Recent trends in research literature on game-based approaches to teaching and coaching games

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Introduction

As suggested by Curry and Light in chapter nine, the expanding output of research on games-based approaches (GBAs) over the past decade has not been reflected in expanding utilisation of GBAs in school-based physical education programmes and club-based sport coaching environments. Reasons for this lack of 'uptake' are varied and range from a lack of exposure to effective GBA professional development opportunities to the prolonged acceptance of a *performative* culture often embedded within physical education and youth sport programmes (Harvey and Jarrett, 2012; Dismore and Bailey, 2010). The literature on games teaching published since Oslin and Mitchell's review of GBAs in 2006 continues to acknowledge the many benefits of using GBAs, but also acknowledges, and to a lesser extent addresses, the key challenges associated with the employment of learner-centred and GBA pedagogies. This chapter provides an overview of post-2005 research trends in the GBA literature to identify and discuss the prominent themes that arose from this meta-analysis.

Prominent research themes

The influence of context

The range of GBAs now available for practitioners to use in games teaching and coaching environments has developed considerably over the past three decades (see chapter four) but

the literature suggests that selecting and implementing the appropriate pedagogical model/approach is strongly influenced by socio-cultural, institutional, political and other contexts. Selecting and effectively implementing a GBA requires a level of understanding of the main factors that influenced its conception, and which continue to influence it usage. In chapter nine Curry and Light present research conducted on the influence of school context, in one school, on health and physical education teachers' and school sports coaches' experiences of implementing TGfU. It provides institutional (local level) insight into how a GBA was introduced in a school-wide community of practitioners and teachers' personal experiences of it as shaped by this context. This attention to context, and the social, cultural, institutional and political elements that contribute to shaping that context, are key factors in how/why many different types of GBA now exist (see TABLE 1).

TABLE 1: NEAR HERE

Empirical research literature exploring teacher and coach perceptions of using/interpreting different GBAs provides its audience, not only with an insight into the context of experience, but also with an understanding of the contextual differences that influence the development of each type of GBA. For example, Jarrett's (2011) report on the use of a Game Sense (GS) approach to engage undergraduate sports students on a taught University unit focused on games included comments from participants which highlighted a shift in expectations associated with a change of implementation of pedagogical approach. The use of GS (originally developed for sports coaches in Australia) in England was reported by participants as being 'different', 'more like club sport' and 'more engaging' in contrast to their British-based secondary school experiences of other game-centred approaches to learning (e.g. TGfU). Arguably, such comments highlight contextual factors that have shaped the development of each approach in each country of origin.

The prominence of contextual influence on the development of the games concept approach (GCA) in Singapore is also worth noting. In a study that explored the views of Singaporean teachers of a mandated change in curriculum pedagogy, Rossi, Fry, McNeill, and Tan (2007) suggested that the regulative discourses framed by governmentality in Singapore meant that the implementation of a GBA was paradoxical in terms of the expectations of teachers in a climate of control. In addition, empirical and theoretical articles also emanating from Southeast Asia by Wang and Ha (2009) and King and Ho (2009) highlight perceived Eastern-Western social and cultural differences in teachers' 'value orientation' and 'management of discipline perceptions'. They further stress the different contextual influences on GBA and how context can influence its interpretation and implementation. These issues mentioned above are stark reminders of some of the challenges teachers face when implementing a GBA.

The influence of context on GBA teaching and learning experience, however, extends beyond just social and cultural agendas such as those highlighted in Light and Tan (2006). In addition to Light and Curry's (chapter nine) research into the influence of institutional context on TGfU implementation, Harvey, Cushion and Massa-Gonzalez (2010) suggested that the institutionalized context of a high school soccer coach's practice (e.g. a performative culture focussed on winning) in the USA made it difficult for him to develop his use of TGfU. Furthermore, participation cricket coaches trying to implement a TGfU approach in Roberts' (2011) study perceived the political context of their proposed intervention as challenging due to a perceived lack of resource support provided by the sport's National Governing Body.

Thus, contextual factors surrounding GBA implementation (for example, country of origin or institutional agenda) hold significance for teachers and coaches and the overall

achievement of desired student learning outcomes. The initial and/or ongoing success of a selected GBA requires not only informed consideration of the context of implementation, but also consideration of contextual factors that were prominent in the conception of the approach.

