THEORETICAL OVERVIEW

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2.1 Teaching and Learning

Teaching and learning are interdependent processes. Our understanding of learning has been made possible by the work of psychologists. According to the behaviourists, learning occurred as a response to certain definite and identifiable ‘stimuli’ in one’s environment. By the middle of the twentieth century, the S-R view of learning had emerged as the most accepted explanation of learning in the field of psychology. By virtue of its predominance, the S-R explanation of learning had influenced allied disciplines such as education, linguistics and sociology. Its influence in the field of education was further strengthened by the works of Skinner and Crowder who translated the theory into systematic procedures of organizing learning which they called programmed learning.

The simplistic and reductionist view of learning was challenged first by a set of psychologists called gestalts and subsequently by those who are known as constructivists. As a result, the reductionist view of the behaviourists was displaced by far more complex non-reductionists views. It occurred in psychology through the work of Piaget, Bruner, Gagne, etc. In recent years, constructivism has received considerable attention in education. It
has been heralded as a more natural relevant, productive and empowering framework for incorporation in educational practice.

### 2.2 Constructivism

Constructivism is viewed as a meaning-making theory that offers an explanation of the nature of knowledge and of how human beings learn. In this explanation of learning, individuals create or construct their own new understandings or knowledge through the interaction of what they already knew and believe and the ideas, events, and activities with which they come in contact. Knowledge viewed here is acquired through an involvement with content rather than initiation or repetition. Constructivism had made profound influence on the conceptualisation of learning and the way teaching needs to be organised. Further advancement in the field occurred when psychologists stressed the way we process experience are central to any conception of learning. They spoke of learning is as a cycle that begins with experience, continues with reflection and taken leads to action, which itself becomes a concrete experience for reflection. The importance of experience in learning was acknowledged by more and more psychologists. The value of experience is a tool in the creation of knowledge and the fostering of human development was seen as early as the 4th century BC.
2.3 Experiential Education

*I hear and I forget
*I see and I remember
*I do and I understand

- Confucius (B.C. 551 – B.C. 479)\(^1\)

Experiential Education is education that incorporates a substantial component of experiential learning into its programming. Experiential learning is defined as learning in which the learner is in direct touch with the realities being studied. It is contrasted with learning in which the learner reads, hears, talks or writes about those referents or realities but never comes into contact with them as part of the learning process (Keeton and Tate, 1978).\(^2\)

Mitzel (1982)\(^3\) described as Experiential education involves not merely observing what is being studied but also doing something with it, such as testing the dynamics of the phenomenon or applying the theory to achieve some desired results. The uses of experiential component are to test a theory, to improve skills, to seek clues to a new theory, to achieve a social objective by applying a theory.

The historical roots of experiential education are deep. They go beyond Aristotle, who studied biological phenomena at first hand, to Buddha, who counselled his followers to leave their
habitual ways of life in order to try the right fold path in actual daily life. Encyclopaedic Dictionary of Education defines Experiential learning as “In theories of learning and educational philosophy, one major mode of acquiring knowledge through experience” (Mamta, 1997).

2.4 Experiential Learning

Experiential learning is a process through which a student develops knowledge, skills, and values from direct experiences. Experiential learning incorporates a wide range of concepts from highly theoretical ones to the simplicity of “learning by doing”. The concept is based on traditional apprenticeship model. Weil & McGill (1989) argue that the concept is being advocated for quite different reasons. Advocates mention the need of shift from on undue emphasis on cognitive aspects to more holistic or humanistic notions of human development, and the necessity of developing cost-effective and flexible means of offering a relevant education.

Experiential learning received additional impetus from the seminal UNESCO Publication “Learning to be” (Faure, 1972), which emphasised life-long learning as a pre-requisite for establishing the knowledge society. A central principle of life long learning is to incorporate the students own experiences and aspirations and to recognise the cultural aspects of learning.
Curricular activities that are “experiential” contain opportunities for the students to take initiative, make decisions, and be accountable for the results. It includes opportunities for the students to engage intellectually, creatively, emotionally, socially, or physically. The design of the learning experience assumes some outcomes will be unknown and creates the possibility to learn from natural consequences, mistakes, and success. It gives opportunity for reflection, critical analysis and synthesis (Hartshorn & Boren, 1990).7

2.4.1 Historical Development of Experiential Learning Theory

For over forty years research based on Experiential Learning Theory-ELT (Kolb, 1984; Kolb & Kolb, 2007) has been an advocate for and contributor to the shift in perspective. Experiential Learning theory draws on the work of prominent 20th century scholars who gave experience. A control role in their theories of human learning and development- John Dewey, Kurt Lewin, Jean Piaget, William James, Carl Jung, Paulo Freire, Carl Rogers and others- to develop a dynamic, holistic model of the process of learning from experience and a multi linear model of adult development. ELT is a dynamic view of learning based on a learning cycle driven by the resolution of the dual dialectics of action/reflection and experience/abstraction. It is a holistic theory that defines learning as the major process of human adaptation.
involving the whole person. ELT is applicable not only in the formal education classroom but in all arenas of life. The process of learning from experience is present in human activity everywhere all the time. The holistic nature of the learning process means that it operates at all levels of human society from the individual, to the group and to society as a whole.

