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SPORT-BASED PHYSICAL EDUCATION

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If we were to gather a group of experts in sport pedagogy and ask them to word associate with the term “games in physical education,” perhaps the most common response would be “double-edged sword.” On one side, results from surveys of students across various countries with respect to their overall enjoyment of physical education (PE), show an overwhelming preference for time spent on sport activities (Hill & Hannon, 2008; Smith & St. Pierre, 2009). These data support those from previous studies (e.g., McKenzie, Alcaraz, & Sallis, 1994) that also indicate a much greater preference by students for game play compared with fitness activities.

The intuitive rationale for students’ preference for games and sports is that they present the most playful component of PE and also the most significant opportunities for socializing. In fact, this postulate is supported by students’ voice where they note that activities that allowed them to “be active, socialize, and work with and against friends and classmates” were those they believed had the biggest impact on enjoyment (see Smith & St. Pierre, 2009, p. 216). Likewise, Rikard and Banville (2006) reported that the most popular curriculum content that fueled enjoyment was team-based activities where students could compete and interact.

The enjoyment of sports within PE is not however universal to all students. Empirical evidence illustrates that some students (mostly those with low skill levels and girls), show high levels of dissatisfaction with games instruction (see Casey, Hill, & Goodyear, 2014; Smith, Green, & Thurston, 2009). Such discontent can be divided into two main themes: the first common to all students, and the second experienced mostly by students who are lower-skilled and often marginalized and alienated.

The first theme could be given the label of “boring and irrelevant content.” Here Rikard and Banville (2006) perhaps summarize it best when they report that a focus on repetitive, teacher directed, and molecular approaches to team sports instruction is tied to increasing levels of student dissatisfaction. That is, when students see themselves as being underchallenged by sport activities that do not contribute to their fitness or interest level, they express significant frustration and boredom. Indeed, many students hold perceptions that PE has no impact on their individual skill improvement, and that activities taught had no transfer to their activity choices outside of school (see Dismore & Bailey, 2011; Gard, Hickey-Moodey, & Enright, 2013).

Kirk (2010, p. 41) critiqued this molecular approach that puts the focus on discrete, non-game-like skills as “Physical education as sport techniques.” Physical education as sports

techniques is perhaps best summarized by a student in Rikard and Banville's (2006, p. 393) study who noted "we don't need to spend most of the class going over them [skills], like in basketball; we already know how to dribble!" While the underlying intent of these units is to provide young people with greater opportunities to find activities to which they are attracted, an unintended consequence seems to be low levels of student commitment, intensity of engagement, and enthusiasm (e.g., Perlman, 2010; Shen, Wingert, Li, Sun, & Rukavina, 2010). Siedentop (1994, p. 7) also criticized "decontextualized physical education" in which teachers teach games and sports in ways that do not resemble authentic sport experiences and infrequently use modified games that promote student decision making and increased understanding of game play. Further, in PE as sport techniques, the teacher controls almost all aspects of the learning process, leading to minimal levels of student autonomy, perceptions of competency, and relatedness (Hastie, 2012).

Another outcome of PE as sport techniques relates to unit length. When units are short, students are unable to achieve any significant mastery of learning outcomes. As early as 1987, Taylor and Chiogioji (1987) noted that the proliferation of and emphasis on teaching many activities in too short a time makes it difficult for students to achieve any PE goal. Indeed, this smorgasbord approach lessens students' opportunities to master any single activity. When students do not see development of their game skills or tactics, they have a concurrent perception that the content lacks meaning.

The second theme of students' discontent concerning games within PE could be given the label of "discriminatory and abusive practices." In the 1990s Ennis and colleagues outlined cases in PE where the aggressive male players were allowed to control both access to and conduct of games, thereby marginalizing and alienating girls and lower-skilled boys (Ennis, 1996, 1999; Ennis et al., 1997). The games taught typically were not developmentally appropriate, involving large numbers of students who were intimidated by the higher-skilled students. They soon became either complete avoiders or at best, "competent bystanders" (see Tousignant & Siedentop, 1983). Pope and O'Sullivan (2003) described these scenarios which privilege success in psychomotor movements and competitiveness in the gym as having "Darwinist" dimensions. Moreover, the non-cooperative and individualized nature of the learning experiences served to sustain the dominant forms of masculinity demonstrated through boys' aggressive game-play behaviors (Griffin, 1985). As a result, teachers' time and attention are essentially divided between constant negotiations for the cooperation of dominant boys and the highly teacher-centered focus on class management. Subsequently, teachers are left with limited opportunities to "protect and support low-skilled pupils, control competitive levels, and nurture social relationships among pupils" (Curtner-Smith & Sofo, 2004, p. 351).

