

Action Research

ACTION RESEARCH: REFLECTIVE PRACTICE AND PROFESSIONAL DEVELOPMENT'



Rob Savory

2008

The impact of interactive multimedia resources in lessons and as extended work on teaching and learning in Physical Education

INTRODUCTION:

Rationale for Project:

The subject of Physical Education involves examination methods which look at students analysing sporting actions or performances. This area of the syllabus requires a broad knowledge and experience in analysing different sporting disciplines. The relevance of this topic is linked to these requirements and the increased emphasis on the evaluation of performance at both AS and A2 level from the new 2008 specifications. Current teaching methods for these topics are effective but students often find this an area of confusion and difficulty. The basis of the current method is fixed images with information, practical tasks do contribute to some extent, however the drawbacks of these tasks are the simplistic nature of the fixed images and the time and equipment requirements of the practical application. A simple trial was conducted to produce videos of the action and then get students to analyse these. Although the quality of the images was relatively poor the initial feedback from staff and students were positive. Consequently the plan is to utilise a number of multimedia resources to cover the anatomy and physiology aspect of AS and the evaluation and appreciation coursework for A2.

Previous Research:

Applications to Learning:

Although lecturing is still a major part of the teaching process the learners experience has become more important. The student involvement has increased and with the learning very much either shared or controlled by the students, therefore giving them greater ownership of the learning. This is following the continuum presented by (Minton, 1997) where lecturing is at the top of teacher control, moving towards discussions, practical and role play leading to less control or shared control with the students, onto research based learning. These are all activities that have become more readily used in the teaching approach. This is seen as "facilitative teaching", ie. when teaching, there is not always such an emphasis on the teacher-centred techniques, and the students become more dominant in the process of learning. The teacher creates the environment within which the learning is activated and the teacher is involved by helping with observing or reflecting on the learning process (Jarvis, 1995)

This introduces the theory of 'Learner Autonomy' where the learner takes responsibility for their learning and this means they can address their own needs and purposes. They need a capacity and willingness to work independently as well as working with fellow learners (Dam, 1995 cited in (Chan, 2001) This is an approach that is seen as very beneficial at the moment and something that needs to be encouraged by teachers. This project will look at supplying the students with resources that will allow them to develop their learning independently.

Application of ICT in Teaching :

A fellow member of the Hampshire Sixth Form Colleges network had produced a similar resource, www.filter.ac.uk, this focused purely on the movement analysis aspect of the work and our development was to try and incorporate a number of assessed areas into the task. This would consequently improve the students' synoptic skills and preparation for future study; be it AS into A2 or study skills for A2 students into higher education, vocational training or relevant employment opportunities.

The purpose of this research is to investigate the potential for the use of ICT in the teaching of Physical Education, in the context of a Physical Education department in which there is minimal 'interactive' or 'advanced' use of ICT methods. With the key topic of Anatomy and Physiology in the course and an aspect of that (movement analysis) being an area where numerous software programmes are available; such as Dartfish and Qualisis to name a few; the department does not fully utilise these possibilities. This is supported by the research and comments from (British Educational Communications and Technology Agency, 2004) when they refer to ICT and e-learning are still largely peripheral to classroom teaching and are most widely used for additional support activities to extend independent learning. Up to this point the classroom teaching is based on informative input from the tutor followed by classroom based or practical tasks. Minimal use of these types ICT based tasks can be found within the department with the exception of some summary tasks or summative assessment methods.

