
Game Sense Research in Coaching: Findings and Reflections

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ABSTRACT

Game Sense coaching has challenged the traditional directive sport-as-techniques approach (Jones, 2006; Kidman, 2001; Light, 2013; Pill, 2012). This paper presents an analysis of the data driven Game Sense research in coaching and the professional literature advocating Game Sense coaching, with the purpose of establishing the similarities, differences and emerging patterns of the research conducted this far. A systematic review of the studies will be conducted. Findings of this study will provide information on how the Game Sense approach is, and has been, used in coaching currently, as well as the uncertainties and ambiguities surrounding the Game Sense approach that have emerged from this research. Benefits and limitations of the Game Sense approach will also be identified, along with the views and attitudes of those involved in implementing the Game Sense approach in coaching practice. This information will inform the future research agenda of Game Sense research in coaching.

Keywords: Game Sense; coaching

INTRODUCTION

The Game Sense approach was developed in the mid-1990s as a sport specific derivative of the Bunker-Thorpe model of Teaching Games for Understanding (Evans, 2006; Evans & Light, 2008; Harvey, 2009; Light, 2004a; Light & Georgakis, 2005, 2007; Pill, 2011b, 2012). Since then, Game Sense coaching has challenged the traditional directive sport-as-techniques approach (Jones, 2006; Kidman, 2001; Light, 2013; Pill, 2012). Developed through collaboration between the Australian Sports Commission and Rod Thorpe (Evans, 2006; Evans & Light, 2008; Harvey, 2009; Light 2004b; Light & Georgakis, 2005; Pill 2011a, 2012), the Game Sense approach clearly contrasts the more established traditional technical and directive approach, particularly in terms of the way in which skills, knowledge and understanding are developed (Pill, Penney & Swabey, 2012). The Game Sense approach has an emphasis on the coach “as an educator”, engaging in the questioning of players to connect players to meaning and purpose of activities and to encourage them to participate in discussion about the tactical aspects of the game (Evans & Light, 2008; Light, 2006; Light & Georgakis, 2007; Pill, 2013). The Game Sense approach also utilises modified and designer games and play practices to develop decision making and tactical thinking, as well as sport-specific skills (Evans, 2006; Harvey, Cushion, Wegis & Massa-Gonzalez, 2010; Kirk, 2009; Light, 2004b; Light & Georgakis, 2005; Pill, 2012; Stolz & Pill, 2012). The Game Sense approach and other similar tactical approaches have challenged traditional directive and technical model to games and sport coaching for more than twenty years (Jones, 2006; Kidman, 2001; Pill, 2012, 2013), with notable progressions in the research exploring Game Sense coaching. Having introduced the Game Sense coaching approach this paper will present a synthesis of the professional literature on Game Sense before an analysis of the data driven Game Sense research in coaching, with the purpose of establishing the similarities, differences and emerging patterns of the research conducted this far. As there are relatively few papers focusing specifically on a Game Sense coaching approach (see Table 1 and Table 2), this paper address this important gap in the coaching literature.

GAME SENSE: A BRIEF LOOK AT HISTORY

The idea of Game Sense coaching in Australia can be traced back to 1993 when Charlesworth (1993) introduced the term “Game Sense” as a part of the development of Designer Games that integrated technical, tactical and fitness training. Originally, Charlesworth (1993; 1994)

used the term Game Sense as a measure to describe the outcome of players' development. Designer Games were developed so that players were able to learn and develop skills in a match-like context, whilst also motivating participation in games because they promote fun and enjoyment (Charlesworth 1994). As a part of the Designer Games process, Charlesworth (1993) discussed using a questioning approach, suggesting that "it is an interesting exercise to stop the game and question teams about what is going on" (Charlesworth, 1993, p. 5). Further, Charlesworth (1994) also proposed that coaches take on more of a facilitator role to create situations in which players have opportunity to use decision-making skills to think out solutions. Since Charlesworth (1994) described Designer Games as the method to combine technical, tactical and fitness training, the concept of Game Sense has been refined and further developed as a coaching approach.

