



## LEARNING STYLES OF LEARNERS AND ITS IMPORTANCE IN INSTRUCTION

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### ABSTRACT

*A learning style is a student's consistent way of responding to and using stimuli in the context of learning. Learning styles are influenced by many factors like culture, technological age, gender, years of schooling, type of learning environment, heredity, personality and communication and perception skills. There are many learning style models based on the three schools of thought viz, perceptual model (VAK model), personality model (Myers Brigg model) and information processing models (Kolb's model). Learners having a particular learning style possess characteristic features. The learning style of a student can be identified using various learning style assessment tools. This helps the teacher to guide the student as to which learning strategies are best for him/her. It also enables the teachers to use different teaching methods to match the learning styles of the learners in her class. Learning styles can also give a clue which courses may be best for a learner. Thus knowledge of learning styles can help in improving the academic performance of the learner.*

**Keywords :** learning style, learning style models, learning style assessment instrument, learning strategies, methods of teaching, academic performance

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### INTRODUCTION

The diversity of students engaged in higher education continues to expand. Students come to colleges with varied ethnic and cultural backgrounds, from a multitude of training programs and institutions, and with differing learning styles.<sup>1</sup> These changes and advances in technology have led many educators to reconsider traditional, uniform instruction methods and stress the importance of considering student learning styles in the design and delivery of course content. Mismatches between an instructor's style of teaching and a student's method of learning have been cited as potential learning obstacles within the classroom and as a reason for using a variety of teaching modalities to deliver instruction.

### Definition

A learning style is a student's consistent way of responding to and using stimuli in the context of learning. Keefe (1979) defines learning styles as the "composite of characteristic cognitive, affective, and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment."<sup>1</sup> Stewart and Felicetti (1992) define learning styles as those "educational conditions under which a student is most likely to

learn." Thus, learning styles are not really concerned with "what" learners learn, but rather "how" they prefer to learn.

### **Factors Affecting Learning styles**<sup>2,3</sup>

Learning styles are influenced by certain factors like:

- a. Culture: Culture influences environmental perceptions and thus determine the way in which information is processed. Culture also plays a role in conditioning and reinforcing learning styles.
- b. Technological age: The millennial generation students are more technologically advanced than genX counter parts.
- c. Gender: Females were mostly convergers and divergers whereas most of the males were assimilators.
- d. Years of schooling: as the schooling progresses, arts students became less analytical and more creative, whereas the science students became less creative and more analytical. The fourth year nursing students were in abstract conceptualization stage and third year students were mostly convergers.
- e. Type of learning environment: Students who had undergone interactive style of interaction will be more independent learners. Asian learners were found to be analytic and field dependent, concrete sequential and visual learners. Negative student interaction, poor rapport between teacher and student results in introverted learning styles.
- f. Personality type: Learning styles based on personality types are explained by Myers.
- g. Heredity: Depending on whether a person is right or left brain dominant, learning styles also vary. Gardner's multiple intelligence theory and many other learning style models are based on the influence of heredity.
- h. Communication and perception skills: This influence is explained in the VAK model and Dunn's model.

### **Learning Style Models**

Learning styles come from three schools of thought:<sup>4</sup>

1. Perceptual modality.
2. Information processing
3. Personality pattern

Perceptual modality is a biologically-based reaction to the physical environment. It refers to the primary way our bodies take in information such as auditory, visual, kinesthetic and tactile. Eg: Fleming's VARK model. Information-processing distinguishes between the way we think, solve problem and remember. Eg: Kolb's learning model. Personality models are the way we interact with our surroundings. It refers to our way of perceiving, organizing and retaining information. Eg: Myers-Briggs Type Indicator, Gardner's multiple intelligence

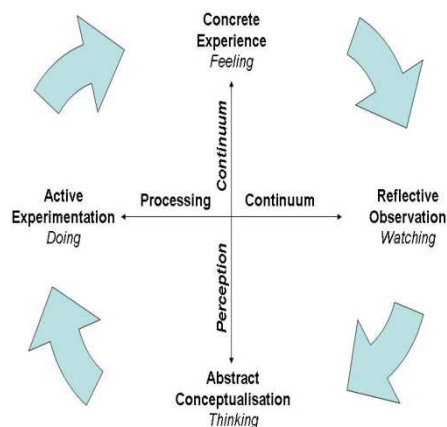
#### **i. PERCEPTUAL MODEL-Visual, Auditory, and Kinesthetic Learning Styles (VAK)**<sup>6,7</sup>

The VAK learning style uses the three main sensory receivers: Visual, Auditory, and Kinesthetic (movement) to determine the dominant learning style. It is sometimes known as VAKT (Visual, Auditory, Kinesthetic, & Tactile). It was put forward by Fleming. It is based on *modalities* -- a channel by which human expression can take place and is composed of a combination of perception and memory.