While there still exists a preponderance of PE as sport techniques within many school programs, there is also a concurrent shift in thinking towards game *play* focused PE in what Ennis (2014) calls "second generation" curricular models that build on strong statements of democratic, student-centered practice in PE. In this chapter we focus attention on some prominent models that use student-centered approaches in teaching sport within PE, and examine their philosophical basis, essential elements, and summarize research that has been conducted on each. Next we focus on promoting quality in research on student-centered sport models, addressing issues such as asking "good" research questions, using appropriate research designs, demonstrating implementation fidelity, and selecting meaningful dependent variables. The chapter concludes with a recommendation that future research on games models takes a more interpretative approach, focusing on internal pedagogical practices of sport within PE rather than a "versus" approach that compares one model with another.

Approaches to games teaching and learning

Curriculum developers have designed and tested a number of student-centered sport and games models for physical education. Among those receiving intense scrutiny by scholars and practitioners are Sport Education, and several Games-Centered Approaches, including Teaching Games for Understanding [TGfU] and Tactical Games. In this section we will summarize the essence of each model and present a few notable studies that have investigated each model.

Sport Education

Sport Education is a pedagogical model designed to provide authentic, educationally rich sport experiences for girls and boys in the context of school PE. First conceptualized in the 1980s by Daryl Siedentop, the model was derived from play education. Siedentop argued that cultures of physically active play are fundamentally important to collective social life (Siedentop, 2002). What spurred Siedentop's development of the model in the later part of that decade into a more full-fledged iteration was his view that students were not interested or inspired in many PE programs, even when taught effectively. By consequence, and following his views of what constituted a quality sporting experience, Siedentop (1994) sought to make available to students in schools an "authentic sporting experience." To achieve this, he crafted the model based on what he believed to be the six key features of sport that make it authentically into a workable model. Those features include: (a) that sport is structured in seasons; (b) players are team members who remain with their team for the entire season; (c) seasons are defined by formal competition, interspersed with teacher and student directed practice sessions; (d) a culminating event concludes each season; (e) sport play includes extensive record keeping; and (f) a festive atmosphere pervades the season (and particularly the culminating event). These characteristics are the standard bearers on which units of work within PE can now be identified as Sport Education.

Essential elements

There are four immutable aspects of Sport Education which cannot be compromised if a particular PE is to be called Sport Education. These include (i) the unit of work takes place over an extended period of time, (ii) the idea of a persisting team, (iii) the presence of developmentally appropriate competition consisting of small-sided games, and (iv) that students take upon roles and responsibilities other than that of player (Hastie, 2012). These roles can include coaches, referees, score keeper, statisticians, and members of the sports organizing board. A typical season sees students progressing from initial experiences in refining and practising skills under the guidance of a student coach, through a series of nonconsequented scrimmage games, and ending with a formal team competition in which the spirit of the competition is to compile points for winning matches while showing good sporting behavior. At the end of the formal competition a variety of awards are presented such as final standings, referee, fair play, and participation awards.

Research findings

While the aim of Sport Education is to create "competent, literate, and enthusiastic sports players" (Siedentop, Hastie, & van der Mars, 2011, p. 5), the earliest reviews of research focused on different elements. Organizing their review around what Alexander and Luckman (2001,

p. 254) called the “5 big aims of PE” (namely, motor skill development, knowledge and understanding, fitness, social development, and values and attitudes), Wallhead and O’Sullivan (2005, p. 181) made the following executive summary:

Evidence suggests that SE, with its emphasis on persistent team membership, promotes personal and social development in the form of student responsibility, cooperation and trust skills. Student leadership within the model has been identified as potentially problematic for effective content development and the promotion of equitable participation. Further research is required to examine the dynamics of peer interaction and subsequent content learning and performance that occurs during student-led tasks of the curriculum.