The collaboration between Rod Thorpe and the Australian Sports Commission in the mid 1990's was a pivotal moment in the development of the Game Sense approach in Australia. Thorpe proposed an approach to sports coaching more focused around a game-centred approach, similar to that of Teaching Games for Understanding (TGfU) (Webb & Thompson, 2000); but according to Thorpe, Game Sense incorporates "more" than TGfU (Thorpe, 2005, p.3). The Game Sense approach also departed from TGfU as it was developed as a sport-specific derivative of the Bunker-Thorpe model of Teaching Games for Understanding (Evans, 2006; Evans & Light, 2008; Harvey, 2009; Light, 2004a; Pill, 2011a, 2012) for secondary physical education (Bunker & Thorpe, 1982). The Game Sense approach is based around the training format of warm-up, game, questions and discussions about the game, skill practice if required, further questions and discussion, extension of game (Pill, 2013; Webb & Thompson, 2000).

Table 1. Patterns in emerging *Game Sense* research.

Author/s	Year	Interpretation
Charlesworth	1993	<ul style="list-style-type: none"> • <i>Designer Games</i> • Used <i>Game Sense</i> as the outcome of player development • Described <i>Designer Games</i> as a combination of technical, tactical and fitness training
den Duyn	1997	<ul style="list-style-type: none"> • Presented <i>Game Sense</i> as a pedagogical approach for sport coaching • Four categories of games: Invasion, Net/Court, Target and Striking/Fielding • Described <i>Game Sense</i> as a way to develop thinking players and emphasise game-related decisions and sport-specific skill • Coach becomes a “designer” and “facilitator” of practice sessions • Emphasis on using questions to encourage discussion and development of “thinking players”
Launder	2001	<ul style="list-style-type: none"> • <i>Game Sense</i> one of the elements of effective play
Siedentop, Hastie & van der Mars	2004, 2011	<ul style="list-style-type: none"> • Sport Education model aims to develop competent players; this includes a players <i>Game Sense</i>; that is, player understanding in action
Schembri	2005	<ul style="list-style-type: none"> • <i>Game Sense</i> pedagogical approach forms the framework of the Playing for Life philosophy
Slade	2010	<ul style="list-style-type: none"> • Described <i>Game Sense</i> and tactics as outcomes of player development from a <i>Teaching Games for Understanding</i> (TGfU) pedagogical approach
Breed & Spittle	2011	<ul style="list-style-type: none"> • Linked the <i>Game Sense</i> pedagogical approach to constraints-led motor development theory • Practical interpretation of <i>Game Sense</i> for coaches • Focus on skill learning through modified games (limiting, reducing and removing game constraints)
Pill	2007, 2013	<ul style="list-style-type: none"> • Linked the <i>Game Sense</i> approach to dynamic systems constraints-led theory and information-movement coupling • <i>Game Sense</i> pedagogical approach should be refined to look different across various levels of game development • Emphasis on using questions to encourage thinking players
Launder & Piltz	2013	<ul style="list-style-type: none"> • <i>Game Sense</i> one of the elements of effective play
Light	2013	<ul style="list-style-type: none"> • <i>Game Sense</i> focuses on the game as a whole • Describes <i>Game Sense</i> as an pedagogical approach which encourages players to develop skills in a game context • Linked <i>Game Sense</i> to complex learning theory • Emphasis on using questions to encourage discussion

