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CHAPTER 9

Using iPods to enhance the teaching of games in physical education

Greg Forrest

Abstract:

Game Centred Approaches (GCA) have 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 GCA as a teaching method is limited by the skill of its practitioners, especially in developing the questions needed to generate dialogue based on game play to generate learning opportunities for students in classes. This chapter will outline how the use of mobile audio devices were used by preservice physical education and health teachers at a New South Wales university to enhance their understanding of questioning methods, the development of dialogue and the pedagogical use of GCA in physical education lessons.

Pedagogies of games in physical education in Australia

The dominant discourses in physical education and coaching in Australia over the last century have been based around two main themes, the playing of 'sport' and the development of confidence in playing sport. This has in part been due to the relationship of our national identity with physically active students and improved national health outcomes (Tinning, MacDonald, Wright & Hickey, 2001). The dominant pedagogical method (to be referred to as the traditional model from now on in this chapter) to achieve these aims has changed very little and is based on the format of warm up, drills for technical skill development, modified game and then the actual sport. The underpinning philosophy of the model has, at its foundation, the belief that students need to master the technical skill aspects associated with a particular sport as a pre requisite for playing the actual sport. Lessons in the technical model are for the most part teacher centred and tend to follow a part-whole-part approach with students being told what to do and how to do it and then applying this knowledge to an adult version of a sport with adult rules and conditions (Hopper & Bell, 2001; Light, 2003).

Issues with the traditional model

Research on the use of the traditional model has revealed key issues relating to its pedagogical success, especially in relation to school physical education. Oslin and Mitchell (2006) have summarised these findings and linked the use of the approach to reduced student engagement, self-confidence and self-perception based on their perceived ability to perform the technical skills. They argue that this leads to reduced student enjoyment in physical education lessons. Other studies suggest that the approach cannot sustain and even reduces levels of student motivation, has a 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 & Holt, 2000; Light, 2003). In addition, Launder and Piltz (2006) suggest the traditional approach can result in students leaving lessons, lacking even a basic understanding of the

fundamental nature of the sports they are being taught or even an understanding of the primary rules required to play. Thus, the outcomes of using the traditional approach seems to be at odds with claims that participation in physical education lessons will lead to improved participation in sports and improved student attitudes relating to engagement in physical activity for life through, in part, involvement and exposure to a wide variety of games and sports (Board of Studies, 2003).

Game centred approaches

The term *Game Centred Approaches* (GCA) is a collective name for pedagogical approaches that have the use of games as its central learning context (Oslin & Mitchell, 2006). The approach uses games as the core learning tool, focussing on decision making, tactics and strategy and technical aspects as the essential skills of playing. There are many variations of the original *Games for Understanding* model developed in 1982 by Bunker and Thorpe, including *Teaching Games for Understanding* (Werner, Thorpe & Bunker, 1996), *Games Sense* (ASC, 1991, cited in Light, 2003), *Play Practice* (Lauder 2001), the *Tactical Decision-Learning Module* (Gréhagne, Wallian & Godbout, 2005), *Playing for Life* (ASC 2005) and *The Games Concept* (Rossi, Fry, McNeill, & Tan, 2007). The key theme of all models is the importance of placing students in game situations that allow tactics, decision-making and problem solving to be examined (Webb & Pearson, 2004). The models all tend to follow a whole-part-whole approach to learning, providing opportunities for the students to develop greater understanding of all aspects of the game through play, answering the age old question that all students ask at the start of the lesson, 'Can we play a game?' GCA are by intent more student centred than the traditional approach and have strong links with constructivist perspectives of learning as students are assumed to be active in the construction of knowledge for learning to take place (Kirk & McPhail, 2002; Rovegno, 2006).

The teacher's role as facilitator is central to the use of GCA as the learning and understanding that is taking place and the meanings that are being created by students occur through the selection of games and the dialogue that develops in the lesson. The use of questions related to this play is the foundation of student understanding and by using these in an appropriate and timely fashion, teachers can set games as problem-solving opportunities, providing students with a variety of opportunities to demonstrate their understanding of the concepts. Technical skill development and execution still play an important role in lessons, but only after the students / players recognise the requirement for competency in these skills to complete their objectives or achieve their aims (Werner, Thorpe & Bunker, 1996).

