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ACTION RESEARCH IN PHYSICAL EDUCATION:
FOCUSING BEYOND MYSELF THROUGH COOPERATIVE LEARNING

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Abstract

This paper reports on the pedagogical changes that I experienced as a teacher engaged in an action research project in which I designed and implemented an indirect, developmentally appropriate and child-centred approach to my teaching. There have been repeated calls to expunge – or at least rationalise - the use of traditional, teacher-led practice in physical education. Yet despite the advocacy of many leading academics there is little evidence that such a change of approach is occurring. In my role as teacher-as-researcher I sought to implement a new pedagogical approach, in the form of Cooperative Learning, and bring about a positive change in the form of enhanced pupil learning. Data collection included a reflective journal, post-teaching reflective analysis, pupil questionnaires, student interviews, document analysis, and non-participant observations. The research team analysed the data using inductive analysis and constant comparison (Denzin & Lincoln 1994; Lincoln & Guba 1985). Six themes emerged from the data: teaching and learning, reflections on cooperation, performance, time, teacher change, and social interaction. The paper argues that Cooperative Learning allowed me to place social and academic learning goals on an even footing, which in turn placed a focus on pupils' understanding and improvement of skills in athletics alongside their interpersonal development.

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Introducing the challenge

Many Physical Education (PE) programmes suffer from a lack of accountability, effectiveness, equity and meaning (Cothran 2001). Academics in PE have long voiced their concerns at the persistence of classroom practitioners' use of outdated instructional approaches that are predominantly teacher-directed and technique-centred. Putman (1993) suggested that although pupils and education are changing, educators' instructional approaches have been slow to evolve. Curtner-Smith, Todorovich and Lacon (2001) hypothesized that in order to meet current pedagogical demands teachers would "need to shift from the exclusive use of direct, teacher-centred, or reproductive styles of teaching to employing more indirect, pupil-centred, or productive styles" (178).

I wished to answer this challenge and move beyond my personal dependence on a performance-based 'do as I do' pedagogy (Gréhaigine, Richard, and Griffin 2005). In its place I wanted to develop and employ 'research-based' practice in the form of Cooperative Learning (CL), a pedagogy that was indirect, appropriate and child-centred in nature. Furthermore, I wanted my new pedagogy to be conceptualised and defined through the links that I made between research, practice and my position as a teacher of physical education. I needed to develop what Elliott (1983) called a praxiology – a procedural expression of ideas – so that I could "mediate between ideas and attempts to actualise them in practice" (p. 17). To this end I utilised action research (AR) as a methodology, for it allowed me to reflect upon the changes that I was endeavouring to make and allowed me to build a more complete picture – from conception to completion – of my new pedagogical strategy. AR has established a tradition of helping to validate teachers as thinking professionals and it provided me with the time and space to reflect upon my teaching (Sheridan-Thomas 2006). In the words of Stark (2006), AR reflected my desire "to find a solution to real problems [and] bring about a positive change" (23).

In seeking to show quality in my AR I drew upon the recent work of Capobianco and Feldman (2006, 502) in which they asserted that four conditions were required to promote

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quality collaborative AR: 1) a community of practice, 2) a knowledge-producing, epistemic community, 3) a thorough grounding in the nature of AR, and 4) a knowledge of appropriate research methods. In attempting to realise each of these conditions in my research I drew upon the help of two other people and while their voices remain silent in the text their contributions to this paper cannot be overlooked. Ben, an expert in CL, became an integral part of my knowledge-producing community of practice while Anne, an expert in practitioner AR, helped me to ground myself in and utilise this methodology appropriately.

This paper therefore follows the journey that I took, with Ben and Anne's guidance, in an effort to change the way that I taught through the lenses of AR. It firstly presents my understanding of AR as a research methodology and details the reasons why I felt that it was a suitable form of inquiry to adequately answer my thematic concerns (Lincoln and Guba 1985). Secondly it looks at Cooperative Learning, and its ability to deliver the more indirect and pupil-centred practice that I sought (Curtner-Smith et al. 2001, Metzler 2005).

Action Research

Kurt Lewin (1946) believed that research conducted by an expert at a local level, in my case a teacher in his own classroom, would be able to bypass the lawfulness of the textbook response because of local knowledge of the situation at hand. Similarly when faced by localised concerns over the problem of improving teaching, Lawrence Stenhouse championed the role of 'the teacher as researcher.' Stenhouse (1975) believed that good teaching is not created through practice but instead is the justified union of ideas and action within a teacher's practice (Elliott 1983).

Such a union of idea, Casey (2006) and Campbell, McNamara, and Gilroy (2004) felt, was a case of moving teaching away from the expected technical standards and finding new ways of teaching and new interpretations of teaching. This research is an example of this concept because it centres on my narrative as I began my move away from the "performance pedagogy" (Penny & Waring 2002) that had dominated not only my practice but also my understanding of teaching. It followed the Lewinian conception of AR and was "a spiral of

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steps each of which is composed of a circle of planning, action and fact-finding about the result of the action” (Lewin 1946, 38).

