

## CHAPTER 9: Transfer of skills, learning theories and stages of learning

### Practice questions - text book page 133 - 134

- 1) Due to the different wrist action involved in tennis and badminton, a person who has learned the forehand in tennis before learning the forehand in badminton often experiences what kind of transfer?
- positive transfer.
  - negative transfer.
  - proactive transfer.
  - bilateral transfer.

**Answer:** b.

**Explanation:**

- The answer is b. because the person has learned the forehand in tennis, the new task of learning the forehand in badminton is interfered with by the knowledge of a similar skill. In other words, the flexible use of the wrist needed for badminton may interfere with the firm wrist needed for tennis.

- 2) The critical activity in the associative stage of learning is to:
- develop an understanding of the task.
  - refine the motor skill and associate specific environmental cues with specific movements develop a basic movement pattern.
  - make small adjustments to the skill to improve performance.
  - learn by copying others.

**Answer:** a.

**Explanation:**

- In the associative stage of learning the learner has an overall picture of what is required since learning occurs as a result of the association or connection between a stimulus and a response, and so the correct answer is a.

- 3) Performance changes tend to be largest in which stage of learning?
- cognitive.
  - associative.
  - autonomous.
  - a. and c.

**Answer:** b.

**Explanation:**

- During the associative stage there is a lot of fault correction and so skill mastery will be at its greatest.
- Whereas during the cognitive stage the learner has little idea of what is a correct performance and so learning will be limited.
- At the autonomous stage the learner knows how to complete the skill and can do so with a great degree of competence.
- Choice d. is a complete red herring.

- 4) Within Fitts and Posner's cognitive phase of learning the key aim is to:
- organise a more efficient movement pattern.
  - make the actions automatic.
  - understand the skill.
  - focus on the established movement patterns.

**Answer:** c.

**Explanation:**

- The cognitive phase of learning is the initial learning of basic skill development and so understanding the skill using role models, guidance and feedback is the key aim of this phase of learning.

- 5) A gymnast is preparing for a major competition and has been practising the routine over and over again for several months. Which of Thorndike's laws explains the effects of practice on performance?
- the law of effect.
  - the law of readiness.
  - the law of exercise.
  - a. and c.

**Answer:** c.

**Explanation:**

- The law of exercise explains that repetition strengthens the S-R bond, hence c. is the correct answer.
- The law of effect uses reinforcement which strengthens the S-R bond.
- The law of readiness says that learning can only occur when the nervous and muscular systems are sufficiently mature to allow the appropriate S-R bond to happen.

- 6) Explain four different types of transfer of learning.

4 marks

**Answer:**

*Any four from:*

- **Positive transfer** is one skill helping the learning or performance of another.
- **Negative transfer** is one skill hindering the learning or performance of another skill.
- **Bi-lateral transfer** is the transfer of learning or performance from limb to limb.
- **Retroactive transfer** is the influence of a skill being learned on a previously learned skill.
- **Proactive transfer** is the influence of a skill being learned on future skills, a skill learned in the past has an influence on a present skill.

- 7) a) Using a practical example, explain what is meant by the term 'transfer' in skill learning. How can transfer be detrimental to performance? Give a practical example.

5 marks

**Answer:**

*Transfer in skill learning:*

- The influence of the learning or performance of one skill on the learning or performance of another skill.
- If you perform one skill and then perform another, the second may well be affected by the first.
- For example, you perform a push pass in hockey and then you perform a flick, the actions of the first skill may help that of the second (positive transfer).

*Detrimental to performance:*

- The performance of one skill may well hinder the performance of another.
- Because there may well be inappropriate movements or information processing which could confuse the performer.
- For example, a badminton player may play tennis immediately after playing badminton and the forehand in tennis may be far too 'wristy' because of the confusion in the response.

- b) How can a teacher or a coach ensure that as much positive transfer takes place as possible in a training session?

