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## **Coach development through collaborative action research: An Australian football coach's implementation of a Game Sense approach**

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### **ABSTRACT**

Research focused on coach development in Australia is limited. In particular, data-driven research studying coach's innovating practice through a Game Sense approach is restricted to studies in the sport of Rugby. Game Sense is an Australian coaching innovation that emerged to counter the sport-as-techniques directive coaching traditional to Australian sport. This study is therefore significant as it deals with a subject with limited research treatment (Australian Football coaching) in a field of sport coaching (Game Sense) where there has been substantial scholarly theoretical writing but minimal evaluation of the application of theory into practice in Australian sport. This paper reports the forces driving and shaping a coach's adoption of Game Sense as a new and innovative practice approach emerging from an appreciative inquiry action research project.

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## INTRODUCTION

Coach development and education approaches frequently do not provide the professional learning required to engage and sustain enhanced coaching practice (Evans & Light, 2007). Research focused on coach development in Australia is however, limited. Few studies have considered coaches innovating practice through a Game Sense approach. This study is therefore significant as it deals with a subject with limited research treatment (Australian Football coaching practice), in a field of sport coaching (Game Sense) where there has been substantial scholarly writing but minimal evaluation of the application of theory into practice in Australian sport, using an emerging research approach (collaborative action research through appreciative inquiry).

Australian Football is an invasion game characterised by a high intensity intermittent movement profile for all playing positions (Gray & Jenkins, 2010). It involves a series of contests for the ball between small groups of players (Dawson et al., 2004). The objective of the game is to capture or recapture, maintain and move the ball into a field position and configuration of play so that a goal can be scored. Traditional directive and technical coaching still features prominently as the preferred coaching approach in Australian Football (Pill, 2013a). Desouza and Mitchell (2010) have characterised a traditional coaching approach as incorporating a large use of drills to teach techniques outside of game context and a low amount of time dedicated to developing game knowledge (tactics and strategies) and skills within game contexts. Drilling focuses on the biomechanical correctness of a movement response which may inadvertently diminish attention to the development of decision-making capabilities required of the skill execution in contextual competitive contexts (Haneishi, Griffin, Seigel & Shelton, 2009). Coaching approaches dominated by a directive “skill and drill” emphasis as their organisational centre are likely to impose constraints on learning that result in the emergence of movement solutions that don’t transfer easily to the “real” context of game play (Light, 2013; Pill, 2012). Coaches and players are likely to believe that knowing sport means knowing sport skills as techniques (DeSousa & Mitchell, 2010).

A “time-honoured” coaching adage is that you should train as you play (Dawson, Hopkinson, Appleby, Stewart & Roberts, 2004). Game Sense coaching draws coaches into this adage by directing coaches to the use of conditioned and designer games to

draw out certain movement responses and game behaviours in play contexts that reflect the dynamics of game day match play. Australian Football coach education has shifted towards game and player centred Game Sense coaching (Australian Football League (AFL), 2012). Despite the fact Game Sense coaching was first introduced by Charlesworth in 1993, further developed as a coaching approach by the Australian Sports Commission (Light, 2013) and formerly adopted in Australian coach education (see for example, AFL, 2012), Game Sense coaching can still be considered a coaching innovation because it is not yet widely adopted in the field (Evans, 2014; Evans & Light, 2007).

### **COLLABORATIVE ACTION RESEARCH USING APPRECIATIVE INQUIRY**

Evans & Light (2007) identified three main ways coaches learn to coach and develop their coaching:

- Informal learning through the experience of coaching;
- Formal coaching education programs typified by short intensive courses of study that may lead to various types of certification or accreditation; and
- Action research (AR) involving an intervention to change what people do, how people interact, and the meanings that people draw from the experience.

AR has been suggested as a valuable means of coach development as it can be used as a vehicle to promote critical and reflective practice in order to address issues of concerns in specific situations. This knowledge can then be available to enhance understanding of practice from the interpretation of the meanings drawn from the experience (Evans & Light, 2007). According to Knowles, Borrie and Telfer (2005), research clearly suggests that effective coaching is founded upon instructional and content knowledge bases that are created through a combination of practical coaching experience followed by a period of critical reflection. Therefore, effective coach education should focus on developing the coach's capacity to learn from, and understand, their own experiences (Knowles et al., 2005).

