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# **Game Sense Online – Utilising the Web for the Professional Development of Physical and Health Education Teachers**

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## **Abstract**

In 2005, a new *Personal Development, Health and Physical Education (PDHPE) Years 7–10 Syllabus* will replace the current syllabus and be implemented with Year 7 and Year 9 students in NSW secondary schools. Informed by contemporary research, the new syllabus represents changes to both the content and the teaching strategies traditionally utilised by teachers. One area that has undergone major changes within the syllabus has been that of the teaching of games, with the move towards a Game Sense framework.

It is expected that the implementation of the new syllabus will also be accompanied by a variety of traditional professional development opportunities for teachers. What is also now possible given the affordances of information and communication technologies is online delivery that has the potential to increase teachers' level of confidence and readiness for implementing a Game Sense approach.

This paper discusses the planning and development of a Game Sense online resource within the ActiveHealth framework ([www.activehealth.uow.edu.au](http://www.activehealth.uow.edu.au)), a new Physical and Health Education Web resource for teachers. Principles for guiding the development of online teaching resources for practicing and pre-service teachers will also be discussed.

The results of a small pilot study designed to investigate teachers perceptions of the effectiveness of such a resource indicate that it is of benefit to teachers in developing a deep understanding of Game Sense, however greater consideration will need to be given to the quality of the learning resources and learning support structures should no face to face opportunities exist.

## Introduction – The PDHPE Syllabus and Game Sense

In 2005, a new *Personal Development, Health and Physical Education (PDHPE) Years 7–10 Syllabus* (Board of Studies, 2003) will replace the current syllabus. This is to be implemented with Year 7 and Year 9 students in NSW secondary schools in 2005 with Years 8 and 10 to be introduced in 2006. This syllabus is based on four strands in both Stage 4 (Years 7&8) and Stage 5 (Years 9&10): Self and Relationships; Movement Skill and Performance; Individual and Community Health; and Lifelong Physical Activity.

One area that has undergone major changes within the syllabus has been that of the teaching of games in Strand 2 - Movement Skill and Performance, with the move towards a Game Sense or games for understanding framework. There are also concepts of Game Sense that can be implemented in Strand 4 - Lifelong Physical Activity.

Game Sense places an emphasis on the play, where tactical and strategic problems are posed in a modified game environment, ultimately drawing upon students to make decisions. It places the focus of a lesson on the student in a game situation where cognitive skills such as 'tactics, decision-making and problem solving are critical...with isolated technique development utilised only when the student recognises the need for it' (Webb & Thompson, 1998, p.1). Other terminology and variations of the games sense approach include: 'Games for Understanding' (Bunker & Thorpe, 1982), 'Play Practice' (Lauder, 2001) and the 'Games Concept Approach' (Wright, Fry, McNeill, Tan, Tan & Schemp, 2001, cited in Light, 2003). The term Game Sense will be most commonly used throughout this paper. The Game Sense strategy follows the teaching sequence of warm-up, game, challenges and questioning, game modification, challenges and questioning, and game modification with an integration of skill development at times where the need arises (den Duyn, 1997).

Using the game of hockey as an example, it is important that the student firstly has an understanding the game, that is, the ball must be moved down field with the intention of scoring a goal. An appreciation of the game might include a grasp of the concept of moving down the field individually or as a team whilst thwarting the opponent's attempts to take control. One of many examples of tactics is passing to players on the wing to run the ball up field. Whether to have a shot at goals or whether to pass to a player in a better position is where the skill of decision-making is required. Finally skill execution and performance is required to perform a flick shot to score in the top corner of the goals.

Game Sense is an approach to teaching that makes very effective use of active learning in that the students are learning through playing the games. In addition to this, 'questioning is a powerful method of encouraging players to analyse their actions, both individually, and as a team' (Goodman, 2001, p.7). Questions will generally relate to a particular tactical aspect. Effective phrasing of questions can also help to guide the player to an answer, in the event that they are struggling with an activity. Age, experience and ability level of the players will affect the complexity of the questions used (Goodman, 2001).

Game Sense has been shown to result in improved learning outcomes for students. Games are a significant component of the physical education curriculum, with research suggesting that '65 per cent or more of the time spent in physical education is allotted to games' (Werner, Thorpe & Bunker, 1996, p.28).