The theory is called experiential learning for two reasons. First this term ties the theory historically to its intellectual origins in the social psychology of Kurt Lewin in the forties and the sensitivity training of the fifties and sixties. Second, it emphasises the important role that experience plays in the learning process, an emphasis that differentiates this approach from other cognitive theories of the learning process.

Experiential Learning can have an extremely broad or narrow definition depending on what might be considered an “experience”. It, we studied the broad spectrum we will find that a simple definition of learning by doing or learning through direct contact with the subject matter, is not at all adequate. In order to understand the full scope of experiential learning we have definition that meets the broader requirements.

Experiential learning refers to a spectrum of meanings, practices and ideologies which emerge out of the work and commitments of policy makers, educators, trainers, change agents
and ‘ordinary’ people all over the world (Henry, 1989). They see ‘experiential learning’ –with different meanings- as relevant to the challenges they currently face: in their lives, in education, in institutions, in commerce and industry, in communities and in society as a whole. It has been chosen to refer to the clusters of people and ideas as ‘villages’. The four villages are as follows:

*Village One* is concerned particularly with assessing and accrediting learning from life and work experience as the basis for creating new routes into higher education, employment and training opportunities, and professional bodies.

*Village Two* focuses on experiential learning as the basis for bringing about change in the structures, purposes and curricula of post-secondary education.

*Village Three* emphasises experiential learning as the basis for group consciousness raising, community action and social change.

*Village Four* is concerned with personal growth and development and experiential learning approaches that increase self-awareness and group effectiveness.

Kolb’s experiential learning theory emerged out of the theoretical works of Lewin, Dewey, Piaget, and Carl Rogers.
2.4.1.1 Kurt Lewin on Experiential Learning

Lewin (1951)\textsuperscript{11} is best known for his work in the field of organisational behaviour and group dynamics. The principal concern for Lewin was the integration of theory and practice. Lewin’s research reveals that learning is maximised when there is dialectic tension between the immediate, concrete experience and analytic detachment. He considered this conflict critical to organisation change and improvement.

Subjective experience is a vital component of experiential learning. He developed his cycle of action, which provides a continuous process of goal-directed action and evaluation of the consequence of that action. Lewin’s experiential learning model consists of a concrete experience, from which observations and reflections are made, that lead to the formation of abstract concepts and generalisations, following which comes the testing of the implications of these concepts in new situations. The four phases are placed in a circle equidistant from each other. Lewin’s model is the precursor to the Kolb Cycle (Shields; Aaron, & Wall; 2002)\textsuperscript{12}
Figure 2.1
Lewin’s Model of Experiential Learning

2.4.1.2 Dewey’s Model of Experiential Learning

Dewey’s (1938/1997)\textsuperscript{13} Model of experiential learning is remarkably similar to the Lewinian model, although he makes more explicit, the developmental nature of learning implied in Lewin’s conception of it as a feedback process by describing how learning transforms the impulses, feelings, and desires of concrete experience into higher order purposeful action. Dewey’s model of experiential learning is graphically portrayed in figure 2.2.
In his description of learning a similarity with Lewin, the emphasis on learning as a dialectic process integrating experience and concepts, observations and actions. The impulse of experience gives ideas to their moving force, and ideas give direction to impulse. Postponement of immediate action is essential for observation and judgment to intervene, and action is essential for achievement of purpose. It is through the integration of this opposing but symbiotically related processor that sophisticated, mature purpose develops from blind impulse.

2.4.1.3 Piaget’s Model of Experiential Learning

For Piaget (1970), the dimensions of experience and concept, reflection, and action form the basic continuum for the development of adult thought. Development from infancy to adulthood moves from a concrete phenomenal view of the world to an abstract constructionist view to a reflective interlined mode of knowing.
Figure 2.3
Piaget’s Model of Experiential Learning

Each of the three models of experiential learning describes conflicts between opposing ways of dealing with the world, suggesting that learning results from resolution of their conflicts. In Piaget’s framework, the twin process of accommodation of ideas to the external world and assimilation of experience into existing conceptual structures on the moving force of cognitive development.