The aim of the research was to appreciate the forces driving and shaping a coach's adoption of a Game Sense approach and to evaluate the impact that the change had on the coach. Similar to a collaborative AR study reported by Evans & Light (2007), this research involved the author as a "sport pedagogue" who collaborated with the coach in

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a partnership to learn about the adoption of a Game Sense coaching approach. The sport pedagogue brought theories informing the practice of Game Sense coaching and coaching experience with the approach, however, the research was focused on the practice of a coach wanting to move from a directive coaching approach. The study can therefore be considered a form of appreciative inquiry (AI) rather than AR with critical inquiry as its organisational centre. The collaboration did not arise as Game Sense coaching was identified as the solution to a coaching problem. It was the desire of the coach to move practice in line with ideas introduced initially at a Level Two AFL Coaching course that motivated the coach to seek the collaboration with the sport pedagogue so as to extend learning beyond the short intensive course of study.

AI is a qualitative methodology used to seek out instances of change to capture and illuminate the elements that created and sustained the change from an appreciative “positive” perspective, or as a type of AR where AI is used in a “generative capacity” required for transformational change (Bushe, 2007; Pill, 2013a). A generative idea is one that shifts thinking and opens up new possibilities (Bushe, 2007), and thus AI used in a generative capacity for sports coaching research brings forth ideas that shifts how coaches think about their practice and opens up new possibilities for action that benefits them, the players they coach or other coaches informed by the research. AI for coaching research therefore aims to liberate the social construction and collective normative thinking about a socially constructed practice (sport coaching) to alter the social construction by presenting positive images to direct action (Cooperrider & Whitney, 2001).

AI shifts the interpretivist epistemology of AR from problems to possibilities by focusing on the factors and elements present when things are “at their best”. Problems are not ignored as they emerge through the generative process of collaborative inquiry, but AR has more normatively begun from a deficit-based ontology, rationalist perspective and problem solving methodology; whereas, the appreciative ontology of AI directs the research towards a quest to discover who we are when we are at our best and to develop positive anticipatory images of the future through dialogue generated by the inquiry (Bushe, 2011; Cooperrider, 1990; Watkins & Mohr, 2001). To date, only one previous coach education and development study has been framed through AI (see Table 1).

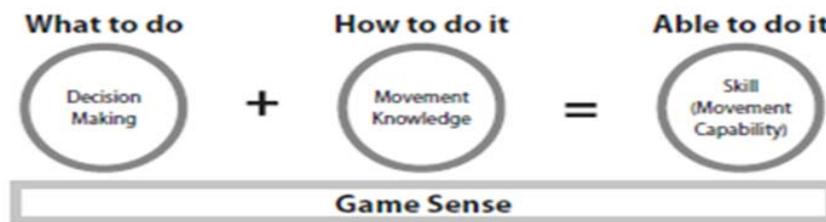
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## **GAME SENSE COACHING**

Game Sense coaching is an example of a more flexible coaching process than the traditional and still common in Australia directive approach focussed on part-task training as a precursor to the performance of the whole task in a game context. More flexible “non-linear” coaching processes have been proposed in line with suggestions that skill develops through the emergence of movement solutions occurring through player exploration of constraints on action (Williams, Horn & Hodges, 2003). Game Sense coaching has been suggested as a pedagogical approach consistent with non-linear and constraints-led skill learning theory descriptions of player skill development as the emergence of movement solutions under task, and player and environmental constraints (Breed & Spittle, 2011; Pill, 2012; 2013c).

Game Sense is an Australian game-centred teaching/coaching approach developed for sport coaching (Light, 2013). Game Sense coaching is distinguished by its dual organisational centres of athlete examination of performance through the coaching use of inquiring questions and its emphasis on initiating skill learning (where skill is contextual tactical decision making leading to functional effective movement responses) within game contexts (Breed & Spittle, 2011; Light, 2013; Pill, 2012). Game Sense has, however, also been used as a synonym for tactical game intelligence and the “thinking” player (i.e. player game sense) (Charlesworth, 1993; Launder, 2001).

