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CHARACTERISTICS OF EFFECTIVE GYMNASTICS COACHING

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Original research article

Abstract

This study is investigating the characteristics of effective sports coaching. The breadth of study method has allowed a progressively greater and a more “grounded” understanding of the characteristics of effective gymnastics coaching. The use of different information retrieval methods moving from literature review through surveys, discourse analysis and, finally, eliciting expert practitioner’s overt and tacit knowledge represents a more integrated attempt to understand the characteristics of effective coaching. The use of multiple methods of knowledge elicitation was recommended to constrain the effects of knowledge type (e.g. representations versus declarations; overt versus tacit understandings) and task-method-investigator moderators. This study produced a key list of gymnastic coaching attributions, these being planning, effective teaching, having sport specific knowledge, goal setting and “envisioned” excellence in an integrated practice. Other identified common tasks reflected learned practices while on-the-job. These tasks were inter-personal communication, leadership, “spotting”, being able to visually analyze skill practice, predict desired outcomes and monitoring students.

Keywords: *gymnastics, effective coaching, key list.*

INTRODUCTION

This study is the third in a series of pilot studies investigating the characteristics of effective sports coaching. Each of the three pilot studies has investigated the characteristics of effective gymnastic coaching using different data collection and analytical methods. The breadth of study method has allowed a progressively greater and a more “grounded” understanding of the characteristics of effective coaching. This highlights the relevance of the use of a range of research paradigms that can reveal more findings about phenomena, than would a reliance on a single research perspective (Schulman, 1986).

The initial study comprised a survey of over 120 gymnastic coaches Australia wide and an extensive review of the Literature. The Literature Review list of

characteristics of effective coaching was, in the main, a list of *tasks* of coaching. The Literature review gleaned representational data (a list of tasks in context).

The second study investigated the opinions of a sample of expert coaches and their athletes from a group of top performing clubs in the State of Queensland. Data was collected via interview and the transcripts were analyzed using the Member Categorization Analysis (MCA) technique as described by Baker (1997) and Silverman (1993). The attributions derived from the second’s study’s interview analysis present a different perspective of effective coaching in sports classes. The coaches placed importance on the *representative core culture of their classes*, as well as the *committed and inspirational nature of the*

coach. Many of the less highly ranked attributions (but never the less identified through the interviews) such as *parents and gymnast are happy, gymnast & coaches having fun*, and *gymnast respecting coaches* suggest the importance of an effective social and psychological climate to effective gymnastic classes.

This present study continues with the same sample of expert coaches as in the previous study, but elicits their tacit knowledge of the characteristics of effective gymnastics coaching using concept mapping and the use of repertory grid analysis. There is a reasonably large field of representational literature on what accounts for effective coaching, but very few examples found of a constructivist approach to studying coaching knowledge and experience (McGaha 2000, Spencer 2001 and Turner 2001). These few studies using a variety of qualitative methods (observation, reflective journals, interviews via the “Delphi” method, and stimulated recall) have led to some evident suggestions for better or more effective coaching competencies and concomitant education. Practical experience as opposed to knowledge of soccer, and the use of teaching cues was found to be important by soccer coaches (Turner, 2001), while conversely knowledge of sport regulations and event management was deemed critical by cheerleaders (Spencer, 2001). McGaha (2000) described coach behaviors as being similar to expert physical educators and highlighted the use of silence as an effective coaching behavior. This current study is the first to consider the question of effective gymnastic coaching by eliciting expert’s knowledge via concept mapping and the use of repertory grid analysis.

The aim of this project is to use concept mapping and repertory grid analysis to identify what expert coaches of top performing gymnastic clubs consider are the characteristics of effective coaching.

1. To describe what characterizes effective sports (gymnastic) coaching based on

the hierarchical outcomes of concept maps created by expert coaches.