Kinchin’s (2006) review of Sport Education focused more on the perceptions of students and teachers than objective measures of learning. Students described Sport Education as “better than before [multi-activity].” They liked the opportunity to become affiliated with a group of team mates over an extended period of time. Students also endorsed opportunities to have responsibility and take ownership within their teams, and expressed high levels of seriousness with respect to fulfillment of their roles. Teachers particularly appreciated the ability of Sport Education to take them off center-stage and place them in a more supporting role. In addition, teachers were energized by increased student interest in PE, resulting in what Alexander, Taggart, and Thorpe (1996, p. 23) describe as having “a spring in their steps.”

Hastie, Martínez de Ojeda, and Calderón’s (2011) review of Sport Education used the same five common content standards and aims of PE used in Wallhead and O’Sullivan’s (2005) review. In this update, Hastie et al. supported many of the same findings from the 2005 review. However, Hastie and his colleagues’ more recent review reported instigation of research in a number of new contexts focusing on new research questions. In particular, research teams had begun to investigate students’ motivational responses towards Sport Education, as well as issues related to PETE students’ learning how to teach Sport Education. Further, by 2011, research designs had become more sophisticated and researchers were using larger sample sizes.

Hastie’s (2012) initial chapter in the text *Sport Education: International Perspectives* was the first to address the central goals of the model. Hastie’s executive summary reported that evidence for competency was “burgeoning and developing,” support for literacy was “emerging,” and that enthusiastic responses by students had been “significantly substantiated.” Table 5.1 provides sample references to various studies that provide support for those generalizations.

Table 5.1 Sample outcomes of research on the goals of Sport Education

Competence	<i>Positive perceptions of skill improvement by students</i>	Spittle & Byrne (2009)
	<i>Empirical examples of skill competence</i>	Hastie, Sinelnikov, & Guarino (2009)
	<i>Teacher perceptions of tactical development</i>	Clarke & Quill (2003)
	<i>Empirical examples of tactical development</i>	Hastie, Sinelnikov, & Guarino (2009)
Literacy	<i>Game knowledge</i>	Hastie & Sinelnikov (2006)
	<i>Development of fair play</i>	Vidoni & Ward (2009)
Enthusiasm	<i>Greater efforts in both team practices and in game play</i>	Wallhead & Ntoumanis (2004)
	<i>Valuing of team affiliation and perceptions of inclusion</i>	MacPhail, Kirk, & Kinchin (2004)
	<i>Autonomy supportive social factors</i>	MacPhail, Gorely, Kirk, & Kinchin (2008)

Game-centered approaches

In 1982, the *Bulletin of Physical Education* published a special issue taking a critical look at the teaching of games within PE. The theme of this edition was “it’s a different ball game” (Jackson, Jones, & Williamson, 1982, p. 23). In particular, the most significant paper emanating from the journal was that by Bunker and Thorpe (1982) who presented “a model for the teaching of games in secondary schools.” The essential premise of this paper (and indeed of the complete special edition) was that the focus on learning technical skills in PE classes with little to no emphasis on strategy was based on a flawed ideology. Instead, Bunker and Thorpe recommended a change in the way games were taught placing emphasis on understanding the logic of play imposed by the rules of the game, and helping students develop an appreciation of the tactical structure of play before being taught highly structured technique.

Since this first paper, a number of iterations of the model known as “Teaching Games for Understanding” (TGfU) have appeared in scholarly papers and practitioner oriented texts. Central to all of these models is the concept that game skill is best developed in circumstances that most closely represent the situations in which the skills will be used (Thorpe & Bunker, 2010). Nonetheless, as Stolz and Pill (2014, p. 37) note, these variants of the original model “may appear to be different, but on closer inspection are defined by subtle rather than distinctive differences.” Game-centered approaches examined in this chapter include TGfU, Tactical Games, Game Sense, Play Practice, Invasion Games Competence Model (IGCM), and Tactical Decision Learning Model (TDLM).

Teaching Games for Understanding – TGfU

Essential elements

There are four immutable aspects which cannot be compromised if one is to correctly describe a particular unit within PE as TGfU. These include (i) games are modified to suit the students’ skills and experience, (ii) skill learning is tied to developing tactical knowledge, (iii) tactical problems are foregrounded within learning tasks, and (iv) students are given multiple opportunities to problem solve and practice the appropriate tactical response.