The Game Sense approach is distinguished from other game-centred approaches providing the opportunity to learn through play. It does not incorporate the step-by-step game appreciation-to-performance model “fundamental” (Bunker & Thorpe, 1986, p.7) and “critical” (Waring & Almond, 1995) to the teaching games for understanding (TGfU) models. The separation of tactical before technical, or progress from tactics to skills (Hopper, 2002; Waring & Almond, 1995) is not emphasised in Game Sense coaching literature. The Game Sense approach is analogous to whole-part-whole (Reid, 2003) rather than the step-by-step tactical model description (Metzler, 2011). The Game Sense approach suggests individual player technical movement models, game understanding and tactical decision making are not separate skills but interrelated (Pill, 2013c). The Game Sense approach is considered more flexible (Light, 2013) and yet in some ways more sophisticated (Kidman, 2001) than other game-centred approaches.



**Figure 1**

**Skill is a combination of knowing what to do and being able to do it  
in the context of play (den Duyn, 1997)**

The data-driven and peer reviewed literature concerned with the experience of Game Sense coaching is summarised in Table 1. It shows that coaches appreciated the emphasis on tactical decision-making and the change in coach-player relationship that occurred through the adoption of a Game Sense approach. However, there was a reluctance by some coaches to take on this approach to coaching due to the different aesthetics of practice, the perception that there was a loss of practice time due to coach questioning of athlete performance compared to directive instruction, and uncertainty as to the value of coaching innovations like Game Sense. Players appreciate the transfer of learning from practice to game day match play when the coach gets the game format used at training aligned with what the players believe to be needing improvement.

**Table 1 Review of data informed game sense coaching research**

<b>Author and Paper</b>	<b>Participants</b>	<b>Findings</b>
Light 2004 <i>Coaches' experiences of game sense: opportunities and challenges</i>	6 coaches	<p>Opportunities:</p> <ul style="list-style-type: none"> <li>- Working off the ball</li> <li>- Transfer from training to game</li> <li>- Creating independent players</li> <li>- Player motivation</li> </ul> <p>Challenges:</p> <ul style="list-style-type: none"> <li>- Coach-player relations (coach feels less authoritative)</li> <li>- Different aesthetics of training</li> <li>- Time constraints</li> </ul>
Light 2006 <i>Game sense: innovation or just good coaching</i>	5 coaches	<ul style="list-style-type: none"> <li>- Game Sense coaching does not involve choosing between techniques and tactics and is about the balance struck in their emphasis</li> <li>- The use of games in coaching occurred before the introduction Game Sense</li> <li>- Typically, coaches adopt a varied range of approaches across a spectrum from “traditional” technique focussed to game-based</li> </ul>
Evans 2006 <i>Elite level rugby coaches interpretation and use of game sense</i>	4 coaches	<ul style="list-style-type: none"> <li>- Game sense coaching can be used to develop independent players, perception and decision-making skills.</li> <li>- While the coaches in this study use games in their training and see it as a valuable part of their training regimes they do not actually take up Game Sense pedagogy as it was at odds with their common sense assumptions about learning developed through their involvement in sport</li> </ul>
Evans 2007 <i>Developing a sense of the game: Skill, specificity and Game Sense in rugby coaching</i>	Author self - reflection	<p>Advantages:</p> <ul style="list-style-type: none"> <li>- Specificity- The degree to which an athlete adapts or learns is related to the demands placed on the athlete in training</li> <li>- Transfer from practice to games</li> <li>- Working off the ball</li> <li>- Player motivation</li> </ul> <p>Challenges:</p> <ul style="list-style-type: none"> <li>- Change in coach role to facilitator of effective learning environments</li> <li>- Perception of an absence of learning</li> <li>- Aesthetics of training (appear “messy”)</li> </ul>