In my experience, the learners who are a key focus of this research are the minimum grade D and C students, they have strengths in certain areas and it is common to have slight weaknesses in the broad range of knowledge required for both 'Movement Analysis' and the 'Evaluation and Appreciation' assessments. The aim is to utilise these ICT methods to meet the requirements of these intermediate learners who have the ability to successfully understand these topics with some additional support and application to aid their learning. The project's aim is supported by findings that stated "e-learning did appear to be having a noticeable impact on some intermediate learner outcomes and on some aspects of teaching practice" (Sarah Golden, Tami McCrone, Matthew Walker and Peter Rudd, 2006). This was based on mixed ability classes at secondary level education. The reason for this benefit is that the students should perceive that ICT based tasks encourage independence and a greater control in their learning. (McEune, 2004) which will give them greater confidence in the topic area and consequently a better academic performance. Although aimed at a younger age group the information from (McEune, 2004) is relevant in the fact that her findings that teachers have found that when pupils use ICT they are committed to the task, wanting to finish work because it can be presented in a superior way to handwritten tasks; therefore those pupils who find writing difficult are able to be successful using the computer. The relevance of this is valid as some students, especially as stated before, the intermediate ones, have a preference for producing work either on the computer or in relation to ICT tasks rather than handwritten work from tasks or textbooks. This might be because it stimulates them more in an area where they are more comfortable as and familiar with. This can be seen from the computer usage information "Boys are more likely to use the computer for Internet access, playing games and using CD-ROMs (educational and leisure), whereas girls write stories and draw pictures" (McEune, 2004). One specific focus group for this project is heavily male dominated with an 18 to 3 ratio, males to females.

The comfort and familiarity of ICT for the students means that there is a requirement for the tasks and resources to be completed to the highest possible quality. If you consider websites they would regularly access all are produced to a very aesthetically pleasing level. This needs to be a major consideration during the project, to ensure the interest and involvement of the learner. This links back to a pilot study where the videos were blurred and of low quality and consequently student usage and success was not to a desired level.

"The partnership in learning with ICT has meant a shift in the traditional relationship between pupils and teachers. Pupils have been able to share their expertise with teachers, which has challenged the traditional relationship and now they are more 'equal' in their knowledge, skills and understanding of ICT. In some cases, pupils are more knowledgeable than their teachers about the applications and mechanics of the computer (McEune, 2004).

In terms of accessing the work outside of the physical classroom environment this has been shown to be beneficial in three case studies conducted by Harris and Kington, (2002) they supplied students with a list of assignments that they had to be working on and complete outside of the classroom, they used video conferencing, internet access and online tasks, three cases students experienced greater independence and responsibility for their own work and progress. The students' progress was tracked with this system and generally there were improvements across the board, not just in the intermediate students as had been eluded to in the previous studies. The supports the smaller aim of the project which refers to the access to resources outside of the classroom, accompanying the integration of the ICT tasks into the classroom programme.

Criteria for success:

The Assessment: A statistical improvement in results from those with extended access to the in class usage and those who did not based on comparison to GCSE score. In addition statistical improvement from previous year's mock exam results on movement analysis aspects and the current year results.

Student Feedback: A positive response in the Course Forum results for the use of technology in classroom environment (with particular reference to the specific resources). Positive responses or constructive criticism that can be used to improve the scheme from the research specific questionnaires.

Tutor Perception: Although I will have the primary use of the resources produced all members of the Physical Education department will be involved to some degree in their production concept and delivery to students. Positive and constructive feedback from the tutors will be vital for the current and future success of the reproduction and development of the research.

METHODS USED:

Prior to the commencement of this research I did attend a training course on the production of videos in the digital PE field. This gave me greater confidence in the production of these videos and added to my previous reasonable competence level. This will therefore hopefully meet the expectations of the majority of learners and produce effective and attractive resources.

Resource Production:

Primarily the resources for both sections of the research were personally produced in the format of video capture using a canon XM 2 Digital Video Camera, this was then edited using Windows Movie Maker software.

The topics of the video for the movement analysis section were as wide ranging as feasible, influenced by the sports available in the college sporting environment. Initially there were priorities given to football, netball, tennis and athletics as these give the best range of movements and link into the interests of the PE students in the classes primarily involved in this research. Additional resources will be formulated dependant on current student expertise in sporting disciplines. To supplement these sporting disciplines a muscles task will be produced with movements cause and strengthening exercises (key examination criteria). This was in the format of an interactive whiteboard task that was used as a formative assessment task rather than a key learning resource as with many of the other resources produced.