To achieve this, Bunker and Thorpe (1982) outlined a model of TGfU that contains six stages in which students follow a cycle beginning with modified game play, through elements of game appreciation, tactical awareness, appropriate decisions, skill practice, and finally returning to the game to determine effectiveness of game play. As Kirk and MacPhail (2002, p. 179) note, “as the players’ expertise develops, the game form is changed to continue to challenge the players in terms of game appreciation, tactical awareness, decision-making, and execution of technique.”

Research findings

Research on TGfU has tended to focus on two lines of inquiry. The first has been studies of teachers’ and students’ perceptions of the attractions and drawbacks of using the model. While Harvey and Jarrett (2014) report that both pre-service and in-service teachers experienced some difficulties using the new pedagogies involved with TGfU, the general consensus across studies was that teachers appreciated the change in focus from class management to one focusing more on student learning (Alison & Thorpe, 1997; Butler, 1996; Cruz, 2004). Students believe they learn more about game rules and tactics, and as a result are willing to give greater effort. In particular, there was the consensus that TGfU effectively engaged students regardless of their skill level or gender (e.g., Harvey et al., 2009; Jones, Marshall, & Peters, 2010).

The second line of research on TGfU has followed comparisons of units of this model with those using more direct instruction methods. Both major reviews of research (Harvey & Jarrett, 2014; Oslin & Mitchell, 2006) suggest equivocal outcomes with respect to skill execution, particularly on-the-ball skill execution. However, there does seem to be evidence for improvements in off-the-ball movement (Harvey et al., 2009; Gray & Sproule, 2011; Lee & Ward, 2009).

Tactical Games

Essential elements

In 1997, Griffin, Mitchell, and Oslin proposed a simplified three-stage model of TGfU, which they labeled “A Tactical Games Approach.” In this approach, which locates specific skills within games themselves, the essential lesson components of the model include modified game play (that highlights a particular tactical problem), the development of tactical awareness and decision making through questioning, and the subsequent development of skill execution. By consequence, the three immutable elements which cannot be compromised if one is to correctly describe a particular unit within PE as Tactical Games would be that (i) lessons follow a game – skill practice – game pattern, (ii) the game forms typically involve “representation” and “exaggeration”, and (iii) teachers frequently use questioning to foster students’ critical thinking and problem solving. First introduced by Thorpe, Bunker, and Almond (1986), the game form, representation, is best defined as “a condensed game that contains the same tactical structure of the advanced form of the game (e.g., reduced number of players and modified equipment).” The game form, exaggeration, involves “changing the secondary rules of the game to overstate a specific tactical problem (e.g., long and narrow courts, narrow or wide goals)” (Griffin & Patton, 2005, pp. 3–4).

Research findings

Similar to the TGfU studies, tactical games research typically examines teacher (e.g., Bohler, 2009) or student motivational responses (e.g., Mandigo, Holt, Anderson, & Sheppard, 2008) or to comparisons between these and more skill-based approaches (Harrison et al., 2004). Again, researchers report that teachers believe students can improve game play and understanding, while students report enjoyment in trying to master the tactical dimensions of games. Nonetheless, comparative studies again showed no superior outcomes for the Tactical Games approach.

A new direction in Tactical Games research has been the examination of whether tactical understanding developed during one game would successfully transfer to another game within the same games category. Studies by Mitchell and Oslin (1999; net/wall games) and Martin (2004; invasion games) have both shown the generic tactics of badminton and Frisbee were sustained into units of pickleball and team handball.

Game Sense

Essential elements

Stolz and Pill (2014, p. 40) suggest that the term “Game Sense” was first used by Thorpe and West (1969) “as a description of game intelligence and as a games teaching performance measure.” Less prescriptive than TGfU and more open to different interpretations (Light, 2013), the immutable aspects of Game Sense include (i) that instruction is centered on the playing of small-sided, competitive games or game-like activities, and (ii) within these games the teacher

(or coach) prioritizes questioning over telling players what they should do. Both of these aspects are aimed at developing tactical game understanding. In Game Sense, there is an attempt to locate all learning *within the game*, with skills learned and developed within play, rather than being identified prior to game participation. As Den Duyn (1997) notes, skill is developed through the coupling of technique to the game context.