Learners use all three modalities to receive and learn new information and experiences. However, according to the VAK or modality theory, one or two of these receiving styles is normally dominant. This dominant style defines the best way for a person to learn new information by filtering what is to be learned. This style may not always be the same for some tasks. The learner may prefer one style of learning for one task, and a combination of others for a different task.

## ii. INFORMATION PROCESSING MODEL-Kolb's Learning styles model

Kolb's learning theory sets out four distinct learning styles, which are based on a four stage learning cycle.<sup>1,4,5</sup> In this four stage cycle of learning, immediate concrete experiences provide a basis for observations and reflections. These observations and reflections are assimilated and distilled into abstract concepts which are actively tested in turn creating new experiences. Kolb says that ideally (not always) this process represents a learning cycle or spiral where learner touches all the bases i.e., a cycle of experiencing, reflecting, thinking and acting.



**Fig.2-** Kolb's learning model

Kolb's model therefore works on two levels- a four stage cycle:

1. Concrete Experience-(CE)
2. Reflective Observation-(RO)
3. Abstract Conceptualisation-(AC)
4. Active Experimentation-(AE).

In Kolb's model, the east-west axis represents modes of grasping experiences (processing) and north-south axis represents mode of transforming experiences (perception continuum). There are two preferences for grasping experiences- doing and watching, and two preferences for transforming experiences- thinking and feeling. The learning styles are the combination of two continuums. So if a person's approach to the task or way of grasping of experience is watching (Reflective Observation) and way of transforming experience in thinking (Abstract Conceptualization), his learning style is Assimilating (AC/RO). Similarly other learning styles are also combinations of the two preferences.

	DOING (ACTIVE EXPERIMENTATION)	WATCHING (REFLECTIVE OBSERVATION)
FEELING (CONCRETE EXPERIENCE)	ACCOMODATING (CE/AE)	DIVERGING (CE/RO)
THINKING (ABSTRACT CONCEPTUALIZATION)	CONVERGING (AC/AE)	ASSIMILATING (AC/RO)

**Figure 3.** Matrix of Learning Styles based on Kollb's Learning model

- **Divergers**
- **Convergers**
- **Assimilator**
- **Accomodator**

### iii. PERSONALITY MODELS-Myers-Briggs Type Indicator

The Myers-Briggs personality-type system is a method of sorting personalities into 16 types based upon four "preferences.". Each of the four preferences (energy, perception, judgment and information-processing) has two possibilities, represented by letters. A full personality type is composed of the four letters which represent a person's preferences. *Energy* is either extroverted or introverted (E/I), *perception* is either sensing or intuitive (S/N), *judgment* is either thinking or feeling (T/F), and *information-processing* is either judging or perceptive (J/P). Therefore, a personality that is extroverted, sensing, feeling and perceptive is written ESFP. The first and last letters are considered revealing of a person's "attitudes" or "orientations." The middle two letters are considered revealing of how a person functions.

#### 1. Extroverts(E) Vs Introverts(I)

#### 2. Sensing (S) Vs Intuition(I)

#### 3. Thinking (T) Vs Feeling(F)

#### 4. Judging (J) Vs Perceiving(P)

#### Characteristic Features of Learners According To Learning Styles

Based on the various learning models, teachers can identify the type of learners using their particular characteristics as a guide.

**Auditory learners-** Learn best by listening and talking aloud. They typically notice and remember sounds. They are good at remembering what they hear. They are also good with words and language. They often read to themselves as they study. They often do better talking to a colleague or a tape recorder and hearing what was said. They are easily distracted by noise and sounds.

**Visual learners-** They think in terms of pictures. They have a good sense of direction, because they visualize maps and directions in their mind. They prefer to read a textbook than listen to a lecture.

They enjoy doodling and drawing. They use “sight words” in their everyday terminology – to take a look at. They remember details including colour and spatial arrangements.

**Kinesthetic learners-** They learn best by touching, feeling, and experiencing. They remember best by writing or physically manipulating the information.

**Extroverts-** They find energy in things and people, prefer to interact with others and are action-oriented, talks more, listens less, learns better by explaining to others.

**Introverts-** find energy in inner world of ideas, concepts and abstractions; think more than talk; are reflective thinkers, likes to work alone.