<p>Evans &amp; Light 2007 <i>Coach development through collaborative action research: a rugby coach's implementation of game sense pedagogy</i></p>	<p>An elite level rugby coach and 5 players</p>	<ul style="list-style-type: none"> <li>- Players perceived increased motivation, autonomy and an improved relationship with the coach</li> <li>- The coach felt that working with a sports pedagogue enabled change in practice. Specifically, training activities that better replicate match conditions</li> <li>- Taking time to explain the aims and rationale and to provide individual and group feedback</li> <li>- Using player questioning was challenging</li> </ul>
<p>Harvey 2009 <i>A study of interscholastic soccer players perceptions of learning with game sense</i></p>	<p>34 players ages 14-18 years</p>	<p>Three facilitators of player learning identified:</p> <ul style="list-style-type: none"> <li>- Positive transfer to match-play when the coach got the game “right”</li> <li>- Enhanced player engagement</li> <li>- Improved player communication and teamwork</li> </ul> <p>Two challenges identified:</p> <ul style="list-style-type: none"> <li>- Negative transfer to match-play when the coach did not get the game “right”</li> <li>- Conflicting training agendas, the needs of the study and player perception of game elements needing to be worked on, impacted players perception of game sense pedagogy</li> </ul>
<p>Evans &amp; Light 2011 <i>The impact of Game Sense on Australian rugby coaches' practice: A question of pedagogy</i></p>	<p>4 Australian rugby coaches</p>	<p>Value of game sense coaching:</p> <ul style="list-style-type: none"> <li>- test skills in game-like situations</li> <li>- develop decision-making and aspects of a ‘sense of the game’ through implicit learning that cannot be directly taught to players</li> <li>- develop match-specific fitness</li> </ul> <p>Challenge:</p> <ul style="list-style-type: none"> <li>- Game Sense pedagogy has had little impact upon rugby coaching</li> </ul>
<p>Evans 2012 <i>Elite rugby union coaches' interpretation and use of Game Sense in New Zealand</i></p>	<p>4 elite level rugby coaches in New Zealand</p>	<p>Coaches reported:</p> <ul style="list-style-type: none"> <li>- Time was a factor in use of <i>Game Sense</i>, as it is needed for questioning and discussion</li> <li>- Specificity - Using <i>Game Sense</i> encouraged players to make decisions in competitive pressure situations that replicated game conditions</li> <li>- Player Motivation - Players became excited when there was an opportunity to play games in training</li> </ul>

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<p>Pill 2013 <i>Using Appreciative Inquiry to explore Australian football coaches' experience with game sense coaching</i></p>	<p>2 Australian Football coaches at state league level</p>	<p>Factors that sustain this coaching:</p> <ul style="list-style-type: none"> <li>- Coaches see themselves as educators</li> <li>- Coaches engage in regular reflective practice</li> <li>- Coaches appreciate the “holistic” nature of play involves on-the-ball and off-the-ball coaching</li> <li>- Coaches believe a Game Sense approach creates a different relationship with the players</li> <li>- Coaches attributed a Game Sense coaching approach to improved team performance</li> </ul>
<p>Light &amp; Evans 2013 <i>Dispositions of elite-level Australian rugby coaches towards game sense: characteristics of their coaching habitus</i></p>	<p>4 elite level Australian rugby coaches</p>	<p>The coaches, experience and the construction of a coaching habitus:</p> <ul style="list-style-type: none"> <li>- the importance of a coach being respected by his/her players</li> <li>- the need to have good people management skills</li> <li>- good coach to have superior levels of knowledge about rugby, have a good work ethic, commitment and enthusiasm</li> <li>- the coaches held a belief in the importance of naturally occurring capacities that separate good players from the rest</li> <li>- there was ambivalence towards, and cynicism about, innovation in coaching and, the possibilities for coaching innovation like Game Sense.</li> </ul>