The 'Evaluation and Appreciation' aspect will be based upon a previous student's assessment and this will be edited using the software to produce a guidance and example document. The aim is not to

produce a 'scripted' assessment from the students but give them additional guidance on the structure and content with an application to the different sports available. The range of sports will be based on the categories for the OCR practical assessment; these include invasion games with the primary example used being field hockey. The range of OCR categories can be seen in Appendix 1.2.

Resource Presentation:

The Evaluation and Appreciation section of the work was made available to all the A-Level students' two classes have used the presentations in timetabled lessons. The other A-Level students will have access to the information on Sixth-net, and will be made aware of its presence. The sporting action element was presented to selected classes, due to the interest of the tutor. This classroom usage will form the basis of teaching and learning of key topic areas at AS level, primarily the movement analysis aspect of anatomy and physiology. These resources will also be produced and utilised in pre-exam revision classes.

Data Gathering:

- i. Student usage, measuring access and downloading of the materials from the 'Sixth-net' site (college intranet resources). This will be the quantitative data and will give clear indication of the popularity of the new resources. In addition, as stated there will be two classes, that I teach, which will have a primary access to the resources. Successful resources will be recommended to other tutors to potential use with their classes.
- ii. Student feedback, qualitative data to assess the groups perception of the task. In the form of questionnaires and course forum feedback. Specific questions relating to the use of the resources in the classroom environment will be manipulated into the course forums. The questionnaire used can be found in the appendix section (Appendix 1.1), this was used in the form of a sample of the focus group and those student who accessed the 'Evaluation and Appreciation' resource.
- iii. The academic performance in the relevant OCR (Exam board for Physical Education) modules will be compared to the previous two papers performance or assessments. This will take the form of the Unit 3562 for the AS Anatomy and Physiology task, and one section of the coursework for the A2 qualification.

FINDINGS:

Influence on Academic Grades:

AS Focus – Anatomy and Physiology :

The focus of this data is two groups from the 2006/2007 cohort and two groups from this years academic cohort. Both samples tutored by the same member of staff. The 2006/2007 results for unit 2562 provided an average score of 57.56 UMS out of a max score of 120. In contrast the 2007/2008 cohort provided average scores of 60.44 UMS. This reflects an improvement of 2.88 UMS marks. This improvement relates to an average D grade. The sample compares to the overall cohort average of 64.83.

AS PE Group	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Average GCSE Score	6.07	5.97	5.76	5.78	5.78	5.35	5.8	5.86
Average UMS Marks	77.67	62.57	70.32	58.95	71.58	62.05	61.43	56.81

Table 1.1. Comparisons of average GCSE scores for each PE group. Groups 4 and 6 are the focus of the research.

A2 Focus – Evaluation and Appreciation :

In academic year 2006/2007 there were 134 students, for the E & A assessment. The following average scores were recorded: Stage 1 – 11.03, Stage 2 – 11 and overall grade 22.02. The results for the 2007/2008 students were taken from a sample of 3 classes, all tutored by the same member of staff. This resulted in a sample number of 48. The results were as follows: Stage 1 - 9.37, Stage 2 – 9.64 and overall grade 19.54. These samples are related to the full cohort averages of Stage 1 – 10.28 and Stage 2 – 9.77, see table below.

Assessment Stage/ Student Group	Stage 1	Stage 2	Overall
06/07	11.03	11	22.02
07/08 – Sample	9.37	9.64	19.54
07/08	10.28	9.77	

Student Feedback:

Course Forum Feedback :

Within the course forum evaluation (a college process for obtaining student views on topics such as; Atmosphere & Ethos, Feedback & Support along with the two key ones for this project which are Teaching Methods and Resources) conducted in January 2008 the students were positive in their response to the teaching styles, which obviously included the use of the video based tasks for Anatomy and Physiology.

Group 6: “The overwhelming majority of the class felt that the course was taught well and using a good range of teaching styles. This aided their understanding of the subject. There was some comments on the use of videos in sessions, the vast majority of these were positive with some students not liking the ‘gory’ elements of some.” (These ‘gory’ videos were not part of the project and related to heart and lung dissection elements).

