Frameworks for Diagnosing Student Performance Problems in Striking/Fielding and Target Games

JENNIFER L. FISETTE *STEPHEN MITCHELL*

With these frameworks, pinpointing performance problems and finding solutions just became easier.

The teaching games for understanding (TGFU) model has been increasingly incorporated into physical education curricula around the world since 1982. The model focuses on the understanding of games through problem solving and decision making. Although TGFU is a student-centered model, a stark contrast from direct instruction (i.e., teacher-centered), many physical education teachers find it difficult to provide students with learning opportunities that foster critical thinking. Specifically, as observers during game play, teachers struggle to identify problems in students' performance and to find potential solutions. In a previous *JOPERD* article, Mitchell and Collier (2009) provided frameworks to guide teachers on how to observe game performance and determine (i.e., diagnose) student performance problems and potential solutions during game play. Mitchell and Collier created frameworks for invasion and net/wall games, which constitute the majority of sport-related games taught in physical education programs. The focus of this article is to complete the holistic picture of the games classification system (Almond, 1986) by providing frameworks for striking/fielding and target games and a sample lesson for implementing the problem-diagnosis frameworks within instruction.

Teaching Games for Understanding

Teaching games for understanding uses a constructivist approach to learning. It builds on students' prior knowledge of and experiences with sport-related games within a socially constructed environment. Instead of providing information, teachers present game situations (i.e., tactical problems) that challenge students with game tactics and involve them in the decision-making process (Bunker & Thorpe, 1982; Griffin, Butler, Lombardo, & Nastasi, 2003; Launder, 2001; Mitchell, Oslin, & Griffin, 2003, 2006; Turner, 2005). Students become responsible for their own learning, while teachers facilitate students' learning process and opportunities. Advocates of TGFU argue that as students start to take ownership of their learning, they begin to feel a sense of empowerment, which increases their level of engagement in sport-related games (Griffin et al.; Mitchell et al., 2003, 2006; Turner). A common goal for most physical education teachers is to provide students with opportunities that will enhance their enjoyment of sport-related games, in the hope that they will continue being physically active throughout their lifetime. This can be facilitated by exposing students to games in which they learn to solve problems and make decisions, in order to extend their game understanding beyond the school gymnasium and fields. By beginning instruction with a game, students are allowed to think tactically, make decisions, and solve problems with their peers within the social dynamics of game play. Additionally, students learn skills and movements within a game context, which leads to improved game understanding and performance.

Jennifer Fisette

Jennifer Fisette

A teacher uses the problem-diagnosis frameworks for target games (left) and for striking/fielding games (right).

For this to be possible, however, the teacher's role in each lesson and unit is critical. The improvement of students' tactical awareness and game understanding might not occur without the teacher's ability to observe game play and diagnose performance problems (Mitchell & Collier, 2009). Teachers may be able to follow the TGFU game-practice-game format, but knowing what questions to ask, diagnosing performance problems based on students' game play, and fostering opportunities for students to think critically and solve the tactical problem can be much more challenging.

