified version of Kolb's learning dimensions, focusing on random and sequential processing of information.

10.1. Mind style Learning Type

The basis of Mind Styles learning types is on the concept that individuals learn through:

1. taking in concrete experiences or abstract constructs and then
 2. ordering them in a linear, sequential way or in a random, leaping way.
- **The term Concrete and abstract refer** to how information is taken in or perceived. The quality of concreteness relates to mentally registering (perceiving) data through the direct use of the physical senses; the quality of abstractness relates to understanding (perceiving) data through reason, intuition, and relationships.

Concrete learners absorb information through direct experience, by doing, acting, sensing, and feeling. They deal with the obvious and the here and now; they prefer details of a thing and think inductively, from the parts to the whole. When using our concrete ability, we are dealing with the obvious, the "here and now." They are not looking for hidden meanings, or making relationships between ideas or concepts. For this type of learners, ***"It is what it is."***

Abstract learners take in information through analysis, observation, and thinking about what is theoretical or speculative in nature (abstractions). They understand or believe what they cannot actually see. This quality allows visualizing, conceiving ideas, understanding or believing what we cannot actually see. They use reason and intuition, and look beneath what is to the more subtle implications; they prefer theories and think deductively, seeing and starting from the whole picture. : In case of Abstract learners, ***"It is not always what it seems"***

- **Ordering** refers to how the mind grasps and arranges (processes) information - either linearly in a step-by step, orderly process (sequentially) or in a non-linear leaping, spontaneous fashion (randomly).

Sequential learners allow mind to organize information in a linear, step-by-step, and logical manner. While using sequential ability, a logical train of thought is followed, which is a traditional approach to dealing with information. They prefer to have a plan and follow it rather than acting on impulse. These learners do well in written tests.

Chapter 11. McCarthy Learning Styles (1987)

According to McCarthy (1990), some perceive reality mainly by sensing/feeling or intuition, while others rely on thinking through a situation or rationale. No one way, be it sensing/feeling or thinking, is totally exclusive of the other, nor is one superior to the other. On the contrary, one should complement the other, working in tandem. The second component in learning is processing which involves the functions of watching and doing. Some individuals are watchers first, others doers who dive right in. However, both are equal and complementary in that doers need to reflect on their actions and watchers need to act on their reflections. The theoretical foundation of the 4MAT System is built on how individuals perceive and process reality.

11.1. Perceiving

Human perception means the ways pupils take in new information. This occurs in an infinite variety of ways, all of which range between experience and conceptualization.

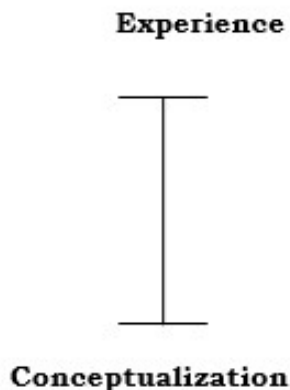


Figure 11.1. Human Perception

Experience: one's perception by his/her personal engagement—including sensations, emotions, physical memories; the immediate; the self; being in it.

Conceptualization: The translation of experience into conceptual forms—ideas, language, hierarchies and naming systems. It is an abstract approach to learning, being apart from it. The interplay between the “feeling” of experience and the “thinking” of conceptualization is crucial in the learning process. It connects the personal values and perceptions of students to those of expert learners.

11.2. Processing

Human processing means what pupils do with new information—occurs in an infinite variety of ways, all of which range between reflection and action.

Chapter 12. Felder-Silverman Learning Style (1988)

Felder formed a theory corresponding diagnostic instrument Index of Learning Styles (shortly ILS) in cooperation with B. Solomon, in 1991 which was based on the first version of it consisting of five dimensions and created by Felder and L. Silverman, an educational psychologist at the University of Denver, in 1988.

12.1. Origin of Felder's Learning Style Concept

It was directly influenced by Kolb's theory where a dimension active/reflexive is analogous to a dimension of active/reflexive in Felder's ILS questionnaire, and a dimension of sensing/thinking is represented by a dimension of sensing /intuition. The author differentiates learner's types according to their preferences in learning process. He describes four concrete dimensions consisting of two poles representing bipolar modalities of learning process. According to Felder, every learner inclines always to one certain pole, though we cannot say that only a particular category is typical for a learner because his/her learning style is formed by combination of certain dimension preferences in learning process.