The overall feedback was positive with a few recommendations for improvements which were also highlighted by the ‘Student Questionnaires’.

Student Questionnaire Feedback :

These were conducted at the end of the AS teaching periods (end of June). A total of 23 questionnaires completed, these ranged from a sample in the two focus AS PE groups and a number of A2 students that used the Evaluation and Appreciation resources as well as the AS Anatomy and Physiology tasks as part of their unit retakes, an area of interesting feedback as they had obviously

sat the paper before and been experienced in the previous key methods of teaching the topics concerned.

To summarise the positive feedback information the general feeling was that the tasks were interesting and appropriate to the task and course content. They gave a chance to apply knowledge to real life situations and link topics together. An element that was key to the project with the new A-level specifications emphasis on 'stretch and challenge'. One student stated that the positives included the "tasks being more realistic than the still images method, but although the practical's were also useful these were sometimes not easy to concentrate on and he became easily distracted". The A2 students found it 'more interesting' a method for their revision of the subject they had learnt approx one year ago.

As areas for development in this project the key points were to ensure that there is a greater range of sports included to address a better spectrum of sporting interests. Namely missing were gymnastics and basketball. In addition the quality of some video media in the 'muscles and strengthening exercises' task could have been improved and a different subject used in the video.

Tutor Perception:

My personal experience of the project would be similar to that of the students involved in the sense that I felt it addressed certain students' interests and learning styles more effectively. Some students responded to the tasks with more enthusiasm than they did with other style of tasks.

Through my involvement in the assessment for the A2 Evaluation and Appreciation task it is my personal feeling that although the grades and content was slightly lower than the previous year, the understanding and application of the knowledge showed an improvement, also they were far more individual and original. This would be evidence that the students have more effectively planned their assignment rather than simple produce a repeat of their practice version.

DISCUSSION:

The academic findings of the research show varied support to the success of the resources produced, with a small improvement in the average UMS marks of the two groups in question compared to the previous year. The improvement is obviously encouraging and gives signs of success, however I feel this result can be seen as more influential than initially appears. The reason for this was due to the alteration of the teaching format adopted for AS Physical Education compared to the 2006/2007. In that year, the main assessed relevant exam was taken in the Summer series, whereas this year the same exam was taken in the January series. This consequently impacted on the amount of time they had to prepare for the exam and the fact that it was their first set of advanced level study exam, an influential aspect as many students are complacent in this early stage of the course and belief that their GCSE PE knowledge is adequate.

These timing adaptations also influenced some of the production of the resources. The previous timeframe of the course allowed an additional 3 months to prepare and amend the resources, whereas the new arrangement meant that the tasks were produced and delivered or made available within a few days to a week. This may link to the feedback concerning the quality of some resources and the overall range of sporting disciplines available. This is certainly a major consideration, but this can easily be changed for next year and development of the resources as current ones can be used as the development of superior new ones is conducted.

The relevance of the data in Table 1.1. is an area of consideration, Group 6, which was a focus of the research had the lowest average GCSE score, it is also worth noting that the group was heavily male dominated with 18 males and 3 females making up the group. Their performance was better than

some of the higher average GCSE grade groups, indicating a superior level of performance. Their comfort with the tasks and responses to the questionnaire indicated a positive influence and support the theory of (Sarah Golden, Tami McCrone, Matthew Walker and Peter Rudd, 2006) that the use of the ICT tasks assists the intermediate learners.