The Nature of Striking/Fielding and Target Games

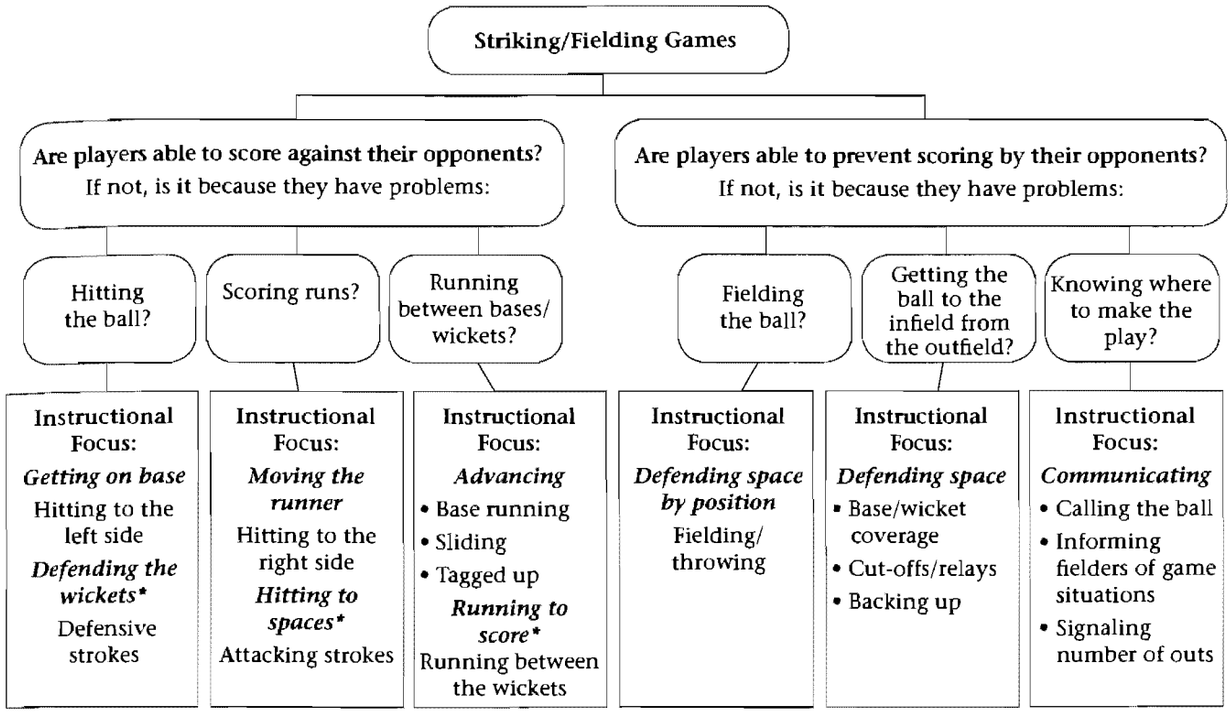
The games classification system is the TGFU framework that organizes games based on their primary rules, which identify how the game is played and how winning can be achieved (Almond, 1986). There are four game categories within the classification system: invasion (e.g., soccer, basketball), net/wall (e.g., volleyball, tennis), striking/fielding (e.g., softball, cricket), and target games (e.g., golf, pool). Each classification has its own goals, primary rules, and problems to be solved (both offensively and defensively). There are additional differences among the game categories. For example, invasion and net/wall games tend to be the most commonly taught in physical education curricula (Mitchell & Collier, 2009), whereas striking/fielding and target games are taught less frequently.

Striking/fielding and target games have less "flow" and a slower pace compared to invasion and net/wall games, which decreases the level of tactical complexity in them. The slower-paced nature of games such as softball and golf provides students with more time to make fewer decisions within game play and gives teachers more opportunity to observe student performance. In softball, the tactical decisions that students need to make are situation specific. For example, on offense, a right-handed batter will need to determine where to hit the ball with runners on first and second with one out. Simultaneously, defensive players should understand where to throw the ball, move to, or cover, depending on where the ball is hit. In target games, there is a greater emphasis on the set-up and pre-shot routines—decisions that are made before skill execution even takes place. This is true for target games when students are unopposed (e.g., golf, bowling) or opposed (e.g., croquet, bocce). When playing golf, students will first need to select a club based on the distance to the target and potential barriers such as trees or bunkers, while accounting for factors such as the "lie" and the wind. During a game of shuffleboard, students must determine whether they will try to score or attempt to block their opponent from scoring. Regardless of the game, teachers have additional time to observe and diagnose performance problems that occur before and during game play.

Diagnosing and Addressing Game-Performance Problems

Figures 1 and 2 present frameworks for observing and diagnosing game performance in striking/fielding and target games. These frameworks are similar to the invasion and net/wall frameworks, as they are comprehensive and designed for all games within each game category (Mitchell & Collier, 2009). Although diagnosis problems are different in striking/fielding and target games, the first thing teachers need to determine when observing game play is whether the students have a problem scoring or preventing their opponent from scoring. For example, during a softball game a teacher may observe students hitting the ball without being able to score any runs. Using the framework (figure 1) to diagnose the problem, the teacher realizes that the hitters are not hitting behind the base runner to move the runner into scoring position. This is not uncommon for most novice and unskilled players, since their focus tends to be on making contact with the ball, rather than on where the ball will go in the field. The teacher needs to determine whether the set-up (i.e., stance), pitch selection, or defensive coverage have influenced the outcome of the batters or whether the students are having difficulty hitting to the right side of the field. To solve this problem, teachers should focus on engaging students in game-like tasks that allow them to practice hitting the ball to the right side of the field, thereby moving

Figure 1. A Framework for Diagnosing Performance Problems in Striking/Fielding Games



Denotes instructional foci for scoring against an opponent when playing Cricket.