2. To describe what characterizes effective sports (gymnastic) coaching based on the cluster analysis of repertory grids created by expert coaches.
3. To compare and contrast the described characteristics (attributions) with those of effective coaching presented in the previous pilot studies

A “user-pays” proviso for sports class participation is a recent and pervasive development that consequently demands positive results for the participating gymnasts.. Providing effective instruction for the student’s potential growth through competitive gymnastics is a primary goal of each gymnastic club. Expectations may be varied, but it might be assumed that parents expect value for money, and that their child learns while having fun. The importance of the question of what constitutes effective coaching has not diminished, but increased over time.

Gymnastics class activity is heavily reliant on coach locus of control. Gymnastics is among the most complex (if not the most complex) of human physical endeavors (Salmela, Petiot, Halle and Regnier, 1980). A gymnastics coach is responsible for a lengthy period of instructing hundreds upon hundreds of varied and intricate skills to each of their students. The mastery of these skills would be impossible without the integrated control of the coach. (Dowdell, 2002a). It can be suggested that an “effective” coach can have a positive influence on class (skill learning) outcomes.

Often, an expert gymnastic coach is not fully aware of their tacit knowledge of effective coaching. A gymnastics coach’s tacit knowledge, as well as their explicit (or easily verbalized) knowledge can be of great value to other practitioners. Effective transfer of tacit knowledge generally requires personal contact and trust. Eliciting expert gymnastic coach’s knowledge of effective coaching via concept mapping and the use of repertory grid analysis can play

an important role in defining what is effective gymnastic coaching.

Knowledge is central to human performance, and eliciting this knowledge is critical to understanding human performance. The traditional model of applying theory into practice in a “real-world” trial application has been progressively challenged. McMeniman, Cumming, Wilson, Stevenson, and Sim (2002) suggest that this applied research model may not be in accord with the realities of practice. They support a theory-practice model that is reflective of and informs about actual practice settings. Hence the use of “knowledge-in-action” investigative methods.

Research into sports’ performance and training behavior over the second half of the twentieth century has been heavily influenced by positivist research methodology and a coach or athlete centered construct. Sport skill was to be “coached” and must therefore draw heavily on physiological and bio-mechanical review, with scant regard for the social psychology of the sport experience (Potrac, Brewer, Jones, Armour and Hoff 2000; Jones, Armour, and Potrac, 2002). The paucity of constructivist examinations of effective sports classes and teaching may have been a result of the popularity of personality surveys and quantitative measurement in sports settings. This is not to say that such investigations have been without merit - on the contrary. However, more varied methods of investigation of sports class settings; such as the case study approach, discursive analysis, and knowledge elicitation protocols may enrich the explanation of what constitutes effective sports coaching.

The variety of tools to elicit and model knowledge-in-action brings with them context, process and interpretative limitations. Interviews and observations, among the most frequently used of all methods, are useful for understanding broad aspects of knowledge-in-action. Stimulated re-call through use of video playback allows

the knowledge elicitation process to be enhanced by a delving into the “cognitive world” of the reflective practitioner. The use of multiple methods of knowledge elicitation is recommended to constrain the effects of knowledge type (e.g. representations versus declarations; overt versus tacit understandings) and task-method-investigator moderators (Cooke, 1999). Examples of these moderators to valid investigation can be interpretation of observed practice versus practitioner recall, and sequence and content limitations of interviews.

In this series of pilot studies the use of very different information retrieval methods moving from literature review through surveys, discourse analysis and, finally, eliciting expert practitioner’s overt and tacit knowledge represents a more integrated attempt to understand the characteristics of effective coaching. Concept mapping and the use of repertory grids continue this process of connecting to the understandings and knowledge-in-action of competent practitioners. Concept mapping is a technique for externalizing concepts (in the form of propositions), and the relationships between concepts (Novak and Gowin, 1984). Simply put, concept mapping can show how an expert practitioner “organizes” their knowledge (Artiles and McClafferty, 1998). Concept mapping has been used to assess the veracity of recently acquired knowledge, to discover the links between “old” and “new” knowledge, as an evaluation tool, as a tool for reflection of changes in knowledge based on experience, and as a method for eliciting the expert’s linked propositions about a topic or phenomena.