Much has been written about the need for PE teachers to be more reflective about their practice through AR (Almond and Thorpe 1988; Kirk 1995; Martinek and Butt 1988). Yet, despite the support of these academics, AR has failed to realise any substantial following in Research on Teaching in Physical Education (RTPE). Despite this dearth of prior research I began to tackle what McTaggart (1982, 101) called the “perennial problem of educational inquiry – the so-called gap between theory and practice,” a gap that CL proved to be effective at addressing.

Cooperative Learning

CL has evolved from three decades of scholarly work in the fields of social relationships, group dynamics, learning, and instruction (Barrett 2005; Dyson 2001, 2002; Gillies 2006; Grineski 1996; Johnson and Johnson 1991; Metzler 2005; Slavin 1996). The ability of CL to accommodate individual differences in the classroom, pupil achievement gains, equity in instruction, and social and personal development contribute to its popularity (Antil et al. 1998). According to Slavin (1996), CL programmes emphasize team goals and team success that can only be achieved if all members of the team learn the objectives. Even though pupils work together, each one needs to do their part in order for the whole group to have success.

Metzler (2005, 273) described CL as taking “one large step beyond just learning next to one another to learning with, by, and for each other.” The emphasis is on positive interdependence, and the need for every individual within a group to achieve an acceptable level of success within a given task. CL shifts the focus for learning on to the pupils, seeking to encourage them not only to learn from the experiences in which they are involved but also to help their peers share in this learning experience (Dyson 2005).

In CL small, structured, heterogeneous groups of students are consciously created by the teacher so as to ensure that a full mix of gender, race, ability, and socio-economic

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background is achieved in every group (Barrett 2005; Dyson 2001, 2002; Dyson and Rubin 2003; Grineski 1996; Johnson and Johnson 1991; Metzler 2005; Slavin 1996). These are not the haphazard teams picked by either teacher or pupil on the spur of the moment to allow competition within a lesson. Instead, they are selected in an effort to maximize the engagement of all pupils, without allowing the situation to be hijacked by one or a few pupils. It is not just a case of putting the pupils into teams and hoping they will learn; these groups are used for the duration of the learning task, whether that is short (one or two lessons), extended (three to five lessons), or for an entire unit (in this case 14 weeks). These groups are the foundation of CL in that they allow pupils to become comfortable with one another, and therefore more capable of helping each other to grasp the learning objectives of any given lesson.

Johnson, Johnson and Stanne (2000) undertook a meta-analysis of CL and uncovered 164 studies that explored the effectiveness of the method in increasing achievement in schools. They found that it was as or more effective than other teaching interventions in increasing achievement. Despite this wealth of research into CL there is only “a beginning literature on CL in PE” (Barrett 2005, 89). However there is clear evidence from the small number of studies conducted in PE that it can be an effective intervention in our subject (see Barrett 2005; Dyson 2001, 2002; Casey, Dyson and Armour 2005; Grineski 1996; Metzler 2005; Siedentop and Tannehill 2000).

Five elements are integral to the successful implementation of CL in the classroom: positive interdependence, interpersonal skills and small group skills, individual accountability, promotive face-to-face interaction, and group processing (Johnson and Johnson 1991; Gillies 2006; Kagan 1992; Metzler 2005; Slavin 1996). However, there are three elements that consistently appear in most research studies: group goals (positive interdependence), interpersonal skills and small group skills, and individual accountability (Antil et al. 1998). The effective integration of these three elements into any CL curriculum is noted as the key to the successful use of this model of teaching (Slavin 1996). Positive

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interdependence refers to each group member learning how to depend on the rest of the group while working with the group members to complete the task. Individual accountability refers to the ‘answerability’ of the task, such as the teacher finding out whether the pupil has completed it. Interpersonal skills and small group skills are developed through the tasks in which the pupils participate and include listening, shared decision making, taking responsibility, learning to give and receive feedback, and learning to encourage each other (Dyson 2001).

The two other elements widely used with CL are face-to-face promotive interaction and group processing. Face-to-face promotive interaction is literally head-to-head discussion within the group while group members are in close proximity to each other. Group processing is the time allocated to discuss in a reflective dialogue how well the group members achieved their goals and maintained effective working relationships (Dyson 2002; Dyson, Griffin, and Hastie 2004; Gillies 2006; Johnson and Johnson 1991).

The occurrence of positive interdependence, interpersonal and small group skills, and individual accountability, within this study would ultimately decide the relative success or failure of the teacher’s implementation of CL (Metzler 2005). They would also form the structure of the research and allow me to develop as an action researcher during the use of CL with my classes. In this way the “knowledge and understanding generated by AR is put into use as an integral part of the AR process” (Capobianco and Feldman 2006, 499).

Recently, Van Looy, and Goegebeur (2007) questioned whether the use of an innovative process such as CL, could function in actual teaching practice. They concluded that the trainee teachers in their study had made observable improvements in their teaching when they were involved in an AR project. The authors concluded that AR could potentially create stronger ties between theory and practice for teachers and facilitate stronger professional development.

