

**Developing a Community of Inquiry in a Science Department and disseminating good practice to the wider community**

**Andrew Watts**

St Benedict's School, Beetons Way, Bury St Edmunds, England IP35 6RH

[bjakwatts@aol.com](mailto:bjakwatts@aol.com)

First International Congress of Qualitative Enquiry

2005

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### **The Beginning...**

The development was generated from my personal interest and the recognition of the potential benefits of ICT to promote, enhance and support staff teaching and student learning in the Science Department of an Upper School in England.

In existence were single-page lesson plans containing references to lesson outcomes, textbooks, worksheets, videos and practical work that could be undertaken. Additionally, there was a 50 page manual of internet sites.

However, the resources were disparate and when lesson planning you had to seek out each of these materials individually, often in different locations, and to decide which of these was appropriate for delivery to your class. If you were new to delivering a module, 'good practice' strongly suggested that you trawled past examination papers to gain a better understanding of the Awarding Body's interpretation of the specification.

This initiative also gained momentum out of a necessity to maintain good quality teaching and learning in the Science Department which has a strong track record of quality provision. Over the previous few years the Department had been plagued with a high level of staff absence due to long-term illness and maternity leave. This resulted in the appointments of temporary staff who had variable knowledge and experience and who came for varying lengths of time. A great deal of time and additional monies was being repeatedly dedicated to enabling new staff to access resources. Many of these individuals

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were overwhelmed and lacked confidence, as they were often delivering unfamiliar subject areas with limited comprehension of the depth and breath of the Awarding Body's specification or National Curriculum (NC) requirements.

Government papers were long on rhetoric (DfES 2003; NAACE 2002) but short on practical examples except for very specific, well resourced examples ([www.curriculumonline.gov.uk](http://www.curriculumonline.gov.uk) & [www.ictadvice.org.uk](http://www.ictadvice.org.uk)). I researched the Internet to discover what materials were available to purchase that would assist me in making improvements but there was limited material available in the UK. North American sites excited me in that they already seemed to be travelling down this road to some extent and some of those materials were accessible. Electronic lesson planning is not the norm in the UK although there are now a number of companies who are marketing products to enable schools to do this, at great expense.

My reflections led me to discover how I might develop my own ICT skills I spent some time with the Head of ICT who demonstrated to me how to book-mark (*within a document*) and hyper-link (*between documents*). What powerful but easy-to-use techniques these are, only requiring basic Word Processing skills coupled with the ability to scan documents. We already possessed a document containing our lesson plans at Key Stage 3 (KS3 - Year 9), Key Stage 4 (KS4 – Year's 10 & 11) and for some of Advanced Level

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Chemistry & Biology (16-18 year olds). It now became evident how lesson planning could be improved using ICT.

### How We Got There...

Leadership & management	Action Research* approach	
Asking the questions and generating the Vision	personal reflection	Improving ICT within Department, staffing issues, accessing resources, single page lesson planning
Sharing the Vision	Departmental Meeting	Some embrace, some reluctant Issues with ICT
Modifying the management of the vision in the light of staff comments	Personal reflection plus semi-structured interviews with teaching staff	Greater ownership needed by staff, fear of ICT and failure of ICT, suggestions for format/inclusions
Sharing the modified vision	Departmental Meeting featuring co-reflection	Update on progress, sharing 'good practice', immediate inclusion in lesson plans.
Management of the vision – monitoring, evaluation & review	Personal reflection plus interviews with all staff plus focus group interview with students	No hardcopy after staff agree, suggestions for format/inclusions, challenges and opportunities,
Sharing the vision within school. Sharing vision to Departmental Head's of Science in LEA	Professional Development Day/Departmental Heads presentation	Whole school & LEA with science version of what they wanted and what could be achieved plus support available. Employment of additional Technical Support & e-Learning Coordinator
Sharing the vision Nationally		Submitted to DfES Innovation Unit

\*adapted from Hart & Bond 1999

This project started a little less than three years ago with myself having the 'good idea' of converting the existing lesson plans into electronic ones.

Whatever change was undertaken needed to be readily accessible to others

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and changed easily, so the interface chosen was word-processed documents including hyper-linking and book marking.

