**THE LEARNING ENVIRONMENT**

1. **The learning environment includes everything outside the learner including the skill itself, coaching and the physical environment.**

**Provide examples of way the physical environment can affect the acquisition and execution of motor skills.**

The physical environment includes the prevailing weather and surrounding conditions in which the skill is to be performed. Inclement weather may affect execution of skills adversely, as can poor ground conditions, lighting and poor or unsafe equipment.

They physical environment can also provide motivation, such as the effects of stadiums and large crowds, and determine if it is safe or unsafe to play.

In the initial stages of skill development, it is best to have stable and uniform surrounds or environments to allow performers to concentrate on task complexity and relevant cues. Allowing the learner to practise skills in a variety of game-like situations will also benefit the athlete and allow match readiness to be developed.

Variety in training environments such as wet weather, different-sized venues and different surfaces can enhance a player’s adaptability and all-round ability and therefore make the athlete more highly skilled. An example is the training on different tennis court surfaces to improve the chance of winning the grand slam.

1. **Complete the following series of continuums by describing the nature of skills and by using sporting examples to represent each range of skill.**
	1. **Open versus closed skill classification**

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| **Open skills** | **Combinations of open and closed skills** | **Closed skills** |
| Open skills usually take place under conditions of a temporarily or spatially changing environment. Decisions and adjustments have to be made while ‘on the run’. An example of this would be a ruckman having to shepherd block a defender with an initial lead step and subsequently being forced to adjust on the second or third step due to a change in direction. Unpredictable environments and movements also increase the openness of a skill. Surfboard riding is perhaps the best example of this. | Combination of open and closed attributes usually exist in many sporting skills. On a continuum it is usually the skills that have either movement occurring with the athlete or the object or target that would apply to this area. There is some unpredictability but also some consistency with the movements required. Eg skeet shooting, football penalty, skateboarding or in-line skating. | Closed skills are at the low end of the continuum and take place under fixed, unchanging environmental conditions. They are predictable and have clearly defined beginning and ending points. Eg bowling, golf, archery. Still target shooting, basketball free throw, darts and competitive weight-lifting are all closed skills. |

* 1. **Gross versus fine skill classification**

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| **Gross skills** | **Combinations of gross and fine skills** | **Fine skills** |
| Gross skills often involve many large muscle groups, and produce large movements. The main aim is to generate a greater size of movement for power, speed or distance. The movements are not very precise, and include many fundamental movement patterns. Examples include running, leaping, jumping, throwing, tackling, shot-put. | As in all continuums there is a range that possesses both extremes and combines features of both. Skills often are generated by large muscle groups but may also incorporate the finesse and intricacy of fine movement to deceive or add a higher skill level to the action. Examples include spin bowling in cricket, topspin in tennis, dance movements, ad a torpedo punt in rugby. | Fine skills are often associated with manipulative skills, fine control and limited movements. They are usually intricate, precise movements using small muscle groups and generally involve high levels of hand-eye coordination. A snooker shot or playing the piano are examples of fine skills. |

* 1. **Discrete, serial and continuous skill classification**

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| **Discrete skills** | **Serial skills** | **Continuous skills** |
| Discrete skills are brief, well-defined actions that have a clear beginning and end. They are single, specific skills, that make up the actions involved in many sports involving hitting and throwing. Eg tennis forehand drive, bowling delivery in cricket, forward roll when performing a dive.  | Serial skills are a group of discrete skills strung together to make a new and complex movement such as the sequence of skills for the triple jump, a placekick in rugby or football, shooting an arrow in archery, shifting gears in motor racing, and a gymnastics or dance routine.  | Continuous skills have no obvious beginning or end. The end of one cycle or movements is the beginning of the next, and the skill is repeated like a cycle. These skills could be stopped at any moment during the performance of the skill such as in swimming, running and cycling. |

