

PE Studies Motor Learning and Coaching Notes

Transfer of Learning:

1. Skill to Skill: When a skill developed in one sport has an influence on a skill in another sport. The influence can be positive(promotes learning) or negative(inhibits learning).
 - Proactive Transfer: A previously learnt skill affects the skill currently being learnt. E.g. A player learning to throw a baseball would pick up the skill faster if he already knew how to throw a cricket ball.
 - Retroactive Transfer: Learning a new skill affects a previous learned skill. E.g. A basketball player with poor footwork spends time working on a “fast-feet” ladder to improve his footwork around the court.
2. Theory to Practice: The transfer of theoretical skills into practice
 - Coaches devise game plans, tactics and strategies for opposing teams and individual players
 - This can involve analysing their own strengths and weaknesses and those of their opposition before coming up with a plan, which in theory, will maximise their chances of success.
 - Players apply the devised theories/plans into the game situation
 - Can also include developing specific strategies to deal with various game specific scenarios. E.g. The Perth Wildcats are four points down with 25 seconds remaining and are in foul trouble. Players are aware, before the situation arises, of what their individual responsibilities are when the strategy is implemented.
 - Theory to practice can also include a coach illustrating a particular play or set piece move on a whiteboard and the players then practising the play.
3. Training to Competition: The transfer of skills developed in training into a competition situation
 - Coaches must plan and implement training sessions which replicate the demands of the game. This includes the development of appropriate skills, energy systems and the decision-making process.
 - Players should be exposed to game specific situations at training to allow them to develop their information-processing and decision-making mechanism. This increases the likelihood of players making the correct decisions when under game pressure.
 - Correct decision making is critical to successful performance and must be developed using game-like drills and simulations at training.

Effects of Transfer of Learning:

- Positive Transfer of Learning: When skills and/or information gathered from a previous learning experience helps with the learning of a new skill.
 - The two skills are often similar in some way. E.g. Free throw in basketball and netball goal shooting, tennis and volleyball serve, jump ball in basketball and ruck tap in AFL.
- Negative Transfer of Learning: When the learning from a previous learned skill negatively impacts on the learning of a new skill.
 - The skills can seemingly have a similar action but there are critical differences in technique. E.g. Squash and tennis are both racquet sports but with critical differences;
 - Shot making in squash involves wrist movement
 - Shot making in tennis does not involve wrist movement
 - A squash player learning to play tennis might have difficulty eliminating the wrist movement when playing a tennis shot which would negatively affect performance.
- Zero Transfer of Learning: When the learning of a new skill is not affected either positively or negatively by previously learned skills.
 - There is zero transfer of learning between the striking demands of baseball and the ball control required in basketball. To say that there is zero transfer between the two sports is far too general, however, focusing specifically on the skills, equipment, tactical requirements, energy systems and/or components of fitness required in each sport allows for a detailed description in relation to transfer of learning.

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** Athletes who have been exposed to a wide variety of movement experiences from a variety of ** sports benefit by being better able to;

- Recognise and select relevant cues from the environment
- Process information received faster and more accurately
- Have more responses available to select from
- Better execute the selected response

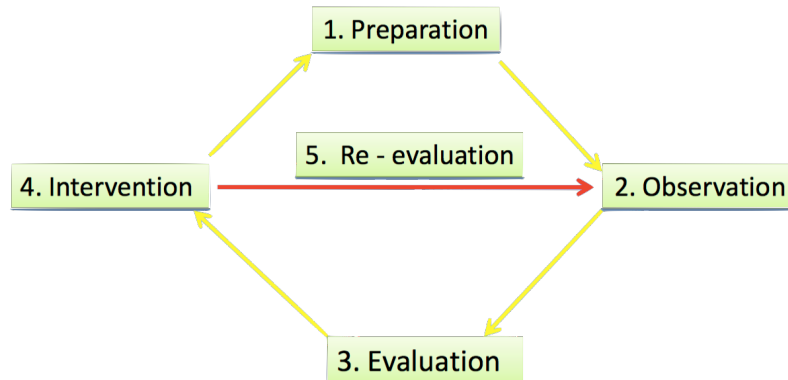
Analysing Performances:

- Laboratory Testing: Performance is analysed in laboratory conditions so that various factors can be varied or manipulated.
 - Computerised analysis can be used
 - Cameras can be very close for better observation
- Field Testing: An athlete's performance is analysed at training in normal surroundings. E.g. The underwater observation of the "pull phase" in a swimming stroke can be observed during the course of a training session.
- Competition Analysis: An athlete is analysed while performing during competition