The Research Study

Setting

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The study site was a state selective grammar school situated in England. In this school the eleven plus exam was used solely to identify a subset of children (around the top 25%) who were considered suitable for a grammar school education. The school population consisted of predominately white pupils (N = 782) of which 1.2% received free school meals and 99.4% had English as their first language. Physical education was a compulsory subject in the school and sport participation played a significant role in the extra-curricular programme. PE was taught to boys and girls separately by two discrete departments. This study involved only the male pupils in their first year of secondary education. Their prior knowledge of athletics was poor and they had one previous experience of CL. Athletics in the school had previously been taught under the close supervision of the subject teacher in a traditional and direct style of teaching.

Participants

At the time of the study I was a qualified PE specialist with eleven years experience. I was able to hold the dual role teacher-researcher as I was also a doctoral student studying AR. This research allowed me to build upon previous experience gained in three unpublished projects undertaken in my master's degree. Ben and Anne, the silent partners in this paper, were experienced academics and had expertise in the use of CL and AR respectively. Ben acted as counsellor and advisor to me and together we co-constructed the curriculum, discussed data collection, and analysed the data. Anne and Ben acted as peer debriefers to challenge my interpretations throughout the AR process.

For the majority of the lessons I had the help of a classroom teaching assistant from Australia. Ernie had worked in the department for four months prior to the start of this study. He had prior experience of CL gained in his involvement with the teaching of a previous unit of gymnastics and in the preparation of materials for this unit. His own secondary education had involved another innovative instructional unit. As the unit was concluding I was approached by Lauren, a third year undergraduate student from a local university, who was interested in investigating my use of CL in physical education. As part of honour's research

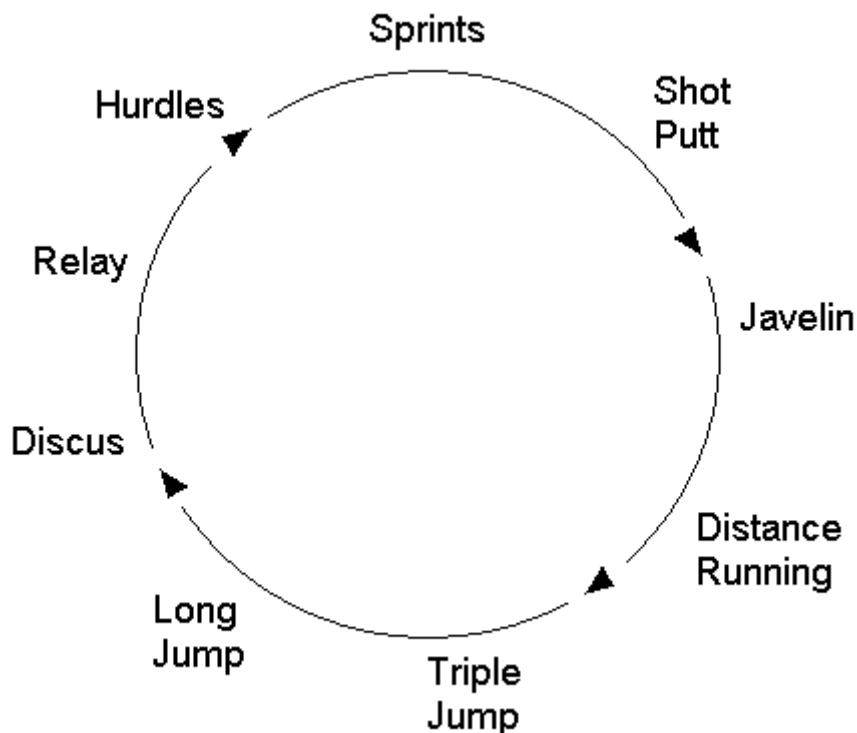
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project Lauren conducted student interviews with four groups each containing three or four students, which are included in this study.

Sixty-seven boys aged 11-12 from four year seven classes participated in the study. Some of the pupils ($N = 51$) were participating in a combined CL and tactical games unit simultaneously to the study. I had taught all of them since the beginning of the year. The pupils attended one lesson per week, each lasting either 35 or 40 minutes, for a total of 14 weeks.

Intervention:

The pupils involved in each of the four classes were divided into “Learning Teams” (Dyson & Grineski 2003). Learning teams provide pupils with the opportunity to share leadership and responsibility roles and use collaborative skills to achieve group goals. The pupils adopted roles such as recorder, encourager, coach, and equipment manager that were used to facilitate group/team activity. Over a nine-week programme, the groups rotated through nine athletics events (see Figure 1) before competing in their learning teams in a nine-event mini Olympics.



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Figure 1. The Events Cycle

Methods

Data Collection

Data collection included a reflective journal, post-teaching reflective analysis (PTRA), pupil questionnaires, student interviews, document analysis, and three observations by fellow members of staff.