5 marks

**Answer:**

*5 marks for 5 of:*

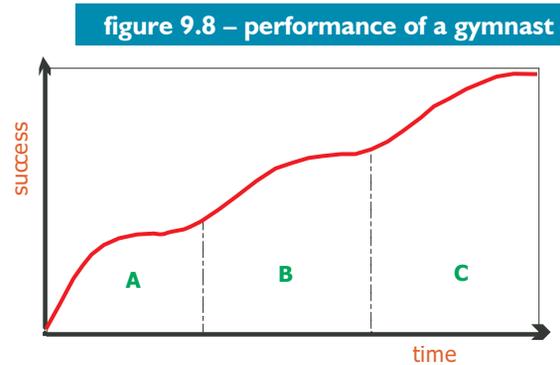
- The coach uses as many **different practices** as possible in training – drills are varied.
- Emphasise the **transferable elements** of the skills.
- Tell performers about transfer to heighten awareness.
- To ensure the building of schema.
- Make sure training is relevant to the 'real' game.
- Environmental conditions need to be similar.
- Tactics, strategies and information processing elements need to be similar.
- **Avoid confusing practices** to avoid negative transfer.
- Ensure that skills are **thoroughly learned** before moving on to other skills.
- Give **distributed practice sessions** in which there are rest intervals for mental assimilation.
- Positive previous experiences or values assist transfer.

8) Figure 9.8 shows the improvement in performance of a gymnast over a period of time.

- a) Name the stages **A**, **B** and **C** shown on this chart and explain their significance to the gymnast. 6 marks

**Answer:**

- **A - Cognitive stage.**
- For example, a beginner watching a demonstration.
- He or she is able to perform simple routines without much technical complexity.
- **B - Associative stage.**
- For example, the gymnast has learnt a number of simple routines which he or she can now put together into a more complex sequence.
- Trial and error and complex advice from the coach now lead to more rapid progress.
- **C - Autonomous stage.**
- For example, the gymnast is able to perform complex skills without much cognitive effort.
- His or her routines are now technically excellent and can be performed without the constant intervention of a coach.
- The coach's role is now to choreograph and advise on the shapes and sequences of movement rather than the techniques involved.



- b) Identify the characteristics of a performer in phase **C**. 4 marks

**Answer:**

- Almost automatic in movements.
- Seems confident or has predetermined goals.
- More likely to complete complex movements.
- Is successful consistently.
- Less likely to lose concentration and so is focused.
- Advanced performers will only stay in this phase if they keep referring back to the associative phase or keep practising.

- c) How might the type of mental practice change in the last phase of learning? 4 marks

**Answer:**

- **Concentrating** on only very few stimuli or very selective in attention.
- Less about skill performance, more on keeping calm and **controlling arousal**.
- **Utilising imagery** of the sequences as part of the warm-up.
- **Visualising** success more than other phases.
- **Thinking** more about tactics or strategies.

- 9) According to Fitts and Posner, learning passes through three stages. Use an example from one of your practical activities to describe the key characteristics of each of these stages.

5 marks

**Answer:**

Select your practical activity.

**Stage 1: Cognitive**

- Learner is using trial and error learning.
- Getting an idea of the skill.
- Many mistakes made.
- Movement is inconsistent.
- Movement lacks fluency
- Performer concentrates on every aspect of the movement.

**Stage 2: Associative**

- Movement is smoother.
- Subroutines linked.
- Performer can use kinaesthetic feedback.
- Motor programmes are formed.
- Practice required and awareness of mistakes.

**Stage 3: Autonomous**

- Movements are automatic.
- No conscious thought or attention required.
- Tactics and strategies can be focused on.
- Reaction time is reduced.
- Detailed external feedback can be used.
- Errors can be detected and corrected without help.
- Must practise to remain in this stage.
- Fluent, flowing.

- 10) a) Explain how you would use operant conditioning to teach a sports skill of your choice.

