Self-identified and Observed Teaching Styles of Senior Physical Education Teachers in Queensland Schools.

Brendan SueSee
Queensland University of Technology (QUT)

Ken Edwards
University of Southern Queensland (USQ)

Abstract

Teaching styles, methods, models or strategies are valued for what they claim they can achieve. In recent times curriculum documents and governments have called for a range of teaching approaches to meet the variety of learner differences and allow students to make more independent decision making in physical education (Hardy and Mawer, 1999). Prior to 2005, no research had been conducted on the teaching styles that teachers of Physical Education use in Queensland. Cothran, Kulinna, Banville, Choi, Amade-Escot, MacPhail, Macdonald, Richard, Sarmento, and Kirk (2005) completed a study titled *A Cross-Cultural Investigation of the Use of Teaching Styles,* which presented a questionnaire to teachers with scenarios of teaching styles based on the 11 styles identified by Mosston & Ashworth (2002). This paper will present the findings of research completed on the reported teaching styles (based on the work of Mosston & Ashworth, 2002) that 110 teachers of Queensland Senior Physical Education believed they used and the teaching styles that were observed as being used by nine participants across three one hour lessons of senior physical education.

Background

In 1998 the Board of Senior Secondary School Studies published the Queensland Senior Physical Education Syllabus (QSPES). The QSPES integrated theoretical knowledge and practical performance and assessed higher order thinking in physical activity. At the time of publication it was credited with being 'unique' and it was suggested that "there is very little else currently underway in the English-speaking world to match developments in Queensland" (Penney and Kirk, 1998, p 43). Besides the integration of selected aspects from 'theory' (*Focus Areas*) with performance (*Physical Activities*) the QSPES also stated teaching styles that should be used such as "guided discovery, inquiry, cooperative learning, individualised instruction, games for understanding and sport education" (QSA, 2004, p 28).[1]

Research Design

An understanding of teaching styles and their use would appear to be fundamental to understanding the effectiveness of the way that physical education is taught and the syllabus effectively implemented. The focus on Senior Physical Education for this study was undertaken because it was believed that this is where 'best practice' with regards to a range of teaching styles and adherence to syllabus requirements was most likely to occur.

The research questions which this study was designed to answer were:

1. Are teachers of Senior Physical Education (years 11 and 12) in Queensland using a range of teaching styles?
2. What styles are teachers of Senior Physical Education in Queensland employing when they teach Senior Physical Education?
3. What is the dominant teaching style for teachers of Senior Physical Education in Queensland?[2]

The research methods employed for this study were non-experimental which is "typified by observations or descriptions of the status of a condition or situation" (Berg & Latin, 2004, p 197). This study sought to record events that would have occurred whether the researcher was there or not. The researcher did not attempt to manipulate variables or make 'something' happen.

In keeping with non-experimental research ideology the sample group were not randomised but were chosen by characteristics which they possessed. This means that "subjects are usually identified by some predetermined criteria and are grouped in that fashion" (Berg& Latin, 2004, p. 198). These criteria or characteristics will be outlined later. If the sample had been randomly selected the data could be biased as the sample may have contained subjects who displayed a narrow range of characteristics (e.g., all males with 0-4 years teaching experiences at all-boys schools).

The study involved two parts – **Part A** and **Part B** – for collecting data. **Part A** of the study involved a questionnaire to determine which teaching styles Queensland (a state in Australia) teachers of Senior Physical Education reported using, and how often they reported using them. From the respondents a group of

potential participants for observation of teaching was identified (for **Part B** of the study).

Part B of the study involved observing a group of volunteering participants (from those who had completed the questionnaire) who displayed many of the 'typical' characteristics, and a cross-section of backgrounds, of teachers of Senior Physical Education in Queensland. In the case of this study, the criteria used to select the group of teachers to be observed teaching were:

- Teaching experience (number of years: 0-4, 5-10 and 11 years and over)
- Gender
- Geographical location of schools (focused on Brisbane and near area for travel/access purposes)
- Profile of the students at schools (girls, boys or co-educational)
- Nature of school (Government or Private)
- The physical activities being taught in a school (activities to reflect all the areas of physical activity outlined in the syllabus).[3]

A total of 27 questionnaire respondents from **Part A** indicated that they were willing to be observed teaching practical lessons. From these respondents nine participants were 'randomly' selected based on a consideration of the criteria outlined above. The randomisation process was applied when there was a choice between two or more volunteers who met the same criteria. It should be noted that there was no randomisation at all with regards to geographical location. Volunteers from areas well away from Brisbane were not considered due to time and travel constraints and the inability of the researcher and a research assistant to cover such large distances.