The syllabus outcomes (Board of Studies, 2003), highlight the need for students to not only participate, but also to be cognitively involved in games. The progression from Stage 4 to Stage 5 can also be seen in relation to students requiring greater critical thinking and solving of more complex tasks. Whilst Game Sense is not the only pedagogical model for teaching games, it is most certainly one that can be used effectively to achieve the student outcomes.

Research (Light, 2003; Thomas, 1997; Turner & Martinek, 1999; Werner et al., 1996) indicates the strengths of the Game Sense approach and the desirability of it as one of the major approaches to the teaching of games in the new PDHPE syllabus. Light (2003) examined the responses from student teachers undertaking primary teaching to taking such a pedagogical approach. Student evaluations were generally positive indicating an increase in enjoyment, understanding and cognitive engagement in the games. In comparing game sense to skill-based teaching, Werner et al (1996) stated that... 'while the teacher may be convinced that skill-based lessons are having a positive effect in that some immediate skill improvement is made, the social and skill related interactions might over time convince the youngsters of their lack of ability' (p.32). Thorpe and Bunker (1986, cited in Allison & Thorpe, 1997) argued that a skill-based approach to teaching less physically able students is likely to: '...result in a sense of failure, a lack of enjoyment, poor self-concept and subsequently inhibition of long term participation' (p.11). In contrast to this, the students who exhibited low physical and technical ability in the Game Sense lessons consistently reported significantly higher and more positive scores for these same factors. 'It appears that a skills-based approach serves only to highlight, confirm and reinforce – often publicly – the pupils lack of physical ability' (Allison & Thorpe, 1997, p.12).

Research indicates the strengths of the Game Sense approach and the desirability of it as one of the major approaches to the teaching of games in the new PDHPE syllabus. There are however, many practicing PDHPE teachers that have little knowledge of the Game Sense approach and the teaching strategies for successfully integrating such an approach into the curriculum. Given such an approach will be new for many, the need for professional development opportunities for PDHPE teachers is paramount.

### **The Game Sense Approach**

In the pre-service training of physical and health education graduates, the University of Wollongong has been regarded as an innovator, being at the forefront of the introduction of new teaching strategies and curriculum development. Indeed, the proposed new NSW 7-10 PDHPE syllabus has incorporated teaching strategies that have been well established at the University of Wollongong (Pearson, Webb & Rowland, 2003).

Whilst Game Sense has been integrated throughout the undergraduate degree program with a variety of strategies utilised (see Pearson, Webb & Rowland, 2003 for a more detailed description), funding pressures within the university have seen the time available to teach practical subjects reduced.

Similar issues exist for the provision of training and development opportunities needed to support teachers in developing the understandings and skills necessary to utilise a Game Sense approach. Given the number of practicing teachers in NSW and their geographical distribution, reduced funding to provide teacher release time, a reduction in the number of consultants to conduct face to face workshops, combined with a wide range of teaching and syllabus considerations, has meant that it would seem necessary to explore alternative options for delivering professional development opportunities related to the Game Sense approach.

Just as Game Sense is providing an innovative approach to the teaching of games, so too is the World Wide Web (WWW) providing the means by which there can be the integration of many different forms of media and communication technologies into a simple delivery system. The World Wide Web was identified as providing the most benefit for learners with its ability to 'present graphics, information, tables, and forms on the Internet in a user-friendly setting' (Kehoe & Mixon, 1997, p.200). Even more advantageous from a physical education perspective, is the ability to provide visual resources in the form of movies to complement notes, lesson plans and graphics.

Aggarwal and Bento (2000) agree, and add that convenience is becoming increasingly important, and that there is a growing demand for a 21<sup>st</sup> century education that is, 'independent of time and space, orientated towards goals and outcomes, centred around the student/learner; geared to activate hands-on learning; and able to accommodate different skills and language' (p.4).

One such strategy developed to complement face to face delivery, has been the production of a series of online learning activities that would assist pre-service and practicing teachers in their understanding of the teaching of Game Sense (Towns, 2003).

### **Game Sense Online – Principles and Development**

The World Wide Web offers learners a wide range of educational benefits, for example:

- the integration of many different forms of media and communication technologies into a single delivery mechanism
- the ability of users to work at their own pace
- the ability to re-visit information and
- the ability to provide demonstrations.