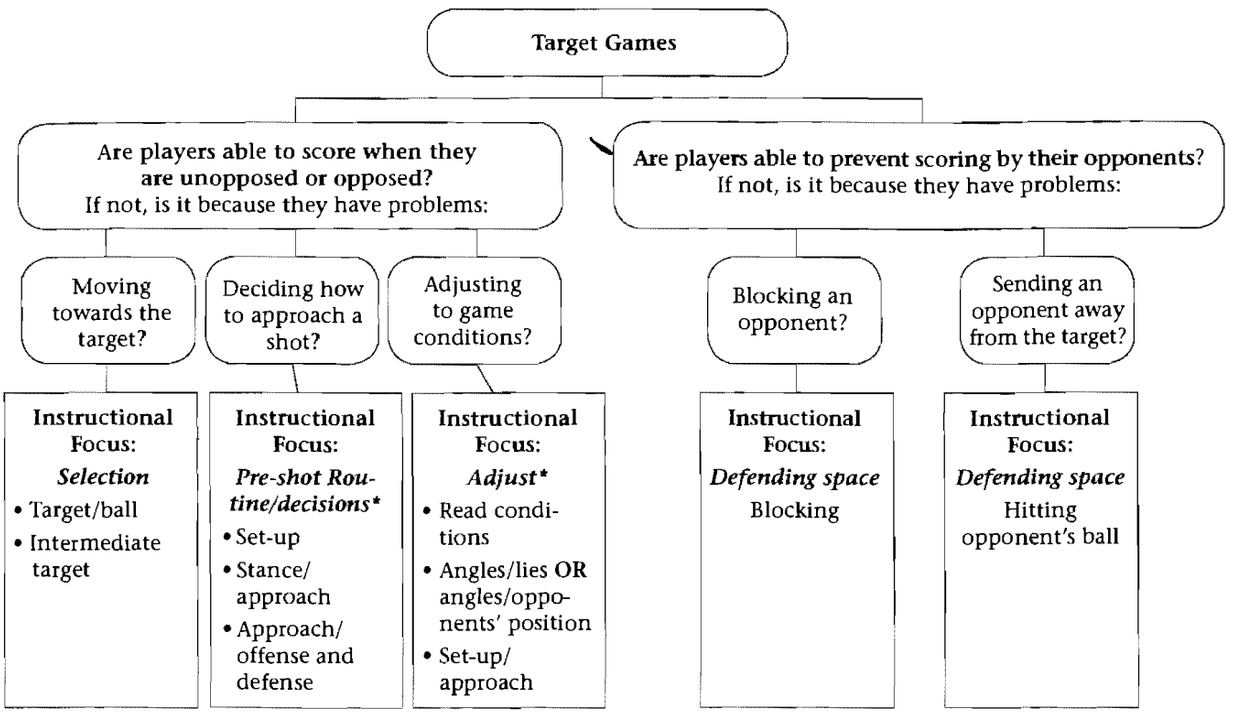
the runner into scoring position (even if it means that the batter makes an out).

At this point, the teacher has completed the first challenge of diagnosing the problem and conceiving the solution; however, the second challenge is to formulate thought-provoking questions that will lead the students themselves to determine the problem and its potential solutions. Devising the proper questions is not easy, as teachers must have the tactical understanding and content knowledge to scaffold the questions in a way that will allow students to figure out the problem and solutions on their own. Furthermore, since striking/fielding games are situational, determining the instructional focus for each potential scenario will be rather difficult. This is why it is important to stop game play for "teachable moments" to increase students' tactical understanding. The framework also accounts for cricket, a striking/fielding game that is increasingly being taught in physical education. For example, it is likely that players who have difficulty scoring, but are able to defend their wickets, are unable to score due to their inability to hit to open spaces to allow for running opportunities.

In target games (figure 2), the teacher can again use the framework to diagnose why students are having problems scoring or preventing their opponent from scoring. In most target games, the problem diagnosis will focus only on scoring because most target games taught in physical education are unopposed (e.g., golf, bowling). Because problem diagnosis and instructional foci for unopposed and opposed scoring within target games have many similarities, they have been combined on the left side of the framework.

Tactical decisions in target games are made before the skill is executed, unlike in invasion and net/wall games, in which decisions are more spontaneous and occur during game play (Mitchell et al., 2003). Novice golfers might have difficulty selecting a club based on the distance to the target, since they may be unfamiliar with the available choices and the stances that align with each club selection. For example, a student may select a 3-iron instead of a 9-iron or pitching wedge to chip the ball onto the green. Since they are unfamiliar with their club selection, they set-up for a full swing instead of a chip shot. In bowling, students might be able to knock down pins with their first ball, but they may have difficulty picking up a 5-10 split. Teachers might observe that the students are inconsistent in their set-up and approach, which demonstrates their lack of understanding of how to approach the first and second bowls in a frame. The problem in both of these situations is that students are having difficulty determining how to approach a shot. Once again, teacher questioning should guide students to think critically about what they are doing before the shot or bowl that ultimately determines the end product (getting the ball on the green, or picking up the spare).