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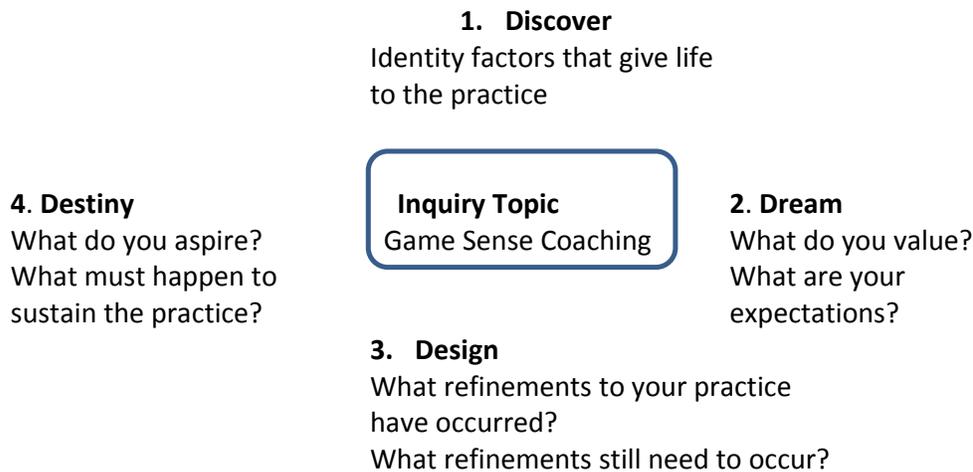
## METHOD

As a form of interpretivist epistemology, AI leads to qualitative research where inductive logic is used to interpret specific experiences and the meanings that arise.

Consistent with an AI approach, this project was a collaborative process between researcher and subject that involved the researcher in a dialogue with the coach throughout the 2013 season. The first conversation explored the coach's motives for wanting to adopt a Game Sense coaching approach, and what the coach already knew, or thought they knew, about the approach. The conversation culminated in an end of season interview with the coach guided by the 4-D's AI model (Figure 2). The interview brought together the narrative of the previous conversations into a coherent story providing the data for interpretative analysis.

The coach was a Level 2 accredited AFL coach with four years coaching experience, coaching for the first time at schoolboys “1<sup>st</sup> XVIII” level. Ethics approval for the research

was obtained before the data collection commenced and the coach provided considered consent to involvement in the project.



**Figure 2**  
**The 4-D cycle Appreciative Inquiry questioning**  
**and the questions used to frame the end of season discussion**

The process of identifying themes through the coding process is the foundation upon which qualitative research findings rest. Creswell's (2002) data analysis spiral (see Figure 2) was used to guide the analysis of the data obtained from three sources of information: 1. The coach kept a reflective journal throughout the season reflection; 2. Coach and sports pedagogue dialogue about practice throughout the season; and 3. The post season interview. The themes emerging from the analysis of the data was shared with the coach for verification. The training log substantiated the coach's planning for use of a Game Sense coaching approach and periodic observation of training by the researcher was used to verify the enactment of a Game Sense approach at training sessions.

Coaching pedagogical and content knowledge grew from the distilled wisdom of practice (Cushion, Armour & Jones, 2003) occurring as a result of a form of continuing professional development through the collaborative AR. The collaborative AR located the results as emerging from the "natural" setting of the coach's normal situation rather than from a controlled or constrained setting.

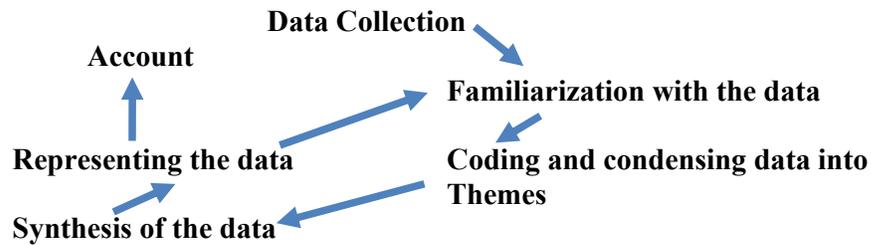


Figure 3

## Creswell's (2002) data analysis spiral

**RESULTS AND DISCUSSION**

The research provides a portrait of coach education and development situated in the practical experience of the adoption of a coaching approach new to this coach. Four themes emerged from the analysis of two sources of information from the coach, the end of season interview and the coach diary. The discussion will conclude with the observations of the sports pedagogue. The themes are identified and discussed below.