The concept of online delivery, specifically in physical education is quite new. Few examples can be found of such resources although there are a number of health related resources on

such sites as Blue Web'n (<http://www.kn.pacbell.com/wired/bluewebn/>) and Merlot (<http://www.merlot.org/>).

A review of the literature indicates however that there are a number of principles by which such a learning resource should be developed. Best summed up by Oliver (2001), he describes a framework for best practice in online delivery as consisting of:

- Learning resources – the content, information and resources with which the learners interact in completing the tasks;
- Learning activities – the tasks, problems and interactions used to engage learners; and
- Learning supports – the scaffolds, structures motivations used to support learning

Based on the principles highlighted and interviews with experts in the field, the resource was developed focusing on 'Invasion Games' (they were deemed the most common category of games in which the Game Sense approach to teaching/coaching is used). Other games, for example, Target Games - Net/Wall Games, Striking/ Fielding Games were also explained.

The content with which learners were to engage consisted of teacher notes, web pages, and videos focusing on three different teaching approaches (Full sided, Small sided, and Games for Outcomes) to Game Sense and three different games (Touch Football, Basketball and Netball).

Using the content provided on the site as well as from other Web links, learners were set a task to analyse the videos. Based on the notes and examples provided, they were asked to construct a series of questions that would be appropriate to the specific Game Sense approach. Learners were provided with general feedback on their responses.

Given that Game Sense Online was designed to complement face to face workshops where facilitators or coaches would provide learners with a range of feedback and assistance appropriate to their needs, considerable effort was put into providing a clear scaffold for the learner to be able to build on their knowledge as they progressed through the resource. To support learners, the site provided a logical sequence of understandings about Game Sense consisting of six major pages through which they were expected to progress.

- Page 1 – What is Game Sense - An outline of the principles behind Game Sense
- Page 2 – Categories of Game Sense - An overview of the various forms of games, eg. Invasion Games, Target Games - Net/Wall Games, Striking/ Fielding Games
- Page 3 – Questioning - This page provided a description of a typical lesson, types of questions, question examples and when to ask the questions
- Page 4 – Lesson 1 - A focus on the Full Sided Approach using Touch Football as an example lesson (video and questions/feedback included)
- Page 5 – Lesson 2 - A focus on the Small Sided Approach using Basketball as an example lesson (video and questions/feedback included)
- Page 6 – Lesson 3 - A focus on the Games for Outcomes Approach using Netball as an example lesson (video and questions/feedback included)

Navigation processes were implemented in order for the user to find their way around the site consistently and systematically. Aesthetic, graphical and video file considerations were taken into account to ensure there were not too many large file-sized components such as images, charts, sound files, or video files where downloading can be drastically slowed.

### **Investigating the Effectiveness of Game Sense Online**

In order to investigate the effectiveness of Game Sense Online, a two-stage process was implemented. The first stage involved a review of the resource by an expert panel that consisted of three educational professionals whose respective areas of expertise were recognised as integral in the site development process.

Reviewer 1 was a former teacher and lecturer in IT; reviewer 2 was an instructional designer for the Digital Media Lab at the University of Wollongong and reviewer 3 was a PDHPE teacher at a local High School with 25 years experience with an expert knowledge of Game Sense. The three panellists were also provided with a copy of an evaluation instrument and asked to indicate their perceptions based on the criteria as well as provide any supporting or additional comment. Overall, their responses overwhelming indicated that the resource met the principles of design described earlier and it was well placed to fit in within the new 7-10 PDHPE syllabus.

In the second stage the focus shifted to a group of 20 practising secondary PDHPE teachers (from the catholic systemic system) who had enrolled in a Game Sense workshop to be conducted over a 90-minute session. Before the workshop the teachers were provided with instructions on how to access Game Sense Online through the ActiveHealth Website.

In preparation for the workshop, teachers were asked to answer the following questions from information provided on the site.

Define game sense.

Describe the model (Thorpe and Bunker) and apply it to a sport.

Comment on the technique versus game sense approach (technical versus tactical)

What are the categories of games?

What type of questioning is prominent in game sense?

