Lars Tore Ronglan & Vidar Ertesvåg: Becoming a Team Player? Learning Outcomes from Implementing a Team-Based TGfU Unit in High School

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Abstract

The purpose of this study was to implement a 'teaching experiment' in a Norwegian high school PE class, where elements from a Cooperative Learning model were fed into a Teaching Games for Understanding (TGfU) unit to reach social-interactive learning outcomes. A class of 21 students (17 year old) was divided into three heterogeneous teams of seven students each, working together throughout an invasion game unit consisting of nine 90 minutes lessons. The aim was to (a) involve each team member, (b) improve tactical understanding and awareness, and (c) improve team communication and cooperation. Data sources were observation of each lesson, teacher journals, student log books from each lesson, and in-depth interviews with ten students after the unit was finished. Findings indicated that the use of stable and heterogeneous teams seemed productive in this unit, promoting team-based student-student learning. Specifically, inexperienced students developed their understanding and involvement in play, and experienced players developed their ability to relate to team mates and involve them in joint problem solving. Recognizing 'relational skills' as important as 'individual skills' in team games should inspire further investigation of how TGfU units might be structured to highlight the social dimensions of game competence.

Keywords: Game competence, physical education, teaching, communication, team roles

1. Introduction and Aim of the Study

Teaching Games for Understanding (TGfU) has attracted increasing attention over the last 25 years.

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In an article summarizing two decades of TGfU practice and research, Griffin et al. (2005) note that TGfU has been explored by researchers, teachers and coaches in several countries (e.g., USA, Canada, Singapore, UK, Australia, and France). Moreover, during the last decade the original Bunker and Thorpe (1982) model has been expanded (Holt et al. 2002) and more explicitly been grounded in robust theoretical frameworks (Kirk and MacPhail 2002; Rovegno et al. 2001a). Based on the established knowledge basis, researchers argue for more field-based (Griffin et al. 2005) studies, where 'TGfU research is designed to fit the routine circumstances in schools in which teachers and students work' (Kirk 2005, 218). The current study was an attempt to follow this suggestion in a Norwegian high school context, which represents a country where TGfU until recently has been given limited attention in teacher education and physical education practice. Rather than viewing TGfU simply as a method among others possible to choose, Metzler (2005) considers the approach an 'instructional model'. As such, it intends to affect the behavior of teachers as well as students. The models requires teachers which operate as facilitators of learning, recognizing students as active, social, and creative learners (Perkins 1999) who discover and construct knowledge through social interaction with their peers. Students are supposed to work in small groups with authentic (that is, game-like) learning activities, with the potential to include social, physical and cognitive learning outcomes. In line with the social constructivist basis of the model, TGfU has been conceptualized from a situated learning perspective (Kirk and McPhail 2002).

The clarification of the theoretical and pedagogical foundation of TGfU represents a valuable attempt to move physical education beyond an activity-driven view of curriculum to a more model-based approach. The original TGfU model was developed by Bunker and Thorpe (1982) as an alternative to traditional approaches to games teaching that emphasized the drilling of isolated techniques out of game contexts. In contrast to teaching characterized by 'a series of highly structured lessons' (ibid, 5), they developed a model in which learning took place within the context of modified games. The aim was to develop thinking game players by focusing on problem solving in realistic game situations modified to suit the learner. The model recognizes the intimate relationship between perception, decision making and skill execution (Light 2002). Learning situations (that is, game situations) are modified to 'represent' and 'exaggerate' (Bunker and Thorpe 1982) tactical demands of the sport.

Small sided games are designed to overcome the classical problem regarding missing transfer of learning from practice to game play: one thing is to master isolated techniques; quite another thing is to apply skills appropriately in game play (Holt et al. 2006). Thus, learning situations in TGfU are aimed to develop tactical awareness, that is; the understanding or game sense required in addition to technique, for a player to become a competent and confident performer. In the early phase of research on TGfU, a main focus was to compare this approach with traditional technique-based approaches, often in the form of experimental studies (e.g., Turner and Martinek 1992). Although finding the focus on comparative, experimental research designs understandable, Kirk (2005) argues that the assumption that TGfU is mainly about teaching tactics and traditional approaches are mainly about teaching techniques is false.