In relation to the A2 coursework unit Evaluation and Appreciation task, as stated the grades show a small reduction in the grades for each aspect compared to the previous year. This is a disappointing outcome to the research, however, should be tempered by two points: Initially the overall coursework was down some 5 marks in terms of an overall average, the majority of this attributed to the lower grades achieved in their two practical sports assessments. This could indicate a weakness in the sporting prowess of the 2007/2008 cohort compared to the 2006/2007; something that could also influence their knowledge of sport and link to the reduction in grade for the 'Evaluation and Appreciation' section. The second point is to refer to the improved individuality and personalised nature of the oral responses. In previous years it has felt too scripted in terms of disciplines, meaning that all football assessments sound relatively the same this was also the case for other sports. This year there were noticeable differences in the content and application of knowledge from student to student. An area of great encouragement for the new specification both the AS and A2 qualifications have this oral assessment component. The resources clearly gave the students greater ownership of the work and there is more of an emphasis on 'Learner Autonomy' as referred to by Dam, 1995 (cited in Chan, 2001). They utilised the resources effectively and combined them with their own preparation for the task instead of the dependence on the subject tutor in the form of a practice assessment which then provided them with a 'script' for the final assessment which they simply regurgitated as opposed to having a real understanding of the topics and their application.

CONCLUSION:

- Encouraging signs for resource development for new specification.

The research provided results that give encouraging signs for the development of these resources with special application and relevance to the new specification for physical education.

- Improved grades for target group.

The previous theories and research suggested that this method of ICT application assisted the intermediate learners and this was particularly supported by all methods of assessment in this research. The comparisons between average GCSE score and the results of PE group 6 showed that they had benefited from the research. This was assisted in the evidence by the student feedback from sample questionnaires and course forum summaries.

- Improved application of knowledge and originality.

The findings for the specific A2 resources give encouraging applications to the forthcoming AS new assessment method. With the learners being prompted in areas to extract their knowledge and apply it to their personal interests and area of sporting discipline.

- Need to improve quality of resource production and range of sports covered.

The key recommendations to take from this research are the need to provide a greater quality and quantity of the resources. This can be taken from the student feedback and my own personal evaluation of the outcomes. The quantity is the main area with a range of sporting disciplines being

incorporated into the current portfolio of resources, key areas for inclusion being gymnastics, of which video footage is available for processing and rugby which will be a key focus of this development. Time restrictions should not be a restrictive factor as a period of time is now available prior to the September launch of the new specification to produce additional resources. The production will also be assisted by the substantial library of video clips collected in the last 12 months. This would be one area that would be relevant to people looking to introduce these types of resources. The data collection and resource processing is time consuming and requires a high quality of equipment in the video camera and computer for editing. This would be a difficult system to launch to an adequate quality immediately and needs some time to prepare and formulate the resources.

REFERENCES:

Sue Harris and Alison Kington. (2002). *Innovative Classroom Practices Using ICT in England*. Slough: National Foundation for Educational Research.

British Educational Communications and Technology Agency. (2004). <http://www.becta.org.uk/corporate/publications/documents/ILT%20in%20furt>. Retrieved March 18, 2008, from www.becta.org.uk.

Chan, V. (2001). Readiness for Learner Autonomy: What do our learners tell us? *Teaching in Higher Education* , 505-519.

Jarvis, P. (1995). *Adult & Continuing Education; theory and practice*. London: Routledge Falmer.

McEune, R. (2004). *What do pupils think of ICT?* London: NFER.

Minton, D. (1997). *Teaching Skills in Further and Adult Education 2nd edition*. London: City & Guilds Publications.

Sarah Golden, Tami McCrone, Matthew Walker and Peter Rudd. (2006). *Impact of e-learning in Further Education: Survey of Scale and Breadth*. Department for Education and Skills. London: National Foundation for Educational Research.

APPENDICES:

Appendix 1.1

Student Questionnaire

In your Physical Education studies you have been using various ICT resources, namely the 'Motion Analysis' and 'Evaluation and Appreciation' tasks. Please spend a few moments to help us further develop these resources by providing your valuable opinions and feedback.

Name: (Optional)

Level of study: AS / A2 (please circle)

Question	Rating (1 = excellent, 6 = very poor)	Additional Comments
1. What is your overall opinion of the ICT resources you used?	1 2 3 4 5 6	
2. How beneficial was the academic content of the resource?	1 2 3 4 5 6	
3. How would you describe the visual quality of resource?	1 2 3 4 5 6	
4. How would you describe the ease of use of the resource?	1 2 3 4 5 6	
Question	Rating (1 = yes much, 6 = no thanks!)	Additional Comments
5. Would you want to use these resources more often?	1 2 3 4 5 6	
6. Would you want more of these resources accessible from Sixth-net?	1 2 3 4 5 6	

Any Additional Comments or Recommendations :

Thank you for your time and assistance in this.

