Teaching Games for Understanding (TGfU):
A Model for Pre Service Teachers

Greg Forrest
Lecturer in Physical and Health Education
University of Wollongong

Dr. Paul Webb
Director of Physical and Health Education
University of Wollongong

Dr. Phil Pearson
Lecturer in Physical and Health Education
University of Wollongong

Contact:
Greg Forrest
Faculty of Education,
University of Wollongong, NSW, 2522
Australia
Ph: 61 2 42215187
Fax: 61 2 42213892
e mail greg_forrest@uow.edu.au

Teaching Games for Understanding
A Model for Pre Service Teachers

Abstract

Teaching Games for Understanding (TGfU) has been present in the Australian sporting community for the last ten years and more recently as the focus of physical education lessons in some Australian schools' curriculum, especially in NSW. However, the effectiveness of TGfU as a teaching method is limited by the skill of its practitioners in developing the appropriate games and questions to generate understanding opportunities for their students. If practitioners do not develop these skills, there may be limited opportunities for their students to gain skills in critical analysis, deep knowledge and deep understanding, essential in any productive pedagogy.

Introduction

Teaching Games for Understanding (TGfU) is a games based pedagogical model aimed at generating greater understanding of all aspects of games, while increasing physical activity levels, engagement, motivation and enjoyment in physical education lessons. Bunker and Thorpe (1982) developed the original model as an alternative to the traditional approach predominantly used in coaching and teaching in physical education (Werner, Thorpe and Bunker, 1996). However, ten years since its inception, it has made little progress within the teaching community in Australia (Pearson Webb and McKeen, 2005b) and may run the risk of being devalued as a teaching method if it is used as a game – practice game method and if there is no concrete understanding of the process used to develop games and appropriate questions to enhance student learning.

This paper will outline a theoretical four-phase model to give pre service Physical Education teachers the opportunity to analyse, evaluate and categorise the many elements of competitive games and develop a bank of generic and specific games with appropriate questions to enhance understanding within and across team sport/game categories.

The Traditional Approach or Technical Model

The traditional approach follows the format of warm up, skill development, modified game and then the game. The underpinning philosophy of the model is that once the fundamental skills are mastered, the ability to play the games will be an osmatic like process, where students or players will be able to play the game by applying the skills practiced in the lesson and placing them into the context of the game in a meaningful way. Assessment procedures tend to be based on skill, measuring a student's ability to perform a skill in isolation and not on their actual ability to play the game. Lessons in the technical model are more knowledge and behaviourist based and in the form of a monologue (Light, 2003a) with students being told what to do and how to do it while the progression to the game, with adult rules and conditions (Hopper and Bell, 2001) is often dependent on the students gaining proficiency in the fundamental skills (Light, 2003).

Research and observation of this approach revealed issues revolving around the pedagogical process used in the model, student engagement, student self confidence and belief, and student enjoyment in physical education lessons (Werner, Thorpe and Bunker, 1996). Other

studies suggest that the approach cannot sustain and even reduces levels of student motivation, has an negative impact on overall levels of participation in physical activity, can decrease the meaning and relevance of the subject and can impact on physical activity levels of students in post school years, especially for those who are less skilled (Mandigo and Holt, 2000, Light, 2003). This seems to be at odds with core outcomes of the NSW Personal Development, Health and Physical Education (PDHPE) syllabus, which has the philosophy of developing skills to encourage students to engage in physical activity for life via participation in a wide variety of challenging and increasingly demanding contexts (Board of Studies, 2003).