The basis for the use of repertory grid knowledge elicitation can be found in the work of Kelly’s personal construct theories (1955). His essential conjecture was that; “A person’s processes are psychologically channeled by the way in which he anticipates events” (Kelly, 1955, p.46). Kelly suggested that we all develop dichotomous “constructs” which are the

basis for distinctive behavior. The repertory grid introduces a means of eliciting a respondent's knowledge by having them classify a set of significant other persons in terms of the respondent's personal constructs (Gaines and Shaw, 2002, 2007). This method attempts to elicit conceptual structures about phenomena indirectly. That is to say, without overtly eliciting concepts and their relationship. This tacit elicitation of knowledge is a useful addition to an integrated approach to understanding practitioner knowledge-in-action.

METHODS

The settings for this study were five gymnastic training organizations. Selection of these clubs was dependent on being ranked in the top dozen clubs (from approximately 90 women's gymnastics clubs in number) in the State and ease of entry and ability to interview key staff. One of the clubs is based in a regional area, while the other four are in the metropolitan area of south-east Queensland, Australia.

Each expert coach was given sufficient, but brief, instructions on constructing a concept map to answer the given question, "What do you understand as the important characteristics of effective gymnastics coaching?" The expert's conceptualizations were augmented with brief interviews conducted during the concept map constructions. Data from the concept maps were analyzed to identify commonalities. Concepts were, in the main, hierarchically presented as super-ordinate, ordinate and sub-ordinate concepts. This allowed a weighted comparison to be made between the five expert's concept maps.

The repertory grid protocol was administered as described by Hopper (1999). The WebGrid-2 software (Gaines and Shaw, 2002) was used to produce a cluster analysis (correlation) among the elements that described the five constructs of sample coaches. The characteristics of the "coach I want to become" gives a

potential list of effective coaching characteristics that may otherwise not be elicited by more representative means.

In previous pilot studies, a literature review of effective sports coaching and teaching articles from 1973 to 1995 was carried out by the author for publication (Dowdell, 2002b). Key effective coaching characteristics were collated and tabled. The question of the characteristics of effective coaching was again put to a cohort of expert coaches (five of who participated in this current study). Their interviews were tape-recorded, transcribed and analyzed using the Member Categorization Analysis (MCA) technique as described by Baker (1997). Each coach interviewee ranked the list of randomly ordered effective class attributions. The rankings were weighted so as to allow the addition of each to achieve a final score total (weighted ranking 1st= x17, 2nd= x16, 3rd= x15, 4th= x14, 5th= x13, 6th= x12, and so on) and a hierarchical list of effective coaching attributions.

The characteristics of effective gymnastics coaching discovered in the knowledge elicitation protocols of this study are tabled with information gleaned from the literature review and MCA.

The selection of expert coaches was non-random, and is a limitation in research method. The small number of expert coach respondents limits the generalizability of the report's findings. The absence of formalized and transcribed interviews with each of the expert practitioners following the development of their concept map has limited the depth of analysis of the concept maps.

RESULTS

The given super-ordinate concepts of effective coaching were of a coaching practice that is *value-based and "vision" driven*, with a clear grasp of the all-encompassing *implementation* of the process. Included are the ordinate concepts of having *sport-specific knowledge, being an effective teacher, being well planned and organized, and leading*.

Table 1. *Listed and ranked weighted effective coaching concepts in descending order compared with the list of attributions of effective coaching discovered from a previous MCA study and the Literature review of effective coaching.*