Figure 2. A Framework for Diagnosing Performance Problems in Target Games



Denotes differences between unopposed and opposed by the / mark. Left to /, unopposed; right to /, opposed.

Implementing the Frameworks

The TGFU philosophy emphasizes that students need to know *what* to do before they know *how* to do it (Bunker & Thorpe, 1982; Mitchell et al., 2003, 2006). In regard to the problem-diagnosis frameworks, it is important to practice what you preach. Specifically, teachers need to learn about the frameworks (i.e., what to do) before they learn how to implement them within instruction. Although many teachers already use the TGFU game-practice-game format in lessons, they often struggle with how and when to observe game play and diagnose performance problems. This section provides a step-by-step process for using the game-practice-game format and implementing the problem-diagnosis framework in a softball lesson (table 1).

Set-up. First, the lesson is set up by focusing on rules, routines, and expectations (RRE), and equipment, space, and people (ESP). Second, a tactical problem is selected for the students to solve (e.g., getting on base). After selecting the tactical problem, the teacher decides on the lesson's focus and on how the students will try to solve the tactical problem (e.g., hitting the ball to the left side of the field). Finally, the learning objectives of the lesson are chosen. The objectives will guide the teacher's observations during game play and ultimately determine the assessment criteria.

Game 1. The teacher designs a modified small-sided game (e.g., 4 v. 4) by setting a goal and devising the conditions of the game. For example, the goal is to hit the ball to the left side of the field and reach first base safely. The conditions of the game include hitting the ball to the left side of the field, scoring a run for reaching first base safely, returning to the batting area whether safe or out, and ending the inning when three runs are scored or three outs are recorded. While students play Game 1, the teacher will observe game play and use the problem-diagnosis framework. From the beginning, the teacher should know what the solutions are to the selected tactical problem, but during observation, teachers might diagnose different or additional problems in students' game performance.

Questions. Based on the problem diagnosis from Game 1, the teacher asks students thought-provoking questions to guide them in solving the tactical problem (Light, 2003; Mitchell et al., 2006). Multiple questions (typically 1-3) may be asked to direct students' thinking process, with the goal of leading them to think of solutions rather than giving them the solutions. For example, in the softball lesson with the instructional focus to reach first base, potential questions include the following: "Where did you have to hit the ball to get on base? When there are no runners on base, where is the best place on the field to hit the ball to reach first base safely?" Since asking good questions is challenging, the teacher can either anticipate the problems and devise questions before the actual diagnosis or write down potential questions when they are diagnosing the problem during game play.

Situated Practice. The lesson transitions into a situated

Table 1. Implementing the Frameworks

Set-up

RRE & ESP

- What are the rules, routines, and expectations of your lesson?
- How are you going to consider the equipment, space, and people for your games and situated practice?

Tactical Problem

- What is the problem you want the students to solve?

Lesson Focus

- What is the focus of the lesson?
- How will students try to solve the tactical problem?

Objective(s)

- What are the learning objectives of the lesson?

Lesson Sequence	Teacher Role During Lesson
Game 1 • What is the goal of the task that you want the students to perform? • What conditions will you put on the game that emphasize the students having to solve the tactical problem?	**Observation of Game Play** • What are some good and bad examples of on-the-ball skills and off-the-ball movements that align with the lesson focus?
Question • What questions will you ask to guide the students in solving the tactical problem?	**Ask Thought-Provoking Questions** • What questions (who, what, where, when, why, and how) will you use to guide students to offer potential solutions to the tactical problem?
Situated Practice • What skill will help the students solve the tactical problem? • How will you set up the task so it is game-like? • What is the goal of the task that you want the students to perform? • What 3 teaching cues will you use to emphasize skill development?	**Instruction & Observation of Practice** • What 3 teaching cues will you emphasize during the situated practice? • How will you demonstrate the situated practice? Who will demonstrate? • How will you provide feedback based on the teaching cues?
Game 2 • What is the goal of the task that you want the students to perform? • What conditions will you put on the game that use the students' skills from the situated practice while trying to solve the tactical problem?	**Observation of Game Play** • How has your students' performance improved during the situated practice? • Do the game conditions need to be changed based on the game variability? **Stopping Game Play** • Do you need to stop an individual student, group, or the whole class? **Teachable Moments** • How did you use teachable moments during game play? • What predetermined scenarios could you use before, during, or after game play that emphasize the tactical problem?