Further refinements of Charlesworth's description of Game Sense were described by den Duyn (1997) in order to present Game Sense as a pedagogical approach for sport coaching (Evans, 2006; Harvey, 2009; Pill, 2011a). The Game Sense approach focused on developing tactical awareness and strategic knowledge through the use of modified games and game-specific situations and as such, technical skills will also develop (Butler & Griffin, 2010; Evans, 2006; Evans & Light, 2008). It has been proposed that the coach becomes more of a designer and facilitator, modifying games to limit the technical skills demands to match that of the players' level (Evans, 2006; Light & Georgakis, 2005; Pill 2012; Stolz & Pill, 2012) and emphasising game-related decision making through a process guided by the coach (Kirk, 2009; Pill 2011a). There have been refinements to the way in which Charlesworth (1993) described the Game Sense approach, including an emphasis on using questions to engage players and encourage discussion about the tactical aspects of the game, which it is suggested creates an environment which is suited to learning and development (Evans & Light, 2008; Light, 2006; Light & Georgakis, 2007; Pill, 2013). It is also suggested that this type of practice environment is also structured to allow players to have more opportunity to test out ideas and attempt to apply strategies they have developed through discussion (Evans & Light, 2008; Light & Evans, 2010). As such, players are encouraged to be more actively involved in practice sessions, rather than being instructed what to do at every point throughout the practice session. After the initial explanation of Game Sense as a sport coaching approach (den Duyn, 1996, 1997) the Game Sense approach was elaborated as thematically grouped small sided games in game categories for the development of fundamental sport skills as Game Sense Games (ASC, 1999). Game Sense Games are involved in teaching fundamental movement skills to beginners so that they have the foundations to participate in Game Sense practice sessions which involved modified games for more contextual skill learning (ASC, 1999).

With the development of the Game Sense approach and later, the *Playing for Life Coaches Guide* (Schembri, 2005), a few major publications have emerged focussing on the Game Sense approach. Breed and Spittle (2011), Light (2013) and Pill (2013) have released publications all of which encompass their take on the development of the Game Sense approach and the variations to the approach that are present in coaching. There are particular differences in how Breed and Spittle (2011), Light (2013) and Pill (2013) define and describe the Game Sense approach compared with how it was initially presented by den Duyn (1997). Where the Game Sense approach was described as a way to develop thinking players and

emphasised both game-related decisions and sport specific skills stimulated initially by a game context by den Duyn (1997), the approach is described by Light (2013) as an approach to coaching which focuses on the game as a whole, encouraging players to develop skills in a realistic game context. One of the areas for conceptual clarification in Game Sense coaching research is the idea of “realistic context”. A play practice involving a 2v1 offensive advantage might be realistic in the sense that skills are used within an oppositional offensive-defensive player relationship, but is the task representative of the information-movement coupling of the game context? In other words, the play practice might be in one sense realistic, but is it representative of the game and therefore is what is practiced transferable to game play? As the later summary of the data-driven research will show, this is an area in need of further research consideration to provide efficacy for the assertions of the Game Sense literature.

Breed and Spittle (2011) have generated the focus of their interpretation of Game Sense toward being a resource for coaches that is clear, concise and practical, particularly for those with limited coaching pedagogical knowledge. The way in which Breed and Spittle (2011) used constraints-led motor development theory to explain the Game Sense approach is distinctive to their interpretation of this pedagogy. Further, Breed & Spittle (2011) place emphasis on the use of modified and constrained games, particularly the exaggeration, limitation, reduction and removal of specific task, environment or performer constraints to allow focus to be placed on skill learning throughout the game.

Over time the Game Sense approach has been refined to look different across various stages of players’ development (Pill, 2012). Whilst junior players find simple games fun and challenging (such as those presented in the ASC (1999) Game Sense cards and ASC (2005) Playing for Life Active After Schools Community Kit), players at the next developmental stage require more challenging games to further develop their sport-specific skills and tactical understanding (Pill, 2012). As such, Pill (2013) has linked the Game Sense approach to dynamic systems as constraints-led practice and the understanding about the nature of skill development and skilled performance as information-movement coupling. Like Breed and Spittle (2011), Pill (2013) provides a theoretical grounding for Game Sense coaching in constraints-led motor development theory. Sports are dynamic and non-linear in their moment-to-moment configurations of play and therefore coaches should ensure that teaching and skill learning are also dynamic and non-linear so that transfer from practice to game

environments in facilitated (Chow et al., 2007). Understanding sport as a dynamic system may aid coaches with their shift towards implementing the Game Sense approach in practice by adding theoretical legitimacy to the pedagogy of game modification by elimination, simplification or reduction of playing constraints to focus learning on aspects of movement or decision-making within the performance context (Pill, 2011c). In contrast, Light (2013) has grounded Game Sense coaching in complex learning theory. Distinctions between an ecological model of dynamic systems for motor skill learning theory and the constructivist informed complex learning theory may be hard to generate for coaches grounded in the everyday performance of coaching as a practical endeavour rather than theoretical concern. Further, there are differences in the way in which authors of more the recent scholarly professional publications approach their views of the Game Sense approach, with Light (2013) presenting a more rigid, and conceptualised view of the Game Sense approach than Breed and Spittle (2011) and Pill (2013).