Listed and ranked (weighted) effective coaching attributions from practitioner's concept maps	Final ranking of Attributions of an effective sport (gymnastic) class – from MCA (Dowdell, 2002)	Attributions of effective sport coaching – from a Literature review (Dowdell, 2002)
1. Planning	1. Classes demonstrate core culture (represents Goals/Objectives, Values)	1. Provision of a totally planned system (11)
2. Effective (Competent) Teaching	2. Coach is enthusiastic, inspirational and committed to excellence	2. Good (interpersonal) communication (10)
3. Sport specific knowledge (=2 nd)	3. Coach prepares Programs well	3. Knowledge of the specific sport (9)
4. Goal setting	4. Coach committed to measurable class change & outcomes	4. Transfer of control to the group/athlete (8)
5. Has Big Picture (=4th)	5. Coach In control & In charge	5. Maximization of the instructional process (7)
6. “Do” - implementation	6. Set and review fitness-skill goals	6. Maximization of direction (6)
7. Has a vision of excellence (=6th)	7. Adjust or re-do program to meet class needs	7. High levels of control (6)
8. Inter-personal communication	8. Students demonstrates changing performance	8. Maximization of productivity (6)
9. Gives and accepts feedback (=8th)	9. Maximum activity & participation	9. Maximization of progress information / feedback (6)
10. Organized (=8th)	10. Coaches provide feedback to every student	10. Skill analysis (6)
11. Leadership	11. Gymnast respect coaches and show positive attitude	11. Knowledge of sports sciences (5)
12. Knowledge and use of good physical environment (=11th)	12. Gymnasts treated as individuals	12. Maximization of positive experiences (5)
13. Understands and correct performance technique (=11th)	13. Parents happy with and enjoying service	13. Enthusiasm and energy in coaching (5)
14. Visually analyses (models) (=11th)	14. Same kids attending happy - not demoralized	14. Maximization of athlete's intrinsic motivation (4)
15. Programming	15. Gym uncluttered and neat	15. Philosophy (of program) reflected in objectives (4)
16. “Spotting”	16. Gymnast and coaches having fun	16. Set objectives (4)
17. Monitor and evaluate students	17. Low Noise level	17. Dedicated coach (3)
		18. Empathetic coach (3)

Listed and ranked weighted effective coaching concepts in descending order are listed in Table 1 and compared with the list of attributions of effective coaching discovered from the previous MCA study and the Literature review of effective coaching. Each of the expert coaches expressed particular characteristics of the

“coach they would like most to become” in the repertory grid responses. Common effective coaching attributions were *being sport knowledgeable, being well planned, predicting and getting results, hard working, and being able to visually analyze (skills)*. The repertory grid cluster analysis of these responses is shown in Table 2.

Table 2. *Elements of effective gymnastics coaching showing higher correlation.*

COACH	Elements that correlate 100%, 95%, 90% and the lowest correlation of 80% or less			
	100%	95%	90%	80% or less
Expert coach #1	Well-planned AND Adaptive	Skilled AND Inspirational	Knowledgeable AND Skilled and Inspirational AND Well-planned, Adaptive	Confidence and Energetic, AND All others
Expert coach #2	Analytical eye AND Predict and achieve results	Useful planning AND Analytical eye Predict and achieve results	Useful planning, analytical eye, Predict and achieve results AND Knowledgeable Prevents injuries, Creates champion thinking AND Open to ideas.	NA
Expert coach #3	Initiative, thorough knowledge AND life long learning Being committed AND hard- working	Complete planning commitment and hard work AND A quality character	NA	NA
Expert coach #4	NA	Seeks knowledge AND motivational	Good visual analysis AND successful Humorous and assertive	NA
Expert coach #5	Structured lessons, good class controls and outcome oriented	Hard working AND Structured lessons, good class control and outcome oriented	Good time management AND clear short instructions. Hard working AND clear short instructions	Good time management AND Relates well to children

DISCUSSION

The selected coach practitioners are each similarly expert in the field of gymnastics coaching. However, each “organized” differently their concepts of the important characteristics of effective gymnastics coaching. Coach #1, #2, and #4 clearly saw coaching practice as integrated and vision driven, while coach #3 saw key values predicating practice in a simple map beginning with “Being” and “Doing” the role of an effective coach. Coach #5 reflected a three-dimensional model that was difficult to justify in a two-dimensional concept map. This coach (the business owner) reflected the ownership and responsibility of the business of gymnastic coaching more so than the other coaches who were staff or consultants.