Methods of Analysis:

- Quantitative Analysis: Uses numbers - body skin folds, blood lactate levels, angle and speed of release, instantaneous velocity, acceleration rate etc.
 - Is objective (based on fact)
- Qualitative Analysis: A description of the movement without using numbers. To work successfully it needs to follow the Knudsen-Morrison Model of skill analysis.
 - Is subjective (based on opinion)

Knudsen-Morrison Model:



1. Preparation Phase: Coach is concerned with the process of developing a prerequisite knowledge base about the particular skill. The coach must know the points of technique required to produce the skill correctly. A checklist could be made up outlining key points of technique prior to analysis.

1. Preparation to perform the skill.

- All movements that prepare the athlete for the performance of the skill. Eg. Backswing, run up, stance, grip, wind up.

2. Execution of the skill.

- Begins when preparation ends and finishes at contact/release of the ball. Includes initiation of sequential actions of the downswing, application of force to the ball.

3. Follow through

- Refers to all movements after the execution phase

2. Observation Phase: Systematically gathering information about the performance or movement during the observation.

- Decide on best way to observe and gather information about the skill

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3. **Evaluation Phase:** Identify strengths and weaknesses of the performer. Identify methods which can be used to improve the performance.
 - List the weaknesses in order of priority for correction - which ones need immediate attention and which ones are less critical - which ones affect performance and which ones do not.
 - Large changes to technique need a longer time to rectify and may be done during the off season.
 - Technical flaws which do not impact performance may not always be addressed.
 - A coach needs to be aware of the “cause - effect relationship” when evaluating performance.
4. **Intervention:** Providing feedback and corrections to the performer, usually under practice conditions, to improve performance. During this phase the coach provides the performer with visual, verbal and proprioceptive cues and strategies to improve the identified problem areas.
 - Visual Cues:
 - Coach demonstrates the correct technique
 - May involve showing the performer what he is doing and then what he should be doing.
 - Coach emphasises 3-4 key points of technique for players to concentrate on
 - May include video feedback
 - Verbal Cues:
 - Single words or short phrase to focus the performer on a particular part of the skill
 - Coach provides verbal cues that performer can use to improve
 - A volleyball player may say “reach up” to emphasise the high contact point required for spiking. Too much information can confuse performer and result in decreased performance.
 - Proprioceptive Cues
 - Coach physically moves the performer through the desired movement patterns to make them aware of how the movement should feel. E.g. Coach rotates performer’s shoulders to the desired position
5. **Re-evaluation:** Observe the performer implement the changes made, in a similar context to initial observation. Did they make a difference or is further intervention needed.

Simple Skills:

- Are straightforward with little progression
- Typically require little practice to learn
- Require little cognitive ability
- Consist of a limited number of component parts
- Limited decision making required
- Taught as a whole

Complex Skills:

- Are more difficult to learn with many progressions
- Require repeated practice to learn
- Require more cognitive ability
- Consist of many component parts
- More decision making required
- May need to be broken down to be taught.

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Shaping: When simplified or incomplete versions of a skill are rehearsed initially and the missing components are added. Components are added as basic skills and are acquired in order to increase complexity.

- Players are rewarded with praise/buzzwords/key phases and/or gestures as the player acquires the desired action.
- Coach demonstrates the skill
- Performer practices simplified version
- Feedback/correction provided
- Add "missing" components
- Further practice - increase speed/accuracy
- Add "missing" components
- Use skill in game-like situations

E.g. Practicing incomplete versions of freestyle swimming

- High elbow drills (ice-break or finger drag)
- Body Position drills
- Long hand entry (stroke count)
- Catching water drills (sculling, catch up etc.)

Chaining: When the skill is broken down into components that are rehearsed separately as if they were isolated skills. Over time, these components are then put together so the whole skill is formed and can be practiced.

- Break the skill down into component parts
- Focus on one aspect at a time in the skill, mastering that component before moving onto the next component
- Start by teaching first part - practice until perfect
- Add next part - practice until perfect
- Add next part
- Add next part etc.
- No progression until previous part is perfect

E.g. Cricket batting. Stance, backswing, forward swing, contact, follow through.

Shaping and Chaining: The decision about whether to break down a motor skill for chaining or shaping is based on the complexity and organisation of the skill.