The PE Team

APPROVED ADDITIONAL ACTIVITIES**Physical Education (3875/7875)****COURSEWORK UNIT 2564 (AS LEVEL)**

ACTIVITY CATEGORIES	Activity	Code
Athletic Activities	Dragon Boat Racing	DBR
	Kayaking	Kay
	Olympic Weightlifting	OW
	Race Walking	RaW
	Rowing & Sculling	RwS
	Track Cycling	TC
	Triathlon	Tri
Combat Activities	Boxing	Bxg
	Fencing	Fen
	Karate (Non-contact)	Kar
	Wrestling	Wr
Dance Activities	Artistic Roller Skating	ARS
	Ballet	Bal
	Ballroom Dancing (Latin)	BD
	Folk Dancing	FD
	Ice Dance	ID
	Irish Dancing	IrD
	Tap Dance	TaD
Game Activities:		
• Invasion Games	Handball	Hb
	Ice Hockey	IH
	Inline Skater Hockey	ISH
	Korfball	Kor
	Lacrosse	Lac
	Polo	Pol
	Roller Hockey	RH
	Water Polo	WP
• Net/Wall Games	Table Tennis	TT
• Striking/Fielding Games	Baseball	Bb
	Rounders	Ro
• Target Games	Archery	Arc
	Flat Green Bowling	FGB
Gymnastic Activities	Ice (Figure) Skating	ISk
	Rhythmic Gymnastics	RG
	Sports Acrobatics (Women)	SAw
Outdoor and Adventurous Activities	Boardsailing	Brd
	Horse Riding	
	(Cross-Country)	HRc
	(Dressage)	HRd
	(Eventing)	HRe
	(Show jumping)	HRs
	Mountain Biking	MB
	Orienteering	Ori
	Rock Climbing	RC
	Sub-Aqua Diving	SAD
	Wakeboarding	Wb
Windsurfing	Ws	
Swimming Activities	Diving	Div
	Life Saving	LS

APPROVED ADDITIONAL ACTIVITIES
Physical Education (3875/7875)

COURSEWORK UNIT 2567 (A2 LEVEL)

ACTIVITY CATEGORIES	Activity	Code
Athletic Activities	Dragon Boat Racing	DBR
	Kayaking	Kay
	Olympic Weightlifting	OW
	Rowing & Sculling	RwS
	Track Cycling	TC
	Triathlon	Tri
Combat Activities	Boxing	Bxg
	Fencing	Fen
	Karate (Non-contact)	Kar
Dance Activities	Artistic Roller Skating	ARS
	Ballet	Bal
	Ballroom Dancing (Latin)	BD
	Folk Dancing	FD
	Ice Dance	ID
	Irish Dancing	IrD
	Tap Dance	TaD
Games Activities:		
• Invasion Games	* Handball	Hb
	Ice Hockey	IH
	Inline Skater Hockey	ISH
	Korfball	Kor
	Lacrosse	Lac
	Polo	Pol
	Roller Hockey	RH
	Water Polo	WP
• Net/Wall Games	Table Tennis	TT
• Striking/Fielding Games	Baseball	Bb
	Rounders	Ro
• Target Games	Archery	Arc
Gymnastic Activities	Ice (Figure) Skating	ISk
	Rhythmic Gymnastics	RG
	Sports Acrobatics (Women)	SAw
Outdoor and Adventurous Activities	* Boardsailing	
	Horse Riding:	
	(Cross-Country)	HRc
	(Dressage)	HRd
	(Eventing)	HRe
	(Show Jumping)	HRs
	Mountain Biking	MB
	Orienteering	Ori
	Rock Climbing	RC
	Sub-Aqua Diving	SAD
	Wakeboarding	Wb
	Windsurfing	Ws
Swimming Activities	Diving	Div
	Life Saving	LS