practice based on the students' solutions to the problem. In this phase, teachers provide students with teaching cues (three are recommended) and demonstrate a game-like activity that emphasizes the solutions to the tactical problem. For example, in a softball lesson focusing on solving the problem of getting on base, a teacher may design a roll-and-run situated practice with four to five students playing defense and four to five students as "rollers" (i.e., batters or offensive players). At each field, the students place target cones on the left side of the field to guide the offensive players. Each offensive player rolls the ball to the left side of the field and implements teaching cues such as stepping strong toward first base, keeping eyes on the base coach, and running through the bag (if it is a force play situation). The defensive team tries to throw the runner (i.e., roller) out. After each roller has had a few attempts at trying to get on base, the offensive and defensive teams switch positions. Teachers continue to observe the students' performance during the practice task and provide specific feedback based on the teaching cues and tactical problem.

Game 2. This final phase of the game-practice-game format consists of another modified small-sided game similar to Game 1. However, the goal and conditions may be altered to include the skills that the students learned during the situated practice. Similar to the modified small-sided Game 1, the game's goal (i.e., hit the ball to the left side of the field and reach first base safely) and conditions (i.e., hitting the ball to the left side of the field, scoring a run for reaching first base safely, returning to the batting area whether safe or out, and ending the inning when three runs are scored or three outs are recorded) can remain the same. However, the teacher can add another goal for the players to try to improve their score from Game 1 in Game 2. In Game 2, teachers can modify the game further by allowing the rollers to advance to second base. One run can be awarded for reaching first base safely and two runs can be given for reaching second base safely. This change in the goal and conditions challenges students to roll (or hit) the ball to the left side of the field; to implement the teaching cues from the practice task when running to first base; and to pay attention to the base coach to see whether they need to run through the bag, round first base, or advance to second. Conditions such as returning to the batting area whether safe or out and ending the inning when three runs are scored or three outs are recorded can remain the same as previous games when trying to solve the problem of getting to base. Once again, teachers are active observers, looking for improvement in students' game performance and diagnosing additional problems that arise during game play.

Another consideration when observing is game variability within the same class. For example, teachers might observe that the students on one field are having trouble reaching first base, whereas students on another field are having difficulty making an out. The problems at each of these fields will require separate diagnoses, and these diagnoses will influence the instructional foci of the next game or lesson in different ways.

Stopping game play to provide instruction or feedback to students can be challenging for teachers. If an individual student needs help, but the majority of the students are on track, then teachers might prefer to help just the individual student. But if several students are having difficulty with a skill or movement, the teacher might consider stopping that group or the entire class. Teachable moments also provide the opportunity for teachers to stop game play. For teachable moments to occur, teachers need to have a grasp of the teaching cues and specific tactics, in various game situations, to overcome the diagnosed problem (Light, 2003). Teachable moments can take place during observation of game play or by using predetermined scenarios that do not necessarily occur during observation.

Conclusion

The problem-diagnosis frameworks are designed to simplify the challenges that teachers face in pinpointing student-performance problems during game play. The frameworks can also guide teachers to formulate thought-provoking questions to enable students to determine the problems and potential solutions for themselves. The problem-diagnosis frameworks recommended in this article can be used to prepare questions for students, determine instructional foci, identify teachable moments or relevant points for feedback, and for formative and potentially summative assessment purposes. As teachers become more proficient in diagnosing problems and creating questions that foster critical thinking, they can have students observe and assess their peers, which can increase students' game understanding and overall game performance. Ultimately, the problem-diagnosis frameworks provide teachers with observational tools that have the potential to guide their instructional foci as they attempt to increase students' game understanding and performance.

References

Almond, L. (1986). Reflecting on themes: A games classification. In R. Thorpe, D. Bunker, & L. Almond (Eds.), *Rethinking games teaching* (pp. 71-72). Loughborough, England: University of Technology, Department of Physical Education and Sports Science.

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

Griffin, L. L., Butler, J., Lombardo, B., & Nastasi, R. (2003). An introduction for teaching games for understanding. In J. Butler, L. L. Griffin, B. Lombardo, & R. Nastasi (Eds.), *Teaching games for understanding* (pp. 1-14). Reston, VA: National Association for Sport and Physical Education.

Launder, A. G. (2001). *Play practice: The games approach to teaching and coaching sports.* Champaign, IL: Human Kinetics.

Light, R. (2003). Preservices teachers' responses to TGFU in an Australian University: "No room for heroes." In J. Butler, L. L. Griffin, B. Lombardo, & R. Nastasi (Eds.), *Teaching games for understanding* (pp. 67-78). Reston, VA: National Association for Sport and Physical Education.

Mitchell, S., & Collier, C. (2009). Observing and diagnosing student per-

Continues on page 56