Reflective Journal

This was compiled out of hundreds of emails sent between Ben and I over a period of four years. Our reflections on this paper and our work on the use of CL in physical education were invaluable in the realisation of my thoughts, frustrations and personal critiques of my lessons.

Post-Teaching Reflective Analysis

A Post-Teaching Reflective Analysis (PTRA) (Dyson 1994) (See Appendix) was used after every lesson to record my thoughts. Each PTRA formed part of an ongoing evaluation of the intervention throughout the AR process.

Pupil Questionnaire

In the first available post-unit lesson pupils were given time to reflect by answering a six-item questionnaire (See Appendix) developed by Ben and me. Each questionnaire was transcribed verbatim onto a master table.

Student Interviews

The interviews were conducted by Lauren and were 15-25 minutes in duration. She was exploring the effectiveness of CL as a teaching intervention in physical education. After the submission of her dissertation she sent me the completed transcript of her interviews.

Critical observations

Three unrelated observations were undertaken on separate occasions. Nicholas, the Head Teacher, observed lesson 8 while Emma, a teacher at the school, observed lesson 11 because of her interest in different teaching styles. Neither was a PE specialist and both wrote

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individual post-lesson observations that are included in this study. The third observer was Ernie, who assisted me in the teaching of most (>90%) of the lessons. He wrote a narrative at the end of the unit as a summary of his experiences.

Is this valid action research?

In a concerted effort to ensure validity and quality in this AR project I felt that I needed to define what Feldman (2007, 22) recently called “criteria for quality” and to this end the four conditions developed by Capobianco and Feldman (2006) were included. Ben and I developed a community of practice built around similar, shared goals, expectations and intentions that allowed us to share: mutual engagement, a joint enterprise and a shared repertoire (Wenger 1998 in Capobianco and Feldman 2006). We also sought to develop the “epistemic community...that created warranted knowledge” (Capobianco and Feldman 2006, 505) that we could both use in our practice and that we could present to others in the fields of physical education and teaching. Through several in-depth discussions with Anne I became more grounded in AR and more explicit in its reporting and design to ensure that the new pedagogy was serving my pupils well.

Data analysis

Data analysis had a cyclical structure that originated with the AR process developed by Lewin (1946) and centred on planning, action and fact-finding. The analysis occurred on three levels. The first aspect of the data analysis, due to the nature of teaching, was immediate and ongoing – allowing me to meet the ‘on the spot’ learning needs of my pupils within the school context. At the second level, I systematically collected and organized data and then the research team analysed it using inductive analysis and constant comparison (Denzin and Lincoln 1994; Lincoln and Guba 1985). Findings from this analysis were grounded in the tenets of the AR process, that is, if something needed changing or altering I, as the teacher-researcher, was able to make changes. At times my teaching needed further critical reflection and observation before change was enacted. This interpretive approach was utilized in an attempt to accurately explore my and the pupils’ voices throughout the stages of the AR

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process. Finally there was a third level of data analysis, peer debriefing, in which Ben, Anne and I analysed and critiqued the data during data collection and throughout the writing process. The themes that emerged: teaching and learning, reflections on cooperation, performance, time, teacher change, and social interaction, were then critically examined by the second and third authors through a reflective dialogue with regards to the different data sources, CL and AR. This analysis was then used to further enhance the potential contribution of the paper to a wider educational community through the transferability of findings in regards to the practice of other teachers especially in physical education.

Data Trustworthiness

How action researchers position themselves in relation to the setting and participants can create the power relations in the situation and the trustworthiness of the data (Herr and Anderson 2005). Therefore I endeavoured, with considerable guidance from Ben and Anne, to maintain trustworthiness so that the findings are dependable, credible, and transferable (Lincoln and Guba 1985). I had ‘free dialogues’ with my pupils, asking questions that encouraged them to tell me ‘what they saw’ as opposed to what ‘they thought I might want to hear.’ In accounting for myself, therefore, I worked to reveal myself and attend to consequences of my presence, a process described by Reason (1994, 327) as “Critical Subjectivity” and Wolcott (1990) as rigorous subjectivity.

Findings

Teaching and Learning

The group you worked with was a group of boys who I had experience of working with during library lessons. In those lessons they had great difficulties working with one another. They were a very immature form, especially the boys, and their form tutor recommended that [some were] not be seated or asked to work together. (Emma)

This was Emma’s assessment of one group prior to her observation. I had experienced similar problems with all three classes. The wish to rectify such difficulties with student interaction had been at the heart of my AR study and was the reason that CL had been chosen as the pedagogical model for these parallel programmes.