COMPETING THEORIES UNDERPINNING GAME SENSE COACHING

Game Sense coaching has been described using different, and sometimes competing theoretical perspectives. Consistent with constructivist approaches to learning, Game Sense has been aligned with social constructivist approach and situated learning theory due to its alignment with knowledge construction within a social context. Game Sense coaching emphasis on authentic “in context” game learning is also aligned with constructivist approaches to learning (Jarrett, 2011; Light, 2013).

Light (2008; 2013) has explained the Game Sense approach from the perspective of complex learning theory, contrasting this to complicated learning theory which he associates with the traditional and still common directive approach and a behaviourist, mechanical view of learning. Light (2008; 2013) suggests complex learning theory brings together cognitive and social constructivist learning theories through a shared view that learning is a process that is complex and cannot be reduced simply to additively learning component parts of the complex whole. As the Game Sense approach emphasises learning the game, and game play is complex, dynamic, at times unpredictable and even chaotic (Light, 2008), complex learning theory helps understand how a Game Sense approach moves from the whole (game) to the pedagogical features of Game Sense and how they facilitate learning as an ongoing process of social interaction (Light, 2013).

Game Sense coaching has also been theorised using perspectives from skill learning literature. The development of skill emerging from constraints on game behaviour is a feature of ecological models of skill learning and a constraint-led approach to skill acquisition and learning. The non-linear and flexible implementation of learning in and through games progressing from simple representations to more complex representations over time in a Game Sense approach is similar to descriptions of skill learning informed by dynamic systems theory and constraints-led instructional practice (Breed & Spittle, 2011; Pill, 2013).

METHODOLOGY

For this paper a systematic review of the studies surrounding the Game Sense approach was conducted. A search of the literature was conducted in the Deakin University and EBSCOHost databases. Due to this paper exploring Game Sense findings and reflections over time, no date limitations were applied to the search. The search was limited to English-language publications. Searches using keywords of Game Sense and Game Sense coaching was conducted at various time points between February 2012 and October 2013 and literature identified was evaluated for relevance by the contents of the titles and abstracts.

An interpretative approach was used to analyse the literature summarised in Table 1 and Table 2. This involved the initial coding of recurring key words and phrases to form the initial codes and then categorising the findings from the literature using those codes, as well as identifying conflicting or contradictory findings, through constant comparative analysis. This process was repeated to reduce the number of codes and to then identify more substantive categories, eventually leading to six themes emerging from the literature.

DATA DRIVEN LITERATURE

The discussion this far has reviewed the major scholarly literature about the Game Sense coaching approach. The following section will summarise that literature (refer to Table 2) and consider the major themes that emerge from this research.

Table 2. Findings of current *Game Sense* research

Author/s	Year	Title	Conclusion/Findings
Light	2004 (a)	Coaches' experiences of game sense: opportunities and challenges	<p>Four main strengths identified:</p> <ul style="list-style-type: none"> • Working off the ball • Transfer from practice to the game • Creating independent players • Player motivation <p>Coaches reported:</p> <ul style="list-style-type: none"> • Implementing <i>Game Sense</i> required too much time • <i>Game Sense</i> altered the coach-player relationship • <i>Game Sense</i> takes longer to develop players, although had more desirable long-term development
Evans	2006	Elite level rugby coaches interpretation and use of game sense	<p>Use of <i>Game Sense</i>:</p> <ul style="list-style-type: none"> • Test skills • Developing independence, perception and decision-making • Develop game specific fitness <p>Factors influencing coaches' interpretation and use of <i>Game Sense</i>:</p> <ul style="list-style-type: none"> • Coaches' beliefs about learning • Coaching culture
Evans	2007	Developing a sense of the game: Skill, specificity and Game Sense in rugby coaching	<p>Three main strengths identified:</p> <ul style="list-style-type: none"> • Transfer from practice to the game • Working off the ball • Player motivation <p>Coaches reported:</p> <ul style="list-style-type: none"> • <i>Game Sense</i> takes time to see improvement in players' performance, even though improvements are arguably long term • The facilitator role of the coach can create doubt in the coach about their role
Evans & Light	2008	Coach Development Through Collaborative Action Research: A Rugby Coach's Implementation of Game Sense	<p>Coach reported:</p> <ul style="list-style-type: none"> • It was difficult to implement questioning • <i>Game Sense</i> improved their relationship with players • Practice sessions flowed better • <i>Game Sense</i> increased the level of intensity in practice <p>Players reported:</p>