Though the randomisation outlined may appear to be a limited process the effort to ensure a cross-section of teachers was consciously attempted as a lack of randomisation "raises many threats to internal validity" (Berg & Latin, 2004, p. 198). The fundamental principle influencing the choice of participant to be observed was always to keep the characteristics of the sample as wide and representative of teachers as possible.

The 27 questionnaire respondents who volunteered to be involved in **Part B** of the study came from different regions across the state of Queensland and was not confined to the Brisbane metropolitan area or large cities. From the group of people who volunteered for **Part B** four came from outside and Brisbane and 23 from the Brisbane area. The final observation group of nine participants included eight teachers from the Brisbane area and one from a rural area. The characteristics of the final group were:

- Female teacher from a girls only private school (11 years or more teaching)
- Male teacher at a government* school (5-10 years teaching)
- Male teacher at a rural government school (5-10 years teaching)
- Female Teacher at a government school (5-10 years teaching)
- Female Teacher at a government school (0-4 years teaching)
- Male Teacher from a co-ed private school (11 years or more teaching)
- Male Teacher from a boys only private school (11 years or more teaching)
- Male Teacher at a government school (0-4 years teaching but had a 15 year career in another field)
- Male teacher at a government school (11 years or more teaching)

(***** All government schools are co-educational.)

Part B of the research involved videotaping lessons taught by the nine teachers. All the lessons were required to be observed and recorded during the same weeks of a teaching unit of work. If this had not occurred then the validity of the data could be questioned.

The observation of lessons provided the information necessary to analyse the congruency between the participants' survey questionnaire and the teaching behaviour observed. In other words, the observation and coding of their teaching performance would determine if teaching styles that participants reported using on the survey questionnaire were observed doing in the classroom. The basis of determining the teaching styles used by participants was the work of Mosston & Ashworth (2002).

Nature of the Questionnaire

Mosston and Ashworth's *Teaching Physical Education* (2002) was always the point of reference for the definitions of teaching styles[3]. The *Spectrum of Teaching Styles* are identified as:

Reproduction Cluster:	**Production Cluster:**
Style A – Command	Style F – Guided Discovery
Style B – Practice	Style G – Convergent Discovery
Style C – Reciprocal	Style H – Divergent Discovery
Style D – Self Check	Style I – Learner Designed Individual Program
Style E – Inclusion	Style J – Learner Initiated Program
	Style K – Self Teaching

Styles from the reproduction cluster (Styles A-E) are clustered by their cognitive focus and require the utilisation of memory as the conscious thought process (Mosston and Ashworth, 2002). They will require a student to replicate, apply or recall a movement pattern, skill or concept that they have been taught or know (Mosston and Ashworth, 2002). Styles from the production cluster (Styles F-K) require students to "serve the human capacity for production (discovery)" (Mosston and Ashworth, 2002, p 20). In the production cluster the behaviour of teachers must shift and requires the student to produce knowledge (or movement) new to the student through the conscious thought process of discovery or creativity.

The *Spectrum of Teaching Styles* has had almost fifty years of research and refinement conducted on it. Within the field of physical education no other model of teaching styles has been so thoroughly researched or has been scrutinised for as long. It now has widespread acceptance in physical education and it allows for a conciseness in defining the differences in the anatomy of every teaching style outlined. The differences are determined by "who makes which decision about what and when" (Mosston and Ashworth, 2002, p 20).

