

## TCT 102: GENERAL METHODS

### Topic 3: Nature and Structure of Learning

P. Kyalo Mulwa  
University of Nairobi  
School of Education  
Department of Educational Communication and Technology  
Email: [peter.kyalo@uonbi.ac.ke](mailto:peter.kyalo@uonbi.ac.ke)  
Mobile: +254 422 824

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### Objectives

At the end of this unit the learner should be able to:

- Define the term learning
- Describe the sequence of learning
- Explain factors that affect learning
- Discuss theories of learning

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### Learning

- Farrant (1980) defined learning as a process by which we acquire and retain skills, knowledge, values, attitudes and capabilities that can not be attributed to the inherited behaviour patterns or physical growth
- Woolfolk (2013) defined learning as a process that occurs when experiences cause a relatively permanent change in an individual's knowledge or behaviour
- For purpose of this course, learning is defined as the **acquiring new or modifying and reinforcing existing knowledge, attitude, behaviors, skills and values**

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### Learning

- From the above definitions, it is worth to note the following about learning:

a) **Learning takes time** – learning results from experience which take time. These experiences can be acquired through getting instruction, making observation, solving a problem, participating in a field study, carrying out an experiment etc. Learning is also a lifelong process. Learners should therefore be given enough time to synthesis or internalize what they are taught by spreading what is being taught over a period of time.

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### Learning

- b) Change occurs in the process of learning – learning brings change in knowledge, skills, values and altitude among learners
- c) Learning is what we infer to have taken place when behaviour changes – learning may not be observed directly but we can infer that learning has taken place by observing changes in behaviour
- d) Learning results from experience – generally we need experience to learn. In a formal setting, some of these experiences involve listening, writing, solving problems, experimenting, nature walk, drawing, painting, modelling, singing, speaking, dancing, etc

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### Learning

- In informal setting, experience could be acquired through observation, imitation, etc
- Teachers should use a variety of teaching methods so as to expose learners to different experiences

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### Learning

- e) Learning happens frequently and everywhere – learning is a continuous process and is not limited to the school set up
- f) Behaviour can either be positive or negative – the teacher should use the principles of learning to support positive behaviours and discourage negative behaviours. Positive behaviours will be approved by the society while negative behaviours are disapproved and not accepted

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### Learning

- g) Learning prepares a child for any adjustment and adaptation – the behaviours, skills, values and attitudes acquired prepares the learner to adjust and adapt to the society at large
- h) Learning is purposeful and goal oriented
- i) Learning is a complex life long process – learning starts from the womb and from birth through adulthood up to death
- j) Learning is universal and continuous
- k) Learning involves new ways of doing things
- l) Learning does not include changes in behaviour on account of maturation, illness and drugs

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### Sequence of Learning

- According to Rowland & Shanks (2005), learning involves five stages: attention, perception, acquisition, retention and transfer.
- a) **Attention** – learners must be attentive in order to follow and understand the content being taught. Teachers should capture and sustain learner attention throughout the learning period
- b) **Perception** – at this stage, information gets registered in the mind so that meaning is attached to it. Learning takes place when more senses are involved (these senses include sight, touch, taste and smell).

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### Sequence of Learning

- Teachers should therefore appeal to a many sensory organs as possible during a lesson through use of multimedia
- c) **Acquisition** – at this stage, new capability or skill is acquired. The expected capability is stated in the lesson objective. Learners are expected to acquire knowledge, skills, values and attitudes during the learning process
- d) **Retention** – this involves the learners holding the knowledge they have learnt for some time. The rate of retention depends on the value attached to what is learnt

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### Sequence of Learning

- e) **Transfer**– this involves application of what has been learnt to a new situation e.g. a learner who learns how to addition and subtraction should be able to apply the knowledge when shopping

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### Factors that Affect Learning

- a) **The nature of the content being taught** – the content should be appropriate to the children’s level of development and readiness. If the content is above the scope of the learners, then learning becomes difficult
- b) **The intelligence of the children** – children can be classified as high, average or slow achievers
- c) **The methods used by the teachers** – methods that a learner centered produce better results than teacher-centered methods

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### Factors that Affect Learning

- d) **Relevance of the content** - learners should be able to relate what they learn to what happens in real life
- e) **The environment in which learning is taking place** – learning environment should be devoid of distractions brought about by noise, lack of ventilation or cleanliness or lack of security
- f) **Instructional objectives** – Teachers need to set clear instructional objectives which are specific, measurable, achievable, realistic and time bound (SMART)

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### Factors that Affect Learning

- g) **Motivational level of the learner** – learning is more effective when learners are motivated. The teacher should therefore aim to arouse and sustain learner’s interest in learning
- h) **Feedback** – learners need timely feedback from teachers so that they can be assured that what they are doing is appreciated by the teacher. Feedback enhance learning
- i) **Guidance and counselling** – children with learning problems need to be guided and counseled to enhance their performance.