2.4.1.4 Carl Roger’s on Experiential Learning

Rogers (1969)\textsuperscript{15} distinguished two types of learning: cognitive (meaningless) and experiential (significant). The former corresponds to academic knowledge such as learning vocabulary or multiplication tables and the latter refers to applied knowledge such as learning about engines in order to repair car. The key to the distinction is that experiential learning addresses the needs and wants of the learner. Rogers lists these qualities of
experiential learning: personal involvement, self-initiated, evaluated by learner, and pervasive effects on learner.

**Figure 2.4**

**Carl Roger’s Model of Experiential Learning**

To Rogers, experiential learning is equivalent to personal change and growth. Rogers feels that all human beings have a natural propensity to learn: the role of the teacher is to facilitate such learning. This includes: (1) setting a positive climate for learning (2) clarifying the purposes of the learner (S), (3) Organising and making available learning resources, (4) balancing intellectual and emotional components of learning, and (5) sharing feelings and thoughts with learners but not dominating.

According to Roger, learning is facilitated when: (1) the student participates completely in the learning process and has
control over its nature and direction, (2) it is primarily based upon
direct confrontation with practical, social, personal or research
problems, and (3) self-evaluation is the principal method of
assessing progress or success. Rogers also emphasises the
importance of learning to learn and an openness to change.

2.5 David A. Kolb on Experiential Learning

David A. Kolb is the Professor of Organisational Behaviour in
the Weatherhead School of Management, Case Western Reserve
University, United States. He was born in 1939. He did M.A in
1964 and Ph.D in 1967 from Harvard University. He started career
as an Assistant Professor of Organisational Psychology and
Management in 1965 at Massachusetts Institute of Technology.
Later in 1976, he joined the Weatherhead School of Management.
Besides his contribution in experiential learning, he is also known
for his contribution to life long learning, organisational behaviour
and management and learning styles.

According to Kolb (1984),

“learning is the process where by
knowledge is created through the transformation of experience.
Knowledge results from the combination of grasping experience
and transforming it” (p.41).

He proposes that experiential learning has six main
characteristics (Kolb & Kolb, 2009).
learning is best conceived as a process, not in terms of outcomes.

learning is a continuous process grounded in experience.

learning requires the resolution of conflicts between dialectically opposed models of adaptation to the world.

learning is a holistic process of adaptation to the world.

learning involves transactions between the person and the environment.

learning is the process of creating knowledge that is the result of the transaction between social knowledge and personal knowledge.

Figure 2.5
Basis of Kolb's Experiential Learning Model

2.6 Experiential Learning Cycle Models

Experiential Learning Cycles (ELC) is models for understanding how the process of learning works. They are distinct from other
models of learning such as behavioural models or social learning models. Experiential Learning Cycles treat the learners' subjective experience as of critical importance in the learning process. ELC propose an interactive series of process which underlies learning. ELC are commonly used to help structure experience-based learning.

The underlying philosophy of ELC is that people learn experientially and that some experiences are educative while others are miseducative. It is the teachers’ responsibility to structure and organise a series of experiences which positively influence individuals future experiences (Dewey, 1938)\textsuperscript{17}

The Experiential Learning Cycle models commonly in Experiential Learning literature have been identified and can be organised in terms of the number of stages they propose.

\textbf{2.6.1 1-stage model}

The first model, a-1-stage model (experience), is simply that experience alone is sufficient for learning. Tell me, and I will forget. Show me, and I may remember: Involve me, and I will understand. The goal of education from this point of view then would be structure and organise learning activities in which experiences themselves facilitate learning (Neill, 2002).\textsuperscript{18}
2.6.2 2-stage model

The second model, a 2-stage model (experience-reflection), is that experiences followed by periods of reflection are an effective way to structure and facilitate experiential education which is explained by James (1980/2000), Bacon (1987) and Neill (2002).

2.6.3 3-stage models

At least two major, 3-stage models exist. The simplest is experience-reflection-plan, which suggests that following an experience and reflection, it is helpful to develop a plan for future experience. The second 3-stage model involving “observation of
surrounding conditions–knowledge obtained by recollection–judgment, which put together what is observed and what is recalled to see what they signify (Dewey, 1938/1997, Priest & Gass, 1997, p. 145)

**Figure 2.8**

3-stage learning cycle model

![3-stage learning cycle model](image)

### 2.6.4 4-stage model

The forth model, a 4-stage model (experience-reflection-abstraction-experimentation), is Kolb’s (1984) classic “Experiential Learning Cycle”. Kolb drew on Dewey’s philosophy in proposing a 4-stage experiential learning cycle which is given below.
Experiential Learning Cycle (Exeter, 2001)\(^{22}\) in this model suggests that a participant has a Concrete Experience, followed by Reflective Observation, then the formation of Abstract Conceptualisations before finally conducting Active Experimentation to test out the newly developed principles. Whilst attributed to Kolb, the stages of experience were derived from the work of Kurt Lewin (Atherton, 2002;\(^{23}\) Priest & Gass, 2005).\(^{21}\) The Kolbian 4-stage model is widely known and used in education and training circles.