As part of a questionnaire this study used a *Spectrum Inventory* instrument which was collaboratively developed[4] for **researchers** and **teachers** to identify *which teaching styles* from the *Spectrum of Teaching Styles* were being utilised by secondary school physical education teachers. The *Instrument for collecting teachers' beliefs about their teaching styles in physical education*[5] consisted of 11 scenarios that "provide a mutually exclusive image with the essential factors of the different teaching styles" (Ashworth, 2007, p. 2). The participants were asked to read a scenario and answer the question "*How frequently do I use this description to teach my senior physical education lessons throughout the year"?* They were then required to circle

the number on the Likert scale (1-5) which most accurately represented their answer *(see example in* **Table 2***).*

Scenario Style	**Scenario Descriptor**				
A	The students perform the task, selected by the teacher, in a unison, choreographed, or precision performance image following the exact pacing (cues) set by the teacher.				
How frequently do I use this description to teach my senior physical education lessons throughout the **year**?	**Not at all**	**Minimally**	**Here & there**	**Often**	**Most of the time**
	1	**2**	**3**	**4**	**5**

Table 2: An example of one scenario from the *Spectrum Inventory* (2005) which shows different *Likert Scale Descriptors* and focusing on measuring how often a teaching style was used.

Research Method

The study questionnaires developed for **Part A** were sent out to an estimated 286 specialist physical education teachers in 77 schools. The schools included both Government schools (known as State or Government schools due to their management being administered by the State Government of Queensland) and Private or Independent Schools. Questionnaires were sent out to a representative sample of all of the 346 schools who had reported that they were teaching Senior Physical Education in the year prior. These schools surveyed represented schools from all the Education Queensland (EQ) regions throughout the state. The 37 schools that responded represent close to just over 10% of schools teaching Senior Physical Education in the state of Queensland. There were a total of 110 individual teacher respondents (from the 37 schools) to the questionnaire. From the respondents 27 teachers stated that they would be interested in participating in **Part B** of the research which would involve having three lessons over the time of a unit of work being videotaped and coded according to an instrument developed. Coincidentally, the number of participants who expressed interest in participating in **Part B** was also close to a quarter (24.5%) of total questionnaire respondents.

Initial approval to conduct the study was obtained through the Ethics Approval process at QUT. Approval to conduct research in schools was also sought and gained from various educational authorities. Specific consent to conduct research for **Part B**

of the study (observation of teaching) was obtained from Education Queensland, Catholic Education and Principals from Government and Private schools. Informed consent was also sought from each participant who indicated a willingness to be part of the study. Each participant was guaranteed anonymity through an assigned number[4]. Similarly, in line with set procedures and ethics committee regulations, informed consent was obtained from parents of the students in classes that would be observed.

Participants and Setting

It could be suggested that the 27 teachers who volunteered to be participants in **Part B** of the research and have their classes videotaped were confident in their ability as teachers because they were willing to have the researcher in their classes. The nine individuals who were finally selected as participants for **Part B** of this research were teachers of Senior Physical Education and had a variety of characteristics representative of teachers of Senior Physical Education. There were six males and three females in the observed group. State school teachers comprised six of the group and the rest were from private schools.

The participants chosen for **Part B** of the study could also be seen as high quality and dedicated teachers. Evidence for this view could be found in some of the extra duties they undertook outside of their usual roles or duties of teaching. For example, three of the participants were part-time university level tutors, and three were on Panels[6] or Panel Chairs (an Education Queensland course monitoring service for all subjects in the various regions around Queensland to ensure consistency of standards). Three of the participants were also Heads of Departments (HODs). This HOD role means that they were involved in middle management or managerial tasks (such as curriculum aspects including work programs) for the subject area of Physical Education within their school. With regards to the variety of school settings six of the schools were State/Government (or Public) co-educational schools, with one of these being in a rural area. Three of the schools were private schools (one single sex boys, one single sex females and one co-educational).

Teachers were observed and videotaped teaching Senior Physical Education classes in weeks two, five and seven of a 10 week term. Each Senior Physical Education unit of work or physical activity was – in most cases – around nine weeks

long. This length of time could be virtually guaranteed due to the Queensland Senior Physical Education Syllabus stipulating the length of all units of work being 55 hours per semester (2004).

Of a total of 27 lessons that were videotaped five of the classes observed were year 11 (students approximately 16 years old) and four were year 12 classes (approximately 17 years old). In total 15 lessons were taught to year 11 classes and 12 lessons were taught to year 12 classes. Twenty-one of the lessons videotaped were co-educational classes while three lessons involved only boys in classes and three were only for girls. Classes ranged in numbers from 12 to 40. The lesson length ranged from 42 minutes to 60 minutes. All lessons observed, except for the Aerobics lessons, were in an outside setting such as on an oval/pitch/grass playing area or court.