The TGfU Approach or Tactical Model

The TGfU model offers an alternative approach to teaching physical education and coaching. Many variations of the model have been developed, including 'Games Sense' (ASC, 1991, cited in Light, 2003), 'Play Practice' (Lauder 2001), 'The Games Concept' (Wright, Fry, McNeill et al., cited in Light, 2003) and 'Playing for Life' (ASC 2005) with the development of thinking players (Webb and Thompson, 1998) a consistent central theme. Games or sports are divided into four categories based on the nature and core elements of the game. (See Table 1)

TGfU is a holistic pedagogical approach that places students in a game situation where the tactics, decision-making and problem solving are critical (Webb and Pearson, 2004). These games, either small sided, full sided, or games for outcomes provide opportunities for the students to develop greater understanding of all aspects of the game by actually playing, answering the age old question that all students ask at the start of the lesson, 'Can we play a game?' However, Hopper and Bell suggest that the game is not enough to get students to play and that 'student's excitement grows from an understanding of how to play tactically' (Hopper and Bell, 2001, p?), a response also noted as joy by Heywood (cited in Light, 2003 and Light and Georgakis, 2005) and for this to occur, modification of adult games is needed. The games are accompanied by guiding questions and by using both in an appropriate fashion, allowing students to approach the games as problem-solving opportunities, moving the emphasis from decontextualised individual skill performance to a team based student centred approach. Skill development and skill execution still play an important role in lessons, but only after the student or player recognises the need for the particular kind of skill (Werner, Thorpe, Bunker 1996).

There have been a series of studies comparing the effectiveness of TGfU to the technical model (French, Werner, Rink, Taylor, and Hussey 1996, French, Werner, Taylor, Hussey and Jones, 1996, Turner and Martinek 1999, Harrison et al 2004). Most have examined skill development and cognitive ability and have generally found no significant difference in the areas measured. However, research conducted by Thomas (1997, cited in Pearson, Webb and McKeen 2005b), Light (2003) and Light and Georgakis (2005) consistently found that the TGfU approach engendered greater enjoyment, increased engagement and increased levels of physical activity in participants. When appropriately used in physical education units and lessons, there was overwhelming support from teachers for the concept of TGfU complimenting the three dimensions of quality teaching (Pearson, Webb and McKeen 2005a).

However, the effectiveness of the TGfU model in achieving these outcomes seems more dependent than the technical model on the skills of the practitioners teaching the students

(Chandler, 1996). The importance of questioning and appropriate and relevant games is essential to the process and one that beginner teachers may be struggle with as they try to manage the many variables of the learning environment (Piltz, 2004). There are also a number of concerns with the model, based upon teachers deep knowledge of games, the development of appropriate game forms, transfer of games skills within categories and the development of appropriate procedures to do this (Chandler, 1996). These are still key issues and while models evolving from the original games for understanding model address in detail what games can be played and what questions can be asked in TGfU, none seem to strongly address the process used to develop appropriate modified games or questions, both at an elementary and advanced level, for pre service teachers. Questioning skills and the ability to develop appropriate activities to allow the questions to be answered are central to the success of the Game Sense (TGfU) approach (Light 2003) and are fundamental reasons for the approach being so valued as a pedagogical model of quality teaching (Pearson, Webb and McKeen, 2005a). If practitioners are not taught a process to address the concerns raised by Chandler, they may simply copy games and imitate questions shown to them, accepting simplified responses as demonstrated by the following initiation, response, evaluation discourse in a game of 'two square bounce' (ASC Games Sense Cards 1999).

Teacher/Coach Initiation: "Where should you bounce the ball to win a point?"

Student Response: "To space"

Teacher / Coach Evaluation: "Correct"

To the practitioner experienced in the use of TGfU, the answer has a number of flaws based on the simplistic nature of the question and the answer. Issues such as depth and power of hit, which space to hit it to and how to recognise the appropriate space are just some of the issues that could have been developed from the initial response. However, the question used is an example of a standard question in TGfU (Webb and Pearson, 2004) and one that may well require some thinking from those answering, but if the teacher has not developed their own fundamental understanding of the game to allow them to analyse the response, they may not have the ability to generate further questions from it. A student may leave this TGfU class with no greater knowledge or understanding of the movement to space than when they entered, even though the TGfU approach seems to have been used. If Physical Education and coaching is to move beyond where it has been positioned as a non intellectual subject (Corson, 1996, sighted in Light, 2003) and actually develop thinking players, it is essential for present and future practitioners to be given a process and framework to analyse games and develop questions.