		Pedagogy	<ul style="list-style-type: none"> • They were more active, less static • They had increased motivation at practice • They had more input in decision-making • <i>Game Sense</i> improved their relationship with the coach
Evans & Light	2010	The impact of <i>Game Sense</i> on Australian rugby coaches' practice: A question of pedagogy	<p>3 main strengths identified:</p> <ul style="list-style-type: none"> • Test skills in game-like situations • Develop decision-making through implicit learning • Develop match-specific fitness
Evans	2012	Elite rugby union coaches' interpretation and use of <i>Game Sense</i> in New Zealand	<p>Emerging themes:</p> <ul style="list-style-type: none"> • The place of games in training • Creating specificity and replicating match conditions • Exciting, motivating and inspiring players <p>Coaches reported:</p> <ul style="list-style-type: none"> • Time was a factor in <i>Game Sense</i>, as it is needed for questioning and discussion • Using <i>Game Sense</i> encouraged players to make decisions in competitive pressure situations • Players became excited when there was an opportunity to play games in training
Pill	2013(b)	Using Appreciative Inquiry to explore Australian football coaches' experience with game sense coaching	<p>Two coaches using a <i>Game Sense</i> coaching approach and the factors that sustain this coaching:</p> <ul style="list-style-type: none"> • Coaches see themselves as educators • Coaches engage in regular reflective practice • Coaches appreciate the "holistic" nature of play involves on-the-ball and off-the-ball coaching • Coaches believe a <i>Game Sense</i> approach creates a different relationship with the players • Coaches attributed a <i>Game Sense</i> coaching approach to improved team performance

Using Questioning

A common theme to emerge is that coaches find it difficult to implement the questioning aspect of the *Game Sense* approach (Evans & Light, 2008), as it is an aspect they are unfamiliar with. This is not surprising, as the questioning aspect of the *Game Sense* approach is commonly reported as an issue for a number of coaches, as they have little experience in this area and it also requires them to take a step back from what they might consider as

traditional coaching (Evans & Light, 2008). Even after following an 8-week training program, coaches in one such study were still unsure of exactly how to include questioning throughout their coaching and also to what extent they had actually improved their use of questioning (Evan & Light, 2008).

Player-Coach Relationship

The change in the relationship between coaches and players is another theme to emerge. Two studies have reported an improvement in the player-coach relationship, from the perspective of both players and coaches alike (Evans & Light, 2008; Light, 2004a). From a coaching perspective, coaches reported that by implementing a Game Sense approach the player-coach relationship is altered significantly, however the more-facilitator and less-authoritarian role coaches take on may be viewed by many as a contradiction to good coaching. (Evans & Light, 2008; Light, 2004a). From a player perspective, Evans and Light (2008) have reported that players describe their coach as more approachable and interested their opinions of the practice sessions (Evans & Light, 2008) and respond positively to the individual coaching and feedback that the coach regularly provided to each player. This is potentially a strength of adopting a Game Sense approach, as the literature suggests that the relationship between a coach and their players is vital in creating a positive learning experience for players (Evans & Light, 2008).