* 1. **Self-paced versus externally paced skill classification**

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| **Self-paced skills** | **Combinations of self-paced and externally paced skills** | **Externally paced skills** |
| Self-paced (or internally paced) skills are those that are instigated by the performer. The performer controls the rate at which the skill is executed. These skills are usually closed skills. Examples include hitting a golf ball, serving in tennis, throwing a javelin or discus. Closely linked to closed skills. | Most sporting skills, particularly in team sports, are a combination of both. An individual may have a degree of control over the execution but it may be linked to opposition movements and when this occurs a degree of self-pacing is reduced. An example is reacting to a break in a middle distance event.  | In externally-paced skills the environment, which may include opponents, controls the rate of performing the skill. The performer must pay attention to external events in order to control their rate of movement. These skills involve reaction, and are usually open skills, ie in ball games the performer must time his actions with the actions of other players and the ball. They are controlled by an outside instigator eg music may control the execution as in dance and some forms of gymnastics. Closely linked to open skills. |

1. **Identify which type of skills would be more appropriate when dealing with young inexperienced individuals, justifying your choice with relevant examples.**

When coaching or providing some form of instruction to novices, how the skills are presented plays an important part in how quickly they learn and master a skill. This is best achieved by providing information, instruction and practice in the areas of closed, discrete and often gross-based skills.

Rather than trying to teach large expansive movements requiring fine skills or finesse at certain points, skills can be broken down to manageable subroutines, so limiting the number of cues for novices to focus on. For example, coaches will initially teach bowling action in cricket without looking at seam, swing or spin. They first just concentrate on the full action and accuracy of delivery. By deconstructing skills, coaches can provide more specific instructions and mini-demonstrations that allow performers to develop a skill step by step.

Simple skills are straightforward with few subsections to go through to perform the skill. These require minimal concentration and cognitive ability from the performer and are ideal for young or novice performers.

Self-paced skills also allow the novice to concentrate on their own techniques and execution without extraneous worries such as opposition or environmental movement. An example of this is learning surfboarding where beginners practise on the sand first to gain an idea of how to kneel then stand up.

1. **Using the basketball lay-up and the serve in tennis as examples, discuss the benefits of using either the whole or part instructional method in the acquisition of a skill.**

Many basketball coaches believe that when teaching a new skill, the first step is to isolate the skill and not attempt to teach more than one thing at a time with a beginner. Many coaches advocate the part method, as it allows novices to focus on relevant cues and not be distracted by the end result.

Therefore, a lay-up can be broken down to starting without a dribble or an approach to the basket (this eliminates the difficulty of positioning, catching and changing visual focus). For a right-handed lay-up, a player takes a step with their left foot and jumps in the air off their left foot.

This breaking down of the skill continues and includes steps and jumps, rotating the ball to the shooting position and shooting a lay-up with the right hand behind the ball and right knee in the air. Dribbling or carrying the ball to the designated spot can be introduced and worked on after some competency is achieved in each subroutine. Once the player masters the basic lay-ups with both hands, then more complex skills can be introduced and worked on in small sections, eg reverse lay-ups and crossover lay-ups.

**Tennis serve**

Arguments for the use of the whole method are based around skills that are difficult to break down, often because of their speed of execution. The lay-up is easily deconstructed to several key subskills but many coaches and players believe that this often causes a reduced flow of the skill and produces jerky, mechanical-like movements because each skill set is developed independent of the others. With this in mind it is useful to link subskills such as in tennis where the ball toss and racquet wind-up are most likely to be worked on together. In tennis, due to the speed of the action, many prefer a more whole-based method (although not completely) as it allows fluency to develop throughout the movement (often referred to as the whole/part or progressive part method).

1. **Two approaches used in the attempt to acquire and master skills are massed practice and distributed practice.**
	1. **Outline the advantages and disadvantages of massed practice in skill acquisition and mastery.**

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| **Advantages** | * Mass practice mirrors some competitive situations while providing some adaptive abilities, both physiologically and psychologically, for individual athletes
* Massed practice allows completion of skill practice without interruption and may allow a better access to it from the athletes involved
* Recent research suggests that massed practice is valuable in the learning and competency of discrete skills. The completion time for mastery of these skills through massed practice may be shorter and less fatiguing
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| **Disadvantages** | * Massed practice of specific skills and drills may lead to fatigue and therefore technique breakdown. Fatigue may also lead to boredom and demotivation within the athlete towards the task.
* It is not an effective method of instruction for beginners.
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* 1. **Outline advantages and disadvantages of distributed practice in skill acquisition and mastery.**