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The students' predilection for off-task behaviour could have caused problems, especially since one of the main criticisms of CL has been the amount of time it takes to teach the pupils to use it (Slavin 1995). The student interviews confirm that the pupils themselves found it difficult to settle into the lessons at first. Mark recalls, "well sometimes we didn't listen and messed around but when Mr Casey told us off we started to listen more," while George felt that students could "be distracted easily, which we were a little in the first few weeks." Yet the lesson-by-lesson reflections inherent in AR afforded this pedagogical change the opportunity to have a positive effect and three of the four classes quickly adapted to the instructional method. The fourth class was not able to "follow the teaching model...from what little I saw as I moved around dealing with the antics and off-task behaviour of the rest of the class" (PTR A), my response, based upon my reflections and my frustrations was to restart the unit for this class. In hindsight, however, my naivety with the AR process may have allowed my frustrations to override my reflection. I had spent time, after all, preparing this unit, and the other groups had done well under similar circumstance. At the time I felt that my pupils did not cooperate, yet with the overview granted by AR it is clear that I expected too much of them with such a terse introduction to CL. What I forgot was that the pupils were also new to CL and the changes that it was bringing to their lessons, particularly the new roles that they were being asked to undertake. Some roles, such as the coach required boys like Jack, to "have authority over other people cause otherwise they don't do anything" while others needed their team mates to support them so that, in Larry's words, "no one actually gave up." Some of the roles were less well received and as Spencer commented "if there wasn't an equipment manager we could have... just taken stuff away." This need to create roles for all the pupils was at times one of the frustrating aspects of implementing CL (Reflective Journal).

These roles were chosen prior to the start of the unit for, as Metzler (2005) suggested, this intervention divided into pre-unit, unit and post-unit sections. These divisions closely mirrored Lewin's (1946) original conception of AR as a cycle of planning, executing and

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reconnaissance and allowed me to easily meld the CL and AR processes. In the pre-unit section I defined the exact nature of the work that the pupils would undertake. Once this had been completed I sought to hand over responsibility to the pupils, and limit my instructional interventions to those that facilitated pupil cooperation. My reflections showed that I was initially reluctant to take the back seat and change my pedagogical approach. I wanted to become less directive, and tried hard to give my pupils chances to make meaningful decisions. I had intended not to challenge or correct them but unfortunately I did this and more. In fairness I did improve but this was only achieved by the persistent reminders to myself that I wrote in many of the PTRAs. A month into the unit, while examining the changes that I planned to make to the lesson the next time I taught it, I wrote:

Continue to step back from the central role of sole expert, and be more prepared to allow mistakes and then challenge the pupils to find ways of overcoming them. This is a gradual process, but as I evaluate I need to learn what it means to fully decentralize myself. (PTRA)

I felt that throughout the unit I was my sternest judge and I often berated myself over these persistent failures to step away from the centre of the classroom (Reflective Journal). Time and time again the reflective journal and PTRAs recorded my frustrations and my habitual tendency to “hijack the whole process with a ‘do as I do’ approach” (PTRA). It was hard to gain distance without becoming unapproachable in the eyes of the pupils and yet I wanted their motivation to do well to come from the work that they were involved in rather than their fear of “Mr Casey and what he would do” (Harry, student interview). Yet by letting the pupils work at their own pace, progress at their own speed and “move onto the next bit or go back if [they] wanted to,” (Stephen) and “give them the freedom not to wait for me” (Ellis), I lost the comfort of being needed. Despite the labour intensive nature of the pre-unit phase I allowed myself to become almost superfluous, leaving pupils like Bradley “to motivate ourselves as Mr Casey didn’t really do much apart from tell us what we were doing at the start of the lesson.” This comment hurt and taught me to remember that CL opens the teacher up to the perception that they are doing very little in the actual teaching of their pupils. I know that I was trying to help students explore problems and work it out for

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themselves but still, when my efforts were apparently overlooked I could not help but feel a twinge of hurt pride that my work was being ignored. The feeling of engendering need in others is one of the things that I loved about teaching and this egotistical motivation is missing in some ways in CL (Reflective Journal). Those who participated in the unit and those who observed it were, on the whole, kinder: “They were fun”, Luke commented about the lessons, “I learnt how to do many sports that I had not learnt before” observed Richard. Nicholas noted a “very positive approach by all pupils” while Emma remarked “several of the boys tend in lessons to avoid participating yet in your lessons when their peers needed them to be involved, they were more attentive and participatory.”

Reflections on Cooperation

What Metzler (2005) coined as the ‘social learning element’ or the development of interpersonal and small group skills, was an important aspect of my pedagogical change as it was a step towards a more holistic approach to teaching. Nicholas commented about the interaction between the pupils, “pupils take initiative and self direct...use different roles...use a complicated rota system but know what they are doing...and use learning cues to understand how to improve their skills.” From Emma’s perspective as an innovative practitioner:

The importance of the lesson was the development of the boys’ ability to work together as a team, supporting and encouraging one another. This, in my opinion, is far more important for their overall development than individual proficiency in an athletic technique. The way you designed the lesson there were important roles for each individual, each contribution of each mattered. Every child felt valued and I suspect that that was the reason for the lesson’s success.