5 marks

**Answer:**

5 marks for 5 of:

- **Operant conditioning** is shaping behaviour by reinforcement.
- The sportsperson has a go at the sport, and the correct effort is reinforced, and the incorrect effort is negatively reinforced.
- This is done by the teacher praising success, and hence giving the sportsperson a feeling of well-being when success is achieved.
- When an incorrect effort is achieved, praise is withdrawn or not given.
- So the sportsperson learns to **associate** (connect) praise (and well-being – the **stimulus**) with a correct effort (the **response**).
- This is called the **stimulus-response** bond.
- The sportsperson is learning by trial and error.
- Eventually, incorrect responses will disappear, because the person wants to feel good.
- This process can be extended by showing the sportsperson how to perform the activity, this is called **shaping**, then the **correct shape** is reinforced (rather than just the shuttle going over the net as in badminton).
- For example, to teach a high long serve in badminton.
- Give demonstration (shaping).
- Get opponent to stand in service box opposite with racket held high (shaping).
- Give targets to aim for (shaping) – aim to get the shuttle over the opponent's head.
- Give **knowledge of results** (reinforcement) – did the shuttle pass over the opponent's head and land inside the baseline?
- Give **feedback** about performance (reinforcement) – was the shot performed with the correct wrist movement?
- Give **praise** (reinforcement).

10) continued

b) Describe what is meant by reinforcement and give examples of different types.

4 marks

**Answer:**

- Reinforcement is the manipulation of a stimulus to ensure that a response recurs.
- For example, **positive reinforcement** - giving praise when a swimmer wins a race.
- For example, **negative reinforcement** - taking away the praise if the swimmer subsequently loses.
- For example, **punishment** - telling the swimmer off for not trying very hard if he or she loses the race.

11) a) Using examples from sport explain what is meant by the S-R bond.

4 marks

**Answer:**

- A certain **response** is connected to a certain stimulus. For example, a forehand is hit by a right-handed player because the ball appears on the right hand side of the player's body.
- The **stimulus** acts as a cue to be associated with a response. For example, in volleyball a player will jump to block a ball being smashed across the net by the opposition.
- The response is almost automatic because the bond is so great between stimulus and response.
- For example, a 'reflex' save by a goalkeeper to a shot on goal.
- Or a sprinter driving out of the blocks when the gun goes.
- The **bond** (link) is strengthened by reinforcing correct responses – giving praise for correct responses, and withdrawing praise or giving punishment for incorrect responses.

b) Explain how a coach in a sport could ensure that a correct response follows a particular stimulus.

5 marks

**Answer:**

- Give **praise** or positive reinforcement.
- Give **feedback** or give direct knowledge about what to do.
- Give **satisfaction** if movement is correct (Thorndike's Law of Effect).
- Give **negative reinforcement** (withdraw praise) if movement is incorrect.
- Give **punishment** if movement is incorrect.
- **Repeat** the correct movement to establish a motor programme.

12) Stimulus-response bonding has been used to explain how a physical skill can be learned.

What is a stimulus-response bond and how can a Physical Education teacher ensure that it is strengthened when teaching swimming or athletics?

6 marks

**Answer:**

**Definition of S-R bond:**

- Performer learns to link a particular response to a particular stimulus.
- For example, the starter's gun in swimming (stimulus) triggers the swimmer's movement (response) from the blocks or poolside.

**Strengthening the S-R bond:**

- **Must use swimming or athletics example.**
- Use reinforcement, praise or punishment to ensure that the person is made to feel good about the correct response, and bad about an incorrect response.
- **Thorndike's Law of Readiness:**
- A performer must be mentally and physically able to do the task.
- For example, a learner swimmer must want to and be physically capable of trying butterfly if she is to master the stroke.
- For example, an eleven year old boy will be physically incapable of performing a slam dunk in basketball.
- **Thorndike's Law of Exercise:**
- Practice of the task will strengthen the S-R connections.
- For example, the athlete has frequent attempts at the sprint start.