**Sensors-** rely on their five senses; are detail oriented, wants facts and trusts them, prefer organized, linear and structured lectures(systematic instruction), likes concrete learning experiences, dislike instruction heavy in abstractions such as theories and mathematical models

**Intuitors-** seek out patterns and relationships among the facts they have gathered, trust hunches and their intuition, value imagination and innovation; prefer various forms of discovery learning and must have the big picture ; like concept maps, compare and contrast tables; do not like rote memorization, substitution and repetitive calculations.

**Thinkers-** decide things impersonally based on logic and principle; value fairness, gives weightage to objective criteria in making a decision; critical; prefer clear goals and objectives; wants to know what they should do to learn the material; like logically organized presentations of course material and feedback.

**Feelers-** value harmony, focuses on values and needs to make decisions; very good at persuasion and facilitating differences among group members; values empathy and harmony; enjoys small group exercises; likes teachers who establish rapport with them and show appreciation of their efforts.

**Judgers-** decisive, self-starters, self-regimented; focus on completing the task, knowing the essentials, take action quickly; plan their work and work their plan, want guides that give quick tips; can be encouraged by offering self-improvement.

**Perceivers-** curious, adaptable, spontaneous, start many tasks, want to know everything about each task, finds it difficult to finish task, postpones till last minute; breaking down a complex assignment in to a series of sub-assignments and providing deadlines help them; are process oriented; likes to have choice and flexibility in their assignments, dislike rigid deadlines.

**Divergers-** they have the ability to look from different perspectives, are sensitive (emotional), uses imagination to solve problem (imaginative), have broad cultural interests and likes to gather information, interested in people and tends to work in groups, listens with an open mind and receive personal feedback, creative- generates many ideas, prefers to study humanities, liberal arts and become counselors, organizational development specialists.

**Convergers-** They have skill in practical application of ideas and theories, does best in situations where there is a single correct answer and can focus on specific problem, relatively unemotional, prefer to deal with things than people and less concerned with interpersonal aspects, more attracted to technical tasks, likes to experiment with new ideas, to simulate, prefers to study physical sciences, engineering, computer sciences.

**Assimilator-** Likes a concise, logical approach, ideas and concepts are more important than people, good in understanding wide range of information and organize it in a clear logical format, needs

clear explanation than practical opportunity. Prefers to study basic sciences and mathematics, not applied sciences and chooses information and science careers, research and planning. If a theory doesn't fit facts, reexamines the facts.

**Accommodator-** Risk takers; excels in situations where quick decisions and adaptations are required. Carries out plans and experiments and involves self in new experiences. At ease with people, but impatient and pushy, relies heavily on other people's information than on their own analysis. Solve problems in trial and error manner ( intuitive, not logical), pursues action-oriented jobs – nursing, teaching, marketing, or sales. If a theory doesn't fit facts, discards it, likes hands-on-learning. Prefer to work in teams.

### **Learning Styles And Learning Strategies** <sup>5,6,7,8,9</sup>

Knowledge of learning styles is useful for the teacher because she can guide the learner regarding the best learning strategies that can be employed by the learner. The following provides a glimpse of learning strategies matched with learning styles.

- **Sensory learner-** Ask the instructor for specific examples of concepts and procedures, and find out how the concepts apply in practice. If the teacher does not provide enough specific, try to find some in your course text or other references or by brainstorming with friends.
- **Intuitive learner-** Ask instructor for interpretations, or theories that link the facts or try to find the connections yourself.
- **Visual-** Find visual representations of course material. Prepare a concept map by listing key points, enclosing them in boxes or circles. Color code notes with a highlighter.
- **Verbal-** Write summaries or outlines of course material in your own words. Work in groups: you gain understanding by hearing classmates explanations or explaining concepts to others or (CD-ROMs, websites, etc
- **Tactile Learners-** Drawing, playing board games, making dioramas, making models, following instructions to make something are some of the strategies these learners can follow.

### **Learning Styles And Methods Of Teaching.** <sup>1,4,6,7,8,9</sup>

Teachers need to cater to the wide variety of learning styles exhibited by the learners. For this they will have to employ various teaching strategies. Given below are teaching strategies suited to each learning style.