Implementing a change in pedagogy

The challenges associated with implementing a change in pedagogy are exacerbated by what a review of post-2005 research suggests are typically short induction periods in teacher and coach GBA education programs (see Harvey & Jarrett 2012). Induction programmes offered to teachers at tertiary level are typically associated with a set unit of work, often confined to a limited period of time prior to a practicum experience. For example, research by McNeil, Fry, Wright, Tan and Rossi (2008) on the Singapore Government's mandated introduction of a Games Concept Approach (GCA) to physical education teaching confirmed an induction period of only 18 hours prior to in-school delivery. Unsurprisingly, findings from the study suggested the need for greater emphasis on peer-teaching workshops and learning opportunities to better understand GCAs in Physical Education Teacher Education (PETE) classes prior to practicum delivery. Similar findings are also reflected in studies by Wang and Ha (2009) and Pill (2011) and further support the need for more ecologically robust GBA induction and development opportunities (such as effective mentoring programmes as discussed in Wang and Ha, 2012).

Feelings of insecurity and apprehension when undertaking a pedagogical change are prominent in GBA literature. In their study Casey and Dyson (2009) suggest the need to provide school students with a short 'crash course in how to be taught this way' (p190) to help manage initial anxiety over a change in expectations and what can be a radically

different experience for learners. As noted by Nash (2009) a change in pedagogy may often be difficult to facilitate due to students' pre-conceived notions of traditional, formal curricula and the emphasis in certain learning environments on traditional technique-based instruction. Nevertheless, research has indicated a perceived improvement by pre-service physical education teachers in understanding GBA pedagogy when engaged in a supportive and active community of practice. The use of micro-teaching groups, peer observation and feedback expectations, access to online forums and the presence of 'community facilitators' to help 'maintain continued engagement' were all suggested by Nash (2009, p17) to help develop significant understanding of TGfU.

Furthermore, Light and Georgakis' (2007) study clearly identified the potential for development in teaching confidence offered by exposure to GBAs. Their study suggested that utilisation of a GS pedagogy offered a useful means for developing generalist primary teachers' inclination and ability to teach physical education. Conclusions indicated that exposure to a GS approach when learning how to teach physical education provided pre-service generalist primary teachers with both a greater confidence to teach physical education and a greater appreciation of the value of sport and physical education provision in school. Positive perceptions of GBA induction and implementation have also been recorded in Southeast Asian contexts. Li and Cruz (2008) reported on pre-service teachers' perceptions that TGfU was a viable instruction model contributing to pupils' cognitive development and the provision of fun, whilst Wang and Ha (2009) confirmed in their study that 'the majority of pre-service teachers are likely to use TGfU in the future' (p. 407).

As the research above suggests, the opportunities and challenges associated with initiating and implementing a change in pedagogical practice are both context specific and subjective in nature. Evidence does however suggest that when pedagogical change expectations are set

with appropriate support (e.g. active community of practice) in a realistic time frame greater appreciation and commitment to change can result.

Fidelity of approach

With the expanding global appeal and use of GBAs, suggested by the ongoing international series of TGfU conferences and the expanding literature (Light 2013), questions about fidelity of approach and the provision of on-going GBA-related professional development opportunities have surfaced in the literature (Harvey and Jarrett 2012). Articulated verification of approaches/models used in GBA research has been limited although a growing proportion of GBA-related research articles are now including comment on verification benchmarks used (see for example Harvey 2009; Harvey, Cushion and Massa-Gonzalez 2010; Jarrett 2011). The articulation of verification procedures is important as it may help to provide practitioners with benchmark criteria to support their own implementation of GBA innovation. The research articles mentioned above have articulated the use of Metzler's 2000 and 2005 benchmarks and context specific validation protocols to verify each GBA utilised.

While understanding that teachers and coaches can 'modify' their implementation of a GBA to suit their local context of implementation, Kirk (2011) suggests caution with the extent to which a teacher/coach can 'modify' an approach such as a GBA to its local context and still legitimately say that they are validly 'doing the approach'. An example of such modification and 'rebranding' of GBA implementation might be a teacher's/coach's simple decision to use higher rates of questioning. What we must see from teachers and coaches is not only an espoused commitment to the particular GBA and the use of its terms, but also a practical understanding of it. As has happened with constructivist-informed teaching, teachers

can pick up the language of constructivism but not practice it due to tension between its underpinning epistemology and the embedded beliefs of teachers (Davis and Sumara 2003).