The change that Emma witnessed came, I believe, from the success of the AR process in reminding me that I needed to capture the attention of the pupils and facilitate a feeling of trust in one another. Yet the AR process itself was time consuming and took me away from other aspects of my teaching that could have benefited from a little more attention. This is one of the limitations of the process and one of the hindrances for repeated and in-depth self-analysis. Yet it was clear from Emma’s observation, Nicholas’ comments, and my post-teaching reflections (PTRAs) that this scheme of work was working, that the pupils quickly

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involved themselves in the unit and the roles that they had to undertake and that they set about developing both their academic and social learning.

Few of my reflections, either in my journal or PTRAs, on cooperation were negative. This can be seen as a strong indicator of the level of success achieved by the pupils in this new intervention. The willingness of the vast majority of pupils to learn via CL suggests that the intervention was made at an appropriate time to receptive groups. As a result of the pupils' immersion in the unit and the adjustments that I constantly made as a result of the AR cycles the unit flowed from week to week. I felt, through my constant self-appraisal, that my practice was shifting away from a sole concern about performance and towards a more indirect, pupil-centred approach. Through the process of planning, action and fact-finding on a lesson-by-lesson basis AR allowed me to properly gauge the impact that my teaching and the pupils' learning had on the process of change at the expense of time to spend on other curriculum developments and responsibilities. Yet it was worth it, as I could "see" for the first time through the eyes of the pupils and I came to realise that they had a voice that was more than capable of intelligent and incisive commentary (Journal and PTRAs). I also came to realise that change is hard for all the participants. The pupils' ability to learn to learn through CL was equally as important as my ability to learn to teach in this way. The inbuilt safety valves of planning, action and fact-finding inherent in the processes of AR allowed me to ensure that the important elements of CL were successfully implemented in these lessons. It may have taken me a lot of time and several attempts to achieve some of my objectives but the cycle that Lewin (1946) envisioned ensured that CL worked for all those involved.

Skilled Performance

Skilled performance gains were seen as the academic learning objective of this unit and it was therefore important that I monitored and modified my work to ensure that all pupils achieved them. When questioned about what they had learnt every pupil mentioned that skills and performance were their main learning outcomes. The apparent success in achieving the unit's learning objectives is directly attributable to the method of instruction which in turn is a

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result of the processes of AR. Emma, who was focused on teacher strategy, made no mention of skills in her evaluation. Nicholas, however, who was looking specifically for learning outcomes, noted the improvement that all the pupils had made in the lesson. My observations and reflections about performance (Reflective Journal) were limited as I was distracted by the need to learn how to teach cooperatively. At times my pedagogy was effective in teaching students the track and field learning cues:

Some pupils developed a good lead leg, trail leg routine in hurdles, while others were able to throw the discus (standing throw) so that it rotated off the forefinger and flew in a streamlined manner. These were all things, which they knew very little about prior to the lesson. Similar improvements were made in sprint start and relay change over. (PTRA)

The impact of the intervention on their academic improvement is evident in the ways in which the pupils showed understanding of learning outcomes. As I reflected upon this I came to realise that the pupils were becoming “fluent in the language of CL and pupil-centred learning. This fluency allowed them to tackle more and more individual and group tasks” (Reflective Journal). They took the structures and goals that I had laid down and built upon them in ways that I could not have foreseen, and as a result made the lessons their own.

Ernie observed the routines that the boys adopted:

At the end of each lesson they run their own mini challenge to see how good everyone is at the particular sport. After a trial run the recorder writes down the level that each pupil performs. The group then uses their management skills to select which 2 pupils will perform the sport in the "Olympics" at the end of the unit.

In the planning for and performing their “Olympics” the pupils placed great emphasis on ensuring that their entire group could perform the featured athletic event (e.g. Javelin). These observations, when coupled with the changes I made as a result of my detailed examination of my teaching, ensured that learning occurred for all pupils. I feel, based upon my journal reflections, that my pre-lesson and pre-unit objectives were achieved for every pupil. By limiting the number of competitors to two per event and by scheduling two events for the same lesson the groups were forced to carefully consider who would perform. Their selections made the greatest impact on the final Olympic results in all the classes, more so than the athletic ability of one individual in the group, with one notable exception. One pupil won all of his individual events, beating the county (state) champion on his way to one of his

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victories, and in doing so accounted for half of his team's total points. Despite this anomaly, careful team selection, with pre-unit AR planning, was the most influential factor in the final "medals" table, and this aspect of group performance can be attributed solely to the group work.

Time

With 35 or 40-minute lessons time was always going to be a limited and precious commodity. Such time constraints invariably resulted in pupils arriving late or having to rush away for their next lesson. The frenetic work involved in just completing each lesson ultimately left the pupils and I feeling frustrated:

The time it takes simply to start the lesson, and the pressure from the other end [the next lesson], makes it a little bit too rushed for my liking. The groups work well but I really feel that their gains are squeezed by an unforgiving timetable. (PTR)

The pupils wanted longer lessons and even suggested that specific time should be set aside in the timetable for getting changed so that they did not have to waste their lesson time. Others identified a single-mindedness that emerged as a result of the limited time they were given in a lesson to complete all the work. This focused them, they said, on the tasks at hand, which in turn forced them to move swiftly through the tasks. My critical journal reflections lead to improvement in time management, which was a key to the success of this unit. In some early lessons it felt that time was haemorrhaging away to the extent that I wondered about the survival chances of the unit. With this in mind time-saving became a key element in the teaching and learning process and, in line with the CL model, I became positively interdependent with my pupils in the improvement of time management. That is, we relied on each other to produce efficient use of time. Equipment managers collected their paraphernalia from a communal bin on the edge of the athletics track, pupils used the five minute walk from and to the changing rooms as a two-minute warm up and cool-down run. I worked to ensure that the pupils' understanding of the CL process was such that they were quickly into their groups, consulting their worksheets and then on task for the rest of the lesson.

