Learning Theory

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Learning ?

- **Learning has been defined by Magill (2010, cited by Sattelmayer) as: "A change in the capability of a person to perform a skill that must be inferred from a relatively permanent improvement in performance as a result of practice.**

- **Learning is a dynamic process, which takes place over time and in different environments.There are**

Phase of Learning ?

- **Cognitive Learning**
- **Associated Learning**
- **Autonomous Learning**

Stages of Learning

Cognitive Stage	Associative Stage	Autonomous Stage
• First stage of learning • Known as the thinking stage • Athletes need feedback from coaches • Athletes need demonstrations and visual images	• Middle stage of learning • Athletes will need to have time to practice during this stage • Athletes begin to learn what errors they are making • Can be the longest stage	• Final stage of learning • Skill can now be recalled when needed • Athletes can now be able to recognise when the skill is performed incorrectly

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Cognitive Learning

What is cognition?

- Cognition, according to Hamilton, I (1995:20) in the *Dictionary of Cognitive Psychology is 'the understanding, acquisition and processing knowledge, or more loosely thought processes'*.

- Cognitive learning theories deal with the way human being acquires and understands knowledge through thinking.

- All explanation about how human being acquires and understands knowledge through thinking.

What is cognitive learning?

- Human beings can learn efficiently by observation, taking instruction, and imitating the behavior of others.
- "Cognitive learning is the result of listening, watching, touching or experiencing."
- Cognitive learning is a powerful mechanism that provides the means of knowledge, and goes well beyond simple imitation of others.
- *Cognitive learning* is defined as the acquisition of knowledge and skill by mental or cognitive processes — ;the procedures we have for manipulating information 'in our heads'.

- **The cognitive stage is the period during which the goals of the task and the appropriate movement sequence to achieve these goals are determined. At this stage, the learner is a novice (i.e. she / he is new to the skill and task at hand) and makes a conscious effort to develop an understanding of what to do. Learning tends to be explicit in this stage.**

- There is often a high degree of error when entering the cognitive stage and a lot of attention is required to learn. For example, when a child is learning to ride a bike, there are many aspects to consider, such as balancing, pedalling and steering. She / he also needs to consider the environment, including the surface and any traffic in the area. Because this task requires a lot of attention, the learner's performance will likely be inconsistent and include mistakes. A facilitator nearby (i.e. therapist, parent, friend, sibling) may be able to provide assistance, guidance or hands-on help to ensure safety and enable the child to continue to learn.

- There tends to be a large improvement in performance in a short period of time during the cognitive stage, particularly when the skill is repeated.

_each (1993) The Psychologist – Bulletin of the British Psychological Society

The Associative Stage

- The cognitive stage is followed by the associative stage. During this stage, the learner has established the movement sequence and is able to refine his / her strategies. She / he does not need to rely so heavily on external instructions and is better able to respond to the context / environment. For example, when riding a bike, the child will learn how to go different speeds and navigate the environment. During this phase, there tends to be fewer errors, greater consistency and improved performance. Less feedback is required, but improvement occurs more slowly.

Types of Associative Learning

- **classical conditioning** – learning process in which a <u>neutral stimulus</u> becomes associated with a meaningful stimulus and acquires the capacity to elicit a similar response
- **operant conditioning** – (a.k.a. instrumental conditioning) a form of associative learning in which the consequences of behavior change the probability of the behavior's occurrence
  - operant → references behavior of the ORGANISM

Classical Conditioning

Stimulus 1
Doctor's office

Stimulus 2
Shot

A child associates going to a doctor's office (stimulus 1) with getting a painful injection (stimulus 2).

Operant Conditioning

Behavior

Consequences

Performing well in a swimming competition (behavior) becomes associated with getting awards (consequences).

Operant & Classical Conditioning

1. Classical conditioning forms associations between stimuli (CS and US). Operant conditioning, on the other hand, forms an association between behaviors and the resulting events.

Splash (CS)   Shock (US)

Sea snail associates splash with a tail shock

Response   Consequence   Response Strengthened
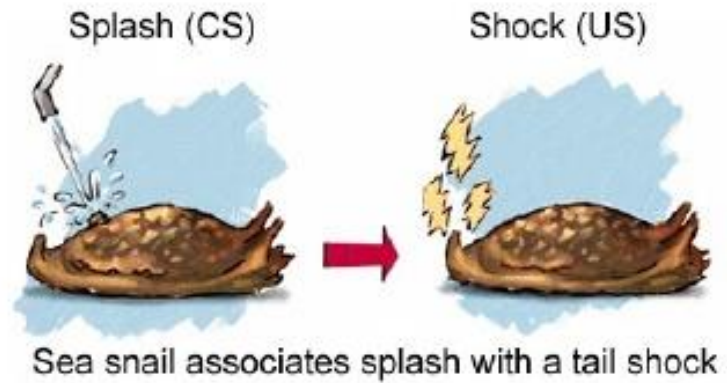
Autonomous Phase

- The final stage is the autonomous stage. This phase involves further practice of the skill in order to enhance performance, so that it becomes automatic. The learner has internalised the skill and is able to perform it with minimal cognitive monitoring. This means that the learner can pay more attention to other things, including other aspects of the task or environmental features. The performance tends to be free of errors and adaptable, with less feedback required.

- When compared to the three phases of motor performance and learning, the acquisition phase of performance tends to correlate with the cognitive stage. The retention phase aligns more with the associative phase and the transfer phase tends to relate to the autonomous stage.