1. Concrete Experience  
2. Reflective Observation  
3. Active Experimentation  
4. Abstract Conceptualisation
2.6.5 5-Stage Model

A variety of 5-stage Experiential Learning Cycle models have been proposed, including Joplin (1981).24 It includes the model; focus – action – support – feedback – debriefing (Priest & Gass; 2005).21 Pfeiffer & Jones (1975)25 gave the following 5-stage model.

**Figure 2.10**

5-stage learning cycle model

2.6.6 6-Stage Model


2.7 Kolb’s Experiential Learning Cycle Model

The International Encyclopaedia of Education (Husen, 1992)27 described the best-known model for experiential learning is that developed by Kolb (1984),8 which depicts learning as a
four–stage cycle. The learner first, undergoes a concrete personal experience; second re-examines and reflects on that experience; third, formulates abstract concepts and generalisations; and forth, tests these in new situations. Individuals have different learning styles and person may have different styles for different tasks. Hence, the learning cycle can be entered at any of its four stages. Whereas traditional learning models typically start with abstractions which may or may not bear any relationship to the students’ experience. Although Kolb’s (1984)\(^8\) theory of the learning cycle seems relevant in particular for designing learning environments for adults, it does not yet have an adequate empirical basis in research.

**Figure 2.11**

**Kolb’s Cycle of Experiential Learning**

Kolb’s learning theory sets out four distinct learning styles, which are based on a four–stage learning cycle.
Concrete experience (feeling): Learning from specific experiences and relating to people.

Reflective observation (watching): Observing before making a judgement by viewing the environment from different perspectives.

Abstract conceptualisation (thinking): Logical analysis of ideas and acting on intellectual understanding of a situation.

Active experimentation (doing): Ability to get things done by influencing people and events through action.

Figure 2.12
Kolb’s Experiential Learning Cycle

Kolb views the learning process as a context of people moving between the modes of concrete experience (CE) and abstract conceptualisation (AC), and Reflective observation (RO) and Active Experimentation (AE). Thus, the effectiveness of learning relies on the ability to balance these modes, which Kolb sees as opposite activities that best promote learning.
Figure 2.13  
Kolb’s Model of Experiential Learning Cycle

Some examples are:

- **Learning to ride a bicycle:**
  - **Reflective observation:** Thinking about riding and watching another person ride a bicycle.
  - **Abstract conceptualisation:** Understanding the theory and having a clear grasp of the bicycling concept.
  - **Concrete experience:** Receiving practical tips and techniques from a bicycling expert.
  - **Active experimentation:** Leaping on the bike and have a go at it.

- **Learning algebra:**
  - **Abstract conceptualisation:** Listening to explanations on what it is.
  - **Concrete experience:** Going step–by-step through an equation
  - **Active experimentation:** Practicing
  - **Reflective observation:** Recording your thoughts about algebraic equations in a learning log.
Kolb’s Four-stage learning cycle shows how experience is translated through reflection into concepts, which in turn are used as guides for active experimentation and the choice of new experiences. The first stage, concrete experience (CE), is where the learner actively experiences an activity such as a lab session or field work. The second stage, reflective observation (RO), is when the learner consciously reflects back on that experience. The third stage, abstract conceptualisation (AC), is where the learner attempt to conceptualise a theory or model of what is observed. The fourth stage, active experimentation (AE), is where the learner is trying to plan how to test a model or theory or plan for a forthcoming experience.

Kolb and Fry (1975) argue that the learning cycle can begin at any one of the four points and it should really be approached as a continuous spiral. However it is suggested that the learning process often begins with a person carrying out a particular action and then seeing the effect of the action in the situation. Following this, the second step is to understand these effects in the particular instance so that if the same action was taken in the same circumstance it would be possible to anticipate what would follow from the action. In this pattern the third step would understand the general principle under which the particular instance falls.
Generalising may involve action over a range of circumstances to gain experience beyond the particular instance and suggest the general principle. Understanding the general principle does not imply in this sequence an ability to express the principle in a symbolic medium that is the ability to put it into words. It implies only the ability to see a connection between the actions and effects over a range of circumstances.

When the general principle is to understand the last step, according to David Kolb is its application through action in a new circumstances within the range of generalisation. The same representations of experiential learning, these steps are sometimes represented is a circular movement. In reality, if learning has taken place the process could be seen as a spiral. The action is taking place in different set of circumstance and the learner is now able to anticipate the possible effects of action.