**Ambiguity as to the distinctiveness of Game Sense coaching**

The coach identified that the only experience of coaching familiar through past experience while a player was “skill and drill” directive coaching and that a Game Sense approach had not been observed as in use by other coaches in the coaching environments the coach had worked in. The idea of Game Sense coaching was, however, not unfamiliar to the coach prior to the research. The coach was familiar with the concept of Game Sense coaching having encountered it as a module in a Level 2 coach education course.

From this course, the coach originally perceived Game Sense coaching as simply “getting the players in bibs and competing against each other” (interview comment). The coach also initially understood Game Sense coaching as an approach competing with other approaches for the coach’s attention, particularly with a more accepted “skill and drill” approach typically involving lots of activities where players wait for a turn to run off a marker. The coach perceived a pedagogical choice between Game Sense

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coaching as “small sided games” (SSG) and the more common directive coaching by drills.

One of the pedagogical ideas that had to be clarified early on was that SSGs and modified games are only one aspect of Game Sense coaching pedagogy. Game-based training such as the use of SSG is not unique to Game Sense coaching (Evans, 2014). The use of games in coaching occurred before the thought of a Game Sense approach with coaches typically adopting a varied range of pedagogies across a spectrum from “traditional” technique focussed to game-based (Light, 2006). The Game Sense approach is exemplified by a focus on questioning players and setting challenges in a practice format beginning with an initial game or game form, followed by focussing learning in and through the game by the coach use of questions to players, the setting of new game challenges, or the practice of game elements, and a return to the game or game form (Harvey, 2009; Pill, 2013). The emphasis in Game Sense coaching is on improving or changing an aspect of team or individual play using situations that occur in a game, unlike in physical education where the emphasis is on learning how to play the game (Breed & Spittle, 2011; Light, 2013).

The coach came to understand that “...it is not just about small sided games, it is not drill or small sided games” (interview comment), and that Game Sense coaching is in part distinguished by the use of games and game-like activities to shape and focus skill learning. Game Sense coaching does not, however, involve choosing between techniques and tactics in planning practice sessions. It is about the balance struck in their emphasis within a whole-part-whole/game-practice-game practice format.

### **A focus on coach questioning players makes game sense coaching distinctive**

The coach found the distinctiveness of Game Sense coaching lay in having players active in skill development using elements such as questions as prompts to reexamine what they understand and focus individual and team game development by “asking players questions, getting them talking and giving tactical direction” (interview comment). By this the coach meant that good coaching involves asking good questions, while poor Game Sense coaching involves poor question technique.

The coach observed that “players at this level often have really good game knowledge” (interview comment), and noted that consequently the coach does not have to have all

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the answers. “Asking instead of telling” allowed the coach to gain an understanding of what the players know and shape skill learning accordingly. The shift in coaching emphasis towards questioning rather than directive instruction has been identified as changing the player-coach relationship from a command style of coaching to a facilitator style of coaching (Evans, 2007; 2014; Pill, 2013a) and the role of “coach as educator”. This re-conceptualisation of sport coaching as educational endeavour acknowledges a pedagogic function to the coach’s role not obvious in a rationalistic technical perspective typical of the more common directive coaching approach (Jones, 2006; Pill, 2013a). The coach as educator is not a perspective that the coach had encountered previously from observation of other coaches and the experience of being coached.

From the coach’s perspective, there was an enhanced insight into the player’s understanding of what the coach was trying to teach available through the engagement provided by the adoption of inquiry orientated questioning.

The coach began to evaluate the effectiveness of training on these insights. For example, “when I can see the boys understand what we are doing and coming up with ideas training is going well” (training diary reflection). Whereas in other Game Sense coaching research the use of questions was problematised by coaches as difficult or time consuming (Evans, 2007; Evans & Light, 2007), whereas the coach in this study found the construction of appropriate questions challenging yet rewarding. The coach appreciated that the emphasis on questioning makes Game Sense coaching an innovation (Light, 2006) and reported attempting to pre-plan the questions so that they were incorporated as a deliberate design feature of each practice session.