Research findings

Like all games-based models, studies investigating Game Sense have shown this model to provide a motivating climate for students, particularly those with previous resistance to sport (Chen & Light, 2006). However, Brooker, Kirk, Braiuka, and Brangrove (2000) did report some instances of resistance from students towards modified games in contrast to playing the “real” version. This resistance was among a number of the challenges that Brooker et al. (2000) suggest face teachers when introducing new pedagogies to students. Among these include significant demands for sport content knowledge as well as the challenges of thinking differently about the nature and purpose of PE, factors supported by Pill (2011) in his study of 64 Australian teachers and also Jarrett (2011) with teacher trainees. Nonetheless, similar to studies using Tactical Games which examined the issue of transfer, Jones and Farrow (1999) found positive transfer in decision-making skills from badminton to volleyball within the Game Sense approach.

Play Practice

Essential elements

First developed by Launder (2001), Play Practice is best described by Holt, Ward, and Wallhead (2006, p. 101) as “a structure for teaching sports ... through the development of closely aligned practice tasks that replicate the demands of the game while maintaining the critical aspect of play.” Thus, the three immutable features of Play Practice include (i) a shaping of play to suit the player experiences, (ii) a focus on learning sport skills, and (iii) through play, attention is directed towards areas that need improvement. Stolz and Pill (2014, p. 42) suggest that these are “conceptually similar to the TGfU pedagogy of teaching through the game and directing learning by sampling, exaggerating and representation of game structures.” However, unlike TGfU, Launder notes it is not necessary to apply Play Practice as a complete package. Rather, a teacher can make small adjustments to skill practice or a game as they see fit, to maximizing alignment and transfer from practice to game, while ensuring early and continuing success. It is Launder’s position (in contrast to TGfU), that it is the technical demands of a sport that determines the instructional emphasis on games sense and technique (see Zhang, Ward, Li, Sutherland, & Goodway, 2012).

Research findings

To date, research on Play Practice has taken place in university PE settings, with studies by Zhang et al. (2012) examining table tennis, and Holt et al. (2006) studying soccer. Zhang’s examination of skill performance suggested that Play Practice was effective in increasing students’ skill levels. Holt and colleagues investigated the second key goal of Play Practice, skill transfer, and found that instruction via Play Practice promoted transfer for the most able participants. Lower-skilled

students, however, while perhaps knowing appropriate skill responses, were unable to perform these during practice, and hence could not transfer them to game situations.

Invasion Games Competence Model

Essential elements

The Invasion Games Competence Model (IGCM) is a conceptual model for teaching invasion games which comprises three main goals: (i) to afford students successful participation in sport-related modified versions of invasion games; (ii) to help them become more self-regulated learners; and (iii) to develop students' ability to transfer problem solving skills to other invasion games (Musch et al., 2002). Similar to Sport Education in creating the "authentic sporting experience," in the IGCM, traditional lessons are replaced by training sessions based on competitive matches. Thus the model emphasizes extensive game practice where equitable participation is guaranteed, assuring an authentic and democratic learning environment.

Within the IGCM, specific invasion games tactical-content and skills are taught through three different categories of game forms; basic and partial game forms and game-like tasks (De Clercq et al., 2005). Basic Game Forms (BGF) are modified versions of the full invasion game; as students' game performance improves, BGF increase in complexity. Partial Game Forms (PGF) and Game-Like Tasks (GLT) are intermediate learning tasks designed specifically to help students respond to game problems that cannot be solved within BGF. PGF emphasizes one of the structural BGF parts (such as scoring/preventing scoring, creating/preventing shooting opportunities, and setting up/preventing the set-up of an attack) (Tallir, Lenoir, Valcke & Musch, 2007). In GLT, students practice specific movement patterns (e.g., dribbling, passing, and shooting) required to solve a specific game problem faced by students within the PGF.

By consequence, there are four immutable aspects which cannot be compromised if one is to correctly describe a particular unit within PE as representing the IGCM. These are (i) that students work within heterogeneous groups, (ii) student learning is developed while learning tactical content and skills specific to invasion games (through basic and partial game forms and game-like tasks), (iii) learning tasks are totally connected with the specific game demands, and (iv) learning outcomes are evaluated as students participate within authentic game performance situations as players and supportive players.

Research findings

To our knowledge, the only study published using the IGCM was that by Tallir et al. (2007). They examined the effectiveness of two approaches (IGCM and traditional) with primary school children with respect to basketball game performance (decision making and motor skill efficiency and efficacy). All three components improved in both groups, but learning profiles were different, with the IGCM group showing a major increase in game performance from pre-test to post-test, while the traditional group caught up at the retention test. In a study combining a Sport Education hybrid model with IGCM during a soccer unit, Mesquita, Farias, and Hastie (2012) demonstrated improvements in students' decision making and skill execution during game play, particularly in girls and lower-skilled students. The authors suggest that the team members' strong commitment and motivation to practice, which accompanies team membership, prolonged engagement with the basic game form.