Motivation and Intensity

Coaches have reported player motivation as one of the main strengths of utilising a Game Sense approach (Evans, 2007, 2012; Light, 2004a). In Light's (2004a) study, coaches reported that the ability of Game Sense coaching to motivate players is a real strength and the players identify that using the Game Sense approach gives coaches a way to challenge players, as well as encourage creativity and give them a degree of independence in practice, and thus improve players' motivation to learn and develop (Light, 2004a). By implementing the Game Sense approach, coaches in Evans and Light's (2008) study report that practice sessions flow better and players exhibit an increased level of intensity. From the players' perspective, players have also identified that coach use of a Game Sense approach is more active and less static (Light, 2004a) and that they were excited when given the opportunity to play games at training in place of instructive skill-based drills (Evans, 2012).

Decision-Making

In some studies, the coaches/coach educators reported that in team sports where player movement off the ball is essential for team success, Game Sense was extremely useful as it provided a way to develop the perceptual and decision-making skills of their players (Evans, 2006, 2007; Evans & Light, 2010; Light, 2004a). The coaches/coach educators also reported that in their experience, Game Sense develops players' sense of independence because it places them in situations where they are required to make decisions in competitive situations (Evans, 2006, 2012) where they are unable to rely on the coach for instruction (Light, 2004a). From a players' perspective, players reported that they had more of an input in the decision-making of the team, because the coach helped them understand the aims and the purpose of different drills and allowed them to make suggestions about which drills should be performed (Evans & Light, 2008).

Transfer from Practice to Match

Another common response from the coaches was the importance of replicating match situations in practice as a means of improving performance (Evans, 2007, 2012; Light, 2004a). Coaches reported that using Game Sense allowed players to learn and develop their skills in an environment similar to that of a match (Evans, 2007, 2012), stating that the ability of Game Sense to replicate game conditions and pressure was the main strength of using this approach (Light, 2004a). Players also felt that by using modified games, practice was more specific to their matches, which they felt increased their motivation at practice (Evans & Light, 2008).

Time Constraints

Another challenge that coaches reported was the time constraints involved when implementing Game Sense; namely they were concerned that implementing Game Sense required too much time (Evans, 2007, 2012), particularly for coaches who are unfamiliar with Game Sense as it would take extra time for these coaches to undertake coaching courses in order to gain a sufficient understanding of Game Sense (Light, 2004a). When it came to the perceptions of good coaching, coaches in this study found that it took longer to develop players with the Game Sense approach and this was a possible cause for problems considering that players and parents tend to want to see the immediate results of practice

(Light, 2004a). As such, it has been reported that the time period in which coaches implemented the Game Sense approach in practice, was too short a time to establish any great improvements in a coach's ability to successfully deliver a Game Sense practice session (Evans & Light, 2008). Despite this, coaches did feel that although Game Sense took longer to develop players initially, it has the potential to achieve more desirable long-term development (Evans, 2007; Light, 2004a).

CONCLUSION

General implication for future research

A number of limitations of the research reviewed in this paper could be addressed in future research. Firstly, the sample size of a number of these studies is relatively small (>10 participants). Furthermore, many of the coaches involved in these studies have extensive coaching experience, as well as experience as a professional coach. As a result, there is little explanation as to whether less experienced coaches have similar views of Game Sense or opinions differ greatly according to coaching experience and coaching level. Secondly, although several studies do give insight into coaches' views of the benefits of implementing the Game Sense approach in practice, there is very limited research of this nature conducted with non-elite coaches and thus, the Game Sense coaching views of these lower level coaches is not currently known. As such, there is a shortage of studies which have utilised a more diverse study sample which would enable results to be generalised to a wider population. Research in this area is significant as a great number of coaches are involved in non-elite sport, and therefore understanding their views is important for future resource development. The opinions and experiences of lower non-elite level coaches may differ greatly from the opinions of elite level coaches for a number of reasons including the amount of coaching experience and the expertise/skills of the coach, as well as the time and resources available to them. Therefore, there is a need for larger scale Game Sense research to be undertaken in a variety of sports and competition levels to thoroughly determine the benefits of implementing a Game Sense approach in coaching at different levels.

Over the past two decades, the concept of Game Sense coaching has been refined and further developed as a coaching approach and as such, is now included as a preferred coaching pedagogy in sport specific coaching manuals, documents and accreditations. However, to

understand why the GS approach is not more widely accepted as an alternative coaching pedagogy, research is needed into how the GS approach is used in coaching practice.

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