The pedagogy of GCA

Many advocates of the approach such as Turner (2005) acknowledge that using GCA are both difficult and challenging for teachers to use. Chandler (1996) links the effective use of GCA with 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. He also suggests the effectiveness

of the GCA in developing learning outcomes for students seems significantly more dependent on the pedagogical and game skills of the practitioners than the technical model.

According to Piltz (2004), the ability to observe and develop appropriate questions to provide meaningful feedback are fundamental elements for those wishing to use a GCA and are essential to its success. Gréhaigne, Wallian and Godbout (2005) argue that it is essential for students, preservice teachers and teachers to develop a deep understanding of what they term action – debate – action cycles, where the dialogue developed in response to questioning is used to enhance student learning and understanding of the games and sports they are playing. Therefore, a key element to the successful use of GCA is the dialogue that develops in between the teacher and students and between the students themselves in the lesson in response to teacher questions relating to play.

The way meanings are constructed by students in the lessons and the learning and understanding that develops from this are derived from the questions and games used by the teacher. Wright and Forrest (2007) suggest that many GCA lessons may be no more constructivist in nature nor more liberating for students than the traditional method due to the simple ‘Initiate – Response – Evaluate’ structure used by teachers in their questioning and dialogue management. If this is the only form of questioning structure used, the teacher still remains the holder of the knowledge and questions used may not allow any meaningful construction of knowledge by the students themselves. They also argue that as there is very little literature to model the ongoing dialogue that evolves from dynamic game situations, it is difficult for practitioners to develop the appropriate questioning and communication skills to manage the learning in a constructivist manner. Those new to the approach or trying to implement it as a pedagogical method may simply copy games and imitate questions shown or demonstrated to them, assuming the questions used and answers given are the only correct solutions.

In this sense and if used this way, the development of dialogue in GCA remains very teacher centred, radically reducing the student’s ability to be involved in decision making, problem solving or student engagement so valued by its advocates.

The challenge

As part of the undergraduate degree, preservice teachers in the Physical and Health Education degree at a New South Wales University participate in a number of practical studies games subjects which aim at developing a deep understanding of games and sports, and related pedagogical content knowledge. GCA pedagogy is the focal point of the games and sport component of the courses. In previous years, assessment on competency and development in teaching a games lesson and using a GCA was based on a student presentation of elements of physical education lessons and self-reflection post-presentation, based on their perceptions of the positives and negative of the lesson. However, to allow students in the course to gain a deeper understanding of the requirements of using a GCA across different sport contexts, students had to be more active in their

development of knowledge and understanding about GCA and base this understanding on more than a one off recollection of the lesson. They needed to be able to analyse what had occurred when they attempted to use a GCA and be active in the analysis of the questions they used, the answers they received, the manner in which they created meaning for those in the presentation and the areas that needed improvement.

These issues then defined the challenge for mobile learning in relation to GCA, to create or enhance a task to allow preservice teachers to examine the practice beyond the theory, by investigating the claims made by proponents of GCA relating to the constructivist nature of the pedagogy and the issues that arose in relation to its use in the actual field that teachers will be working in during games lessons. The task also had to fit within the broader framework of the brief for the project, to develop innovative methods of teaching and learning through the use of a mobile device. To fulfil the teaching and learning brief, the content of workshops and tutorials, consultations, presentation observations and general observations on tutorials and understanding of GCA were also recorded. This became an interactive audio diary to be used as part of the analysis process for the study.

Teaching and learning activity

The task for the project was in two parts. Firstly, students (in groups of three or four) were assessed on their use of a GCA when teaching a 'lesson' in one of the sport contexts for either net court or invasion/territory game. As part of the task, students were expected to:

- Develop appropriate games for the purpose of the presentation
- Manage the group effectively during the presentation
- Develop appropriate dialogue and questions based on observations of game play in the lesson and student responses

Secondly, presenters were required to complete an individual two-page reflection and analysis of the presentation based on their use of a GCA in the particular sporting context selected. The reflection included an evaluation of the positives and negatives of the session and an evaluation of the questioning methods used to establish and determine learning and meaning within the lesson. The data for the reflection were collected in two ways, firstly via digital video camera and more importantly for the project, through the use of a mobile audio device, in this case, an iPod with an attached microphone. Students were instructed to allow the iPod to record the entire presentation to ensure both their dialogue and the intended and unintended dialogue of the participants in the presentation was recorded. This was then stored for the presenters to use when developing their reflection and analysis of their presentation.