This paper proposes the use of a theoretical four-phase model for pre service teachers to understand the TGfU process. It aims to provide a consistent framework for physical education teachers and coaches to firstly develop a fundamental understanding of team sports and games within and across categories and secondly, use this understanding to develop appropriate modified games and questions to enhance student understanding of these team sports and games. Elementary and advanced game analysis will use the same process, allowing teachers to determine similarities and differences in sports / games through the examination of their principles of play, tactics, rules and techniques. By using the process across categories, students will be able to link modified games to sports and develop a bank of both generic and sports specific games and questions. By comparing sports and games in all four categories, practitioners will be able to develop the understanding required to provide

opportunities for deep understanding, significance, higher order thinking and deep knowledge in their lessons and sessions, components essential in any quality pedagogical program.

The Theoretical Four Phase Model

Phase 1
Elementary Understanding of Games
Within a Category

Phase 2
Elementary Understanding of Games
Across Categories

Phase 3
Advanced Understanding of a Game
Within a Category

Phase 4
Advanced Understanding of Games within
and across Categories

Figure 1 – Theoretical Model for Games Understanding

Phase 1 – Elementary Understanding of Games Within a Category

The first phase of the model allows participants to gain an elementary understanding of games within a category. Initially a specific game in a category, such as volleyball in net court, would be analysed through participation and observation to determine all of the elements required by an individual to successfully participate in the game and more specifically, how the students themselves determined what elements were required. Involvement in this process will require students, in essence, to deconstruct the game and will allow students to begin to develop the idea of viewing games with a 'lens' on certain aspects, a process often not developed in novice teachers (Piltz, 2004).

These elements identified can then be divided into three sub categories, associated with rules, tactics and strategies (initially fundamental principles of play) and technique/skills (communication, physical and psychological) in a more in depth version of the Games Sense process (Webb and Pearson, 2004). Once the elements associated with each sub category have been determined, the student can then begin to experiment with matching the wide variety of modified games available in sport and games literature, such as 'Play Practice' (Launder, 2001), in coaching manuals and through their own training experiences with the elements identified. This process will allow them to determine which games are appropriate to develop understanding of the elements identified. As the games are matched to the elements, questions based on maximising learning experiences in the three subcategories can be developed, including recognition of the variety of possible movement and verbal responses that may be appropriate to indicate learning. Through the process of play and investigation, participants will have the opportunity to create the vital link between elements, game and questions to develop the fundamental elements. Notations should also be made regarding games that may achieve the same or similar outcomes, games that logically progress from one to another and of possible modifications to games for all learners to be

engaged. Thus, using the net court example, a students may discover that the small sided one on one game of 'two court bounce' used earlier can be used to develop understanding of rules related to boundaries and scoring, the principle of placing the ball away from the opponent, the strategy of moving one's opponent to different areas of the court to create better scoring opportunities, the technical skills of throw and catch and the psychological skills of when to concentrate and what to concentrate on. Progression to a two on two version of the game will allow these understandings to be deepened by examining how an extra player can influence the elements discussed, plus the added element of how communication between players can influence decision making and performance. The same game can then be used with the technical components of the dig and set shots replacing the throw and catch, either at the one on one or two on two stage, creating the fundamental link with the actual game of volleyball while still allowing application of the same tactical and rules based elements and again examining the impact the introduction of these technical components has on play. Thus as the students themselves gain understanding of the various games that can be used, they can continue to refine and perhaps increase the number and variety questions they can ask to develop understanding in the students they may teach.

Once this process for determining elements, sub categories, games and questions has been applied to one game, it can be used for all games within a category. Once completed a summary sheet for each game in the category is used, allowing for comparisons to be made based on elements and sub categories that make up the game. More importantly, the summary process allows the practitioner to note which elements, modified games and associated questions are common across the category and which may be considered sport specific. By applying the process, the participant would recognise that the same one on one small-sided game of 'two court bounce' may be used for volleyball, tennis and badminton, but not for wall games such as squash. The questions relating to tactics and strategy and principles of play may also be the similar but those related to technique and rules may be different. However, when examining technical sub categories, the participant could determine that squash and badminton have similarities in technique and that similar questions related to this could be used in both games. Thus the process creates a consistent framework for the pre service teacher to operate in to develop games and questions while participation in the process engenders greater understanding of the requirements needed to participate in the whole sport or game. Once the process has been applied to games within a category, it can be used for all four categories.

Phase 2 - Elementary Understanding of Games Across Categories

At the end of Phase 1, each participant should have an elementary understanding of the elements that make up each game in each category, the sub categories the elements fall under, modified games that could be considered generic and game specific and questions related to categories that could be considered generic and game specific. In Phase 2, the process used to compare games within categories at the end of Phase 1 is repeated, however this time across categories. Students now conduct a category comparison, examining principles of play, tactics and strategies, rules and technical skills (physical, psychological and communication) to find general similarities and differences. A further review of games and questions can also occur, with the same intended outcomes as Phase 1, a catalogue of games and appropriate questions that can achieve similar and game specific outcomes. By conducting the comparison, students have the opportunity to see that a four on four game of 'Keep Possession' used to develop the technique of passing and catching and the principle of moving to space to receive or create a pass in an invasion game may also be used in striking

fielding to practice catching and fielding technique, allowing students to compare, for example, similar and different concepts involved with technique of catching and throwing using different implements plus the factors that impact on our concentration while also still developing skills in invasion games. Game principles relating to accuracy in target games such as releasing and delivering accurately can be linked with fielding and throwing in cricket and shooting in netball, while principles associated with gathering runs in striking / fielding, such as angle of shot in relation to the placement of fielders in cricket may indeed be similar to principles of winning points in net court, such as the placement of attacking spikes in volleyball in relation to opposition players.

Phase 3 - Advanced Understanding of a Game within a Category

By the beginning of Phase 3, participants should have a thorough understanding of the process they used to develop an elementary understanding of games within and across categories. They should have a bank of generic and sport specific games and questions that can be used to enhance understanding in the game relating to tactics, techniques and rules in a wide variety of games. At this stage of the model, the participant should have an appropriate level of games understanding to provide pedagogically challenging lessons for most students in secondary physical education classes. However, it is important to be aware of the variety of learners in a class and of the need to provide all pre service teachers and with the skills of deep knowledge, deep understanding and higher order thinking. The more advanced students (either through physical skills and / or thinking ability) in a class still need to be engaged, thus the teacher needs to provide them with opportunities to do this. To cater for this, Phase 3 of the model moves back within a category. Using the same process as in Phase 1, participants again examine a specific game in a category and decide on the elements required to play the game at a more advanced level. Due to participation in the elementary phases and application of the process across a wide variety of games, students should begin to see the game as a more complete pattern, more in a manner of experienced coaches (Piltz, 2004). Greater emphasis would be placed on the more complex individual and team interactions associated with the elements of attack and defence and the individual and team responses to game patterns, a similar development of what Lauder (2001) terms as games sense, the ability to solve problems presented by the opposition or the game itself. While participation in the game in this phase is still vital in assisting the students determine the required elements, the actual technical ability of students may not allow for a regular level of success in what they are trying to achieve. It is important that there is the opportunity for observation of the game at a higher standard through the use of video and live action, allowing the participants to use methods of analysis identified in the experiential learning experiences built into some National Coaching curriculum's, such as Lacrosse (Piltz, 2004) and Level 3 Touch Football (Webb and Thompson, 1998). The process would then continue as in Phase 1, advanced elements would then be divided into the sub categories of rules, technique and tactics and strategy and then matched with modified games. The games used may be similar in structure to those developed in the elementary stage but should be based more on the full sided approach, to allow these more complex and dynamic interactions to be generated. Thus in the invasion game of basketball, participants could examine the concepts developed in a four on four modified game based on the elementary game of keep possession used in the elementary phase and modify it by adding an extra player on offence. The modification will give students the opportunity to examine the implications this has for the offence and the defence, allowing opportunities for questions to be developed on how to best defend against an extra player as a team such as area or zones and the implications these choices have, for example, on technique, communication and concentration. Corresponding opportunities for questions are

generated for the offence on how to use this extra player to create better scoring opportunities. Conversely, the extra player can be given to the defence, creating more opportunities for questions on strategies on how to most effectively use the player, such as by double teaming, linked with questions relating to recognising when and who to double team. These problems can then be applied to a full-sided game where questions related to the same concepts can be used to examine when, how and why these more advanced decision making scenarios may apply in the actual game.

Phase 4 - Advanced Understanding of Games Within Categories

Once the process for advanced analysis has been used in a single game, the same can be used for games within a category. Just as it is 'beneficial for coaches to observe different sports that involve similar tactical concepts' (Piltz, 2004, p 87), so to should it be beneficial for teachers of physical education. Participants should again follow the same process to analyse a series of games within a category, developing a summary sheet of the game elements divided into the three sub categories. This will again allow for comparisons between the games, noting the areas of technique, rules and tactics and strategies that are similar and which are sport specific, allowing participants to determine, for example, whether specific strategies of attack in squash can be used in or adapted for tennis or badminton, whether methods used to create an overlap in touch can be used to create an extra player in a basketball offence and whether the different types of defensive strategies such as zones or double teams are applicable for other games such as AFL, soccer, hockey or netball. Games used to generate deeper understanding of these advanced elements within a game can then be evaluated and may be used generically to develop deep understanding for a number of games within the category.

Conclusion

It has been suggested that coaching in the game becomes a constantly expanding and revolving diagnosis of play (Launder and Piltz, 1999, sighted in Piltz, 2004). It could also be suggested that teaching physical education through the use of TGfU should be viewed in the same way. Therefore it is vital to provide practitioners with the opportunity to develop the processes associated with this revolving diagnosis, the ability to deconstruct games into elements and then reconstruct them, to understand how to develop and use games and questions in a meaningful way. Proponents of the TGfU approach rightly argue that the model provides a more holistic and constructivist learning environment that is challenging, motivating, engaging and enjoyable for students and has the ability to involve many of the components essential to quality pedagogical models (Light 2003). However, it is important tertiary educators address the 'contradiction between the approaches we are asking the teachers to adopt and the ways in which we are teaching them.'(Light and Georgakis, 2005). Adoption of this model will give pre service and practicing physical education teachers a process that allows them to firstly develop an elementary and then an advanced understanding of the elements of games within and across categories and secondly allows them to develop appropriate modified games and guiding questions to provide opportunities for critical thought in games in their lessons.

Table 1:   Categories of Games (from Webb and Pearson, 2004)

Category/ Name	Key Components	Examples
Invasion	Team games invading the other team's territory with the aim of scoring more points than the other team in the time limit.	Touch, Basketball. Soccer
Net and Wall Games	Games played with a net or a wall with the aim of sending an object into an opponent's court so that it cannot be played or returned within the court boundaries.	Volleyball, Tennis, Squash
Striking/Fielding	Contest between a fielding and batting team with the aim of scoring more runs than the other in the innings or time allowed.	Cricket, Softball
Target	Place an object near or in a target in order to have the best possible score. Can be opposed or unopposed.	Golf, Lawn Bowls, Darts

REFERENCES

Australian Sports Commission. (2005). *Active after school communities. Community approach training program.* Canberra: ASC.

Australian Sports Commission. (1999). *Games Sense Cards: 30 Games to develop thinking players.* Canberra: ASC.

Board of Studies. (2003). *Personal Development, Health and Physical Education (PDHPE) Years 7 – 10.* Sydney: Board of Studies.

Bunker, D., and Thorpe, R. (1982). A model for the teaching of games in secondary schools. *Bulletin of Physical Education,* 18 (1), 5 – 8.

Chandler, T. (1996). Reflections and further questions (teaching games for understanding method). *The Journal of Physical Education, Recreation and Dance* 67 (4), 49 - 53

French, K.E., Werner, P.H., Rink, J.E., Taylor, K., and Hussey, K. (1996). The effects of a 3-week unit of tactical and skill instruction on badminton performance in ninth grade students. *Journal of Teaching in Physical Education 15* (4) 418 – 438.

French, K.E,. Werner, P.H., Taylor, K., Hussey, K. and Jones, J. (1996). The effects of a 6-week unit of tactical and skill instruction on badminton performance in ninth grade students. *Journal of Teaching in Physical Education 15* (4) 439 – 463.

Harrison, J., Blakemore, C., Richards, R., Oliver, J., et al (2004). The Effects of Two Instructional Models – Tactical and Skill Teaching – on Skill Development and Game Play, Knowledge, Self Efficacy, and Student Perceptions in Volleyball. *The Physical Educator 61*(4), 186 - 199

Hopper, T. and Bell, R. (2001). "Can we play that game again?" *Strategies,* 14 (6) 23 - 27.

Launder, A. G. (2001). *Play Practice. The Games Approach to Teaching and Coaching Sports.* Illinois: Human Kinetics.

Light, R. (2003). The joy of learning: Emotion and learning in games through TGfU. *Journal of Physical Education New Zealand*. 36 (1), 93 – 109.

Light, R. and Georgakis, S. (2005). Integrating theory and practice in teacher education: The impact of a games sense unit on female pre service primary teachers attitudes towards teaching physical education. *Journal of Physical Education New Zealand* 38 (1), 67 – 83.

Mandigo, J., &Holt, N. (2000). Putting cognitive theory into practice: how cognitive evaluation theory can help us motivate children in physical activity environments. *Journal of Physical Education, Recreation and Dance* 71 (1), 44 - 49.

NSW Department of Education and Training. (2003). *Quality Teaching in NSW Public Schools.* Sydney: Professional Support and Curriculum Directorate.

Pearson, P., Webb, P., & McKeen, K., (2005a). *Linking Teaching Games for Understanding (TGfU) and Quality Teaching (QT).* Unpublished paper. University of Wollongong, Australia. Presented at III TGfU International Conference, Hong Kong, 2005.

Pearson, P., Webb, P., & McKeen, K., (2005b). *Teaching Games for understanding (TGfU) – 10 years in Australia.* Unpublished paper, University of Wollongong, Australia. Presented at III TGfU International Conference, Hong Kong, 2005.

Piltz, W. (2002). *Developing competent and confident players using the 'play practice' methodology*. University of South Australia. Presented at the ACHPER Interactive Health and Physical Education Conference

Piltz, W. (2004). *Reading the game—A key component of effective instruction in teaching and coaching.* Paper presented at the 2nd International Conference: Teaching Sport and Physical Education for Understanding, Melbourne, December 11-14.

Turner, A.P., Martinek, A. (1999). An Investigation into Teaching Games for Understanding: Effects on Skills, Knowledge and Game Play. *Research Quarterly for Exercise and Sport 70* (3), 286 - 296

Werner, P., Thorpe, R,. and Bunker, D. (1996) Teaching games for understanding: evolution of a model. *The Journal of Physical Education Recreation and Dance, 67* (1), 28 – 33.

Webb, P. and Pearson, P., (2004). *The Game Centred Approach in Primary and Secondary Education. Unpublished Paper*. University of Wollongong, Australia.

Webb, P. and Thompson, C. (1998). *Developing Thinking Players. Games Sense in Coaching and Teaching.* In Sports Coach 1998: 1998 National Coaching and Officiating Conference, 25-28 November 1998, Melbourne Convention Centre, Victoria, Unpublished Papers, Australian Coaching Council, Australian Sports Commission, 2, 610-613.