2.8 Learning Styles

Each person prefers different learning styles and techniques. Every one has a mix of learning styles. People may find that they have a dominant style of learning with far less use of the other styles. We can develop ability in less dominant styles, as well as further develop styles that we already use well.

The concept of learning style refers to how people prefer to learn (Sternberg, 1994). Learning style is considered as an
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integral concept that bridges the personality cognitive dimensions of individual. Thus learning style can be viewed as the different ways in which people process information in the cause of learning. Pithers & Mason (1992)\(^3\) define learning style as a relatively consistent pattern of perception interaction with and response to stimuli in a particular learning environment.

The broad definition of learning style advocated by Hunt (1970)\(^\) is given as “learning style describes a student in terms of those educational conditions under which he/she is most likely to learn. Learning describes how a student learns not what he / she has learnt (p. 27).”

In Entwistle’s (1981)\(^3\) programme, the three learning styles or orientation are labelled “meaning”, “reproducing” and “achieving” orientation. Students with a “meaning” orientation are intrinsically motivated. Those with “reproducing ” learning style is extrinsically motivated by fear of failure while those with “achieving” style are extrinsically motivated by hope for success.

According to Keefe (1982), Learning style refers to “cognitive, affective and psychological traits that serve as relatively stalled indicators of how learners perceive, interact with and respond to learning environment”. Learning style classifies different ways people learn and how they approach information. Traditional schooling use mainly linguistic and logical teaching
methods. It also uses a limited range of learning and teaching techniques. Many institutions still rely on classroom and book based teaching, much repetition, and pressured exams for reinforcement and review. A result is that we often label those who use these learning styles and techniques as “bright”. Those who use less favoured learning style often find themselves in lower classes, with various not so complimentary labels and sometimes lower quality teaching. This can creates positive and negative spirals that reinforce the belief that one is ‘smart” of “dumb”.

A learning style is a student’s consistent way of responding to and using stimuli in the context of learning. Keefe (1979)\textsuperscript{34} defines learning styles as the “composite of characteristics-cognitive, affective, and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment”. Stewart and Felicetti (1992)\textsuperscript{35} define learning styles as those educational conditions under which a student is most likely to learn.

By recognising and understanding our own learning styles, we can use techniques better suited to us. This improves the speed and quality of our learning. Since the mid 1970’s educators recognised the usefulness of the concept of learning style. Various methods and instruments have been developed to assess learning styles. Much of the research on experiential learning theory has
focused on the concept of learning style, using the Learning Style Inventory (LSI) to assess individual learning styles. Kolb’s experiential learning theory sets out distinct learning styles and developed a learning style model and a learning style inventory.

2.9 Kolb’s learning style model

David A. Kolb explains that different people naturally prefer a certain single different learning style. He theorised that the four combinations of perceiving and processing determine one of the four learning styles. Kolb believes that learning styles are not fixed personality traits, but relatively stable patterns of behaviour that is based on their background and experience.

**Figure 2.14**

Kolb’s learning style model
The four Kolb’s learning styles are

1. **Diverging (feeling and watching):** Emphasises the innovative and imaginative approach to doing things. Views concrete situations from many perspectives and adapts by observation rather than by action. The people, who are leaving diverging learning style are best at viewing concrete situations several different view points. Kolb called this style “Diverging” because these people perform better in situations that requires ideas-generation. People with a diverging learning style have broad cultural interests and like to gather information. They are interested in people, tend to be imaginative and emotional, and tend to be strong in the acts. People with the diverging style prefer to work in groups, to listen with an open mind and to receive personal feed back.

2. **Assimilating (watching and thinking):** The assimilating learning preference is for a concise, logical approach. Ideas and concepts are more important than people. These people require good clear explanation rather than practical opportunity. They excel at understanding vide-ranging information and organising it a clear logical format. People with an assimilating learning style are more interested in ideas and abstract concepts. In formal learning situations,
people with this style prefer reading, lectures of exploring analytical models.

3. Converging (doing and thinking): People with a Converging learning style can solve problems and will use their learning to find solutions to practical issues. They prefer technical tasks, and are concerned with interpersonal aspects. People with a Converging learning style are best at finding practical uses for ideas and theories. A Converging learning style is best at finding practical uses for ideas and theories. A Converging learning style enables specialist and technology abilities. People with a Converging style like to experiment with new ideas, to stimulate, and to work with practical applications.

4. Accommodating (doing and feeling): The Accommodating learning style is ‘hands-on’ and relies on intuition rather than logic. These people use other people’s analysis and prefer to take a practical, experimental approach. They are attracted to new challenges and experiences, and to carryout plans. People with an Accommodating learning style prefer to work in teams to complete tasks. They set targets and actively work in the field trying different ways to achieve an objective.