Developing skill

The development of learner/athlete skill outcomes has been synonymous with educational goals in physical education and sport coaching settings for generations. A focus on decontextualized skill training was a key feature of physical education and sport coaching programmes throughout the twentieth century (Kirk, 2010) and arguably continues to dominate pedagogy used by physical education teachers and sports coaches today. According to Bunker and Thorpe (1986) such technique-focused programmes 'failed to take into consideration the contextual nature of games' (p6) and often led to an emphasis on declarative knowledge development rather than procedural knowledge development (Turner and Martinek 1999). As a fundamental principle of learning associated with the use of GBAs, skills developed in the context of game play offer the potential to expand learning opportunities beyond declarative, on-the-ball learning experiences (Harvey 2009), although the potential for GBAs to develop on-the-ball motor skills in game play situations has been the focus of numerous research articles over the past two decades (for example see Turner and Martinek 1999; Gray, Sproule and Morgan 2009; Zhang, Ward, Li, Sutherland and Goodway 2012). Literature highlighting the importance of off-the-ball movement and its relationship to skill development in and through games (see for example Gray and Sproule 2011) does suggest a growing appreciation of the fact that team games/sports have a higher percentage of game time when learners/athletes are engaged in off-the-ball movement. For example, Reilly and Thomas (1976) found that typically a player in soccer is in possession of

the ball for less than 2% of game time), suggesting that a learning approach forged from engagement in game play has significant appeal. Studies by Gray and Sproule (2011) and Harvey, Cushion, Wegis and Massa-Gonzalez (2010) provide evidence that employment of GBAs can improve participants' off-the-ball movement. The importance of developing this aspect of play was also highlighted by a coach in Light's (2004) study on sport coaches' experiences of using a GS approach.

> In a ninety minute game the ball is in play for say sixty minutes… and each player averages at most three minutes touching the ball. So what are they doing for the rest of the game? They are running around making decisions.
>
> Participant comment in Light (2004, p120)

> Game Sense provides opportunities for enjoyment, for maximising activity, and creativity. They (players) develop an understanding of tactics of play whether they are on the ball or not.
>
> Participant comment in Light (2004, p120)

Assessment of performance

The importance of developing a player's off-the-ball movement and decision-making has also been recognised in the development and validation of a number of performance assessment instruments. The Games Performance Assessment Instrument (GPAI; Mitchell, Oslin & Griffin 2006), Game Test Situations (GTS; Memmert, 2006), Lee and Ward's (2009) 'supporting movement' coding instrument, and the modified instrument used by Gray and Sproule (2011) can all be used to examine the contributions of off-the-ball play to both overall game performance *and* involvement. This recognition of the importance of off-the-

ball movement and associated decision making should not be understated and reflects a growing acceptance in the literature that skill and tactical development is complex and relational. For example, MacPhail, Kirk & Griffin's (2008) replication of Rovegno, Nevett, Brock & Babiarz' (2001) study into 'throwing a catchable pass' emphasized the need to recognise the physical-perceptual and social-interactive elements of game play in the learning process. Thus, the need to assess knowledge-in-action as suggested by Light & Fawns (2003), or the body thinking, has justifiable importance and is central to *becoming* an intelligent games player.

Memmert (2006, 2007) and Greco, Memmert & Morales' (2010) utilisation of Game Test Situations (GTS), which are assessment scenarios that utilise context-dependent, real world settings that can provoke tactical solutions in ecologically-valid situations, can also be adapted to use as a school physical education of sports club-appropriate assessment tool. The use of the Games Performance Evaluation Tool (G-PET) - a tool developed by Gutierrez Diaz, Villora, Lopez & Mitchell's (2011) from initial work by Nevett, Rovegno, Babiarz and McCaughtry (2001), which allows for the examination of on and off-the-ball technical and tactical skills as well as 'tactical context adaptation', might also be an effective tool for assessment in various learning environments.

Developing tactical awareness/cognition

A focus on the potential of GBAs to facilitate tactical transfer between games of similar classification and from practice to match scenarios is a feature of numerous post-2005 GBA studies (for example see Memmert and Harvey 2010; Lee and Ward 2009; and Hastie and Curtner-Smith 2006). Such research follows on from pre-2005 studies by Mitchell and Oslin

(1999), Jones and Farrow (1999) and Contreras Jordan, Garcia Lopez and Ruiz Perez (2003) that highlighted the potential for transfer between games in the same category. Memmert and Harvey's (2010) study on the identification and validation of non-specific tactical tasks in invasion games supported previous TGfU theorists' proposals about the use of GBAs to facilitate tactical transfer between different invasion games within the same category. Here the authors studied the transfer of appropriate tactical responses from small-sided, 4 vs. 4 practice scenarios to game play in soccer utilising Launder's (2001) Play-Practice approach. Analysis of the data demonstrated that the intervention proved effective for 'more able' participants with regards to the percentage of appropriate tactical responses recorded during game-play; a trend also observed in Memmert's 2006 study of creative thinking development between gifted and non-gifted children completing a sport enrichment programme.