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| **Advantages** | * The athlete stays more alert
* Intensity is more likely to be achieved
* Part practice helps avoid oversaturation of the skill which could cause fatigue or even technique degeneration
* Repetitions are maintained at a near-perfect level
* Because the athlete is fresh, energy level stays constant
* As fatigue becomes less of a factor, motivation is easier to maintain
* Skills can be practised within the athlete’s personal schedule as they are in smaller blocks (practice often rather than more)
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| **Disadvantages** | * Distributed practice may not be as effective for high level, highly motivated athletes who enjoy the changing routines of part practice. They seek to complete tasks and may even attempt to instigate fatigue to attempt to replicate game-like situations.
* If practices occur more often, then some players may not be able to attend all of them
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1. **Based on the advantages and disadvantages of massed and distributed practice outlined in the tables above, evaluate the usefulness of each approach.**

Coaching is important in the reinforcement of skills. It has been found that with careful control of the reinforcement conditions in a practice session, learning rates and persistence can be increased remarkably. Generally speaking it seems that distributed practice is best for the majority of tasks, although massed practice is also good for some tasks.

The general rule adopted is that the length of a practice session is determined by the physiological fatigue incurred and the individual’s motivation to progress (reinforcement). By carefully alternating activities and providing adequate reinforcement, the work output and performance improvement of athletes can be greatly increased. In complex activities, eg swimming, track and field, and football, where the participant is required to practise a repertoire of skills, the participation period can be extended by changing the skills practised. This suggests that part practice is more suitable to the majority of athletes.

The advantages of distributed practice far outweigh its disadvantages. Distributed practice sessions allow the mastery or many skills for beginners, when the task is difficult and when fatigue or lack of success may lead to boredom. Also when motivation and interest are poor, practising in smaller bouts may improve the quality of the performer’s work.

Massed practice is less favoured than distributed practice but is still a chosen, effective method for highly motivated and highly skilled performers.

1. **The aim of feedback is to provide:**
	1. **Reinforcement of successful performance**
	2. **Recognition and diagnosis of movement error**
	3. **Motivation for continued involvement towards mastery**

**Explain how these aims are achieved through the use of internal, external, concurrent and delayed feedback.**

Reinforcement of successful performance in skills and achievements comes from a variety of sources both internal and external as well as concurrent and delayed. Such reinforcement is a positive experience for the athlete and thus stimulates motivation to improve skills towards mastery of the sport.

Reinforcement of a successful performance may be achieved through internal (intrinsic) feedback as the athlete has developed a feel for the correct movement through experience and proprioceptive muscular activity.

Reinforcement may also be delivered from external sources such as success in the skill (eg goal shooting) or reactions of others such as coach, family, and spectators in the form of verbal or non-verbal feedback (eg applause). This feedback may be concurrent or delayed.

Diagnostic feedback provides for recognition and diagnosis of movement error. This is achieved through internal feedback and also through analysis of the skill from external sources. Diagnostic feedback in the form of advice, or even high-tech movement analysis, may be provided as concurrent feedback during events to assist in refining skill execution or for altering tactics. In addition to this, video analysis presented in a delayed or terminal format allows athletes to pinpoint biomechanical errors or successes in each movement and attempt to replicate or remove them.

1. **Evaluate the effectiveness of knowledge of results versus knowledge of performance as a feedback tool in motor skill development.**

Knowledge of results and knowledge of performance are both effective methods for providing feedback to athletes.

Knowledge of performance is particularly effective as it qualifies the feedback information and allow a degree of specificity and feedback accuracy that is translated more quickly to the correct or desired movement. Also knowledge of performance can be delivered before (eg stance, grip) and during the execution (eg wind-up, impact, follow-through), as well as afterwards.

Knowledge of results, although important as it gives information about the result of the performance, does not specifically tackle the technical components of the skills or the biomechanical principles behind them and can only be delivered after the event.

Therefore, as an effective tool for novices and experienced athletes alike, a more effective feedback tool would be increasing the knowledge of performance.