According to Kirk, the issue is not about tactics versus techniques, but about learning outcomes and how these might be achieved by using particular instructional strategies. TGfU advocates a movement from direct teaching to discovery learning (Butler 2006), from replication of behavior to construction of knowledge (Butler and McCahan 2005), from well-organized lines to 'organized chaos' (Light 2005). These movements are a consequence of an approach emphasizing learning outcomes that are immanent of game performance. Games are not neat, well ordered and predictable. Because the game itself is chaotic, 'you have to develop players who can make sense of the chaos' (Light 2005, 176). Chaotic situations suppose strategic thinking, perceptual skills and decision making to adjust suitable movements and actions. However, game competence does not only suppose perceptual skills and decision making at a purely individual level. In team sports, performance is basically a joint pursuit. As a consequence of the interdependent nature of game play, the ability to relate and respond to your teammates' movements is an integral part of game competence. 'Individual skills' have to be adjusted into 'relational skills' in real game situations. In line with this, two studies have demonstrated how throwing and catching are constituted as relational skills in game play (MacPhail et al. 2008; Rovegno et al. 2001b). The ability to throw a 'catchable pass' implies taking the holistic game situation, including the receiver's perspective, movement and abilities, into consideration. Thus, we will argue that the term 'understanding' in Teaching Games for Understanding should not solely refer to individual problem solving skills. 'Understanding' includes how the player can help, support, and efficiently contribute to the team's common handling of the situation.

'Becoming a team player' implies developing collaboration and communication skills, bodily and verbally, on and off the court. As important as making appropriate decisions and actions on-the-ball, a good games player is an effective mover and a constructive communicator off-the-ball. (S) he is visible and accessible (moves into supporting positions), give and receive appropriate feedback, and so contribute to make other players better as well. What we have labeled a 'team-based TGfU unit' in the title of this study was an attempt to highlight this genuine social dimension of game competence. Generally, TGfU units focus on students becoming improved game players 'by foregrounding the decision-making process' (Dyson et al. 2004, 231). Because decision-making often is looked upon as an individual skill, this may lead to an emphasis on individual rather than interactional learning outcomes. A valuable and novel aspect of the present study lies in its focus on team processes within a TGfU framework. Rather than viewing the team merely as a social backdrop for learning processes shaped by the interaction between 'the player and the game', the study explores social interaction within a team context as constitutive for learning outcomes from TGfU. By conducting a 'practice referenced study' (Kirk 2005) over 9 weeks in a high school physical education class we sought to make judgments about the impact of the unit on student learning, based on the goals established for the unit. Recognizing the differences in games experiences and skills among students in school (Griffin et al. 2001) we were interested in investigating the outcomes for experienced as well as inexperienced game players. By composing heterogeneous and stable teams working together throughout the unit, and focusing on team performance, we hoped to facilitate social-interactive learning outcomes essential to game competence. In specific, the aims were to (a) involve each team member, (b) improve tactical understanding and awareness, and (c) improve team communication and cooperation.

2.Methodology

In structuring a 'team-based' TGfU-unit we draw upon elements from Cooperate Learning (CE). Dyson, Griffith and Hastie (2004) pointed to the intersection between TGfU and CE, both being student centered instructional models based on situated learning theory. According to Dyson (2005), TGfU-units can draw on elements from CL if the aim is to highlight social-interactive dimensions of game play. In CL students work together in stable, heterogeneous small-groups to master subject matter content.

Thus, core elements within CL; promotive face-to-face interaction and development of small group skills (Dyson 2001), are fundamental aspects of team sports performance in general and congruent with the goals established for the unit we wanted to implement. Rather than representing a blending of two instructional models (TGfU and CL) the content of the unit and the teaching approach in the present study followed TGfU-principles. The TGfU-unit was made a 'team based' unit by including two elements from cooperative learning in structuring the work, namely the use of stable teams and regularly providing team reflection tasks. Below this will be elaborated and justified.