- Complexity: The number of skills required to complete the task (number of components or degree of difficulty)
- Organisation: How dependant each phase of the skill is on the previous phase
- Motor skills that are high in complexity and low in organisation(sequential skills) can be broken down into component parts to be practiced separately. Chaining.
- Motor skills that are low in complexity and high in organisation(simultaneous skills) are best practiced as a complete skill and not broken down. Shaping.

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Dynamic - Static Drills: Coaches develop skills by using static and dynamic drills. When teaching skills to beginners, or in rehabilitation of injured athletes, coaches will “increase the requirement of players in the drill to move, initially from standing still to finally fully running and change of direction.”

Static Drills:

- Performer practices skill while in a stationary position
- Can concentrate on technique without attending to other factors
- Limited decision making
- Predictable(closed) environment
- Beneficial when learning a new skill

E.g. Water polo players passing the ball forward and backward to each other

Dynamic Drills:

- Performer is moving
- Environment becomes less predictable(open)
- Increased decision making required
- Drills become more game related and more difficult
- Used to extend skill development

E.g. Water polo players passing the ball in a game specific environment

Coaching Styles:

Authoritarian Coach(Autocratic):

- Tends to make all the decisions
- Very strict style of coaching
- Coach believes he has the knowledge and experience to impart on the players
- Role of the players is to attend to, and respond to, coach's commands
- Less confident players are intimidated
- Effective when team is winning
- Less effective when team is losing
- Is a good style of extrinsic motivation
 - Characteristics:
 - Intense energy
 - Well organised
 - Demands attention to detail by the players
 - Punish those who make mistakes
 - Winning is the only goal
 - Confrontational when challenged

Democratic Coach (Co-operative):

- Maintains open communication with players
- Players involved in decision making
- Players feel they have a degree of ownership of the team
- Positive and negative feedback used to re-enforce and promote learning
- Very good for inexperienced players
- Enjoyment is important
- Liked by players
- Encourages players to develop intrinsic motivation
- May not provide enough motivation for some performers
 - Characteristics:
 - Tends to be very flexible
 - Strives to create an atmosphere of mutual respect
 - Concerned for the welfare of the players
 - Task related goals(winning) can suffer
 - Decisions can take a long time

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Casual Coach (Laissez Faire):

- Relaxed and easy going who establishes an informal learning environment
- No pressure on the players to perform
- Tends to be less organised and prepared
- Works best with experienced players who can make their own decisions
- Offers guidance and advice when asked
- Limited improvement
- Inexperienced players unsure of what to do
- Serious players often find this coaching style unsatisfactory
 - Characteristics:
 - Provides little instruction and minimal guidance in organising activities
 - Creates a relaxed atmosphere, there's lack of general direction
 - Coach exerts little influence on the players

Combining Coaching Styles: Coaches can change their coaching styles depending on the needs of the team, the situation they are facing and the stage of the season.

- Casual(Laissez Faire):
 - This coaching style can be used briefly in the pre-season to see which players show initiative and leadership traits.
 - Used when coaching highly motivated/experienced athletes to allow for creativity.
 - Used when coaching athletes with a high level of intrinsic motivation.
- Autocratic:
 - This coaching style can be used in the pre-season phase as the coach establishes his authority and control over the group.
 - Used when coaching a dangerous activity and safety is of importance.
 - When coaching a very inexperienced team and direction is needed.
 - When coaching athletes who are extrinsically motivated (pre-season fitness demands).
- Democratic:
 - The style can be used during the in-season and finals as it incorporates the team in decision making but the coach has the final say.
 - When coaching elite or experienced athletes that would value giving input to the team.
 - When coaching athletes who are intrinsically motivated.

Trends in Leadership:

- Males tend to prefer more autocratic decision making process
- Athletes involved in individual sports tend to prefer a more democratic leadership style
- Coaches whose main aim is to win, particularly at a higher level, tend to be authoritarian in their approach
- Coaches whose focus is fun and enjoyment tend to adopt a more casual approach
- Coaches who want to help athletes develop their potential and at the same time to enjoy themselves, tend to be democratic
- Players from certain cultural backgrounds expect an autocratic approach
- Players from some other cultural backgrounds expect a democratic approach
- Females prefer more democratic processes than males

Using Checklists and Video to Analyse Technique:

Checklists: A form of written feedback.

- Can be used to determine the technical and tactical ability of performers
 - A checklist is made up identifying the key criteria for successful performance. The athlete performs the skill and information about the performance is recorded on the checklist.
 - Player and coach use the information gathered to improve performance.
 - The coach observes player during multiple attempts and completes the checklist was doing so.
 - Specific feedback is provided to the player of aspects of technique to improve
- Video: A form of visual feedback.