Furthermore, a study by Lee and Ward (2009) showed that tactics associated with 'supportive behaviour' in a 20-lesson unit of tag rugby were able to be transferred from 4 vs. 4 instructional games to 4 vs. 4 match play games. Such findings continue to validate the use of GBAs to develop game play cognition, especially within both school-based curricula where the multi-sport approach to teaching often prevails as well as single sport coaching contexts where transfer of tactical development from practice to match scenarios is emphasised. It is also important to recognise, though, comments made by Harvey (2009) highlighting the potential for the negative transfer of tactical awareness and decision making from modified/conditioned games to match-play situations when the coach did not 'get the game right'.

The main focus of GBA implementation is an emphasis on game players' understanding of 'what' and 'why' to do something before a focus on 'how to do it' (Bunker and Thorpe 1986). The research discussed above supports the potential for learning to be transferred from

one context to another (e.g. practice to match scenarios) and in doing so continues to validate GBA as a means of improving game play performance.

Developing tactical intelligence/creativity

Memmert and Roth (2007) argue that 'the teaching of ball games and the measurement of its success should focus on relevant competencies that cannot much be improved upon in later training phases' (p. 1423). For games teachers and coaches this concerns the development of tactical creativity. In response, studies by Memmert and colleagues (2006, 2007; Memmert and Roth 2007; Memmert and Harvey 2010; Greco, Memmert and Morales 2010) have focused on the assessment of athletes' tactical creativity where an emphasis is placed on attaining measures of originality (i.e. the unusualness of ideas) and flexibility (i.e. the diversity of tactical solutions offered). A better understanding and use of these constructs might arguably help dissect the often complex and varied interpretations of appropriate tactical awareness progressions and help teachers and coaches facilitate development of creative game play behaviour.

Links within the research literature between the use of GBAs and the development of creative behaviour are prominent. For example, Memmert's (2007) study into the development of tactical creativity via an attention-broadening training programme (facilitated through the use of non-specific teaching methodologies such as those inherent with Ball School – see Rabb 2007) focused on the role of the teacher/coach and the use (or absence) of explicit tactical instruction. Results indicated that over a six-month period the attention-broadening training group improved its creative performance considerably more than the attention-narrowing training group.

Such results not only bring into focus the potential of a non-specific training programme when trying to develop players' tactical creativity, but also the quantity of instruction given to players and its impact on players' breadth of attention (Memmert 2010). This diversion or narrowing of attention is often referred to as inattentional blindness and is a phenomenon caused when a teacher/coach gives tactical instructions that narrow a player's attention to certain factors (Most, Scholl, Clifford and Simons 2005). Thus, the research suggests that the use of GBAs such as Ball School and TGfU can provide greater opportunity to develop (and keep) a wide visual attention and if a player has a wide visual attention then arguably they can be more creative (Memmert 2010).

Developing students'/athletes' higher order thinking

The promotion of higher order thinking has been both a catalyst and a goal of GBA use since a shift in pedagogical approach to games teaching and coaching arguably began in the mid-1980s. Asking questions that: 1) generate dialogue and learning and 2) provide opportunities for formulating, testing and evaluating solutions within a 'debate of ideas' are now recognised as stalwarts of effective GBA implementation and offer a road map to engaging students/athletes in higher order thinking (Gréhaigne, Richard and Griffin 2005). Yet the literature still reports on problems arising from both the effectiveness of questioning (see for example Harvey, Cushion and Massa-Gonzalez 2010; Roberts 2011) and pedagogical content knowledge limitations (see for example Wright, McNeill and Fry 2009). The existence of such issues could be considered to be indirectly attributable to many teachers' and coaches' conceptual misunderstanding of GBAs and subsequent difficulty with GBA implementation. Typically, we still see teaching and coaching practice that although planned as student-

centred, inherently lacks effective questioning (arguably predominantly divergent) or the facilitation of opportunities for reflection/discussion (Davis and Sumara 2003).