2.1 Participants and Context

The study was conducted in a PE class in a Norwegian high school located in a small town. The class held 21 students (13 females, 8 males), all 17 years old. The unit was developed by the two authors, and the second author (Vidar) carried out the unit together with the students. Besides being an educated PE teacher with several years of teaching experience, Vidar also is a certified football coach and has practiced as youth football coach in a number of clubs. The original PE teacher in the class (John) joined the project by leaving the role as teacher and going into a role as observer of each lesson during the project. A formal permission to conduct the study was given from the school's administration. Permission was also gained from the students to use their data for the analysis. The students were relatively homogeneous in cultural background (all raised in the local area), but varied a lot regarding team sports experiences. About half of the group played or had played football in the local club. By interviewing John (their teacher over the last three years) and having the students answer a questionnaire before the unit started, we mapped each student's sports background and their interest in PE. This made it possible to divide the class into three heterogeneous teams in which skills and games experience were equally distributed across the teams. We composed three teams of 7 students each, all consisting of males and females, skilled and low-skilled players, with different motivation in PE. The teams stayed together for the entire unit.

2.2 The Unit

In the high school timetable it was fixed one 90 minutes PE lesson per week. The unit was planned as an 11 week unit lasting from the end of September until mid-December. Due to one week going away to a student project and another to an exam period, we ended up with 9 lessons of 90 minutes (see table 1).

Table 1: Unit Plan

Lesson	Key content	Objectives of the period
1 Period 1	Introduce the unit, the teams and invasion games. Throwing-catching and off-the-ball movements (use of volleyball in play)	Subject matter: Understand invasion games and basic principles (space, relational skills, off-the-ball movements) Socially: Develop communication on/off court. Clarification and acceptance of roles. Reflection: Individual and team reflection on basic attacking tactical principles (oral/written).
2 Period 1	Create/utilize space. Breadth and depth. Passing play, support, ask for the ball	
3 Period 1	Decision making, 3 vs 3, simple game situations. Student-student coaching	
4 Period 1	Complementary roles and relational skills. 7 vs 7 with restricted ball keeping (move, pass, communicate). Shift playing roles.	
5 Period 2	Football. Transfer knowledge from period 1. Adjusted football play 7 vs 7, easier to score (use of scoring line instead of goal)	Subject matter: Transfer invasion game knowledge to football. Socially: Improved consciousness on the different roles in the team and their value. Reflection: Reflect on learning outcomes. Reflect on tactical decisions when the objective is mastery vs victory (oral/written).
6 Period 2	Football. Use of majority (4 vs 3, 5 vs 2) to involve low-skilled in attack. Shift of roles.	
7 Period 2	Soccer tournament between the three teams. The teams decide strategy, role distribution, and specific tactics to apply. Internal team preparation and team evaluation included.	
8 Period 3	The teams invent their own invasion games; specify goals, rules, participants, court, ball, etc. Try out within your own team and adjust the game to suit the participants.	Subject matter: Inventing games based on invasion games knowledge. Socially: Develop creative and cooperative skills. Strengthen team affiliation. Reflection: Evaluate your own and team mates' contribution to the group processes (oral/written).
9 Period 3	Develop your invented game further. Present it and try it out against the other teams. Discuss strengths/weaknesses with the games, and possible learning outcomes of practicing them.	

The unit was composed of three periods. Period 1 (four lessons) focused on understanding invasion games principles, clarification of team roles, and communication skills on and off the court. Modified throwing-catching games were introduced and practiced, making it possible to emphasize cooperation and movements within game contexts that were not technically demanding. Period 2 (three lessons) focused on football as an example of an invasion game. Modified football game situations were designed to highlight the importance of off-the-ball movements to help the ball holder in solving the situation. Period 3 consisted of two lessons in which the teams invented their own invasion games. Based on their acquired knowledge, the students were encouraged to transfer concepts and share ideas within a creative game-inventing process (Butler 2006). Throughout the unit Vidar performed the teaching role in accordance with TGfU principles. The focus on implicit learning through problem solving in game situations were supplemented by some explicit information (Rovegno et al. 2001b) and questioning / guidance (Dyson et al. 2004) during play. At regular intervals emerging playing situations were 'frozen' to highlight specific movements and possibilities.

