

Overview of Skill Acquisition

Analyse the processes of learning/ developing a new or existing skill (AO3)

A. Overview Skill, ability and learning

- Skill is a learned ability, while ability is inherent.
- Learning is affected and determined by several factors, it requires careful monitoring to offset plateauing.
- Skilled performance achieves the desired outcomes; consistently, with efficiency, effectively and accurately.
- Skills are classified to understand the learning process and offer appropriate methods of guidance and practice.
- Skills can be classified into the following continua: Pacing; Difficulty; Organisation; Continuity; Muscular involvement; Environmental influence.
- Fitts and Posner (1967) describe 3 phases of learning; cognitive (beginner), associative (developing), autonomous (skilled/advanced).
- Learning tends not to be linear, in performances there are peaks and troughs. Plateauing can be caused by a number of factors including: level of skill; information; feedback; motivation; fatigue.
- Strategies to overcome plateauing include: rewards; chunking information; appropriate practice; effective feedback; recovery.
- Social learning theorists believe that we learn by observing other people. This is known as observational learning. Bandura (1977) suggests that there are four processes in observational learning: DARM.
- Transfer of learning refers to the effect that learning one task has on the learning of another. It is important to note that not all transfer enhances learning.
- The methods of guidance, practice and feedback will vary depending on: the participants stage of learning; the activity; individual preferences
- There are four types of Guidance: visual, verbal, manual and mechanical
- The type of practice will vary depending on: stage of learning; personality and motivation; the classification of the skill; facilities; size and structure of group.
- Types of practice include: -Fixed (closed) and Variable (open); Massed

(continuous) and Distributed (discrete); Whole (high organisation and simple) and Part (low organisation, serial and complex skills)

- Behaviour should be reinforced when the athlete exhibits the desired performance allowing the athlete to learn from the experience and replicate the performance in the future.
- Three types of reinforcement are: Positive; negative and punishment.
- Drive reduction theory – believes that an athletes drive (motivation) will impact on the successful completion of a task
- Feedback is used to (MRI): Motivate; Reinforce good habits; Inform athlete of any errors.
- Feedback is effective when: Accurate, concise, immediate, easily understood, truthful .
- Feedback can take on a number of forms the main types are: -
 - Extrinsic feedback
 - Intrinsic Feedback
 - Knowledge of performance
 - Knowledge of results
 - Positive Feedback
 - Negative Feedback
 - Terminal Feedback
 - Concurrent Feedback

B. Overview Information Processing

- Information processing theory explains the brains processes for decision making and learning.
- The universal theory is sensory input, perception and selective attention, decision making including memory (Short term sensory store, short and long term memory and effector/output).
- There are two main theories Welford and Whiting whose models on information processing only differ slightly.
- Welford's model (1968) subdivides input, decision making and output, and has two feedback mechanisms, internal and external.
- Whiting's model (1969) however tends to use different terminology and sees the process more as a cycle. He refers to the process having four stages: Receptor systems – these are the sensory organs; Perceptual mechanism –filtering information; Translatory mechanisms – decision making; Effector mechanism – output messages are sent to the limbs via the nervous system.

The information process can be subdivided into three stages:

Input which includes:

- SENSORY INPUT is simply information entering the body from the sense organs, internal and external.
- PERCEPTION is the process by which the sensory input is given meaning; three stages; DETECTION –identifying the correct stimulus; COMPARISON – the brain processes this information; RECOGNITION –a match in our memory.
- SELECTIVE ATTENTION –It is important that it selects the correct information to attend to. As the performer moves through the stages of learning, they are able to attend to more elements.

DECISION MAKING is our ability to use the information given to make decisions.

MEMORY is used to make the correct decision. There are THREE aspects to memory:

- SHORT TERM SENSORY STORE –information is only kept for ONE second and if it is not considered important, it is forgotten.
- SHORT TERM MEMORY (working memory) lasts for between 20-30 seconds before we lose the information and we can only retain 5-9 items as a rule.
- LONG TERM MEMORY – these are past experiences and the memory has a limitless capacity. Once information is stored in the LTM it is not forgotten. This is believed to be stored as motor programmes or schema.
- Motor programmes are a series of sub-routines organised into the correct sequence in order to perform a movement (linked with stages of learning) e.g. tennis stroke – grip, stance, swing and follow-through.
- Motor programmes means that not every part of an action needs to pass through short-term memory (overcoming issues with memory overload) this allows a movement to be performed quickly/effective and efficient.
- There are two theories: closed loop- intrinsic feedback and correction during performance; open loop-information as a single message not reliant on feedback.
- Schema theory challenges the both theories and states that motor programmes are clustered together and are interchangeable in response to the situation.

Output which includes:

- Reaction time is the amount of time between a stimulus and the first movement initiated in response to the stimulus.
- The more choices a person has, the more information that needs processing, the longer it takes to process the information, the slower the reaction time. This is known as Hick's Law.
- Psychological Refractory Period (PRP). This refers to the time taken to react, once an individual has realised that he/she has responded in an incorrect way and wants to change their response.

- Movement time is the time between starting and finishing a movement.
- Response time is the time between the first presentation of the stimulus to the completion of the movement.
- $\text{RESPONSE TIME} = \text{REACTION TIME} + \text{MOVEMENT TIME}$
- Intrinsic feedback comes during the movement from your senses, it is sometimes referred to as kinaesthetic.
- Extrinsic feedback comes from external sources; two forms – KNOWLEDGE OF PERFORMANCE and KNOWLEDGE OF RESULTS.
- Knowledge of performance is how well they performed. Knowledge of results is terminal feedback offering simple information on the success of the performance/result.
- Successful feedback should motivate, challenge, reinforce and inform performers, supporting them in the development of skill and performance.
- Effective feedback. Here are five key principles; **positive –constructive and informative; specific and consistent; immediate; frequent and Chunked; accurate and honest.**

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