The use of video analysis for Mediational Learning (Old Way / New Way): New technology meets a new approach to skill correction and maintenance in elite sport

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The skill mediation technique (Mediational Learning) has been used in a number of different learning domains. The majority of research in the area deals with its effectiveness in the educational domain. Sports psychologists are already using the skill mediation technique with both elite and non-elite athletes, based on observation and anecdotal evidence of its effectiveness in the sporting domain, as well as empirical evidence for its effectiveness in the educational domain. The simultaneous introduction of video analysis technology at the South Australian Sports Institute, has assisted with the implementation and reinforcement of the Old Way/New Way technique for change.

Theoretical Underpinning

Mediational Learning has successfully been demonstrated in a wide variety of applications where stable changes in habits, skills, concepts are required (e.g., Baxter & Dole, 1990; Baxter, Lyndon, Dole Cooper, Battistutta, & Blakeley, 1997; Dole, 1991; Lyndon, 1989; Rowell, Dawson, & Lyndon, 1990). The use of this methodology is based on the proactive interference effects - interference caused by conflicting prior learning (Lyndon, 2000) -, in that it has as a central element, the joint practice of two competing responses. It has been shown to have positive results for skill acquisition, conceptual development, and affect (Lyndon, 2000).

The technique reflects the necessary conditions for learning when there is a conflict between prior learning and any new learning. The technique is cognitive in nature and can be applied in any domain in which an individual has previously learned a skill and now wishes to change. The skill mediation technique is the same irrespective of the intended content of the learning (Lyndon, 2000). The technique consists of three stages; firstly the initial preparation stage, the mediational stage, and the final application stage.

Outline of Method

In the preparation stage, both the old and new ways are identified. The individual must elicit the old way and where necessary the relevant elaboration of this old way must be undertaken (Lyndon, 2000). The individual must then learn or demonstrate prior learning of the new way and actively differentiate between the two approaches. This process can take vary in amount of time taken, depending on the nature of the new skill or concept involved.

It can be said that to this point, the skill mediation technique is simply describing what can be considered effective teaching practices. In this ‘regular’ teaching approach, the next phase would be for the individual to practice or apply this new skill or concept as broadly as possible. The

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'regular' approach is based on the belief that practice of a new skill always improves the retention of what is being learned. This can be considered to be true for the relationship between learning, practice and retention when the skill being learned is new and/or non-conflicting. However, this is not the case when the individual is attempting to change existing habits or skills (Lyndon, 2000).

Following the preparation stage of the technique, the next step involves the re-elicitation of the individual's old way, and the elicitation of the new way. The individual then is required to reflect upon and verbally state the differences between the alternative approaches to the skill. This is perhaps the most important part of the skill mediation technique. This stage of the technique in which first the old way and then the new way is elicited, followed by the comparison and differentiation between the two, is called mediation (Lyndon, 2000). The individual then re-mediates a total of five times, during which time they become more able to articulate the similarities and differences between the alternative approaches to the skill. This results in a differentiation that has developed in a progressive manner, rather than from the rote learning of any relevant differences (Lyndon, 2000). The repetition of the mediation process is another significant difference between the skill mediation technique and 'regular' teaching methods.

The third and final stage of the skill mediation technique is the application stage. This stage is common to other methods of teaching and learning. The application stage involves the individual generalising and applying their newly developed skill. Another aspect of this technique that is different from''regular' teaching practice is that re-mediation successfully facilitates transfer of new learning when other methods do not (Lyndon, 2000).

Research Findings

In a study conducted by Baxter et al (1997) the relative effectiveness of skill correction in a group of vocational education students, using skill mediation compared to that obtained by conventional methods of re-mediation was examined. The results showed that those students who were exposed to conventional teaching methods in order to correct pre-existing skills, experienced only a 20 per cent retention rate of the new skill. This result would seem consistent with research examining the effects of proactive inhibition. The participants in the study, experienced accelerated forgetting of the new skill, that is 80 per cent loss of retention. However, those students who undertook the skill mediation technique demonstrated only 20 per cent loss of retention, thereby experiencing a normal rate of forgetting of the new skill. This result would also seem consistent with research on normal rates of forgetting (Baxter, et al., 1997).

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Furthermore, the results of this study also showed that all of those participants who used skill mediation progressed to skill mastery over the following two weeks. However, only certain individuals in the conventional teaching group demonstrated a reasonable degree of progress toward master of the new skill, in the same period of time (Baxter, et al., 1997).

In addition, the students who used skill mediation showed improved affect, self-detection, and self-correction of incorrect skills, improved understanding of the complex nature of the skill being learned, and an awareness of the value of the method for accelerated skill development (Baxter, et al., 1997). It is also relevant to note that the treatment effectiveness of the method was not teacher dependent. These results are significant in that they provide direct support for the method and more importantly for its theoretical underpinning (Lyndon, 2000).

Application

It can be concluded that accelerated rates of forgetting caused by conflicting prior knowledge can be transformed to a normal rate of forgetting through the use of a relatively simple cognitive strategy. Furthermore, the original learning, the cause of proactive inhibition, is now itself subject to an accelerated forgetting effect thus reducing its influence in future skilled performance to a controllable and thus more acceptable level. Individuals are now able to pursue the development of skill mastery or, within the field of conceptual development, attainment of a stable level of knowledge representation that we may properly call understanding (Lyndon, 2000).

Mediational Learning has been applied, by the psychologists at the South Australian Sports Institute (SASI), with a variety of different athletes. These athletes include the following: Baseballers (pitching technique); basketballers (shooting technique – 3 point line, and jump shots); divers (hurdle technique on spring board, take-off technique on platform, and body posture); rowers (catch position), soccer players (kicking technique), and volleyballers (hitting and serving technique, as well as team concepts and beliefs). The technique is best applied when the psychologist acts as the facilitator, the coach provides technical feedback when requested by the psychologist, and the athlete is empowered to be the mediator (the master of change).

Recently, the use of video feedback, during Mediational Learning has enhanced the learning process for athletes. Video feedback provides another source of immediate information (apart from their own sensory information) for athletes to draw on – both when analysing and identifying old and new technique, and when actually mediating between their old and new ways. Video footage also acts as a permanent record of performance, which can be used for long term monitoring (Robertson, 2000).

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Swinger Motion Analysis Software–‰, designed to analyse motion in a simplistic way, is being utilised by SASI elite coaches more readily in 2001. The benefit of the Swinger program for Mediational Learning is the ability to simultaneously display two video clips, via a split screen. This allows for the display of the Old Way on the left of screen, and the New Way on the right of screen. The program also allows for the annotation of individual frames with instructional notes at any point on the screen. This is where the athletes' own'‘mediation' (verbalisation of the differences and similarities between old and new way technique) can be added to the screen as a record of their own learning processes and cues. Athletes are then provided a summary video of their Skill Mediation process. This can be used to enhance their imagery practice of the New Way, as well as provide them with the process of mediation that they can re-visit, and mentally practice at suitable times.

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