- **Auditory learners-** Begin new material with a brief explanation of what is coming. Conclude with a summary of what has been covered. Use the Socratic method of lecturing by questioning learners to draw as much information from them as possible and then fill in the gaps with your own expertise. Include auditory activities, such as brainstorming, buzz groups, or Jeopardy. Leave plenty of time to debrief activities. This allows them to make connections of what they learned and how it applies to their situation. Have the learners verbalize the questions. Develop an internal dialogue between yourself and the learners. Use discussions, oral reports, Writing projects, Socratic method of lecturing, Buzz group, brain storming , interviewing, debating, participating on a panel.
- **Visual learners-** Use graphs, maps, charts, cartoons, posters, diagrams, graphic organizers, text with a lot of pictures Include outlines, concept maps, agendas, handouts, etc. for reading

and taking notes. Include plenty of content in handouts to reread after the learning session. Leave white space in handouts for note-taking. Invite questions to help them stay alert in auditory environments. Post flip charts to show what will come and what has been presented. Emphasize key points to cue when to take notes. Eliminate potential distractions. Supplement textual information with illustrations whenever possible. Have them draw pictures in the margins. Have the learners envision the topic or have them act out the subject matter. Use Computer graphics.

- **Kinesthetic learners-** Use activities that get the learners up and moving. Play music, when appropriate, during activities. Use colored markers to emphasize key points on flipcharts or white boards. Give frequent stretch breaks (brain breaks). Provide toys such as Koosh balls and Play-Dough to give them something to do with their hands. To highlight a point, provide gum, candy, scents, etc. which provides a cross link of scent (aroma) to the topic at hand (scent can be a powerful cue). Provide highlighters, colored pens and/or pencils. Guide learners through a visualization of complex tasks. Have them transfer information from the text to another medium such as a keyboard or a tablet. Employ Projects, experiments
- **Sensing-** Real-world applications, Hands-on activities, Case studies, group project, in-class presentations.
- **Intuitive-** Connections: concept maps, Open-ended, speculative assignments
- **Divergers-** Collective discussion, Brain storming
- **Convergers-** Visual methods, Diagrams, Teacher's handout
- **Accommodators-** Role playing, Computer simulation
- **Assimilators-** Lecture, Sample reading materials

### **Learning styles and academic performance**

A learner's achievement in any class is determined by the native ability and the level of congruence between learners' learning styles and teacher's teaching styles. Congruence between teaching and learning styles has a positive impact on achievement and satisfaction. High independent learners tend to score better grades than those who are less independent. Among engineering students, introverts, intuitors, thinkers and judges outperformed extroverts, sensors, feelers and perceivers.<sup>1</sup> This is because instruction is designed to match these type of learners.. In a study among chemical engineering students at North Carolina State University, it was found that intuitors performed better than sensors in courses with abstract content, thinkers outperformed feelers in the relatively impersonal environment of engineering, judges outperformed perceivers because of the heavy time demands<sup>1</sup> After a faculty training program at Brigham Young University, learning improved among the students as teachers used a variety of teaching methods and redesigned many courses based on learning styles of the students. When one group of students in North Carolina State University were subjected to traditional instruction and another group to holistic instruction, Type I and Type 4 students were more likely to get lower grades when teaching was traditional<sup>1</sup>

### **Merits of Assessment of Learning Styles**

Knowledge of learning styles can be of use to both educators and students. Faculty members with knowledge of learning styles can tailor pedagogy so that it best coincides with learning styles exhibited by the majority of students.<sup>4</sup> Alternatively, students with knowledge of their own preferences are empowered to use various techniques to enhance learning, which in turn may

impact overall educational satisfaction.

### **Learning Style Assessment Instruments<sup>1,5</sup>**

Depending on the learning style model adopted, we can use different learning style assessment tools. The following are the names of some of the common tools:

1. Index of Learning Survey (ILS)
2. Jackson's Learning Styles Profiler (LSP)
3. The Learning Style Inventory (LSI)
4. Honey and Mumford's Learning Styles Questionnaire (LSQ)
5. Allinson and Hayes' Cognitive Style Index (CSI)
6. The Inventory of Learning Styles
7. Dunn and Dunn's Learning Style Questionnaire (LSQ)
8. Myers- Briggs Index
9. VARK Survey
10. Online instruments
  - Learning Style Inventory
  - Index of Learning Styles Questionnaire
  - Keirseey Teemperament Sorter
  - VARK Inventory (Neil Fleming, 1987)

### **CONCLUSION**

Learning styles are having application in almost all fields of life. But it is of more importance in the field of education as teachers are faced with the task of catering to a group with a wide range of attributes that influences learning. Learners of nursing are also differing widely as there are traditional learners as well as millennial learners, regular classroom learners as well as online learners. In order to cater to the needs of these wide ranges of learners, teachers need to adapt their teaching styles to cater to the varied learning styles of learners, as well as enable learners to utilize all learning styles.

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