Although the coach discussed pre-planning questions as a deliberate design feature, the planning of questions did not feature prominently in the session planning recorded in the coach’s diary. It appeared the coach planned activities with the intention to emphasise a tactical concept and then thought of questions to get the answers the coach was looking for. Observation of game day coaching revealed the coach followed the conceptual development introduced at training into match day conversations and game reviews, where the coach also tried to use a “question-first” approach with players.

### **Game Sense coaching changes the aesthetics of training**

It has previously been noted that Game Sense coaching can challenge coach perception of the aesthetics of training (Evans, 2007; Light, 2004) and commonly held assumptions developed through their involvement in sport (Evans, 2006). In particular, Game Sense coaching activities can make training appear “messy” when contrasted to the cleanness of skill execution and order observed when players run off markers and perform activities over prescribed distances in closed or open drill type activities. The coach in this study also noted this, observing that “with traditional coaching, when the ball doesn’t hit the ground training looks look and you think training has gone well” (interview comment). However, one of the significant shifts in understanding to occur for the coach was that “you learn it is OK if it looks messy because players are making mistakes at training, because if they are making mistakes they are taking risks and extending themselves. They will get better as a result”.

The notion that players were taking risks and extending themselves, which would lead to player development, was central to this coach’s appreciation of the value of Game Sense coaching. Shaping Australian Football practice tasks towards high variability means that players will make more errors as they are operating in more dynamic and complex performance environments representative of game day conditions. However, it also means that practice is more likely to facilitate transfer of learning from practice to the game as perceptual attunement and retention of information-movement coupling is more likely (Pill, 2013b). This would have to be based on the authenticity of the game play, the game selected and the outcomes achieved through the inquiry process facilitated by questioning players and setting problems to solve at training.

### **The role of on-going mentoring in changing coaching practice**

As was the case in Evans & Light’s (2007) collaborative AR with a Rugby coach, the sport pedagogue played a key role in the coach development through theoretically informed input into conversations and via the provision of reading material about Game Sense coaching, and the facilitation of the coach’s reflection upon practice during the season. The initial coaching course played a role in the coach development of awareness of Game Sense coaching but the collaborative research association was necessary for deeper understanding of the nuances of the approach and for retention of

pedagogical knowledge. For example, the coach stated that “I wouldn’t have been able to make the changes to my coaching that I have without the conversations we have been able to have throughout the year” (interview comment).

The coach “heard about the way things are done at the elite level and the use of Game Sense coaching at a Level 2 course” and “wanted to understand footy better” (interview comments). The coach had an appreciation of the development of coaching pedagogy that Game Sense coaching would prompt and anticipated an efficacy in off-the-ball as well as on-the-ball player skill development would occur through the application of Game Sense coaching. We can therefore see that the desire of the coach “to be better” at coaching and the awareness that occurred through the formal coach education course motivated an initial desire to change coaching practice. However, more time is needed to develop pedagogical understanding of a new approach and to ensure a pedagogical shift away from the comfort of existing regularities. Like Evans and Light’s (2007) research, this collaborative AR provided the opportunity for the coach to continue their education, in this instance beyond the preliminary understandings provided through a formal coaching course. This continuing coach development occurred in an appreciative context where the coach could be guided through theory that might inform the change and then be tested within the natural setting of the coaching environment.

### **Reflections of the sport pedagogue**

As mentioned earlier in the paper, sophisticated player questioning is one element to the distinctiveness of Game Sense coaching. Observations of the coach at training sessions and on game day revealed a commitment to developing player understanding by prioritising player thinking about action and action consequences by first asking questions rather than initially directing behaviour. However, the coach struggled to redirect the questioning and to persist with questioning when the anticipated answer did not come from the players, either because the players did not answer, or the answer was not the one anticipated.

The coach’s diary, which included the practice session plans, revealed that the coach attempted to identify a tactical concept or a problem through which to focus the content of the practice session, but questions to guide player development of game

understanding did not feature in the planning process. The coach seemed to rely on thinking about questions to ask players in response to observations of practice.