Myer and Brigg's model was inspiring for Felder reflecting extraversion/introversion dimension of their personal questionnaire in the sense of active/reflexive as a first dimension in his diagnostic instrument ILS. The main characteristics of extravert type is that he is active in various fields, prefers a great number of activities; prefers working in a group, is sociable, and has a lot of friends. In the case of introvert type, he uses especially thinking in the process of learning, he/she reflects his/her ideas and images, prefers working alone the most with one or two pupils.

The second dimension of ILS is analogous to MBTI model – it is sensing/intuitive. Learners preferring sensing acquire the information by using their five senses (sight, hearing, touch, smell, taste). They are interested in what is actual, real, current and common, and they remember important details. The intuitive types stress the impression and importance. They prefer learning when they can think about the problem rather than to use concrete experience. They think about the future rather than past. They prefer abstract information (Myers, Briggs, 2009).

Felder's learning style concept assessed through his ILS questionnaire is represented by four dimensions. Two already mentioned dimensions influenced by Kolb's and Myers-Brigg's theories, two other dimensions are added. That is why according to Felder's model, a learner rather prefers one certain modality of each dimension: a) active / reflective b) sensing / intuitive c) visual / verbal d) sequential / global. There were five dimensions in the original version of ILS questionnaire. The last one was inductive / deductive dimension. Later on, Felder (2002) realized that induction and deduction are both different learning preferences requiring different

Chapter 13. Stacy Mantle – The Seven Learning Styles

In order to maximize learning advantages, one must define the type of learner and cater the lesson to that particular learning style. For example, if the child is primarily a linguistic learner, we could incorporate several novels into the curriculum to encourage short stories to explain scientific developments, or allow the student to rewrite a difficult math problem into a story problem. If he/she is primarily logical, emphasize charts, tables, and diagrams. Venn diagrams work well with a logical learner. The seven learning styles by Stacy Mantle are

13.1. Linguistic

1. This type of learner loves to read, write, and tell stories. He/She tend to memorize places, dates, names, and trivia very easily. They have a remarkable ability to repeat back everything that has been told to them, word for word. These students learn best by saying, hearing, and seeing words.

Suggested Teaching Learning Activities

- I. Encourage their creativity, and do best to distinguish between the truth and exaggeration (it is all well intended).
- II. Ask them to write down a word or a phrase, and it is forever locked into their memory.
- III. Encourage them to participate in spelling bees and creative writing courses.

13.2. Logical

2. A logical learner is very much mathematically inclined. They enjoy solving problems, particularly if they are math related. They are very logical, straight-forward types of learners. They will be plague with questions on how things work, how things relate to one another, and why things are here. Their favorite toys as young children were likely building blocks, and pattern puzzles. This type of student learns best by categorizing, classifying, and working with abstract patterns or relationships.

Suggested Teaching Learning Activities

- I. Answer their ongoing questions with as much patience as you can muster, and know that one day they may become an engineer.
- II. Ask them to make a chart or to show relationships between different items.

13.3. Spatial

3. These are the visualizers. They spend most of the day dreaming, watching movies, and staying as far away from reality as possible. If they seem particularly "down",

Chapter 14. Fleming's VAK Learning Style (1992)

VAK stands for Visual, Auditory, and Kinesthetic (Tactile). The theory is that one prefers to learn through one of these sense channels.



Figure 14.1. VAK Learning Styles

14.1. Visual Learning Style

Visual learners learn through vision. They think in pictures and learn best from visual displays – body language, facial expressions, written information, charts and diagrams, illustrations in books and videos. Viewing and reading are described to be important for visual learners. Pictures, tables, demonstrations, handouts, and mind maps are very useful for these kinds of learners. It is easy to add those things in the learning environment and therefore it is easy for visually learning students to use and study in virtual environment. Thematic entities are important to this kind of learners.

14.1. 1. Teaching Visual Learners

Visual learners do best through viewing concepts. They benefit from reading, visual, writing or drawing concepts, and like written instructions. They learn best when they can observe. Pictures, diagrams, films and displays are effective for them. Flashcards, cartoons and the use of highlighted material or different computer fonts are appealing to them. Teachers should consider the use of maps, flowcharts or webs to help these students learn concepts. They appreciate opportunities to highlight material or to use checklists. Visual learners represent about 65 percent of the population.

14.2. Auditory Learning Style

Auditory learning style involves the transfer of information through listening: to the

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