Each learning style is located in a different quadrant of the cycle of learning.
An individual with Diverging style has Concrete Experience (CE) and Reflective Observation (RO) as dominant learning abilities. People with this learning style are best at viewing concrete situations from many different points of view. It is labeled Diverging because a person with it performs better in situations that call for generation of ideas, such as brainstorming sessions. People with a Diverging learning style have broad cultural interest and like to gather information. They are interested in people; tend to be imaginative and emotional, have broad cultural interests, and tend to specialise in the arts. In formal learning situations,
people with the Diverging style prefer to work in groups, listening with an open mind to different points of view and receiving personalised feedback.

An individual with an Assimilating style has Abstract Conceptualization (AC) and Reflective Observation (RO) as dominant learning abilities. People with this learning style are best at understanding a wide range of information and putting it into concise, logical form. Individuals with an Assimilating style are less focused and more interested in ideas and abstract concepts. Generally, people with this style find it more important that a theory have logical soundness than practical value. The Assimilating learning style is important for effectiveness in information and science careers. In formal learning situations, people with this style prefer readings, lectures, exploring analytical models, and having time to think things through.

An individual with a Converging style has Abstract Conceptualization (AC) and Active Experimentation (AE) as dominant learning abilities. People with this style are best at finding practical uses of ideas and theories. They have the ability to solve problems and make decisions based on finding solutions to questions or problems. Individuals with a Converging learning style prefer to deal with technical tasks and problems rather than with social issues and interpersonal issues. These learning skills are
important for effectiveness in specialist and technology careers. In formal learning situations, people with this style prefer to experiment with new ideas, simulations, laboratory assignments, and practical applications.

An individual with an Accommodating style has Concrete Experience (CE) and Active Experimentation (AE) as dominant learning abilities. People with this learning style have the ability to learn from primarily “hands-on” experience. They enjoy carrying out plans and involving themselves in new and challenging experience. Their tendency may be to act on “gut” feelings rather than on logical analysis. In solving problems, individuals with an Accommodating learning style rely more heavily on people for information than on their own technical analysis. This learning style is important for effectiveness in action-oriented careers such as marketing or sales. In formal learning situations, people with the Accommodating learning style prefer to work with others to get assignments done, to set goals, to do field work, and to test out different approaches to complete a project.
2.10 Kolb learning Style Inventory

The Kolb’s Learning Style Inventory (KLSI) is designed to understand how one learns best in educational settings and everyday life. It differs from other tests of learning style and personality used in education by being based on the comprehensive theory of experiential learning. The KLSI was created to fulfil two purposes.

1. To serve as an educational tool to increase individuals understanding of the process of learning from experience and their unique individual approach to learning.

2. To provide a research tool for investigating Experiential learning theory (ELT) and the characteristics of individual learning styles.
The KLSI is conducted as a self assessment exercise and tool for predictive validity typically begin with a criterion, such as academic achievement. ELT has been widely accepted as a useful framework for learning–conferred educational innovation including instructional design. Five versions of KLSI have been published over the last 38 years.

2.10.1 Kolb Learning Style Inventory –Version 1 (Kolb, 1971)

The original learning style Inventory (LSI) was created in 1979 as part of an MIT curriculum development project (Kolb, Rubin, & McIntyre; 1971). It was originally developed as an experiential education exercise designed to help learners understand the process of experiential learning and their unique individual style of learning from experience. Items for the inventory were selected from a long list of words and phrases developed for each learning mode by a panel of four behavioural scientists familiar with ELT. The final version of the LSI version 1 comprises of 9 items.

2.10.2 Kolb learning style Inventory -Version 2 (Kolb; 1985)

Low reliability coefficients and other concerns about the KLSI version I led to revision of the inventory in 1985. Six new items chosen to increase internal reliability (Alpha) were added to each scale, making 12 scored items on each scale.
2.10.3 **Kolb learning style Inventory -Version 2a (Kolb; 1996)**\(^{39}\)

After analysing the review studies of Kolb learning style inventory-version 2a, a research version of the random format inventory (LSI-2a) was published in 1993.

2.10.4 **Kolb learning style Inventory- Version 3 (Kolb; 1999)**\(^{40}\)

In 1999 the randomised format was adopted in a revised self-scoring and interpretation booklet (LSI3) that included a colour-coded scoring sheet to simplify scoring.

2.10.5 **Kolb learning style Inventory-Version 3.1 (Kolb2005)**\(^{41}\)

The revision includes new norms that are based on a larger, more diverse and representative sample. The format items scoring and interpretative booklet remain identical to KLSI-3. The only change in the norm charts used to convert raw LSI Scorer.

