

CHAPTER 11 - Learning theories and practices

Exam style questions - text book page 141

1) Figure 11.9 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:

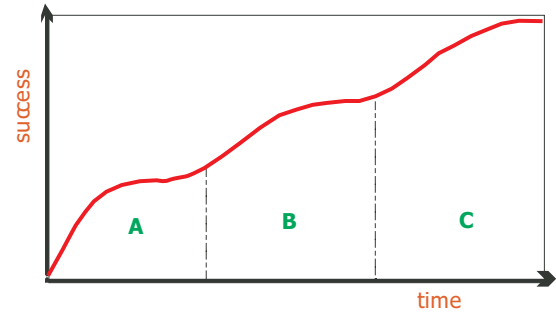
- Almost **automatic** in movements.
- Seems **confident** or has **predetermined goals**.
- More likely to complete complex movements.
- Is successful consistently.
- Less likely to lose concentration and so is **focused**.
- Advanced performers will only stay in this phase if they keep referring back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

figure 11.9 – performance of a gymnast



- 2) 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.

- 3) a) Explain how you would use operant conditioning to teach a sports skill of your choice. 5 marks

Answer:

- **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).

3) 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.

4) 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.

5) 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:

1 mark for 1 of: 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.

5 marks for 5 of: 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 11 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.

5) (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.

6) 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.

7) a) Explain the difference between massed and distributed practice. 2 marks

Answer:

- **Massed** - no rest intervals hence practice conditions of long duration.
- **Distributed** - rest intervals at regular periods of time during a session.

7) b) Justify the choice of practice conditions for a training session of a sport of your choice.

6 marks

Answer:

Massed:

- To ensure motor programmes are learned (overlearning).
- To encourage an habitual response.
- To cut down on response or reaction time.
- Good for learning discrete skills.
- Good for skills performed over a short duration, for example, basketball shots.
- But can lead to fatigue, boredom or demotivation.

Distributed:

- To give physical rest or recuperation.
- To give mental rest or gather thoughts.
- To relieve stress.
- Provides safety for dangerous activities.

c) Name two characteristics of the task, and two attributes of the learner which might lead you to decide which method (massed or distributed) of practice to use.

4 marks

Answer:

Two characteristics of the task from the following:

- Whether the skill was complex and lengthy or short and discrete.
- Whether the task required great fitness levels.
- Whether the task was dangerous or not.

Two attributes from the learner:

- The motivation levels of the learner.
- The personality of the learner (whether or not he or she would be prepared to persist in the learning task).

Make sure you use the above answer in relation to a sport or game of your choice.

8) Generally a skill should be taught as a whole as far as possible. Give reasons for this.

Some skills need to be split up into parts to be taught effectively. What are the advantages and disadvantages of this type of skill presentation.

12 marks

Answer:

Teaching skill as a whole:

- The performer can appreciate skill in its entirety.
- Has overall kinaesthetic sense of the skill.
- The flow of the skill is not interfered with.
- Much more efficient in skill learning and is therefore quicker to learn.
- Can help understanding and hence the cognitive development of the performer.

Splitting into parts:

Advantages:

- Useful if skill is dangerous and will lower fear level.
- Good for complex or difficult skills.
- Good for serial skills.
- Gives success at each stage and less likely to fail overall skill.
- Helps confidence and motivation.

Disadvantages:

- Transfer of movements from the part skill to the whole may not work.
- Some skills cannot be split up into subroutines very easily.
- Loses the overall kinaesthetic sense.
- Loses the flow of the skill.
- Takes up too much time.

- 10) **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. 15 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 important 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 produces 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.