Technology

Students involved in the course used a 30gb iPod as their mobile audio device. A portable microphone was attached to the base of the iPod. The attachment of the microphone initiated an automatic *Record now* menu and two settings related to the quality of recording. For this task, considering the amount of interference that may have occurred in

a lesson outside a classroom, the recording quality was set at the highest quality to allow capture of as much the dialogue that occurred in the presentation as was possible. Students presenting held the iPod during their presentation, allowing the true mobility of the device to be utilised. If the recording ceased at any time, the iPod had a *Stop and save* function, which saved the lesson up to the point where recording had paused. It then reverted to the *Record now* menu option and the students repeated the initial recording process by pressing *Enter*. Recordings were saved on the device and once all presentations for the tutorials in that week were completed, the dialogue was saved. As there were not sufficient iPods to allow the students to have their own for the duration of the semester, their audio from the presentation was burnt onto a CD for student presenters to use as the basis of their reflection and as a permanent record.

Participants

Data for the study were collected in semester-long practical studies classes at the University. Ethical approval was granted prior to the commencement of the semester and permission was sought and gained from the students in two cohorts of the course.

The participants in the study were all students in the University's undergraduate Physical Education and Health degree. There were 119 students involved in the research, all of whom were enrolled in one of two subjects, a second year two credit point component of *Skills Analysis and Performance* subject and third year two credit point component of an *Advanced Skills Analysis and Performance* subject.

The second year subject focused on the game category of invasion / territory games (where one team enters the other team's territory to score points) with the sports of hockey and soccer as the context. The structure of the course allowed for four weeks of instruction using hockey as the context for understanding GCA pedagogy followed by two weeks of presentations where students were assessed on their demonstrated their competency in using a GCA in Hockey. This was repeated for the second half of the semester with soccer as the context. Each presentation lasted for 20 minutes.

Students in the third year subject had four sport contexts to examine net court games (where one team / player attempts to manipulate an object over a net so it cannot be returned by the opponent/s): volleyball, badminton, squash and tennis. They had two weeks of instruction in GCA relating to Volleyball, followed by two weeks of presentations where students were assessed on their demonstrated competency using GCA in a Volleyball context. This was repeated for Badminton, Squash and Tennis. All presentations were again for 20 minutes.

Findings

For this project, data were categorised according to themes emerging from the analysis of the individual two-page evaluation of the lesson. These emerged specifically in relation to the criteria for the reflections and were; how the use of the device allowed students to examine the positives and negatives of their presentation, how the use of the device assisted the students analyse their use of questioning and how the

device assisted students to analyse the development of dialogue in their lesson. The analysis was based on a constructivist and situated framework in which students were active in the construction of their knowledge in a context that was authentic to physical education teachers using a GCA. The themes emerging were then compared with the audio diary data from tutorials and consultations and then with others in the physical education community to ensure trustworthiness and credibility.

Positives and negatives of the presentation

I noticed that I need to project my voice more. I speak very quietly and believe I need to show more enthusiasm in my voice when I am teaching. (Student B)

Students used the audio to reflect on the positives and negatives of the presentations through features evident in their dialogue at a variety of levels. Most tended focus on clarity of instructions, pace of speaking, tone of voice and appropriate vocabulary as key notions relating to positive or negative aspects of the lesson.

Our questioning during the lesson allowed the students to think strategically about the game and allowed the students to focus on key concepts that make up volleyball (Student E).

Students also demonstrated their understanding of GCA by reflecting on the use of questions within the lesson, especially the link between the questions and the activities and linked this with a positive or negative element. However, others noted that this questioning was the source of issues with their lessons.

It was very evident when listening to my lessons that we did not create an optimal learning environment due to the nature of our questioning, which was regularly without purpose or related specifically to the games used (Student C).

Nature and purpose of questions

Students recognised the need to use questioning to probe for understanding and noted this as a key component in their successful use of a GCA. Some students made note of role of the answers to questions in learning.

Each of the players gave the answers I was looking for and if I received a blank look, I usually reworded the question and a great response or the response I wanted to hear was then given (Student M).

This indicates that the students were cognisant that the type of questions they asked would enhance the learning but in turn were not necessarily reflecting on the role of students in the class being active in knowledge construction as opposed to telling the teacher the answer they wanted to hear. However, other students focussed on this area and analysed this in a different manner.

A number of times I used closed questioning and gave away the answers while waiting for the class to respond (Student A).

Others wrote:

I also found that when asking a question, I tended to answer the question for them or lead them so much that the only answer required was yes (Student C).

This response was common in the reflections, suggesting that analysing the dialogue gave students the ability to recognise not only the importance of the type and nature of the question but more importantly, their response to the answer or indeed the lack of an answer. Another student further expanded on this theme.

One aspect of questioning absent that could have improved the learning was to use further probing questions. Generally there was only one question asked to students and when answered, that was it (Student L).

This was supported by another reflection, where the author, Student A, noted:

When a student gives me what I feel is the correct answer, I simply say yes and move on as opposed to investigating this further through other questions or other student responses.

These students are recognising the need for a variety of answers to the questions they are asking and perhaps the relationship between the learning that is occurring for all students and the constructivist nature of the approach rather than accepting learning has occurred through single responses. They are also noting that if an answer is not given, it may require further exploration as opposed to those in the class not knowing. Other analyses of questions expanded even further and noted the role that personalising the questions could play increased effectiveness in learning.

I believed that I could have further supplemented the questions asked to the class as a whole by asking more questions personally...it adds to the educational value as it is concurrent in the game and gives them (students an opportunity to implement (their answers) in the game (Student J).

This is of particular interest as the ability of the student to listen to the dialogue has allowed them to move beyond the GCA structure of game, questions, and progression of game and examine how questions can identify and enhance learning at different levels of learning and understanding in the class.

Use of dialogue to establish and determine understanding

Students used the dialogue recorded in the lesson to reflect on the level of learning through the answers received. While most simply indicated that the answers they received indicated understanding, some went further in their analysis.

When students asked if the cones made it easier or harder from an attacking point of view, they responded with 'It made it harder but made us realise ways to create space and promote awareness of where other players were'. The defensive players agreed and included that they had used the background knowledge of the player's use of the cones to prepare for their approach (Student E).

The ability to have the dialogue from the lesson allowed the student to evaluate both the questions and the answers received and compare the responses from both teams in relation to their own observations.

Others noted that:

Answers given such as “running to the ball” did indicate that students did make mistakes and could articulate this, seeing why it was a mistake but this was not always reflected in play (Student T)

I did receive a good response when she talked about how positioning yourself between the player and the ball was successful. I then asked how that particular method helped you defend (Student T).

Here, Student T is not only acknowledging the ability to recognise appropriate responses in relation to the question he had asked but also to begin to develop a dialogue and interact with the students based on their responses.

At its best, the link between the discussion and the play and teacher practices was very in depth. For example, Student C suggests in relation to implementation of strategy in a game and its relationship to the dialogue and his own construction of the reasons for player response.

At first I just decided that these players weren't skilled as their opponents however, the fact that I did not encourage them further to describe their strategy (and its requirements) ... meant that their defensive structure broke down in certain circumstances.

Here the ability to reflect and analyse feedback and questions allows Student C to recognise his role in the learning and understanding of students in relation to the problems he is setting. He recognises that it is task complexity and an interpretation of the response in relation to the question he has asked that needs exploration rather than a simple judgement on skill that is leading to poor play.

Issues impacting on questioning and dialogue

The ability to access and analyse the dialogue allowed students to not only reflect on the questions they were using but the reasons they were keeping the dialogue open or closing it. Student T recorded that:

I received a good answer but then I went on with a speech about space and stuff to get through the lesson.

Student J noted that:

I feel that while I was receiving answers that indicated understanding, I did not have the depth of knowledge to investigate some of the implications of these answers further and simply moved on to avoid this.

The ability to capture the dialogue allowed the students to recognise that limits in game knowledge and worries about efficiency were keys in closing the dialogue. Students also acknowledged the difficulty of

using the approach due to their ability to use dialogue and its role in GCA approaches. Student A noted:

I feel that I need more knowledge in GCA, which would include more theory, but in particular questioning practice would enable me to give the questions more purpose.

Student M, noted:

Listening to the dialogue indicates I need more practice and knowledge at using a GCA, especially when it comes to questioning

This also supports this statement, demonstrating very active participation in the construction of knowledge.

Use of the device as a learning tool

While not a component of the reflection, nearly all of the students made comment on the value of the device to enhance their analysis, despite some initial reservations.

At first I was nervous being taped but soon forget I actually had it. (Student A).

Others noted the difficulty completing the reflection adequately without the device.

(The analysis) would have been a whole lot easier for me if I had remembered to turn the microphone (iPod) on but at least I had the other group members dialogue (Student K).

Students also made note of the value of the device in improving their teaching and pedagogical skill.

I hope to listen to myself again as I learn a lot by listening and would like to see if I have taken the comments I have made on board (Student A).

Student M also noted:

While I was a little intimidated at first with hearing myself, it was actually something I would like to do again as I was able to critique my teaching style and find ways to improve my teaching.

The mobile device here is giving students the capacity to enhance their pedagogical skills and allowing them to be active in ways to improve their pedagogical skills in a manner that is non intrusive and easy to use.

Discussion

Wright and Forrest (2006), Prain and Hickey (1997) and Chen and Rovegno (2001) argue for the value of examining what is actually occurring in the dialogue of lessons (in relation to both discourse and use of constructivist methods), as both deeply affect the thought processes and the nature of what is learnt in the subject. The use of the mobile device and its ability to capture the actual dialogue from practice and store it for repeated use by the students in analysis

allowed students to actually hear what they were saying in the class and to evaluate the questions they used, the strengths and weaknesses of their development of dialogue and use of a GCA as a pedagogical method at a variety of levels rather than simply attempt to recall what had occurred. Some students, however, only analysed the lesson at a more simple level, based on the asking of questions, voice clarity and instruction while others used the dialogue to provide a more in depth analysis based on the learning that was occurring as a result of the nature of the questions being asked, the responses to the question and at its deepest, the relationship of this dialogue to the movement responses of the students in the games being used and its indication of student understanding. Of real interest was the ability of the dialogue to allow students to determine the nature of the questions they asked, the type of dialogue they were creating in the class and their own requirements in relation to both GCA pedagogy, creating a positive correlation between the nature of the question and the learning occurring and its importance in student's constructing knowledge in GCA.

The implications of the research project have also had a positive impact on the structure and requirements of the games and sport component of the practical studies course. Pre service teachers in the course:

- are required to complete compulsory readings and related quizzes to enhance theoretical knowledge for GCA, other pedagogical approaches and the role of dialogue and questioning in learning
- have more observational time for students to develop the skills needed to formulate questions
- have been given greater scaffolding of question structure and observational focus points in games to enhance learning for students
- are required to develop the video and the dialogue together as part of the analysis process.

The use of the mobile digital audio device was a positive benefit for this task. While there were some initial reservations from students, the ability of the audio was actually well received and perceived as a valuable tool. There were some initial teething problems with recording issues, microphone attachment and the logistics of charging and recharging but these were insignificant. The device was able to capture the dialogues and allow students to evaluate and reflect on what actually occurred in the lesson, and what learning and understanding was occurring. While many students still made assumptions about the approach, for example the use of questions in a lesson equating to the use of GCA, others were able to extend their analysis beyond this and examine their role in questioning and knowledge construction and the role of the dialogue developed in lessons and its relationship to learning and understanding. The role the device played in allowing students to do this is important for two reasons. Firstly, the link between questioning and verbal responses and cognition relating to movement is often overlooked when determining learning and successful outcomes of physical education classes where movement, participation and high activity levels are

seen as the benchmark of success. Secondly, the dialogue provided the opportunity for students to conceptualise through practice the issues associated with using a GCA and requirements to use it successfully based on the dialogue developing and occurring in the lesson. This device allowed further development in the examination of movement pedagogy in a meaningful way for the students due to their active participation in the process.

GCA approaches are a valuable pedagogical tool and can greatly enhance student learning in physical education and sport if used appropriately. The use of a device as a cognitive tool in this field has the capacity to enhance the preservice teachers understanding of GCA in a meaningful and valuable manner in a way that has applications in other pedagogical practices beyond Physical Education.

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