The lessons showed 3 different approaches. After viewing each lesson what are they?

During the workshop, conducted by two lecturers from the University of Wollongong, participants revised the task set for them two weeks earlier. They then actively participated in a variety of games that demonstrated the different approaches to Game Sense. Participants were then required to work together in groups (invasion, striking/fielding and net/wall) to design and teach a selected game using the different Game Sense approaches. After a specified time, each group demonstrated their approaches to the other groups, integrating appropriate questioning.

At the conclusion of the workshop, the participants were given a questionnaire where they were asked firstly to comment on the content, relevance and quality of the presentation

overall. Secondly they were asked to comment specifically on the Game Sense Online resource. Information was sought from participants as to whether they accessed Game Sense Online before the workshop, how this was done, how long it took to complete the assigned task, the degree to which the content of the site was helpful, and their overall perception of usefulness of the Game Sense Online resource. Participants were also asked to comment on their level of proficiency in using the Web, as well as their views on using the Web for the purpose of providing professional development. The surveys were analysed using the SPSS statistical package. Descriptive statistics were generated to provide frequency distributions for responses to each of the questions.

In responding to the first aspect of the survey, teachers were overwhelmingly in agreement that the content of the workshop was relevant, informative and professionally presented. The responses to the second aspect of the survey indicated that the majority of participants rated Game Sense Online highly. A consistent theme throughout the survey was that the site was highly regarded as an excellent resource for PDHPE teachers. This was particularly evident in the responses of teachers when they indicated its ability to provide help to teachers in defining Game Sense and its various categories, and in the provision of video and text to explain the three different approaches teachers might use when taking a Game Sense approach.

**Table 1: Teachers' Perceptions of the Amount of Help Provided by Game Sense Online**

Content for Game Sense Online	Amount of help					
		Extremely helpful	Very helpful	Helpful	Satisfactory	Not helpful at all
Define Game Sense	n	6	7	2	0	0
	%	40	47	13	0	0
A description of the model by Bunker and Thorpe	N	3	4	6	2	0
	%	20	27	40	13	0
A description of the technique vs tactical approach	N	2	7	5	1	0
	%	13	47	33	7	0
A description of the categories of games	N	9	5	1	0	0
	%	60	33	7	0	0
An explanation of questioning	N	2	9	4	0	0
	%	13	60	27	0	0



A description of the 3 different approaches through the use of text and movies	N	6	6	2	0	0
	%	43	43	14	0	0

Another theme throughout the responses was that this particular group of teachers were not averse to using the internet for professional development opportunities and were proficient in the use of the internet, able to access information relatively quickly from their school computer network.

When asked their perceptions of the usefulness of accessing Game Sense Online before the workshop, both lecturers were in agreement that the teachers were far more prepared than other groups who had participated in similar workshops. Participants were more likely to ask in-depth questions and they, as facilitators, were able to spend more time providing practical hands-on activities to demonstrate the various approaches rather than talking about what should be done.

## Conclusion

Online delivery offers learners a wide range of educational benefits, allowing for the integration of many different forms of media and communication technologies into a single delivery mechanism as well as allowing for flexibilities such as users working at their own pace, and the ability to re-visit information and provide demonstrations. The development of this web-based resource has allowed pre-service and practicing teachers, especially those in remote areas, the opportunity to examine Game Sense principles.

At the present time, few examples of coaching resources exist via the web that utilise a variety of multi-media approaches. The existence of an online learning community, *ActiveHealth* where there is a range of resources to support learners, provides an ideal platform for the delivery of such a series of learning activities.

However, whilst teacher professional development utilising ICT is becoming increasingly commonplace, teachers still prefer traditional methods such as facilitator led workshops, with the use of CD-ROM and online environments as their least preferred method (Commonwealth Department of Education Science and Training, 2001). The question for Universities and Departments of Education becomes how to preserve and expand the desirable aspects of face-to-face teaching models when translating them into the new environment of Web-based education (WBE).

Whilst this online project focused on Invasion Games, it is the first phase of a larger endeavour, providing a platform for future developments related to the teaching of Game Sense online such as Target Games, Net/Wall Games and Striking/Fielding Games. Online delivery is expensive in time and resources, however the initial results suggest that such an approach is worthy of further exploration.

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