Tactical-Decision Learning Model

Essential features

Gréhaigne, Wallian, and Godbout (2005) developed the Tactical-Decision Learning Model (T-DLM) to enhance students' tactical knowledge construction and decision-making skill development. In the model students take part in cycles of "play-discuss-play" to progressively gain tactical knowledge while refining decision-making skills. That is, instruction begins with mini game play in which students receive intrinsic feedback about the game performance and extrinsic feedback from the teacher (and sometimes student observers). Following games, teams engage in a "debate of ideas" (Gréhaigne, Richard, & Griffin, 2005, p. 116) to generate an action plan, which they then test in play. The positive and negative aspects of that action plan are then evaluated to form a new game plan, which is then again tested in this recurring cycle. By consequence, the immutable aspects of the T-DLM include (i) play in small-sided games, (ii) the development of action projects through a debate of ideas, and (iii) testing and re-testing game plans.

Research findings

While widely practiced within French PE settings (see Gréhaigne, 2014), there is less evidence of empirical work using the model. Nonetheless, Chang, Wallian, Nachon, and Gréhaigne (2006) examined the efficacy of the "debate of ideas" concept, finding it helped students to understand and appreciate "efficient action rules" (i.e., appropriate ways to respond to strategic challenges) within basketball games.

A later study by Gréhaigne, Caty, and Godbout (2010) following 4 vs. 4 soccer identified eight play configurations that occurred most frequently with novice players. The authors suggested that by studying these play configurations, teachers can help students better predict the evolution of game play situations. While Gréhaigne et al. (2010) acknowledge challenges in developing appropriate pedagogies for this form of game instruction, they do present a didactical model of game play in which students strive to make sense of a new game problem by relating it to their prior knowledge and by collaborating with fellow students to construct shared understandings.

Promoting quality in research on sport-based physical education: moving forward in the research agenda

To date, research on sport within PE has been essentially descriptive, with the key areas being participants' (both teachers and students) responses to second generation sport models, and whether these models are able to achieve their goals. After reviewing the literature across various models, we are fairly confident that these innovative models can provide a more engaging way for students to participate in sports settings, and that in the main, the development of skillful and tactically astute sports players is possible (Harvey & Jarrett, 2014; Hastie et al., 2011).

It is our belief, however, that we need to change the focus of research on sports models. First, with respect to the development of skill and tactical development, there is a need to increase the number and quality of studies using more sophisticated designs that have demonstrated sufficient model fidelity to support their claims. Second, we need studies that concentrate on the internal pedagogical practices that occur within Sport Education and games-based approaches. In those designs, the aim is to achieve a deeper understanding of the dynamics of teachers' and students' interactions, leading to enhanced learning within

individual and team sports. These studies would add to those seeking answers to questions such as “Does it work?” with those asking, “Why and how does each model work?” and even more importantly, “How can the model be improved?” This new line of inquiry is particularly important given recent research findings demonstrating differential outcomes according to both students’ gender and skill level (Farias, Mesquita, & Hastie, 2015; Mahedero, Calderón, Arias, Hastie, & Guarino, 2015). That is, the attribution of the effects of a single dependent variable to the entire sample of students being studied is too simplistic and can even result in a misleading set of conclusions.

Changing the research design focus

From a quantitative perspective, most studies of Sport Education and games-based approaches to this point have been limited to collecting data from a single site involving only one exposure to the intervention. Further, within single case design studies of Sport Education, for example, over 80% have only studied a single class. In fact, the only quasi-experimental study of Sport Education that examined seasons across schools was that of Hastie, Calderón, Rolim, and Guarino (2013), while only those of Spittle and Byrne (2009) and Wallhead, Garn, and Vidoni (2013) measured students across multiple seasons. In addition, most of the research examining the impact of sport-based models has not included the application of a retention test. In fact, this test is perhaps more crucial for an accurate assessment of all students’ improvements than simply a post-test (Haerens & Tallir, 2012). From the analysis of the empirical research focused on this topic, only two studies (Mesquita et al., 2012; Pereira et al., 2015) have adopted this measure. We suggest then, that future studies examining student performance in sport-based PE consider expanding both the scope of the participant pool and the number of measures to include retention (and in the case of tactical learning, transfer) tests.

Future research designs examining student outcomes in sport-based PE might also begin to investigate the impact of multiple variables on student outcomes. Examples of these variables might include those relating to the teacher (e.g., experience with the model, sport content knowledge), students (e.g., sex, gender, and prior sport experience), student motivation (e.g., goal orientation and perceived autonomy), student engagement (measured through either game involvement or physical activity), and student performance (game performance). The development of designs in which regression or path analyses are used to empirically test these relationships would allow for a more sophisticated accounting of the postulates presented in the research to date. Figure 5.1 shows but one possibility.

From a qualitative perspective, researchers also should consider more lengthy case studies and action-research projects. This will facilitate the study of how teachers and students give value and significance to the content. Further, findings from more in-depth research will assist us to improve games-based practice. The rationale here is that these designs provide a richer understanding of the teaching and learning experiences within team sports. In particular, action-research designs allow a close monitoring of the implementation of pedagogical approaches (Casey & Dyson, 2009) and assist teachers to achieve better results associated with pedagogical change (Van Looy & Goegebeur, 2007). In turn, the ability of case studies to investigate a particular phenomenon within real-life contexts can deepen understanding of unique situations. For instance the deep examination of an expert teacher or a school sport department staff teaching team sports is a good example of research which can unearth the key factors that made those cases successful, as well as identifying how the problems faced in each moment were perceived and solved by the actors. Within this participatory research, a wide set of methods exists (including diaries and visual methods such as photo-elicitation and photo voice) that are

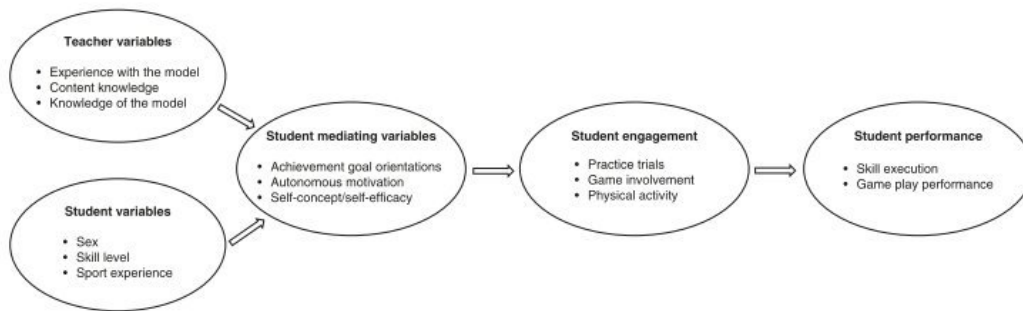


Figure 5.1 Potential variables and interrelationships in future research on sport-based models

considered pertinent ways for participants to engage in research and generated data (Enright & O'Sullivan, 2012).

Action-research and case study designs by nature, require more intensive engagement in the sport setting, and are further strengthened by the collection of data over an extended period of time. Extending time in a sport setting beyond a single season or unit allows for an analysis of the critical elements which have the most significant impact on instruction and learning. This idea clearly supports suggestions for more longitudinal studies echoed in previous reviews of Sport Education and games-based approaches.

Addressing issues of implementation fidelity

When conducting research examining models-based instruction, researchers should demonstrate that the model was implemented within the spirit of its creators. Throughout this chapter we have outlined the immutable aspects of a model that provide its operational definition. Both Harvey and Jarrett (2014) and Hastie and Casey (2014) report, however, that there are severe deficiencies in the games teaching literature with respect to rich descriptions of the unit's curricular elements and detailed validation of model implementation. Further, given that responses to models-based instruction has tended to be very context specific, it is critical that all studies include detailed descriptions of the program context, including the teacher's and students' previous experiences with the model or with models-based practice.

The future of sport-based physical education

Across the globe, sport is too important a cultural entity for it to disappear altogether from the PE curriculum in schools. However, the past two decades have seen a philosophical shift toward a health-related focus to the detriment of sport-based curriculum. We would contend that sport, itself, is not the problem but rather the manner in which it has been taught that has served to marginalize too many students. Further empirical work is needed to describe how teachers can provide positive sport experiences to the majority of students. In addition, this research needs to demonstrate student learning of standards-based objectives.