2.11 **Other Learning Style Models**

Here the investigator reviewed some of the important learning style models and are listed below.

2.11.1 **The Dunn and Dunn Learning Style Model**

The model of learning styles created by, Dunn, Dunn & Price (1979, 1980, 1990)\(^{42}\) comprises five major categories are 21 different clematis that influence our learning. Following are the five types of stimuli and the elements they comprise.

“\textit{Environmental}” : light, sound, temperature, and room design

“\textit{Emotional}” : structured planning, persistence and room design
“Sociological” : Pairs, peers, adults, self, group and varied.

“Physical” : perceptual strength, mobility, intake and time of day.

“Psychological” : global, analytic, impulsive, and reflective

For most individuals, four or five of the elements become extremely important when attempting to learn new or difficult information. Living attention to the elements that most influence a person’s learning is what constitutes attending to one’s individual learning style.

**Figure No.2.16
Dunn and Dunn Learning Style Model**

2.11.2 Brown Cooper Model

Brown & Cooper (1976) developed a Learning Style Inventory that measures Maths learning styles. The LSI has nine categories, which are
1. Visual Language–learn language skills best by sight and reading

2. Visual numerical–do better with numbers when see them written.

3. Auditory Language- learn best by listening

4. Auditory Numerical- learn best with numbers when hear them.

5. Tactile Concrete-learn best when touch what you are studying

6. Social individual- prefers to work as your own.

7. Social Group-learn best by interacting in groups.

8. Oral Expressiveness- How well you express yourself when you talk.

9. Written Expressiveness – How well you express yourself in writing.

There learning styles are usually considered modality styles.

2.11.3 VAK Learning Style

The VAK Learning Style uses the three main sensory receivers: Visual, Auditory, and Kinaesthetic (movement) to determine the dominant learning style. It is sometimes known as VAKT (Visual, Auditory, Kinaesthetic, & Tactile).
Table No.2.2
VAK Learning Style Model

<table>
<thead>
<tr>
<th>vak learning styles</th>
<th>description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual</td>
<td>seeing and reading</td>
</tr>
<tr>
<td>Auditory</td>
<td>listening and speaking</td>
</tr>
<tr>
<td>Kinesthetic</td>
<td>touching and doing</td>
</tr>
</tbody>
</table>

VAK is derived from the accelerated learning world and seems to be about the most popular model nowadays due to its simplicity, however, its main weakness is that the research does not support it. This is probably because it is more of a preference, rather than a style.

2.11.4 Honey & Mumford Learning Style

Honey & Mumford (1982, 1986, 1992) have built a typology of learning Styles. The Learning Style Questionnaire (LSQ) was based on ELT. They defined the following four learning modes.

1. **Reflector** - Prefers to learn from activities that allow them to watch, think and review what has happened. Likes to use journals and brains forming.

2. **Theorist** - Prefer to think problems through in a step-by-step manner. Likes lectures, analogies, systems care studies, models and readings.
3. Pragmatist- prefers to apply new learning’s to actual practice to see if they work. Likes laboratories, field work and observations.

4. **Activist**-prefers the challenges of new experiences, involvement with others, assimilations and role playing. Likes anything new, problem solving and small group discussions.

**Figure No. 2.17**

**Honey and Mumford’s learning cycle**

2.11.5 Felder- Silverman Learning Style Model

One of the most widely used models of learning styles is the Index of Learning Styles developed by Richard Felder and Linda Silverman\(^{47}\) in the late 1980s. According to this model there are four dimensions of learning styles and these dimensions are considered as a continuum with one learning preference on the far left and the other on the far right.
Theoretical Overview

TABLE 2.3
Index of Learning Styles

<table>
<thead>
<tr>
<th>Sensory</th>
<th>Intuitive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensory learners prefer concrete, practical,</td>
<td>Intuitive learners prefer conceptual, innovative,</td>
</tr>
<tr>
<td>and procedural information.</td>
<td>and theoretical information.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Visual</th>
<th>Verbal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visual learners prefer graphs, pictures, and</td>
<td>Verbal learners prefer to hear or read information.</td>
</tr>
<tr>
<td>diagrams.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Active</th>
<th>Reflective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active learners prefer to manipulate objects,</td>
<td>Reflective learners prefer to think things through,</td>
</tr>
<tr>
<td>do physical experiments, and learn by trying.</td>
<td>to evaluate options, and learn by analysis.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sequential</th>
<th>Global</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sequential learners prefer to have information presented linearly and in an orderly manner.</td>
<td>Global learners prefer a holistic and systematic approach.</td>
</tr>
</tbody>
</table>

2.11.6 McCarthy’s 4MAT system

Bernice McCarthy (1980) took Kolb’s learning style descriptions and amplified these to construct the system of developing lesson plans for grades K-12. This system incorporates Kolb’s four learning mode recent research on right/left brain hemispheric processing. It should be remembered that each person’s style is a combination of perceiving and processing information as McCarthy describes four major styles (McCarthy, 2000).
The four learning styles identified by McCarthy are:

1. **Type 1: Innovative Learners** are primarily interested in personal meaning. They need to have reasons for learning - ideally, reasons that connect new information with personal experience and establish that information’s usefulness in daily life.