The weighting of concepts via hierarchical levels produced a key list of effective coaching attributions being *planning, effective teaching, having sport specific knowledge, goal setting* and *“visioned” excellence in an integrated practice*. This list corresponds with the literature review and survey findings that suggests *totally planned systems, sport specific knowledge, and maximization of the instructional process* are among the top five characteristics of effective coaching.

However, it is the differences between the three lists in table 1 that are enlightening. The Literature Review list of characteristics of effective coaching is mainly a list of tasks of coaching. Only numbers 2 and 18 refer directly to the interactional nature of coaching. The attributions derived from the MCA and concept mapping present a different perspective of the “world” of effective gymnastic classes. There are common tasks between the Literature Review findings and the MCA findings highlighted as important, such as a well-planned coaching program. However, the MCA outcomes stress more of the social-psychological interactions among coach, student and class. For example, interpersonal communication, inspired leadership, “spotting” and monitoring

students are aspects of learned practice that cannot be accomplished outside the world of practitioner experience.

This difference may point to the Literature review gleaned representational data (list of tasks out of context), while the methods used in this study brought forth the practitioner’s everyday understandings of their “world” of gymnastic coaching. Interestingly, the expert coaches repertory grid -responses to the question “the coach I would like most to become” showed a commonality among coaching attributions. Being *knowledgeable* and having a *complete and useful coaching plan* were common to four coaches. The ability to *visually analyze skill practice* and *predict desired outcomes*, as well as *being hard working* was common in at least two of the five practitioners.

The cluster analysis of elements (results in Table 2) grouped comprehensible (even predictable) attributions. Examples are “well planned” and “adaptive” (coach #1), and “good time management” and “clear short Instructions” (coach #5). Of interest is some correlation between attributions that may bear future scrutiny. These are “skilled” and “inspirational” from coach #1, “prevents injuries” and “creates champion thinking” from coach #2, and “humorous” and “assertive” from coach #4. Future analysis of this type would benefit greatly by post grid response interviews as to why the practitioners selected particular bi-polar constructs and why these constructs clustered together as they did.

This current study is the first to consider the question of effective coaching by eliciting expert’s tacit knowledge via concept mapping and the use of repertory grid analysis. These knowledge elicitation methods seem ideally suited to coach practitioners, as “real-world” practice is more than often reflective rather than representative of theoretical models. Past constructivist methods of effective sports practice investigation have been mostly representational (observations and document analysis) with little applicability to expert “reflection in practice” (Byra and Karp, 2000). The current knowledge-in-

action protocols are ideally suited to further probing of the overt and tacit knowledge of expert coach practitioners. The list of attributions of effective gymnastic coaching both confirms past studies and provides a more comprehensive view by adding some key learned practices such as visual analysis of skills, “spotting”, outcome predication and monitoring students.

CONCLUSION

This study is the third in a series of a pilot group of studies investigating the characteristics of effective gymnastics coaching. These studies are to establish dimensions of coaching behavior relevant to a key study to produce a measuring instrument for sports class learning climate.

Each of the three pilot studies has investigated the characteristics of effective sports (gymnastic) coaching using different data collection and analytical methods. The breadth of study method allows a progressively greater and a more “grounded” understanding of the characteristics of effective coaching. The use of very different information retrieval methods moving from literature review through surveys, discourse analysis and, finally, eliciting expert practitioner’s overt and tacit knowledge represents a more integrated attempt to understand the characteristics of effective coaching. The use of multiple methods of knowledge elicitation is further recommended to constrain the effects of knowledge type (e.g. representations versus declarations; overt versus tacit understandings) and task-method-investigator moderators.

This study produced a key list of gymnastic coaching attributions, these being *planning, effective teaching, having sport specific knowledge, goal setting and “envisioned” excellence in an integrated practice*. Other identified common tasks reflected learned practices while on-the-job. These tasks were *inter-personal communication, leadership, “spotting”, being able to visually analyze skill practice, predict desired outcomes and monitoring students*. Future analysis of this knowledge-

in-action elicitation type would benefit greatly by post response interviews as to why the practitioners selected particular constructs and why these constructs clustered together as they did.

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