As Light (in press and chapter four) alludes to in his developing body of work that conceptualises GBAs as 'Positive Pedagogy', questioning is the central mechanism employed for promoting student-centred learning and a stimulant for dialogue, reflection, and the conscious processing of ideas. A recent study by Vande Broek, Boen, Claessens, Feys and Ceux (2011) comparing instructional approaches to enhance tactical knowledge in volleyball found that the 'student-centered with tactical questioning' group significantly improved their Tactical Awareness Test results when compared with the two other instructional groups (that being 'teacher centred' and 'student centred without questioning'). These findings highlight the importance of effective questioning within a student-centered approach to enhance the tactical decision-making process. Appropriate support and education of teachers and coaches is therefore needed in helping them develop a questioning approach, which is seen as central to effective games-based teaching/coaching.

It is also important to comment on practitioner perceptions of GBA use and related improvements in cognition, or higher order thinking, during game play. In Spain, Díaz-Cueto, Hernández-Álvarez and Castejón (2010) reported that in-service teachers implementing a 14 lesson TGfU unit of either basketball or handball noted the positive changes in pupils' decision-making and tactical performance and in England Jarrett's (2011) study on perceptions of a change to Game Sense pedagogy identified a range of cognitive learning opportunities provided to participants through the use of Game Sense.

Student motivation

As Mandigo, Holt, Anderson and Sheppard (2008) state, 'one way to improve children's engagement in PE is to increase their intrinsic motivation' (p. 408). Results from their study into children's motivational experiences following TGfU-autonomy supportive games lessons found high levels of motivation in pupils in grades 4-7. Girls reported higher levels of enjoyment, perceived autonomy support and optimal challenge whereas boys reported higher perceived competence levels. Similar results were found by Jones, Marshall and Peters (2010) in their study into the intrinsic benefits of TGfU reported by 9-13 year olds after a unit of work. Gray, Sproule and Morgan's (2009) study into the motivational climate exhibited by students when taught team invasion games using a GBA further reflected a positive motivational response from students, as did results from McNeill, Fry and Hairil's (2011) study. And although empirical research into motivational climate generated by use of GBAs in club/elite sport settings is limited, Evans and Light (2008) highlighted in their study on rugby coaches' implementation of Game Sense pedagogy that player's had experienced greater motivation when engaged in autonomy supportive coaching environments. The authors also commented on how GBAs had the potential to develop positive coach/player relationships based on more equal distribution of power.

Developing positive affective response/engagement

Research and commentary on the development of learning in the affective domain has continued to be recognised in GBA literature (see for example McKeen, Webb, and Pearson 2008; Jones and Cope 2010; Curry 2012; Stoltz and Pill 2012). The area of teacher and learner perceptions of GBAs has received particular empirical attention (see for example Rossi et al. 2007; Light and Evans 2010). As Light (2010) suggests, the nature of affective experience is an important dimension of sport participation. However, research into personal

and social development as well as exploration of cross-domain potential of GBA implementation (e.g. relationship between psychomotor, cognitive and affective domains of learning) is still limited. Harvey and Jarrett (2012) note the holistic view of learning within games still lacks prominence in GBA literature although recent texts by Light (2012) and Harvey and Light (2012) begin to expand commentary on the potential for GBA use to develop personal, social and ethical dimensions of learning.

Conclusion

This chapter identifies the recent trends in GBA literature that continue to inform our practices as physical education teachers and sports coaches. From the influence of context on GBA implementation to the potential for GBAs to enhance game-related performance, empirical research exploring the use of GBAs is now conducted all round the world. But what does the future hold?

The future of GBA implementation in teaching and coaching environments begins with continued reflection on current practice. Working with pupils and athletes to enhance game-related participation and achievement goals requires continued awareness of empirical research and theoretical commentary associated with GBA implementation and pedagogical change. The recent research trends in GBA literature highlighted in this chapter provide games practitioners the opportunity to reflect on the various benefits and challenges associated with GBA implementation and to inform future use. Empirical developments in pedagogical function should provide practitioners with dialogue opportunities to address implementation and support issues. This is especially important in light of a growing awareness of performative climates in our physical education and sport team environments

that are dominated by the need to measure success only via results. Further GBA research is needed though, especially in the areas of context-appropriate performance assessment, implications for GBA implementation in coaching contexts, longitudinal research designs, and the breadth of research methodologies used to generate information about subjective experiences of learning with GCA.

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