12) (continued)

- **Thorndike's Law of Effect:**
- *If the response is followed by satisfaction or positive feedback (a 'satisfier'), the bond is strengthened.*
- *If the response is followed by an intense emotional feeling (of well-being) the bond is strengthened.*
- *For example, the swimmer who feels pride after doing 25m for the first time.*
- *If the response is followed by an 'annoyer' or negative feedback, the bond is weakened.*
- *For example, a young high jumper who repeatedly knocks the bar off because the bar is too high.*
  
- **Positive reinforcement, Reward or Praise:**
- *Operant conditioning or shaping increases the chance of the behaviour occurring again.*
- *For example, the swimmer gains a badge for completing 25m.*
  
- **Negative reinforcement:**
- *The behaviour is likely to be repeated when a stimulus is withdrawn.*
- *For example, no-one makes fun of the pupil who usually comes last when he or she achieves a better placing.*
  
- **Punishment:**
- *The stimulus given prevents a particular response occurring.*
- *For example, a pupil is made to perform an extra lap of the track for unsafe behaviour in the javelin lesson.*

13) A coach reinforces good performances in training with praise. Why does this reinforcement work rather than punishing poor performance? Explain what is meant by reinforcement and punishment in this case.

5 marks

**Answer:**

- **Reinforcement** works because the **praise** (giving a pleasant experience) to the performer will enhance and give **motivation** to the performer to repeat the good performance.
- The S-R bond is enhanced.
- **Punishment** of a poor performance (giving an unpleasant experience) has the chance that the person could be **demotivated** by the activity.
- And good performances never attained.

**What is meant by reinforcement?**

- Reinforcement is the giving of pleasant experiences for good performances to attempt to enhance the S-R bond and stimulate the correct response.

**What is meant by punishment?**

- Punishment is the giving of unpleasant experiences for poor responses or performances.
- This is an attempt to make a performer reject an undesirable response.
- And hence try harder to attain a correct response.

- 14) **A Level.** Using Thorndike's laws, discuss how producing a satisfying effect in a particular situation becomes more likely to occur again in that situation, and responses that produce a discomforting effect become less likely to occur again in that situation. 20 marks

**Answer:**

- **Reinforcement** is the process of increasing behaviour by giving satisfaction to the learner.
- That can be positive such as praise and rewards to achieve the desired result.
- And negative by removing an unpleasant experience in order to increase the likelihood of the desired response being repeated.
  
- **Thorndike's three laws** are concerned with strengthening the S-R bond, and hence the concept of reinforcement that is particularly importance to skill development.
  
- **The law of readiness** implies a degree of concentration and eagerness.
- Individuals learn best when they are physically, mentally, and emotionally ready to learn.
- And do not learn well if they see no reason for learning.
  
- This law says that learning can only occur when the nervous system (and muscular system) is sufficiently mature to allow the appropriate S-R bond to happen.
- For example, the more a thrower is physically and mentally prepared to perform a throw then it is more likely to be performed well.
- Individuals should learn simple basic skills (and become basically fit) before attempting to learn more complex skills.
- The law of readiness includes mental readiness.
- Participants learn best when they really want to acquire the skill.
- Have a clear understanding of the requirements of the task.
- Know and accept why they are practising the task.
  
- **The law of exercise** explains that repetition strengthens the S-R bond.
- It forms the basis of drill and practice.
- Learning occurs when a particular response has an effect on the person i.e. when the response is reinforced.
- For example, the more a discus thrower practises throwing the more likely it is that this correct throwing technique will be repeated in the competitive situation.
- So practice is very important.
  
- **The law of effect** is based on the emotional reaction of the learner.
- It has a direct relationship to motivation.
- The principle of effect is that learning is strengthened when accompanied by pleasant and satisfying feeling.
- And that learning is weakened when associated with an unpleasant feeling.
- It uses reinforcement (by praise, reward or observed success) to strengthen the S-R bond.
- Satisfying reinforcers (ones which make the learner feel good) increase the likelihood of a response being repeated.
- Thus, to enable early success it is important for a coach to use positive feedback to reinforce correct attempts.
- For example, if the thrower feels that the movement is correct then he or she is more likely to repeat the movement.
- Failure in a task can also act as negative reinforcement because it producing the opposite effect of satisfaction annoyance or discomfort.
  
- **A trial and error process** can produce this effect, since success reinforces a response, whereas failure forces the performer to try new methods to achieve success.