2.3 Team Communication and Reflection

An important part of the teaching plan was to facilitate team communication and reflection. Always when playing 7 against 7, the team not playing was given tasks related to how they could improve their performance in the coming playing sequence. Short questions based on the lesson's objectives guided the discussions. The purpose was to establish a 'debate of ideas' setting (Richard and Wallian 2005) in which the students exchanged ideas based on observation and personal experiences. In his communication with the students, Vidar emphasized the importance of using the off-court time to discuss how to utilize each team member in the best way in the team. As a main objective was team improvement on court, the teams were encouraged to maximize peer learning through sharing of knowledge and debate of ideas. In addition, the students used 10 minutes at the end of each lesson writing an individual log note. The log had a three-fold purpose; it secured individual reflection, it mediated communication between student and teacher, and it was used as data in the research project. Prior to each lesson we developed three questions related to the lessons' objectives guiding the students' writing. In the first part of the unit the questions were quite simple and closed, later they were formulated more open-ended.

2.4   Data Collection and Analysis

Three basic data sources were utilized in the study. These were (a) participant observation of each lesson including field conversations with the students during the unit, (b) log books from the students containing reflection notes from each lesson, and (c) qualitative in-depth interviews with 10 of the 21 students after the unit was finished.

2.4.1 Participant Observation and Student Log Books

Both Vidar as the 'active' teacher and John as an observer from the sideline observed the sessions from their particular positions. Immediately after each lesson Vidar wrote down his interpretations of the teaching-learning process and the students' teamwork. Together with John, who took field notes during the session, the research group then discussed critical incidents as well as possible learning outcomes. The post-lesson reflection was transcribed in a teacher journal. The students' log notes were gathered every week, as an additional source for evaluating their progress. The student material was discussed by the researchers, and summarized in the teacher journal. Having teacher interpretations, external observations, and students' reflections of each lesson available made it easier to consecutively adjust the teaching plan in line with the experiences done. The continuous gathering of data also made it possible to follow learning processes and challenges as the unit proceeded (Rovegno et al. 2001b).

2.4.2 Qualitative Interviews

At the end of the unit the student log books totaled about written 80 pages (in average 4 pages per student). Together with the teacher journals, this formed the basis for constructing an interview guide. 10 students were selected as interview informants. The selection followed the principle of giving voice to a variety of opinions and experiences. Among the informants there were girls and boys, participants from all the three teams, high- and low-skilled players, and students expressing enthusiasm as well as criticism in their written evaluation of the unit. The interviews lasted about 45 minutes, and were audiotaped and transcribed for analysis.

2.4.3 Data Analysis

Inductive analysis and constant comparison were used to analyze the qualitative data (teacher journal, student log notes) throughout the research process (Lincoln &Guba 1985; Patton 1990).The constant comparison method was used 'to group answers...to common questions and analyze different perspectives on central issues' (Patton 1990, 376).The interview text was analysed through a combination of what Kvale (1996) has described as meaning condensation and meaning categorization. The analyzing process resulted in text reduction, making it easier to handle the total material (log books, teacher journals, and interviews) together, without losing too much of individual variation.

2.5 Data Trustworthiness

According to Denzin and Lincoln (2000), the traditional criteria for evaluating qualitative research are problematic, so rethinking terms like validity and reliability is necessary. Trustworthiness concerns the degree to which the findings are dependable, credible and transferable (Lincoln and Guba 1985). The triangulation of methods in the present study should strengthen the credibility of the interpretations done, as it allowed the data sources to be cross-checked. By using John as an observer and discussion partner, an attempt was made to enrich the perspectives concerning the teaching-learning processes. John had some objections to TGfU, and could act as the Devil's Advocate in research group discussions. Member checks (Lincoln and Guba 1985) were conducted by discussing with students the researcher's preliminary interpretations as the unit proceeded, and by forwarding interview transcribes to the students for checking of content. To combat reactivity, Vidar spent extended periods of time at the school during the research period. Having been a former teacher at the school should further reduce the possible reactivity of Vidar's presence in the school setting.

3. Findings and Discussion

The study aimed to investigate social-interactive learning outcomes for experienced as well as inexperienced players when working together in stable teams.