2. **Type 2: Analytic Learners** are primary interested in acquiring facts in order to deepen their understanding of concepts and processes.

3. **Type 3: Common Sense Learners** are primarily interested in how things work: they want to ‘get in and try it.’

4. **Type 4: Dynamic Learners** are primarily interested in self-directed discovery. They rely heavily on their own intuition, and seek to teach both themselves and others.

### 2.11.7 Myres -Briggs, Type Indicator (MBTI) Model

The MBTI has been claimed (Mc Caulley; 2000)\(^{50}\) to be an aid in understanding the individual differences by helping employees and managers enhance their interpersonal relations and there by improving their ability to work effectively. The MBTI model has three dimensions-height, width, and the depth. Extroversion/ Introversion would be on the horizontal axis, while feeling / thinking would be on the vertical axis.
The MBTI measures preferences on four scales derived from Jung’s Theory of Psychological Types (Myers & McCauley, 1985). People are classified according to their preference for:

- **Introversion (I)** - interest flowing mainly to the inner world of concepts and ideas
- **Extroversion (E)** - interest flowing mainly to the outer world of actions, objects, and persons
- **Sensing (S)** - tending to perceive immediate, real, practical facts of experience and life
- **Intuition (N)** - tending to perceive possibilities, relationships, and meanings of experiences
- Thinking (T) tending to make judgments or decisions objectively and impersonally
- Feeling (F) tending to make judgments subjectively and personally
- Judging (J) tending to act in a planned and decisive way
- Perceiving (P) tending to act in a spontaneous and flexible way

2.11.8 The Reichmann-Grasha Model

The Reichmann-Grasha model, for instance, focuses on student attitudes toward learning, classroom activities, teachers, and peers. This model identifies the following types and their characteristics (Reichmann & Grasha, 1974):52

- **Avoidant students** tend to be at the lower end of the grade distribution.
- **Participative** students are characterised as willing to accept responsibility for self-learning and relate well to their peers.
- **Competitive** students are described as suspicious of their peers leading to competition for rewards and recognition.
- **Collaborative** students enjoy working in harmony with their peers.
- **Dependent** students typically become frustrated when facing new challenges not directly addressed in the classroom.
- **Independent** students, as the name implies, prefer to work alone and require little direction from the teacher.
2.11.9 Stacy Mandle’s Learning Style Model

According to Stacy Mandle (2005)\textsuperscript{53} there are seven specific types of learning styles.

*Linguistic:* This type of learners loves to read, write and tell stories. They tend to memorise places, dates, names and trivia very easily.

*Logical:* These children are very mathematically inclined. They enjoy solving problems particularly if they are mathematics related.

*Spatial:* These are the visualisers. They spend most of the day dreaming, watching movies, and staying as far away from reality as possible.

*Musical:* This type of learner is best at noticing details, pitches and rhythms that escape the normal listener.

*Bodily:* This type of learner is always on the move. These are the learners who can do more than one thing at a time.

*Interpersonal:* They are the social butterflies. They adapt easily to any type of social situation have many friends and are excellent leaders.

*Intrapersonal:* They have the capacity to be self-aware and in tune with inner feelings, values, beliefs and thinking processes.

2.11.10 Multiple intelligence

Gardner (1983)\textsuperscript{54} theorised that there are multiple intelligences, and that we all use one or two for the most effective learning. Our culture teaches, tests, reinforces and rewards
primarily two kinds of intelligence: verbal /linguistic and logical / mathematical. His theory proposes that there are at least eight other kinds of intelligence that are equally important. They are “languages” that most people speak, and that cut through cultural, educational, and ability differences.

**Figure No .2.19**

Multiple Intelligence model

According to Multiple intelligences theory, not only do all individuals possess numerous mental representations and intellectual languages, but individuals also differ from one another in the forms of these representations, their relative strengths, and the ways in which these representations can be changed.

**Conclusions**

The investigator traced the origin and historical development of experiential learning and learning style. The investigator also examined the theoretical framework of Kolb’s experiential learning theory and learning style. This helped the investigator to frame the topic of study and to adopt a suitable procedure to carry out.
References