Physical activities being taught included Touch Football – a non-tackle version of Rugby League – (6 lessons), Netball (6), Gaelic Football (3), Softball (3), Competitive Aerobics (3), Archery (3) and Orienteering (3). Overall the sample of physical activities observed included content from the four areas of physical activity mentioned in the QSPES (2004).[7]

Systematic Observation Instrument

The videotaped recordings of lessons were reviewed and coded using Ashworth's *Identification of Classroom Teaching Learning Styles* (2004). This instrument was obtained from Professor Sara Ashworth and chosen to ensure that the descriptions of the teaching styles that were coded were an accurate reflection of Mosston and Ashworth's (2002) definitions. The instrument was able to identify *nine* out of the 11 possible teaching styles being used by the participants and how often each one was used. The instrument describes the subject matter expectations for the observed teaching styles and the behaviour expectations of the students when they are participating in a learning experience or episode.

In conjunction with Ashworth's *Identification of Classroom Teaching Learning Styles* (2004) it was decided that the *Instrument For Identifying Teaching Styles* (IFITS) coding sheet would also be used in the observation and coding process. This tool was used in a study by Hasty (1997) to ascertain the amount of time teachers

spent using different teaching styles. Although the coding sheet from IFITS was used the descriptors associated with it were not.

The *coding procedure* involved in using IFITS involved a 10 second observation followed by a 10 second recording of this observation. This meant that when observing a lesson the coder made a decision every 20 seconds. The decision the coders were making involved determining which teaching style was being utilised in the previous ten second period. During an interval of time where two or more teaching styles were employed, the style would be coded as the style closest to the production end of the *Spectrum of Teaching Styles*. For example, if Practice Style-Style B and the Reciprocal Style-Style C were both seen in a 10 second period, then the trained coders would record Reciprocal Style-Style C. This decision was made – again based on the Hasty's work – where "the least didactic (i.e. more student centred) teaching style is given preference and recorded" (Hasty, 1997, p. 45). This procedure was used as literature suggests that production styles are the least used or "likely to be used sparingly" (Hasty, 1997, p. 46). This would ensure that if there was any bias in the coding, it would be to the production cluster end of the *Spectrum of Teaching Styles*. Again, this decision was based on Hasty's research "so that the time teachers spent using productive teaching styles was overestimated" (Hasty, 1997, p. 46). While Hasty's (1997) adaptation of Ashworth's *Identification of Classroom Teaching Learning Styles* (2004) included eight categories of teaching styles (A-H), this study involved all 11 categories which included teaching styles A-K.

Coding

Two coders were used to code the videotaped lessons. The first coder was the researcher who was a four year trained teacher with 12 years of teaching experiences and two postgraduate qualifications. The second coder was also a four year trained specialist physical education teacher who had been teaching for three years. The second coder had studied *Spectrum of Teaching Styles* literature and theory during their degree program and was also trained by the researcher for nine hours in the operation of the coding instrument.

To increase inter-observer reliability, to become familiar with recognising teaching styles and to become competent with the using of the coding sheet, both coders practised coding live and recorded physical education lessons. The fact that all

lessons had been videotaped meant that the coders were able to stop the lessons at any time to consult notes or texts to clear up any confusion.

The researcher was also able to consult with Prof. Sara Ashworth extensively during the coding process to clarify some scenarios. To do this, the researcher sent descriptions of the episode in question, and the exact words used by the teacher during the episode. Prof. Ashworth would then describe the decision the teacher was making or the ones the teacher was asking the learner/s to make. This was invaluable to the coders and contributed to the accuracy of the coded lessons.

Teacher's Self-Reported Usage of Teaching Styles

The table below (**Table 1**) shows the breakdown of responses for data collected with the questionnaire tool for **Part A** of the research project. The teaching styles from the *Spectrum of Teaching Styles* are listed in the first column. Respondents to the questionnaire had been asked to first read a given scenario that described a teaching style and then indicate how often they used this teaching style to teach their Senior Physical Education class during the year.