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The improvement of the time management of all participants came at a cost in terms of the CL process. Group processing, a facet of CL that Dyson (2001, 2002) and Gillies (2006) felt was as important as other elements of CL (i.e. individual accountability and positive interdependence) simply was not possible in such a time-poor environment. The group *togetherness* had to be generated in other ways and I found that previous research and recommendations restricted my ability to teach my pupils, in my school, and in my own way. This facet of the CL model became a struggle for me as I tried to fit everything that was required of me by the model into the imperfect square of time on the timetable. In some of my previous work a peer reviewer suggested that I should not have used CL in such a short space of curriculum time, yet as this paper testifies “it is possible,” it just takes modification and hard work (Reflective Journal). In addition to this the process of planning, action and fact-finding was draining as I struggled to uphold the standards of AR while simultaneously managing the thirty-two other classes on my full timetable in addition to my extra-curricular responsibilities within the school. The demanding nature of AR is important in ensuring validity and generalisation but it is also taxing for any teacher when it is conducted in addition to a full workload.

Social interaction

The use of pupil observations and comments in the post unit reflections paid clear dividends when they highlighted a key element in the intervention. Social interaction, a key ingredient of successful CL, was overlooked by the adult observers (including myself) and it was only the pupils who mentioned it. Brennan said the lessons “were fun and we made better social relations with people”, while Luke suggested “the activities were mostly fun and exciting especially javelin and other throwing activities with the team.” This level of enjoyable interaction did not even feature in my reflections yet its very presence suggests that some of the pupils, at least, found it to be an important part of the CL method. Jake and William found that the lessons were “very fun and were made more interesting because it taught us how to work together in a team.” This level of social interaction is an important part

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of CL and its inclusion by the pupils in their comments is another indicator of the success of this intervention and its discovery is another strength of the AR process.

Teacher change

From my perspective one of the most positive aspects of this study came directly from the pupils' development. In my previous position at the centre of the classroom my instruction was "characterized by teacher-centred decisions and teacher directed engagement patterns for learners" (Metzler 2005, 188). I had allowed the pupils to only make a very small and very controlled number of decisions and I fully expected them to respond immediately to my instructions and my questions. This pedagogical change was about my development as a practitioner. This meant moving away from directing my pupils' academic learning and trying instead to adopt a position where I allowed them to take a leading role in both their academic and social learning. Yet in seeking to become a facilitator rather than a direct instructor - a key strategy to implementing CL - I needed constant reminders and lengthy self and intervention reminders. Ernie observed the development of this aspect of AR and inadvertently contrasted the "old" teacher with the changing teacher that emerged from this study:

The most significant aspect of the whole process is that a lot of the responsibility of the teaching and learning is based on the pupils themselves. The teacher is of course there for advice, guidance and safety but he limits the use of specific instruction and robotic drills. The aim is for the pupils to find out things for themselves. So the teacher uses leading questions and hints in order for the pupils to answer questions. He does not read out a list of instructions and tell them obey. It is a more open style of learning which gives the pupils more responsibility. The reward is that the pupils get a sense of achievement, either by completing a task they didn't believe they could or by being successful in teaching another pupil a technique or skill.

My experiences of this innovation were not recorded as an unmitigated success (Reflective Journal and PTR) in which everything went according to plan and the pupils flourished under this new pedagogy. However, my reflective journal shows that I had developed as a teacher, especially in my ability to trust the pupils with their own learning:

I found myself staying in the wings a little more and finding ways of facilitating inquiry amongst the pupils rather than them seeking the answers solely from me...I was better at acting as a guide rather than a director (Reflective Journal).

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For a practitioner who had previously allowed his pupils very few decision-making opportunities this was a pedagogical milestone. I made: “a significant step towards pupil-centred learning that the AR model helped me achieve” (Reflective Journal).

Discussion

In electing to use AR as the lens to view my attempts at pedagogical change I was able to draw conclusions about both CL and this research methodology. The discipline of creating a unit of work from scratch that was flexible enough to accommodate my teaching aims was a challenge to my pedagogy. To then allow this to operate outside of my direct control was a difficult and yet significant progression in my development as a teacher. By limiting my interaction with the pupils to questions rather than answers, I became positively interdependent with them in the unit and this was strengthened by the AR cycle. CL allowed me to place academic and social learning on an equal par and AR allowed me to closely monitor this change in pedagogical approach (Johnson, Johnson, and Stanne 2000).