With heterogeneous teams one could easily imagine two possible unfavorable scenarios: (a) the most experienced players might totally dominate team play and discussions (reduced learning outcomes for the others), or (b) low-skilled players might set the standard, leaving the experienced with less stimulating learning situations. To avoid these pitfalls, we carefully explained the goals to the students, namely positive outcomes for all students by striving to involve each team member in the improvement of team performance, cooperation and reflection. Based on the research questions and theoretical framework, the data was analyzed related to five categories: (a) understanding, (b) involvement, (c) team roles, (d) communication skills, and (e) problem solving. Findings related to the specific research questions are below presented and discussed in line with these categories. The concluding discussion includes reflections on 'team-based' models as a possible way to structure TGfU-units focusing on team development and cooperation as an integral part of game competence.

3.1 Understanding

As part of the first lessons the students got information (written and oral) on games classification (Bunker and Thorpe 1982) and the characteristics of invasion games. This declarative knowledge was intended to facilitate the development of practical understanding and procedural knowledge (Gréhaigne and Godbout 1995). None of the students were familiar with the classification, so this was a new way for them to conceptualize games. An experienced female footballer said in the interview: I had never heard of invasion games before. Of course I know football and handball, so I understood what you were talking about. But I had never thought of the common features of those games in that way. Having learnt about the similarities and the common tactical structure, I now understand more of the games. I can transfer knowledge in a way. The ability to transfer knowledge was reflected in the log books. The experienced footballers quickly appeared to gain knowledge from the classification itself. Already possessing a solid knowledge base related to football made it easier for them to integrate tactical knowledge on invasion games in general. As the unit proceeded, also most of the low-skilled students improved their ability to employ concepts (e.g. 'depth', 'width', 'space', 'playability') precisely in their log notes. Not surprisingly, they needed more time to acquire the new information. The ability to reflect on and make use of declarative knowledge increased gradually as they got more practical experiences.

Understanding the meaning and function of primary rules is decisive to see how games are structured, and how the structure constrains and enables movements and team play patterns. Some of the inexperienced students pointed out the importance of this regarding their own meaning making process, like this girl: I feel that my game sense has improved. The focus on rules has been an eye-opener regarding what meaning they have in the game. Now I understand more about the idea of the game and the game context, and that makes it all more interesting Declarative knowledge on games characteristics can be linked to the notion of games literacy. Mandigo and Holt (2004) claimed that players are games literate if they (a) have knowledge that enable them to anticipate patterns of play, (b) possess technical and tactical skills to deploy appropriate responses, and (c) are able to experience positive motivational states while helping to facilitate motivation among others involved. Thus, a student with games literacy knows the primary rules and understands how these rules create structural and tactical similarities between games. By using different modified invasion games in the first period of the unit (lesson 1-4) before focusing on football in the second period, our idea was to highlight similarities and help the students to conceptualize football in another way. The interviews suggest that especially the inexperienced players found this valuable ('eye opener', 'improved game sense', 'more interesting'). It seemed also to have expanded the perspective to some of the skilled footballers ('transfer knowledge').

3.2 Involvement in Play

The program was definitively more challenging than I am used to. When we play football in our 'usual' physical education lessons, I can just dribble them and score goals. Here you couldn't do everything yourself; you had to pass, to move, to communicate, to involve your team mates. (Interview, experienced footballer) A consequence of the focus on games structure and principles of play was an increased importance on off-the-ball movements. Vidar regularly stopped the class during play sequences. Typically, the students were asked what the ball receivers could do off the ball to make a successful reception and when and to whom the ball carrier could pass. Utilizing free space, movements into supporting positions, and being visible to the ball carrier (eye contact, calling name, reaching for the ball) was encouraged. Recognizing off-the-ball actions as important as on-the-ball actions to solve game situations seemed to increase the involvement among the less skilled students.

John, observing the lessons, commented that 'students usually participating with limited engagement are definitively more physically active'. One of the skilled footballers said; 'I have seen fellow students that used to hide away; in some of these lessons they ran until they were completely exhausted' (interview). Moving from period 1 (throwing-catching games) to period 2 (football) we noticed a sudden decrease in involvement among the less skilled students. Controlling the ball with the feet is far more complicated and seemed to hamper their involvement in playing situations. After the first football lesson we decided to simplify the game even more; to further reduce the resistance and replace the goals with passing across a scoring line. The new game was embraced by the students: 'It was fun; not really football but football-like and easier to play' (log note). After the successful introduction of the adapted game, we decided to use variations of it in the coming football lessons. MacPhail et al. (2008) underline the importance to consider the appropriateness of the modified game as learning progresses. Ability to carefully observe how the game suits the learner and continuously be able to adapt primary rules is vital. Adequate facilitation supposes flexible teachers possessing rich knowledge on the game. Vidar did similar experiences as Australian and US teachers in previous studies implementing TGfU (Light 2002; Light and Butler 2005), as illustrated in the reflection notes: 'I could not keep strictly to the plan; at first that made me insecure but I think I developed my adaptability as the unit proceeded.'

When talking about the increased involvement in the class, several of the interviewed students emphasized suitable adapted games. An inexperienced female player put it this way: I have not been so fond of ball games. Earlier when we played in PE, I often just tried to hide in a corner and not to make a fool out of myself. With games more adapted to my level, I have become more motivated. I have learned how to move and involve in the play, and then it's much more interesting to participate. It's fun to play when you manage the game, and when you can help the team to perform. Many students considered stable teams important in promoting participation. 'You work harder because you don't want to let your team down' was a typical utterance in log books and interviews. Particularly two of the teams experienced increased interaction as the program proceeded. 'The cooperation and cohesion got better and better as we got to know each other within the team', one of the boys commented. In the third team it seemed more difficult to keep everyone engaged.

The other members of this team reacted negatively when someone pulled out from team activities: 'What's bad is that Pete couldn't even be bothered to participate and contribute, he just resigned', a female student sighed after one of the lessons. Typically, it was the lack of effort, not limited skills, that was criticized by team mates. As opposed to social sanctions against those pulling out, the researchers hardly registered any negative comments on team mates' performances. But as the games supposed inclusion from everyone to perform well, there were no room for free riders and thus a group pressure to contribute.

3.3 Team Roles and Dynamics

To me, as a captain in the local football club, it has been instructive to be part of a team with people who is not used to play; not used to talk on court, to follow the opponent, to position, and things like that. I've learned new things myself from guiding and helping them and trying to get them to understand as much as possible. (Interview, experienced footballer) Regularly Vidar encouraged the teams to discuss how roles and tasks could be distributed to optimize team collaboration as well as individual development. Due to their knowledge and competence, experienced players were assigned central positions in all the teams: 'I have got an important role in discussions and decision making; naturally given that I'm the only active football player in the team' (log note). Several of the skilled footballers emphasized similar learning outcomes: 'I was supposed by the others to be kind of a leader figure; I think I have improved my ability to stand forth and drag the others along' (interview). In line with research on cooperative learning (Dyson 2001; Slavin 1996), high-skilled students in the present study did not seem disadvantaged by being part of a heterogeneous team. On the contrary, they noted positive outcomes like leader skills, coaching skills, and strategic skills: 'The team was in the focus in this program, therefore the skilled ones could only dominate by involving the others; being kind of an architect' (interview). Also students who were less skilled reported feelings of importance and value as team members, as the following quote illustrates: I am not quite sure what kind of role I have got in the team. I am not one of the leaders, but I absolutely feel as a part of the team.

Maybe I cannot contribute with much knowledge, but I am good at encouraging (log note, inexperienced player) In addition to the increased involvement in play, low-skilled students benefitted from peer-based learning; 'team discussions and personal feedback from others helped me a lot' (log note). Initially it was primarily the high-skilled students that did the coaching, but as the teams became more established more students gave feedback to each other. An experienced footballer told in the interview: 'In the end everyone in the team dared to speak out. They confronted even me when they thought I did something wrong'. An element of risk when using stable teams, is that participants gradually may be locked to particular playing positions on court. One student told in the interview: 'It was a tendency towards an increasingly fixed role structure in our team; because we noticed in which position everyone could do the best job'.

Considering each student's learning process, a deadlocked role configuration may not be productive, because particular roles offer more freedom of action than other roles. Discussing situated learning, Lave and Wenger (1991) highlight changes in location and perspectives as part of actors' learning trajectories within the community of practice. A fixed role structure may hinder movements from peripheral to full participation. Due to the unit's limited duration, Vidar chose to not intervene in the teams' structure, but 'if the program had lasted for a longer time, I think it had been necessary to govern a rotation of tasks and roles' (journal). Another challenge turned out to be the students who were unable to participate physically. Due to injuries the teams regularly had six instead of seven available players. Injured students were usually given a role as coach in their team. Being occupied with coaching the playing teams, the teacher often had to leave the third team alone with team discussions. An injured student wrote after session 2: 'I didn't contribute much today. I was supposed to be a coach but it was difficult to take part in the discussions, not having been on court' (log note). Inclusion of injured players got somewhat better after having recognized the problem and clarified roles. However, the quote illustrates that the 'three team design' was labor intensive to handle for one teacher.

3.4 Communication Skills

Reflecting upon learning outcomes in their log books, 20 out of 21 students emphasized enhanced communication skills. Having observed the lessons and knowing the students for a long time, John (the observer) also registered considerable improvement in team communication on the court: 'As I see it, bodily and verbal communication between the students during games has become more evident.' One of the inexperienced players said: I have been much better to communicate during these months. I used to have problems with talking on the field; I was rather quiet when I played. That has changed, now I see the point of talking and I'm more able to do it (interview). 'To be able' to communicate meaningful during play is depending on the ability to understand and apply game related concepts. The quote indicates that acquisition of declarative knowledge was helpful in promoting communication and thus cooperation on court. As Brooker et al. (2000) argue cognitive function and physical action are intimately interrelated. The interdependence of understanding and skill – or speech and action (Light and Fawns 2003) – means that communication on court can be seen as an integral part of team performance. Verbal conversation during play may facilitate the bodily communication that is expressed as harmonized teamwork. Thus, to become 'better to communicate' can be interpreted as improved game competence. Communication skills on court are not merely about utterances and movements to solve playing situations, it also includes high fives, cheering, stirring up, giving feedback, etc. Discussing affective dimensions of TGfU, Pope (2005) argued that in playing games students are seeking to become players; to think, behave and feel like players. Behaving like players includes acts like those mentioned above. Here, some of the skilled students recognized their function as role models: 'I tried to drag the others along, pretending us to be a 'real' football team' (interview). We observed more encouragements, cheering, and body contact as the unit progressed. Similarly, the amount of feedback increased as the teams got more established. Despite the short period of time it is reasonable to claim that the process in the way of 'becoming players' comprised more students.

3.5 Problem Solving

In lesson 8 and 9 the teams collaborated in inventing their own games. Immediately after the first lesson Vidar was quite frustrated: 'Not very successful; a messy process in all the teams.

Many students pulled out, just a few seemed really interested in the task' (journal). Based on the first impression it was surprising to us that log notes and interviews showed that the majority of the students found these lessons enjoyable and instructive. Some even considered these lessons as the most interesting part of the whole unit: Inventing games was extremely fun! Our team was maybe the team wasting most time in the beginning. When we finally tried out our ideas, we found out several rules necessary to change. After some trial and error the game developed to be a huge success. We managed to create a game that really worked (interview). Many students commented that inventing games made them understand ordinary games in another way. In retrospect it was obvious to us that we then and there underestimated the learning process going on during the game inventing sessions. The messy process, initially interpreted as indecisiveness and waste of time, probably was a necessary explorative phase.

According to Jones and Turner (2006) it is usual for both teachers and students to be frustrated when working with problem based learning, because of its time-consuming and apparently chaotic character. Similarly, students not used to PBL may oppose because they don't see the utility value. Three students explicitly uttered criticism towards the game inventing process: 'It was nonsense; we should have real physical activity in the PE lessons' (log note). However, to us the most interesting finding was that in spite of the limited time (two lessons), several students expressed genuine enthusiasm when commenting these lessons: 'It was so fun collaborating to invent games; when the lesson came to an end I thought we had been working for five minutes!'