Mosston and Ashworth (2002) explain how questioning can guide the development of understanding by proceeding from the general to the specific, and by each question relating to the target concept to be understood. In this study, the coach's ability to enact this pedagogical dimension limited the effectiveness of the Game Sense coaching.

The coach had most success shifting over time from a practice focus on repetitive skill drills to game sense activities like play practices and designer games for match simulation practice of specific tactical actions. The Game Sense coaching planning emphasis on "game" leading to practice of specific elements of player or team competency if necessary, and then a return to the "game", took longer to be understood and therefore to become part of the planning process. It was session 21 of 35 practice sessions before the training diary showed game-practice-game planning. Prior to that, practice sessions would commence with a designer game or play practice before moving to closed or open drill practices of a game component, and sessions would then finish with a new game or play-practice and not a progression of the starting game or game form.

There is an ongoing issue with collaborative action research and mentoring in coach education. There is a limited number of experts in Game Sense coaching given that, as explained earlier in the paper, Game Sense coaching is still relatively unfamiliar to large number of coaches. In sports like Australian Football, where the governing body appears to promote use of Game Sense coaching (AFL, 2012), investment to improve mentoring capacity is necessary.

## **CONCLUSION**

The "intervention" of a sport pedagogue as a collaborator in researching the coaching practice could not be separated from the coaching process and was perceived by the coach as deterministic in the deeper learning facilitated and the coach's perception of a successful innovation in their coaching. The coach motivated the research through an appreciation of the value of Game Sense coaching and a desire to be a "better coach". The coach held a positive association between Game Sense coaching and being a "better coach".

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AI was adopted for the project as the framing of the research occurred from an appreciative rather than a critical and problem solving perspective. The coach came to the project with a positive view of Game Sense coaching, and a desire to develop his coaching practice this way. AI was therefore used as the tool to document and analyse this example of a change in coaching practice. Collaborative AR from the standpoint of an AI offered a useful direction for coach education in this instance and assisted the grounding of the research in the natural setting of coaching. AI provides an alternative to critical AR perspectives.

Multiple cycles of collaborative AR may be necessary to fully understand some elements of Game Sense coaching and therefore for those elements to become habituated coaching behaviour. Specifically, the coach ability to question players using a sequence of designed questions, as well as the ability of the coach to come up with a sequence of questions in response to in the moment observations of player behaviour, is challenging for trained educators. Expecting coaches to be able to learn and apply this pedagogical practice after one season of learning to coach with this pedagogical focus seems unrealistic. Even more unrealistic is the expectation that coaches will be able to employ guided discovery and inquiry oriented coaching pedagogy effectively following a module of Game Sense coaching learning at a coaching course.

The research has added to existing literature suggesting that Game Sense coaching is misinterpreted in method and in its application. The study has shown that fully appreciating and being able to use the elements of Game Sense coaching in planning and in practice take time to develop. Despite acceptance in coach education courses, such as the Australian Football coaching accreditation course literature (AFL, 2012), appropriate mentoring of coaches in the field is required to move beyond coach recognition of Game Sense coaching to understanding the pedagogical distinctiveness of its implementation.

Similar to Evans & Light (2012), in this study collaborative AR was found to meet the coach education challenge of continuing learning beyond the limitations of coach accreditation courses. The coach in this study was able to further his practice by taking the opportunity to put theory “to the test” in practice over the course of a season with the support of an experienced sport pedagogue. Collaborative AR thus provided a context through which a community coach and academic sport pedagogue could be involved in continuous coach

education that was authentic as it occurred within the natural context of the coach's practice, and participatory due to the collaborative nature of the coach learning in conversation with the sport pedagogue. Further research exploring AI, particularly AI as the change process in sport coaching pedagogy, is necessary to examine the potential of AI and AR in coach education. Further research into coach adoption, and resistance to adoption, of Game Sense and other game-based coaching approaches is also necessary to more fully understand the limits, constraints and possibilities of these approaches and their distinctiveness.

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