This meant that instead of prioritising skills I sought to emphasize an improvement of pupils’ understanding of athletics through focusing on the ways in which they worked together. CL, as a teaching intervention, encouraged pupils to be engaged in activities that require “higher level thinking and reflective processes” (Richard and Wallian 2005, 21) and prompted them to take new meaning from their experiences both academically and socially. Equally, AR allowed me to garner fresh meanings from my interactions with both the pedagogical model and more importantly (and for the first time) with my pupils. Fewer assumptions were made and while I was a tough task master I felt that my teaching grew as a direct consequence of the intervention.

I was also seeking to move away from the sole use of direct and reproductive styles of instruction and substitute a more indirect pupil managed pedagogy (Kirk 2005; Dyson 2002). My own cyclical and sustained observations of my practice suggest that this was not as easy or straightforward as I may at first have thought. The difficulties that I experienced in divorcing myself from my didactic-self is an area that requires further investigation if the

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physical education academic community is going to continue to champion both AR as a research methodology and a shift away from performance-based pedagogies. The move towards a pedagogy in which pupils are more personally and socially involved in their learning is not an easy teaching strategy to achieve but AR does offer a potentially effective, if somewhat time dependant, means for other practitioners to get their pupils involved (Dyson, Griffin, and Hastie 2004).

I was challenged in many ways by my reflections, my critical friends, my research colleagues and my pupils. It is important in CL, through AR, to ensure that everyone is involved and that challenge, on top of the practical problems of teaching on a day-to-day and lesson-to-lesson basis, was possibly the hardest to overcome. Winter (1998) warned that AR is not 'spectator' research, as the theories that the practitioner encounters must be integrated into the here and now. This was a case of "getting my hands dirty" and making the changes that were needed to encourage the pupils not only to learn from the experiences in which they were involved but also to help their peers share in this learning experience as a typical focus for CL (Dyson 2001; Gillies 2006). The "up close and personal" nature of AR means that there is no neat dividing line between the practitioner and the researcher, between the teaching and the research. The crux between wanting to try a new approach and the reality of learning and teaching a new pedagogical model was the key challenge highlighted by AR in this investigation. I was fortunate that the vast majority of pupils worked well, and the instances of confusion or off-task behaviour were minimal. Yet upon further analysis the pupils' application to the model was helped by my preparations, my informal assessment and my experience of working in the school and with these pupils.

The vast majority of pupils appeared to have been ready to engage in a CL teaching method and their suggested changes were more about subtle refinements induced by AR such as fairer groups, clearer task sheets and more concise instructions. These findings support previous research on CL (Barrett 2005; Casey et al. 2005; Dyson 2001, 2002; Grenier, Dyson, and Yeaton 2005). This change in emphasis from teacher control to a shared responsibility

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between the pupils and their teacher was a significant step away from the conclusions of Metzler (2005) and Kirk (2005) who both suggested that the majority of teachers use direct instruction as the dominant instructional model.

The literature related to the use of CL in physical education may be limited (Barrett 2005), but given the reactions of pupils and critical colleagues it appears to have a real future in the gymnasium and in the classroom as pupils can make a significant contribution to the teaching and learning environment. Student achievement in terms of both academic and social learning was improved enough to prompt me to continue with, and expand, my use of CL as a pedagogical approach. The pupils knew far more about athletics at the end of each lesson and the whole unit than I had previously (and repeatedly) told them and this allowed me to subsequently modify their future learning. Socially, they went from a year group who in the words of students: “sometimes didn’t listen and messed around” (Alex) to one that “had to work it out ourselves” (Stephen). This study involved what Kemmis (2006) referred to as broader questions of education related to students’ interaction and growth. The research suggests that CL warrants further inquiry to establish ecological validity (quantitative) and transferability (qualitative methods) through replication of CL in athletics. Additional research is required into 1) the effectiveness of AR in helping physical education teachers achieve the changes in pedagogy that academics are seeking, 2) the effectiveness of CL at delivering effective teaching and learning in other content areas such as gymnastics, dance, games, swimming, and outdoor education, and how it can be adapted to different school contexts and different age groups, and 3) the ramifications of a conceptual shift for teacher practice from performance based to pupil-centred based pedagogies (Dyson, Griffin, and Hastie 2004).

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APPENDIX

Figure 1: Post-Teaching Reflective Analysis

Date: Class:

1. What were your goals for the lesson?

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→For you as a teacher:

Specify positive interdependence:

Specify individual accountability:

→For your pupils:

2. What did you see in your lesson that you met your goals? Be specific.

→For you as a teacher:

→For your pupils:

3. What were the most positive aspects of the class?

→For your pupils:

4. What aspects did you feel did not go well?

5. What changes would you make to the lesson the next time you teach it?

6. Learning Outcomes: Did you see learning occur? Specifically what?

7. What are your specific goals for the next lesson? What strategies will help you achieve your goals?

→Teacher Goals:

→Pupil Goals: