

HEALTH

Teaching Physical Literacy to Promote Healthy Lives: TGfU and Related Approaches

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Abstract

The knowledge acquired in physical education classes should provide for an increase in physical activity and promote interest in healthier lifestyles. Despite the importance of physical literacy developed in physical education classes, physical education is not perceived as important, and funding for physical education has decreased. This paper highlights the importance of physical education on the development of competent, confident students by reviewing instructional approaches: The Teaching Games for Understanding approach and its derivatives. Teaching Games for Understanding (TGfU) can contribute to critical thinking, autonomy and classroom skills as well as better understanding of physical activity and its importance for physical literacy when compared to traditional physical education methods. Multiple research studies are discussed in this paper to illustrate how TGfU can holistically increase a student's ability to perform in academic classes as well as in physical education. These studies can help present a strong argument for the support of funding physical education programs and the recognition of physical educators.

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Although the ancient Greeks considered it a primary necessity, physical education is not a priority in our time. In fact, funding for physical education and time for physical education and recesses have all been cut back (Richardson, 2011). The School Health Policies and Programs Study conducted for the Centers for Disease Control and Prevention (2008) found that “only 3.8% of elementary schools (excluding kindergarten), 7.9% of middle schools, and 2.1% of high schools in the United States provided daily physical education or its equivalent for all grades in the school for the entire school year” (Lee, Burgesson, Fulton, & Spain, 2007, p. 459). Some reasons for these omissions are that schools are focusing on funding academic core classes, and physical education is not considered part of the academic core. These budgets are being cut even though research has shown that attending physical education classes directly relates to better academic performance (Bae & Ennis, 2014; Ennis, 2014) and attitude towards school (Ennis, 2014; Richard, 2010; Richardson, 2011). In certain worst-case situations, physical activity is occasionally used or perceived as a punishment, especially for students who are not athletically inclined. In one school, a new physical education teacher was instructed, “So long as there is control and the children seem happy, no one really minds (what happens in PE)” (Light & Butler, 2005, p. 250). This is a very common concept, and many academic teachers, especially elementary school teachers, see physical education class as a time for them to get a break from their kids in the classroom, rather than an educational opportunity for their kids (Ennis, 2006, 2014; Placek, 1983).

These circumstances require that physical education teachers be strong in their conviction of the importance of their work and the benefit to the students (Ennis, 2011, 2014; Rink, 2013; Rovegno & Bandhauer, 2013). They must be highly qualified with solid knowledge, including pedagogical content knowledge (Rovegno, 1998; Ward, 2013), so they are able to use a variety of curricular models that help students learn (Ennis, 2011, 2014; Metzler, 2000; Rink, 2014).

Quality of Teaching

Research on student learning has indicated the importance of quality of the teacher (Ennis, 2014; Lindsay, 2014; Rink, 2013) because the teacher’s knowledge and educational beliefs influence not

only the selection for curriculum (Pajares, 1992; Prawat, 1992), but also the way the teacher implements a curriculum and refers to instructional methods, tactics, and strategies for the students (Bae & Ennis, 2014; Lindsay, 2014; Ennis, 2014). The following section has three parts: presentation of TGfU as an instructional model, benefit of the approach, and the effectiveness of the approach in developing students who are physically literate (National Association for Sport and Physical Education [NASPE], 2013; Society of Health and Physical Educators [SHAPE], 2014).

Teaching Games for Understanding: An Effective Instructional Model

Many curricular models have been developed for physical education teachers (Ennis, 2006, 2014; Rovegno & Bandhauer, 2013). TGfU is an instructional model which focuses on examining content area and learning outcomes (Ennis, 2014; Metzler, 2000). Programs based on this model involve the same focus. According to Ennis (2014), “The Teaching Games for Understanding family of models provides a physically active context for problem posing and problem solution that permits students to think deeply about performance options and apply knowledge to achieve meaningful solutions” (p. 8). TGfU is a tactical approach which was first proposed in 1982 by Bunker and Thorpe. Unlike the traditional technique-oriented approach that focuses on skill drills which are still very frequently observed in school in the United States, TGfU contributes to improving decision making ability for play within game contexts (Butler, 2006; Mitchell, Oslin, & Griffin, 2013) by providing for development of game appreciation and tactical awareness (Kirk & MacPhail, 2002; Werner, Thorpe, & Bunker, 1996). Having students improve skills and tactics in small-sided games can help them transfer learning from one game to another (Hopper, 2003; Light, 2004; Mitchell et al., 2013). This original model created by Bunker and Thorpe has inspired many iterations. In the following section, three among those iterations will be briefly described, along with the Game Performance Assessment Instrument (GPAI). The three major derivative approaches are Tactical Games approach, Game Sense, and the Invasion Game Competency model.

The tactical games approach. This approach took the six-step teaching from TGfU and simplified it into three steps (Kirk & MacPhail, 2002; Mitchell, 1996). This approach helps students understand the relevance of the connection between skills and tactics by providing them with the opportunity to explore a game form that presents a tactical problem requiring the use of particular skills (Mitchell, 1996; Mitchell et al., 2013). The teachers create game forms that require that students solve tactical problems by finding appropriate skills. The forms enable students to appreciate the value of skills, and also provide an opportunity for them to practice skills and develop tactical understanding in game situations (Werner et al., 1996). As students continue to practice, teachers can individualize the instruction by modifying the game form, adjusting the complexity of tasks in relation to a specific tactical problem (Mitchell et al., 2013). Improved skills and tactical understanding allow students to develop a deep understanding of movement patterns in an invasion games category (Rovegno, 2010; Rovegno & Bandhauer, 2013). Therefore, this tactical games approach contributes to students' overall game performance.

Game sense approach. An emerging field of coaching in Australia utilizes this approach, combining specific technical, tactical and fitness training in a game practice (Light, 2004; Stoltz & Pill, 2014). It focuses on creating game-like situations that enable participants to indirectly experience what would be seen in a real game (Light, 2004). This approach is also based on TGfU but refines it to create a central focus for developing critical thinking skills while playing games. Since the game sense approach enables the players to read game situations with regard to offensive and defensive strategies, they can improve their decision making ability to solve problems presented in game context and develop independence or autonomy on the field (Light, 2004; Light & Robert, 2010). However, unlike other iterations of TGfU, this approach requires that the players be taught technical and tactical skills at the same time rather than taught using steps (Light, 2004).

Invasion games competency model. The third iteration is the Invasion Games Competency Model (IGCM). This model focuses on the development of decision making abilities through participating in invasion games (Tallir, Musch, Lenior, & Valcke, 2009). Players in

the model progress through modified games which involves game-like activities, in a developmentally appropriate sequence which grows in complexity. According to Tallir et al. (2007), each lesson begins with a specific game situation set up by the instructor and an introduction game is presented for that situation. The teacher begins by introducing the most essential skills and tactics necessary to play the game, designing some game-like tasks to help students make appropriate decisions (Tallir et al., 2007). Players learn to participate successfully in sport related modified invasion games that enable them to select solutions to problems. In the IGCM, students are assessed on key aspects of playing basic game forms (BGFs) and on performing nonplaying roles related to the basic form being played.

The game performance assessment instrument (GPAI). The GPAI was developed to evaluate game performance (Mitchell et al., 2013; Oslin, Mitchell, & Griffin, 1998). It was designed to measure selection and application of appropriate skills that demonstrate understanding and ability to find the solutions to tactical problems within game context (Mitchell et al., 2013; Oslin et al., 1998). Given that the enhancement of game performance is the goal of game teaching, the GPAI provides the opportunity for teachers to effectively assess what was being taught and what their students were learning in game-oriented physical education classes. In addition, it provides educators with a means of thinking more broadly about teaching games based on analyses of individual game performance components and overall performance (Oslin et al., 1998). The GPAI measures both on-the-ball movement and off-the-ball skills. By measuring the total involvement in the game, including supporting, adjusting, and covering, the GPAI encourages all levels of students to actively participate in game play (Mitchell et al., 2013). Therefore, the GPAI contributes to enhancing students' comprehensive understanding of game performance (Mitchell et al., 2013; Oslin et al., 1998).

In short, when one of these three iterations of TGfU is effectively taught and implemented, students learn to appreciate the value of skills and to understand the necessity of tactical understanding within the game context. That is, these iterations are all designed to provide the opportunity for students to develop a broad range of executive skills and appropriate movements, enabling them to make decisions necessary to solve tactical problems (Light, 2004; Richard,

2010; Storey & Butler, 2013). Furthermore, the GPAI helps every student continue to develop skillfulness, competence, and confidence by measuring all aspects of game performance (Mitchell et al., 2013; Oslin et al., 1998). Therefore, students are able to continue to develop their ability to become physically literate individuals who enjoy physical activities and the health benefits that activity provides (Mandigo & Corlett, 2010; NASPE, 2013; SHAPE, 2014).

Educational Benefits of Implementing Diverse Iterations of TGfU

Studies support that effective instructional models contribute to fostering student learning (Ennis, 2014; Metzler, 2000; Rovegno & Bandhauer, 2013). When it comes to self-efficacy, one exception is the Harrison study, which found that self-efficacy improved in both the skill instruction group and the tactical instruction group (Harrison, Blakemore, Richard, Oliver, Wilkinson, & Fellingham, 2004).

Harrison et al. (2004) did a study that showed that using a tactical method of teaching such as TGfU does in fact increase self-efficacy. However, self-efficacy also increased in the skill instruction group. In their study, 182 students in a beginning volleyball collegiate class met 2 days a week for 16 weeks. They were divided into a skill instruction group and a tactical instruction group. At the end of the 16 weeks, there was an analysis of the students' game play, skills, self-efficacy skills, and attitude to the lessons. Overall, they found that self-efficacy improved significantly in both groups.

Other findings, however, confirm that teachers or coaches who are equipped with knowledge related to TGfU are able to maximize the effect of curricular models on student learning (Butler, 2006; DeSouza & Mitchell, 2010; Storey & Butler, 2013). In this section, some educational benefits will be discussed in relation to the TGfU model.

Critical thinking. Critical thinking in physical education is defined by Lodewyk (2009) as “reflective thinking that is used to make reasonable and defensible decisions about movement tasks and challenges” (p. 12). Critical thinking can be divided into two parts, internal and external (Lodewyk, 2009). Internal thinking is the mental aspect of decision making, or the questions that the students ask as they internally process the information (Kirk & MacPhail, 2002;

Light, 2004). After internal thinking comes external thinking, or the actions and decisions that the athlete chooses to act out. Both internal and external thinking can be learned and are not dependent on the student's intellectual ability. Developing critical thinking is associated with academic qualities and skills such as creativity, reasoning, problem solving, mindfulness, and reflective judgment (Light & Robert, 2010; Lodewyk, 2009; Rovegno, 2010). The development of critical thinking ability enables students to use knowledge that they have and meaningfully integrate it in their memory (Hopper, 2003), allowing them to become more mentally and motivationally engaged in solving problems (Lodewyk, 2009; Rovegno, 2010).

TGfU and game methods derived from this concept are great methods to develop problem solving skills and critical thinking skills (Gray & Sproule, 2011; Harrison et al., 2004; Harvey, Cushion, Wegis, & Gonzalez, 2010; Lodewyk, 2009). Because TGfU is focused on the student as the center of learning (Butler, 2006; Richard, 2010), the students make their own decisions and are able to think about the actions they need to make (Hopper, 2003; Kirk & MacPhail, 2002). Harvey et al. (2010) conducted a study on American high school soccer players that looked at the performance of 18 varsity players and 16 first years in a 3 v 3 small-sided soccer games. Two coaches coached eight sessions lasting 40 to 60 min, using the TGfU approach. After the intervention, the varsity players made more appropriate and correct adjustments, and the first-years also made more appropriate adjustments when compared to baseline. Overall, Harvey et al. (2010) assumed that increases in appropriate actions or reductions in inappropriate actions were due to changes in decision making and skill execution. Their interpretation was that using TGfU as a coaching method allowed for faster responses and quicker reactions within the game environment off the ball, therefore improving the player's appropriate responses.

There have been other studies similar to Harvey et al. (2010) with similar results (Gray & Sproule, 2011; Tallir et al., 2009). Gray and Sproule (2011) had 52 secondary school participants that were divided into a skills method group, and a tactical teaching games approach method group. Both groups participated in 5-week blocks of classes that had lessons working toward performance in 4 v 4 basketball games. The students were videotaped and also filled out

a questionnaire at the end of study. After analysis of the tapes and questionnaires, the researchers found that postintervention those students who were in the teaching games approach method group showed significant increases in decision making and better support off the ball. There were no significant differences found in skill levels in the students between groups. Tallir et al. (2009) also divided participants into two groups, a traditional group and an Invasion Game Competence Model. This study lasted 12 weeks, during which the students participated in 12 sessions lasting 50 min. Students' learning was evaluated by taking a decision-making test and a memory test. The researchers found that there was a significant improvement in memory and decision making for both groups from preintervention. However, the IGCM showed a greater improvement in decision making at the intermediate test than the traditional skill group (Tallir et al., 2007). Both Gray and Sproule (2011) and Tallir et al. (2009) concluded that using a TGfU-based model improved the students' critical thinking skills as well as the efficiency at which they obtain these skills. Critical thinking and efficient decision-making skills can be developed during healthy activity in physical education based on the TGfU model (Hopper, 2003; Lodewyk, 2009; Rovegno, 2010).

Autonomy and self-efficacy. Along with developing better critical thinking skills (Light & Robert, 2010; Lodewyk, 2009), participating in sports and physical education helps develop a student's autonomy and self-efficacy (De Souza & Mitchell, 2010; Light, 2004). The idea of self-efficacy comes from Bandura's (1997) social cognitive theory and is defined as the perception of one's ability to successfully perform a particular behavior (Block, Taliaferro, Harris, & Krause, 2010). Autonomy is the perception of choice and control over a specific situation (Perlman & Webster, 2011). Both self-efficacy and autonomy are influenced by the motivation of the person, with the highest and most beneficial motivation being intrinsic motivation (Bandura, 1997; Block et al., 2010; Perlman & Webster, 2011). For students to develop these characteristics, communications must reassure students that their decisions as learners can be utilized (Perlman & Webster, 2011). Communication that honors the ideas of the students is exactly what TGfU provides, because the method is focused on the student and not the teacher or the coach (Kidman & Lombardo, 2010; Mitchell et al., 2013).

Perlman and Webster (2011) describe five behaviors that are parts of autonomy-supportive teaching. Three of these behaviors fit with the ideas of TGfU, and the other two can be easily added to a teacher's lesson plans. The first behavior Perlman and Webster describe is that the teacher nurtures inner motivation by making learning experiences more personally relevant and rewarding. TGfU is based on games that are developed around the students' social and cultural backgrounds and experiences. These small-sided games are more enjoyable and are more relatable than skill drills; therefore, students are more motivated to participate (De Souza & Mitchell, 2010; Mitchell et al., 2013). The other two aspects that help develop autonomy are the provision of explanatory rationales for rules or methods and the use of informational, noncontrolling language (Perlman & Webster, 2011). These ideas are actually taken a step further in the TGfU method. A very important aspect of TGfU is that during play or after a game, questions are asked that involve critical thinking (Hopper, 2003). These questions not only provide explanatory rationale but also allow the students to develop their own solutions (Hopper, 2003; Storey & Butler, 2013). When using TGfU, teachers do not give direct instruction, but ask prompt questions that help the students or athletes decide which tactic would be the best in a specific situation (Light, 2004; Richard, 2010). This not only develops autonomy but also self-efficacy because the power of finding the solution is given to the student, and the teacher is there to support and give encouragement while they develop the solution (Block et al., 2010; Richard, 2010; Rovegno, 2010).

Transfer and assessment. Critical thinking skills, autonomy, and self-efficacy are important in academic classrooms, but they can be developed while participating in physical education and sports. The application of TGfU concepts and strategies need not be limited to physical education classes. In academic classes, TGfU can promote individual learning, create an atmosphere of constructive cooperation and competition without set performance expectations and allow for the student to be self-assessing on their knowledge (Mitchell et al., 2013; Richard, 2010). For example, in a game context, students are required to identify tactical problems, gather information about the problems, and make an appropriate decision after pondering possible outcomes. This process encourages students to collaborate

effectively to solve problems. In fact, games can increase the enjoyment of learning a specific topic as well as increase the likelihood that the students grasp patterns and generalizations about the subject (Henderson & Foster, 1976; Wiersum, 2012).

Traditionally, the assessment of physical education is focused on managerial performance (attendance, punctuality and dress) and participation in the activities (Richard, 2010). However, there are no clear expectations for the students when grading this way (van der Mars & Harvey, 2010). This type of assessment is one of the reasons why physical education is not seen as an educational class or as part of a core curriculum. However, TGfU allows for an assessment system that coincides with a traditional academic assessment (Storey & Butler, 2013). Educators are promoting a shift from an “assessment of learning” to an “assessment for learning” and physical education can benefit from this change (van der Mars & Harvey, 2010). Assessment for learning focuses on the students and helps provide feedback for students on their progress (Richard, 2010; Rink, 2013). TGfU does this by allowing for assessments that can fit into a rubric, much like a normal academic class (Mitchell et al., 2013; Richard, 2010).

Henderson and Foster (1976) performed a study using a game to teach national policies to students in an American government course at a University. The students were divided into a traditional teaching lesson group and a games lesson group. The traditional lectures were given over a 4-week period and the games lecture was two, 2-hr lectures after an all-day session playing a relevant game. What Henderson and Foster (1976) found was that using games increased students’ enjoyment of the course as well as their ability to understand the concepts they were learning.

Wiersum (2012) also did a similar study using multiple games in mathematics. The researcher took four different types of game situations and evaluated how students participated and learned from these games. From this study it was found that there was an increase in enthusiasm and interest in math in part due the fact that there was an increased understanding of the subject (Wiersum, 2012).

Development of Physical Literacy

Physical literacy is defined by Margaret Whitehead (2007) as “the motivation, confidence, physical competence, understanding,

and knowledge to maintain physical activity at an individually appropriate level, throughout life.” As addressed earlier in this paper, TGfU not only develops critical thinking and understanding but also enables students to meet requirements for physical literacy because it involves using a student-centered approach to learning (NASPE, 2013; Richard, 2010). Furthermore, TGfU also helps to fill a gap that is often forgotten during physical education or sports. Physical literacy is described in SHAPE America (2014) as “a person who is physically literate is able to recognize the value of physical activity for health, enjoyment, challenge, self-expression, and or social interaction.” Unfortunately, there are those who believe that physical activity alone is the primary goal for physical education and consider it nonintellectual and nonacademic (Ennis, 2011, 2014; Placek, 1983). They ignore the potential for achieving instructional goals that contribute to physical literacy. However, if physical education includes critical thinking skills, autonomy, and self-efficacy, and an increase in physical literacy, these negative connotations disappear. Furthermore, unlike physical activities and skills, physical literacy involves knowledge that can be assessed on standardized tests, so it can be compared to the core curriculum.

Education is an ongoing process of interpersonal interactions between the teacher and students and among students within a given educational environment (Bae & Ennis, 2014; Noddings, 1992). TGfU is centered on using games for teaching and provides for structured interactions among students to handle challenges or solve tactical problems (Mandigo & Corlett, 2010; Richard, 2010; Stoltz & Pill, 2014). Fry, Tan, McNeill, and Wright (2010) did a study on 297 primary school age children who participated in seven to 12 lessons taught using a game-based method. They evaluated the students using an open-ended questionnaire that compared the game-based method to their past experience with physical education. What the authors found was that over 90% of the students preferred the game method to their other physical education experiences. In fact, the students displayed heightened interest and engagement in learning, increased game skills and tactics as well as finding a higher value in physical activity (Fry et al., 2010; Mitchell et al., 2013; Richard, 2010).

Wallhead and Deglan (2004) and Light and Butler (2005) found similar results in their studies. Wallhead and Deglan (2004) found

that there was a significant increase in mean level of enjoyment and perceived competence after the students participate in a unit that was taught using a tactical games approach. They concluded that because there had been a positive relationship between perceived competence and continued participation in physical activity, tactical games might have the potential to motivate students to continue physical activity outside of school (Wallhead & Deglan, 2004). After interviewing four preservice and early career teachers, Light and Butler (2005) found that when these teachers used TGfU there was an increase in respect from other academic teachers as well as increased enjoyment in physical education. One of the participants stated that one fourth grade student was overheard saying she “used to really hate PE class, but now she loves it” after TGfU was implemented in her class (Light & Butler, 2005, p. 205).

The development of critical thinking, autonomy and self-efficacy helps create physical literacy (NASPE, 2013). Students who are physically literate will take ownership of their learning. Therefore, these students will be more likely to participate in physical activity throughout their lives (NASPE, 2013; SHAPE, 2014).

Conclusion

Physical education is important for the development of well-rounded holistic students. For physical education to move forward and to be able to assert its importance in the academic world, Teaching Games for Understanding or variations of this model can make a definite contribution. Student who are taught using the TGfU model are found to be more autonomous, critical thinkers who can apply the knowledge and strategies that they have learned in physical education to the challenges that they may face in other academic subjects and in life. They also have a better understanding of themselves and have developed stronger intrinsic motivation: in short, they become physically literate. As physically literate individuals, students are intrinsically motivated to stay physically active throughout their lives and share the joy of physical activity with others. Therefore, an increase in physical activity based on the knowledge acquired in physical education classes can provide for healthier lifestyles.

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