Summary points

- Within PE, there are stronger preferences by most students for game play compared with fitness activities, due mostly to the fact that game play allows them to be active, socialize, and work with and against friends and classmates.

Table 5.2 Immutable aspects of game-based models

Sport Education	1. The unit of work takes place over an extended period of time 2. The idea of the persisting team 3. The presence of developmentally appropriate competition consisting of small-sided games 4. That students take upon roles and responsibilities other than that of player
TGfU	1. Games are modified to suit the skills and experience of the students 2. Skill learning is tied into developing tactical knowledge 3. Tactical problems are foregrounded within learning tasks 4. Students are given multiple opportunities to problem solve and practice the appropriate tactical response
Tactical Games	1. Lessons follow a game – skill practice – game pattern 2. The game forms included typically involve “representation” and “exaggeration” 3. Frequent use of questioning is used to foster students’ critical thinking and problem solving
Game Sense	1. Instruction is centered on the playing of small-sided, competitive games or game-like activities 2. Within these games the teacher (or coach) prioritizes questioning over telling players what they should do
Play Practice	1. There is a shaping of play to suit the experiences of players 2. The focus is on learning sport skills 3. Through play, attention is directed towards areas that need improvement
Invasion Game Competence Model	1. Students work within groups or teams consisting of players with different skill levels 2. Student learning is developed within learning tactical content and skills specific to invasion games (through basic game forms, partial game forms, and game-like tasks) 3. Learning tasks are totally connected with the specific game demands 4. Learning outcomes are evaluated within authentic game performance situations as players and supportive players

- Student discontent with game content in PE arises from cases where the content is boring and irrelevant and students see themselves as being underchallenged. In these situations students may experience discriminatory and abusive practices where aggressive male players control both access to and conduct of games, thereby marginalizing and alienating girls and lower-skilled boys
- The last two decades have seen a shift in thinking towards game *play* focused PE in what Ennis (2014) calls “second generation” models that build on strong statements of democratic, student-centered practice.
- Each of the models discussed in this chapter has a number of immutable aspects which cannot be compromised if one is to correctly describe a particular unit within PE as following that model (see Table 5.2).
- The Sport Education model (Siedentop et al., 2011) aims to create competent, literate, and enthusiastic sports players by mimicking many of the components of community sport. This model is the most empirically researched of the second generation models.
- In 1982, Bunker and Thorpe presented a model for teaching games in secondary schools that shifted the focus from learning technical skills to an emphasis on understanding the logic of

play imposed by the rules of the game. Further, it assisted students to develop an appreciation for the tactical structure of play before they experienced highly structured technique teaching. A number of iterations of the model known as “Teaching Games for Understanding” (TGfU) have appeared in scholarly papers and practitioner oriented texts.

- Central to all models is the concept that game skill is best developed in authentic circumstances that most closely represent the situations in which the skills will be used (Thorpe & Bunker, 2010).
- While research on sport within PE has been essentially descriptive, there is enough evidence to suggest that second generation models can provide a more engaging way for students to participate in sports settings, and for them to become more skillful and tactically astute sports players (Harvey & Jarrett, 2014; Hastie et al., 2011).
- Future research on sport in PE should include more sophisticated designs, examining multiple variables. Additionally, researchers need to provide evidence of sufficient model fidelity to support their claims.
- There is a critical need for studies investigating the internal pedagogical practices that occur within Sport Education and games-based approaches. In those designs, the aim is to achieve a deeper understanding of the dynamics of teachers’ and students’ interactions that lead to enhanced learning within individual and team sports.

Reflective questions for discussion

1. Is there any benefit in continuing to compare the learning outcomes of second generation models with those achieved from more traditional, multi-activity formats?
2. Often research examining sport-based PE has placed a stronger focus on the experiences and achievements of lower-skilled students. What might be appropriate designs for evaluating how sport models can serve both lower- and higher-skilled students?
3. How might research be designed to evaluate the effectiveness of second generation models in promoting out-of-school engagement in sport and physical activity?
4. Second generation models place significant value on the cognitive components of sport engagement which have implications for the accumulation of physical activity within lessons. What argument can you make to justify the potential subjugation of the public health agenda within these models?
5. What are the key questions that need to be addressed by research examining sport-based PE?

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