	Reported Usage of Styles by Respondents After Reading Scenarios.					
Teaching Style	***Not at All*** ***1***	***Minimally*** ***2***	***Here & There*** ***3***	***Often*** ***4***	***Most of the Time*** ***5***	***%***
Command	6	19	38	40	6	100
Practice	0	6	26	68	10	100
Reciprocal	5	32	56	17	0	100
Self Check	16	36	39	15	4	100
Inclusion	23	35	36	16	0	100
Guided Discovery	17	30	24	35	4	100
Convergent Discovery	8	25	38	37	2	100
Divergent Discovery	4	25	35	44	2	100
Learner Designed Individual Program	29	19	37	19	6	100
Learner Initiated Program	53	33	16	6	2	100
Self Teaching	69	26	9	6	0	100

Table 1: The total breakdown of teachers (n=110) reported usage of teaching styles.

The table (**Table 2**) presented below allows a comparison of reported teaching styles from Cothran et al. (2005) and the data collected from this research. Five of the teaching styles show little (less than 5%) difference in their reported usage by teachers when the data of these two studies are compared. The largest difference between these two studies involves the reported usage of The Inclusion Style-Style E.

Teaching Styles	SueSee 2006 Percentage of Teachers Reported Using This Style 'Here & There to Most of the Time'	Cothran et al. 2005 Percent of Teachers Indicating Use of 'Sometimes to Always' for Each Style
Command - A	77%	93.1%
Practice - B	94.5%	92.1%
Reciprocal - C	66.3%	85%
Self Check - D	52.7%	46.9%
Inclusion - E	47.2%	78.6%
Guided Discovery - F	57.2%	70.6%
Convergent Discovery - G	70%	73.6%
Divergent Discovery - H	73.6%	73.7%
Learner Designed Individual Program - I	56.3%	40.4%
Learner Initiated Program - J	21.8%	13.5%
Self Teaching - K	13.6%	11.9%

Table 3: A comparison with Cothran et al. (2005) and the percentage of teachers who reported using the eleven teaching styles *'Here & There' to 'Most of the Time'* from this research.

Part B *– Class Observations:*

The teaching styles used by the nine participants observed when teaching Senior Physical Education is listed in **Table 3** below. The far right column displays the reported usage of the entire sample of respondents (n=110) to allow comparison. While most of the nine participants reported usage of teaching styles was similar to the overall number of questionnaire respondents differences of greater than 10% can be seen for styles C-F. Given the small size of groups there is no significance in this observation.

Teaching Style	*Not at All*	*Minimally*	*Here & There*	*Often*	*Most of the Time*	*% Here & There- Most of the Time-**9 Videotaped Participants***	*% Here & There-Most of the Time- **All (n=110) Participants Questionnaire***
Command	0	2	2	5	0	77.7	77%
Practice	0	1	2	5	1	88.8	94.5%
Reciprocal	0	4	2	3	0	55.5	66.3%
Self Check	0	3	3	2	1	66.6	52.7%

Inclusion	2	1	3	3	0	66.6	47.2%
Guided Discovery	1	5	0	3	0	33.3	57.2%
Convergent Discovery	1	2	5	1	0	66.6	70%
Divergent Discovery	0	2	2	5	0	77.7	73.6%
Learner Designed Individual Program	1	3	2	2	1	55.5	56.3%
Learner Initiated Program	1	6	2	0	0	22.2	21.8%
Self Teaching	6	1	2	0	0	22.2	13.6%

Table 3: The reported usage of the nine participants compared against the total number of questionnaire respondents (n=110).

Based on the reported usage of teaching styles by the nine participants the observations and coding revealed some discrepancies between what teaching styles the participants believed they were utilising and the styles that were observed using. These results can be seen below in **Table 4**.

Participant	Styles Used	Number of Styles Used
Participant 1	B	1
Participant 2	B	1
Participant 3	B, C	2
Participant 4	B, D	2
Participant 5	B, C	2
Participant 6	B	1
Participant 7	A, B & H	3
Participant 8	B	1
Participant 9	B	1

Table 4: Participant breakdown of the range of styles observed being used during each teacher's three by one hour lessons (total lessons =27).

When the time spent using different teaching styles is converted to a percentage of the total amount of time of teaching that was observed then a more accurate picture is obtained of the variety of teaching styles used by the participants in the study. This information is displayed below in **Table 5**.

Teaching Style	% of Time Teaching Styles Were Observed From Total Lessons	%Reported Using This Style "Here & There- Most of the Time" 9 Videotaped participants
Command- Style A	3.65%	77.77
Practice-Style B	69.87%	88.88
Reciprocal-Style C	2.55%	55.55
Self Check-Style D	.55%	66.66
Inclusion-Style E	0%	66.66
Guided Discovery-Style F	0%	33.33
Convergent Discovery-Style G	0%	66.66
Divergent Discovery-Style H	.78%	77.77
Learner Designed Individual Program-Style I	0%	55.55
Learner Initiated Program-Style J	0%	22.22
Self Teaching-Style K	0%	22.22
Management (such as placing markers)	22.57%	NA

Table 5: The percentage of time (%) participants were observed using styles and reported usage.

Discussion

The results indicate that teachers of Senior Physical Education in Queensland *do not use a wide variety of styles*. These results reflect those from similar studies in other countries (Hasty, 1997). When considering research on teaching, Mosston & Ashworth, also in support of the findings of this study, indicate that "research on classroom teaching-learning behaviours indicates that, although teachers believe they use a wide variety of alternative behaviours in the classroom, they are, in fact, significantly uniform in their teaching behaviour" (2002, p. 293).

The styles that the nine participants employed were *Command Style-Style A, Practice Style-Style B, Reciprocal Style-Style C, Self-Check Style-Style D and Divergent Discovery Style-Style H.* At first glance this may appear like a range of styles, but it is when the total time using these styles is presented as a percentage of total observed time (**Table 5**) that a more precise claim can be made about the range of teaching styles observed. As a percentage of total time observed, only 7.5% was observed using a teaching style other than the *Practice Style-Style B.* If Participant 7 was removed from the sample, only around 3% of the time can be classified as using

teaching styles other than the *Practice Style-Style B*. Therefore, in answer to the final research question, 'What is the dominant teaching style for teacher's of Senior Physical Education in Queensland?' – the answer is *Practice Style-Style B*.

However, the use of *Practice Style-Style B* as the predominant style is not necessarily compatible with the expectations and approaches outlined in the Senior Physical Education Syllabus. This study suggests the need for further investigation of a range of issues related to syllabus intent, design and implementation as well as the type and level of information on teaching styles that teachers have and/or gain during teacher preparation, practice and in-service opportunities. There could be some concern in the fact that the syllabus is not being taught using a variety of styles as prescribed/indicated by the syllabus – nor indeed being taught according to the pedagogical underpinnings of the syllabus. Any disconnect between a school program and a student work review system which expects to see work produced as a result of certain teaching styles and what and how it is produced was not considered in this study.

Conclusion

This paper has outlined the research findings of a study on teaching styles (teaching styles as identified by Mosston & Ashworth, 2002). The study was in two parts. The first part was a questionnaire completed by 110 teachers of Queensland Senior Physical Education (QSPES) in which they indicated what teaching styles they believed they used. Teachers indicated in the questionnaire that they used a range of teaching styles. In the second part of the study a group of nine volunteer participants were observed teaching across three one hour lessons of Senior Physical Education and the videotapes which were made were coded using a reliable recording instrument. The results of the observed group indicate that the dominant teaching style used by teachers of Senior Physical Education in Queensland was the *Practice Style-Style B* and that a range of teaching styles was not employed.

There are ramifications from the results of the study for teachers in that they are not doing what they believe they are doing. The pedagogical underpinnings of the QSPES do not seem to be honoured. If a variety of teaching styles are not being used then it would seem reasonable to state that the learning experiences described by the

QSPES are unlikely to occur. A logical assumption would be that the General Objectives of the syllabus (of which there are four) are not being effectively taught or assessed as outlined by the QSPES. While explaining this concept in greater detail (along with offering explanations for why this has occurred) is not the focus of this paper, it is being examined in a partially completed doctoral study. Despite the implications of the study it is hoped that some of the information outlined here will highlight the need for teachers to have greater knowledge of, and expertise in, a range of teaching styles and be able to implement the intent of the syllabus by using these.

Notes:

[1] Other countries such as England have also mandated teaching styles to be used in the teaching of physical education with limited success (Hasty, 1997).

[2]There was another research question from a doctoral study that this paper is based on that will not be outlined and explored in this paper.

[3] The utilisation of the Spectrum of Teaching Styles (2002) and Prof Sara Ashworth provided particularly accurate foundations to construct the definitions for the questionnaire and enabled the questionnaire to most accurately reflect the *Spectrum of Teaching Styles*.