Cognitive Stage	Associative Stage	Autonomous Stage
Learners get the general idea or overall concept of the skill	Focus on smaller details leads to skill refinement	Skill execution is automatic, allowing focus on other aspects of performance
Performance may be slow, jerky, and highly variable with many errors	Performance is more fluid, controlled, and consistent with fewer errors	Performance is effortless, relaxed, and accurate with few errors
Early practice involves demonstrations and vivid descriptions with lots of verbal input from instructors and self-talk by learners	Lots of practice takes place over long periods of time with expert instruction	Practice helps maintain skills with less dependency on instruction and more self-monitoring
Performance serves as a foundation on which a learner can build	Rapid performance improvements occur with vast potential for growth	Performance improvements are relatively slow with less room for improvement
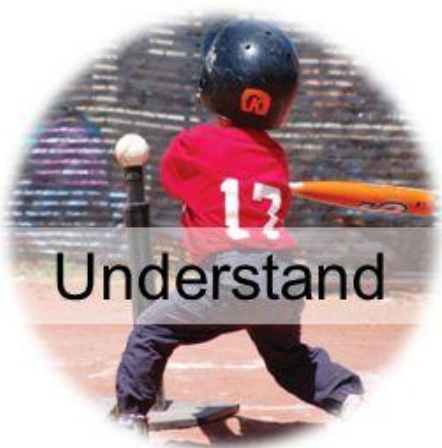
Understand

Practice

Apply

3 Stages of Learning

| Cognitive **[Planning]** | Associative **[Practice]** | Autonomous **[Automatic]** |

https://www.youtube.com/watch?v=n7UcobScnck&safe=active

https://ashpe.weebly.com/practice-and-stages-of-learning.html

Watch the videos and take notes on the stages of learning

Learning Characteristics

Cognitive learning

- The cognitive stage is characterized as having large gains in performance and inconsistent performance.

Associative learning

- The associative stage is characterized as much less verbal information, smaller gains in performance, conscious performance, adjustment making, awkward and disjointed movement, and taking a long time to complete.

TRANSFER OF LEARNING

Definition?

- Transfer of learning occurs when a person's learning in one situation influences his learning and performance in other situations."

- Transfer of learning occurs when learning in one context or with one set of materials impacts on performance in another context or with other related materials. [Perkins and Salomon, 2012]

Types of Transfer Learning

➢ **Positive Transfer Learning- One skill helps learning of another**

➢ **Negative Transfer Learning – One skill hinders another**

➢ **Proactive Transfer Learning- Effect on future skill**

➢ **Retroactive Transfer Learning- Effect on previous skill**

➢ **Bilateral Transfer Learning- Limb to limb (side to side)**

➢ **Zero Transfer Learning- No transfer available**

Positive Transfer Learning

- Positive transfer When something previously learnt benefits performance of learning in a new situation. e.g. learning of math's helps in solving numerical problems in physics

- Transfer is said to be positive when learning in one context improves learning or performance in another context.

Positive Transfer

The effect of a previously learnt skill has a beneficial effect on another.

Overarm throwing technique to help learn a tennis serve to a javelin throw.

Negative Transfer Learning

- Negative transfer occurs when previous learning or experience inhibits or interferes with learning or performance in a new context.

- Previous learning hinders performance or learning in new situation. e.g. having learnt to pronounce 'put' correctly child had difficulty in learning to pronounce 'but.'

Negative Transfer

This is where the effect of a previously learned or practised skill is damaging to the learning of a new skill.

It is possible to have short term negative transfer, which is soon overcome. For example moving from outdoor cricket to indoor cricket.

TRANSFER

POSITIVE TRANSFER

- occurs when **learning** in one task is enhanced by learning in **another task**
- example : learning a golf stroke may be enhanced by virtue of the fact that the player is a good cricketer

ZERO TRANSFER

- **no transfer at all** may occur even between skills which appear to be similar
- example : learning at squash may have zero transfer from weight training

NEGATIVE TRANSFER

- occurs when the learning of a new task is **interfered** with by the knowledge of a similar activity
- example : the flexible use of the wrist needed for badminton may interfere with the firm wrist needed for tennis

Bilateral Transfer Learning

3.3 Types of transfer

Bilateral transfer

Description...

transfer from limb to limb (from one side of the body to the other)

e.g. a footballer kicking both with the left and right foot

Effects...

can be positive or negative

when positive, bilateral transfer helps an attacker to deceive a defender e.g. using the non-dominant foot to shoot or pass

TRANSFER

BILATERALTRANSFER (LIMB TO LIMB)

- this is the transfer which takes place from **one limb to another**

- sometimes called **lateralisation**

- example : a soccer player learns to kick a ball with the non-preferred foot, the actions are learnt through reference by the brain to the preferred foot

PROACTIVE TRANSFER

- influence of one skill on a skill **yet to be learned**

- example : having learned the forehand drive in tennis, the action is then modified to the forehand drive with top spin

RETROACTIVE TRANSFER

- influence of one skill on a skill that has **previously been learned**

- example : a hockey player learns the flicking skill which may have a negative effect on the previously learned push (the push pass may be lifted unnecessarily)

Zero Transfer Learning

- in case previous learning makes no difference to learning in a new situations. Something previous learning may partly help and partly hinder new learning. e.g. learning to play baseball after learning to play tennis.

Zero Transfer

There is no effect on current performance or learning from previous learning.

THANK YOU