4. Concluding Discussion

The results indicate that both the experienced and the inexperienced game players among the students made gains during the unit. The inexperienced developed their cognitive understanding as well as involvement in play. Acquiring declarative knowledge on rules, play patterns, and movements off-the-ball, seemed to facilitate broader participation and increased game sense among the less skilled students. The experienced players reported improved leader and coaching skills. Apparently they developed their game competence in the sense of relating to team mates and increased ability to involve team mates in joint problem solving of playing situations. Both groups reported improved communication skills on and off the court.

In congruence with research on cooperative learning (Carlson and Hastie 1997; Dyson 2001), the study showed that students can teach their peers. Frequent periods with team discussions and the focus on communication on court seemed to promote student-student learning. Having established a shared conceptualization of invasion games principles during the first part of the unit seemed helpful. A common language made it easier to create meaningful dialogues between high- and low-skilled players. This is in line with previous research focusing on the significance of verbal exchanges among peers in enhancing team game performances (Lafont et al. 2007). Inventing games at the end of the unit seemed to further intensify the social and creative learning (Perkins 1999). A solid shared knowledge base, and social security in the team, may have contributed to release more creative resources among the students.

In sum, the use of stable and quite autonomous teams seemed productive in this unit. However, as Putnam (1998) pointed out, simply placing students in groups will not insure positive interpersonal outcomes. In this case the class was carefully divided. It was important that the teams by the students were perceived equal regarding distribution of competencies. If the unit had lasted longer, we suggest that interventions to secure rotation of roles and tasks within the teams probably would have been necessary to avoid an inappropriate fixed role structure. Crucial when employing a model like this (TGfU / stable teams), is the teacher's ability to balance team autonomy and self-determination on the one hand with suitable interventions to stimulate the learning processes on the other. We experienced some challenges when implementing the unit. First, it was labor-intensive for the teacher. Considered as a 'teaching experiment' (Rovegno et al. 2001a), a critical question is if the efforts needed to succeed with this kind of unit are realistic to expect from teachers in an everyday school setting. Teaching just this class, Vidar had time to thoroughly plan, evaluate and discuss each lesson. Even though some of the work was done due to the research process, the reflection processes embedded in the program demand increased teacher efforts compared to pure activity-driven units. Another challenge concerned the teacher's subject matter mastery. Implementing the unit successfully required great skills pedagogically as well as related to the content (invasion games competence). As pointed out by Hastie and Courtner-Smith (2006) and MacPhail et al. (2008), the capacity to ask productive questions and to make appropriate modifications to game rules and field configurations is crucial because of the inductive nature of the TGfU model. Great content and pedagogical knowledge are needed.

A third challenge was related to reduced practice time, as the students needed time to answer questions and participate in team discussions in each lesson. Appropriate practice time is a prerequisite for effective physical education, and limited practice time is recognized as a possible challenge in cooperative learning units (Dyson, 2001). Hastie and Courtner-Smith (2006) found thirty-minute lessons restrictive when implementing a hybrid games model (TGfU-Sport Education) and advocated longer lessons. Ninety-minute lessons, as used in this case, provide more time for questioning, team discussions and reflection, and should be further investigated as an alternative way to organize PE units highlighting social-interactive learning outcomes.

5. Conclusion

Typically, TGfU units in general focus on students becoming improved game players 'by foregrounding the decision-making process' (Dyson et al. 2004, 231). Because decision-making often is looked upon as an individual skill, this may lead to an emphasis on individual rather than interactional learning outcomes. However, 'becoming a team player' implies developing shared understandings of playing situations on court. Such shared understandings presuppose communication and the ability to adequately relate to and respond to one's team mates' actions in a joint effort to solve the situation at hand. Thus, we have argued that the term 'understanding' in TGfU includes social skills and the ability to collaborate. This was the rationale behind constructing and implementing a 'team based' TGfU unit in this study. Recognizing 'relational skills' as important as 'individual skills' in team games should inspire further investigation of how TGfU units might be structured to highlight the genuine social dimensions of game competence.

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