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- Video analysis can slow movement down to 500 frames per second for more accurate analysis. A performer can observe his performance broken down into fractions of a second allowing him to observe strengths and weaknesses of his performance.
- Many athletes respond better to visual feedback than verbal. A combination of both is ideal. Coaches use visual feedback to support their verbal feedback

Other methods of information gathering:

- Fitness Requirements: By players wearing a GPS, coaches can get data regarding how far the player walked, jogged, sprinted during a game. This data can influence the fitness training program as the fitness requirements of the game may vary from player to player depending on their position.
- Intensity of Work: wearing a heart rate monitor provide data about how hard a player is working. This ensures player are working at the intensity required. Some clubs require players to record their heart rate on a whiteboard so their teammates can see how much effort each player is making.
- Performance Criteria: Also referred to as key performance indicators, these are the criteria essential for successful outcomes. Some KPI's relating to AFL would be;
 - Inside 50's
 - Tackles made
 - Tackles missed
 - % of short passes successfully completed
 - % of long passes successfully completed
 - Centre clearances
- "Live" Feedback: Coaches are provided with "live" Data during the game from assistants regarding individual players. This enables the coach to know which players are having an impact on the game. It also allows him to see which opposition players are dominating and he can make changes to his team structure to counteract them.
- Analysing Tactics: Coaches analyse patterns of play and set plays used during a game by their own team and the opposition. This can be done by studying videos of upcoming opposition teams or using forward scouts. Individual players are provided with video clips of the next opponent so they can analyse how to play against them. Analysing opposition teams can be beneficial in minimising the impact of their key players and the effectiveness of their strategies. If a team can recognise the patterns of play and the formations used by opposition teams, they are more likely to be able to counteract them. E.g. ;
 - A hockey team defending against a short corner in hockey
 - Oppositions preferred positions in a line out in rugby

Reflective Learning:

1. Reflection:

- **Reflective Journals**:
 - Used to record feelings and emotions
 - Keeps a record of successes, failures and suggestions for improvement
 - Records what has been achieved and possibilities for the future
 - Are reviewed from time to time
- *Are not always written - they can also be in video and electronic format*
- **Mentoring/Coach/Peer**:
 - A significant other in the life of the athlete, the mentor assists by providing critical and constructive feedback to help the performer continue to improve. The mentor must be supportive of the athlete at all times throughout the process. E.g. Senior players mentor junior players.

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- **Video Analysis:**
 - Athletes can view their performance during training and make corrections immediately.
 - Can be paused/played frame by frame/slowed down to allow closer analysis of technique.
 - Allows athlete to compare current performance with past performance or that of an elite athlete.
- **Questionnaires:**
 - Questionnaires are given to players to gather information about individual players, the leadership group, potential leaders and the coaching staff
 - Feedback from the questionnaires can then be used to make changes if required and to guide the development of the team, the individual players and its leaders.

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2. Recognition of things to improve:

- As a result of self reflection on a performance, an athlete can determine what aspects of the performance could have been done better, or could be improved to enhance future performances.
- Gathering data about performances, and then recognising things to improve, has become more accurate with the latest technology.
- Tennis players can use information gained from statistics and technology about the placement of their serves and statistics about the effectiveness of their serve.

3. Planing for improvement:

- Most sports are constantly evolving with changes in strategies, tactics, techniques and training methods.
- It is important that players and coaches are aware of, and can implement, the latest advancements in their sport. If they do not, they will not perform at their optimal level as they will be using outdated methods.
- Players and coaches can improve their knowledge of current trends and changes in two ways;
 - Formally: By attending coaching courses conducted By governing bodies. E.g. WACA run level 0 - level 2 coaching courses as do most governing bodies.
 - Informally: Through meeting and speaking with other coaches, players at workshops, after games, observation of the other coaches and players in action.
- Newly acquired knowledge should be applied when planning for future improvement

4. Action:

- Action is the product of the reflective process
- Having identified weaknesses, the athlete sets short term goals to address the areas identified as needing attention. Achieving these short-term goals will motivate the athlete and ultimately assist in achieving long-term goals

Self-Instruction:

- There are many occasions when players are required to assist the coach by taking responsibility for their own performance.
- Self instruction enables players, when faced with a stressful situation, to provide themselves with specific strategies to improve concentration and problem-solving skills which in turn will improve performance.
- Athletes need to learn to take responsibility for many aspects of their own performance before, during and after the event. They need to be able to function independently of a coach.