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### Theories of learning

- There are several learning theories that are relevant in teaching. Such theories include:
- Behavioral theories
- Constructivism
- Social cognitive
- Theory of multiple intelligence
- Cognitive theories
- Information processing

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### Theories of learning

#### a) Behavioural theories

- This theory focus on observable behaviour of the learner in a learning environment
- According to this theory, behaviour is modified by the use of either classical or operant conditioning
- According to Ivan Pavlov (1849 -1936), conditioning is the process of learning by association. Conditioning involves a situation where a stimulus elicits a response
- In classical conditioning, one learns to anticipate an important event such as food or pain

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### Theories of learning

- In operant conditioning, one learns to repeat acts that bring desired results and avoid acts that that elicit punishment especially pain are avoided
- Applications of behavioural theories to learning includes:
  - i. Learning require both practice and rewards – this is in accordance to the law of effect and readiness. This implies that learners should do more exercises to master the concepts and that teachers should reinforce the learners responses accordingly

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### Theories of learning

- i. Learning require both practice and rewards – this is in accordance to the law of effect and readiness. This implies that learners should do more exercises to master the concepts and that teachers should reinforce the learners responses accordingly
- ii. From the law of readiness, a good introduction of a lesson (induction) is required
- iii. Transfer of learning occurs when learners use previous knowledge in a new situation. Therefore, when teaching, teachers should move from known to unknown

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### Theories of learning

- iv. Intelligence is a function of the number of connections learned. Therefore, topics from one theme should be taught in a progressive manner
- v. Behaviours that are positively reinforced will re-occur
- vi. In order for the conditioning to occur, the organism must actively respond and do something. Therefore, learning should be learner centered
- vii. Since learning involves the conditioning of specific movements, instructions must present very specific tasks

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### Theories of learning

- viii. Exposure to variations of stimulus patterns is desirable in order to produce a generalized response. Teachers should therefore use various teaching methods and approaches so as to promote effective learning
- ix. The best response in a learning situation should be correct since it is the one that will be associated with the stimulus. The stimulus helps in shaping behaviour of the learner which ultimately encourages learning of complex tasks.

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### Theories of learning

#### b) Social learning theory

- Also referred to as observation learning theory
- According to this theory, learning occurs when an observer's behaviour changes after viewing the behaviour of a model (Bandura, 1977)
- A model is a person being emulated by the learner
- An observers behaviour can be affected by positive or negative consequences called vicarious reinforcement or vicarious punishment
- In the learning environment, the teacher is the model emulated by the learners

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### Theories of learning

- Learners keep observing and imitating the behaviour of their teachers, parents and other figures considered important in their lives e.g. A child can learn cooking skills by observing his/her mother cooking
- This learning theory can be applied in teaching in the following ways:
  - a) Curriculum:
    - Learners must get a chance to observe and model the behaviour that leads to positive reinforcement, implying that teachers must be careful to display good behaviour that will then be emulated by their children

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### Theories of learning

#### b) Instruction

- Teachers need to encourage collaborative learning since much of the learning happens within important social and environmental contexts
- Teachers can also aim to make the content personally meaningful and enhance attention and teaching good memory strategies

#### c) Assessment

- Assessment needs to be done within the correct learning environment

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### Theories of learning

#### c) Theory of Multiple Intelligence

- Intelligence is the ability to understand the World and the resourcefulness to cope with its challenges (Gardner, 1983)
- The theory of multiple intelligence suggests that there are different forms of intelligence that each individual possesses in varying degrees. These include:

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### Theories of learning

- i. Linguistic intelligence
- ii. Musical intelligence
- iii. Logical intelligence
- iv. Logical – mathematical intelligence
- v. Spatial intelligence
- vi. Body – kinesthetic intelligence
- vii. Intrapersonal intelligence (insight or met-cognitive)
- viii. Interpersonal – social skills

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### Theories of learning

- The theory’s application to learning includes;
- Learning should focus on the particular intelligence of each person
- Individuals should be encouraged to use their preferred intelligence of learning
- Instructional activities should appeal to different forms of intelligence
- Assessment of learning should measure multiple forms of intelligence

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### Theories of learning

#### D. Constructivism learning theory

- The theory stipulates that learning is simply the process of adjusting our mental models to accommodate new experience (Piaget, 1960)
- Constructivism is a philosophy of learning based on the premise that by reflecting on our experiences we construct or own understanding of the World we live in, hence, knowledge is socially constructed
- According to this theory, learning is seen as an active process and therefore children should be actively involved in the learning process (Dewey, 1938)

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### Theories of learning

- Curriculum is organised in a spiral manner so that children continually build upon what they have learnt
- At the early stages of cognitive development, children are taught the curriculum that suits them

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### Other learning theories

- Discuss the following learning theories clearly showing how they are relevant in the 21<sup>st</sup> century teaching and learning:
  - 1) Brain-Based Learning
  - 2) Andragogy
  - 3) Social Constructivism
  - 4) Cognitivism
  - 5) Problem-based learning

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### Questions:

1. Define the following terms: learning, teaching, learning theory
2. Discuss the application of the following learning theories in computer studies;
  - a) Behaviorism
  - b) Cognitivism
  - c) Social Learning Theory
  - d) Social Constructivism
  - e) Multiple Intelligences
  - f) Brain-Based Learning, andragogy
  - g) Problem-based learning

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