[4] The participants had to be identifiable after Part A so that they could be contacted for Part B if they expressed interest.

[5] It should be noted that no attempt was made to proportionally represent all the different criteria associated with teachers in Queensland as the information to do this is not readily available.

[6] The instrument was developed as part of a doctoral study and along with input from Prof. Sara Ashworth and supervisor Dr. Ken Edwards. In particular the support and advice of Sara Ashworth, one of its creators of the *Spectrum of Teaching Styles*, was a valued and significant contribution in the design of the questionnaire and the descriptions of the teaching styles that were developed.

[7] This instrument has since been further refined from the original and the one used in this study. The instrument is now titled the *"Instrument for collecting teachers' beliefs about their teaching styles used in physical education: Adaptation of description inventory of landmark teaching styles: A spectrum approach"* The revised version has been released on the *Spectrum of Teaching Styles* website at http://www.spectrumofteachingstyles.org/.

[8] Panels consist of teachers who provide feedback and moderation to schools in the district about the quality of work programs, assessment pieces and grades/marks awarded to students. Teachers on Panels volunteer for the job.

[9] The Senior Physical Education Syllabus (2004) identifies four distinct categories of Physical Activities (Direct Interceptive, Indirect Interceptive, Aesthetic and Performance). Associated with the teaching of the physical activities was a degree of

integration of various aspects related to Focus Areas (Focus Area A: Learning physical skills, Focus Area B: Process and effects of training and exercise and Focus Area C: Sport, physical activity and exercise in the context of Australian Society) – subject discipline knowledge.

References

Ashworth, S., SueSee, B., & Edwards, K. (2007). *Descriptions of Landmark Teaching Styles: A Spectrum Inventory.* USA & Australia: The Spectrum Institute.

Berg, K. & Latin, R. (2004). *Essentials of Research Methods in Health, Physical Education, Exercise Science and Recreation.* Baltimore: Lippincott Williams & Wilkins.

Cothran, D., Kulinna, P., Banville, D., Choi, E., Amade-Escot, C., MacPhail, A., Macdonald, D., Richard, J., Sarmento, P., & Kirk, D.E. (2005). A Cross-Cultural Investigation of the Use of Teaching Styles. *Research Quarterly for Exercise and Sport.*

Davis, B. and Sumara, D. (2003). Why aren't they getting this? Working through the regressive myths of constructivist pedagogy. *Teaching Education, 14,* 123-40.

Hardy, C. And Mawer, M. (1999). *Learning and Teaching in Physical Education.* London: Falmer Press.

Hasty, D. (1997). *The Impact of British National Curriculum Physical Education on Teacher's use of Teaching Styles.* The University of Alabama.

Leslie, T. (2010, March 25th). *ABC News.* Retrieved August 22nd, 2010, from http://www.abc.net.au/news/stories/2010/03/25/2855409.htm.

Metzler, M. (1983). On styles. *Quest. 35,* 145-154.

Mosston, M., & Ashworth, S. (2002). *Teaching Physical Education.* San Francisco: Benjamin Cummings.

Penney, D & Kirk, D. (1998). *Evaluation of the Trial-Pilot Senior Syllabus in Physical Education in Queensland Secondary Schools.* Brisbane: Board of Senior Secondary School Studies Queensland.

Phillips, D, A., Carlisle, C., Steffen, J., & Stroot, S. (1986). The computerized version of the physical education assessment instrument. Unpublished manuscript, University of Northern Colorado, Greeley, CO.

Queensland Board of Senior Secondary School Studies (1998). *Queensland Senior Physical Education.* Brisbane: National Library of Australia Cataloguing-in-Publication data.

Queensland Studies Authority (2004). *Senior Physical Education Syllabus.* Brisbane: Queensland Studies Authority (QSA).

SueSee, B., Ashworth, S., & Edwards, K. (2006). Instrument for collecting teachers' beliefs about their teaching styles used in physical education: Adaptation of description inventory of landmark teaching styles: A spectrum approach. Queensland University of Technology, Brisbane, Australia. (United States

Thorburn, M. (2007). *Achieving Conceptual and Curriculum Coherence in High-Stakes School Examinations in Physical Education.* Physical Education and Sport Pedagogy, v 12 n 2 p 163-184 June 2007.