It soon became apparent that the single page format would not accommodate some resource lists in existing lesson plans but having committed the Department to the electronic version I felt this would not be too controversial and would assist a move away from hardcopy to the greater flexibility of e-lesson plans. I discussed my 'vision' at a Departmental Meeting. Those who were computer literate embraced it, those who weren't cited a number of reasons why this was not a 'good idea' i.e. lack of access to the network, unreliability of the network, underdeveloped ICT skills. Assurances were given but there remained some reluctance and scepticism. Because of staffing issues, the limits imposed by single page lesson plans, the need to improve the use of ICT within the Department, the decision was made to move forward electronically.

After reflecting on the issues I embarked on semi-structured interviews with all teaching staff individually to gather their reflections away from the glare of the public arena of a Departmental Meeting and to give them greater ownership of the process. Consent was obtained at this stage and all staff signed a form to state they wished to participate in the research but would not be disadvantaged if they decided to withdraw at any stage (Towell & Harris 1979). The interviews were open and conversational productive in

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allaying fears and drawing out the direction they wished the e-lesson plans to go in which they were, consequently, able to support in future meetings.

Already built into Departmental Meetings time was an agenda item where we all shared 'good practice'. Any worthwhile examples could be immediately embedded into the electronic lesson plans and staff were pleased to see their contributions "up in lights".

Another regular agenda item became discussion about progress and improvements with e-lesson plans. For example, when the school's e-learning coordinator was fired up about Webquest's and the Department agreed to use some, they could be quickly placed in the scheme and their location within the electronic lesson plans highlighted. Furthermore, inspection required us to identify whole school issues within lesson plans e.g. where opportunities for ICT, work related learning, etc., are in lesson plans.

The e-lesson plans were available on the school's intranet to students. So far no account had been made of these users. A focus group strategy was used to gather substantial amounts of carefully targeted data in a short period of time (Morgan 1998). Kitzen (1994) reminds us that it is essential to be sensitive when power is unequal. Four groups of students were interviewed, selected on the basis of age (covering the KS3 to KS5), sex (M/F) and attainment (low, middle and high) and asked what their experiences were of using the electronic lesson plans and what they would like to see by way of

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improvements. Overwhelmingly the reply came in about notes, PowerPoint's, internet sites and, most importantly, past paper questions with answers.

All staff, teaching and support, now use the electronic lesson plans, with almost all of the student population either within school or on CD-ROM.

### **The electronic Lesson Plans...**

Enhancements were made to turn the previous lesson plans into an electronic version by:-

- Hyper-linking all modules and book-marking all lessons around a 'Welcome' file. This had the knock-on effect of allowing individual lesson plans to be larger than the self-imposed restriction of one-page-per-lesson format.
- Scanning in copies of all worksheets and past examination questions where we did not possess electronic versions.
- Identifying opportunities in all lesson plans for the delivery of Citizenship, ICT, Multi-cultural, 'Ideas & Evidence', Autonomous Learning, Spirituality, Coursework, Starter/Plenary and Work Related Curriculum. These are colour coded to emphasise current obligations and commitments e.g. 'Ideas and Evidence' with yellow background.

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- 67 pages of Internet sites were hyper-linked into lesson plans and module summaries. This file can also be used stand-alone utilising the familiar 'Welcome' file format. These provide some excellent resources to assist in delivery e.g. suggested questions, ways of thinking about differentiated delivery, animations of concepts and processes, etc.
- Differentiation (KS3/KS4 Foundation and Higher) of worksheets, hyper-linked for practical work, homework, readers, past paper questions, etc.
- Past Paper Questions (PPQ) derived from past SAT's and Awarding Body past papers included both in whole module summaries and within individual lesson plans. They are also differentiated at KS3 and KS4 into Foundation and Higher (KS4) or Level 3-6, Level 5-7 (KS3).
- Each lesson has a brief PowerPoint summary for those who have access to electronic whiteboards and/or data projectors. There are also many, many PowerPoint resources within lesson plans and as module summaries, which assist in the understanding of lessons' learning outcomes and can suggest approaches to their delivery.

### **The Benefits...**

The above have contributed to the development of learning and teaching of both staff and students in the following ways:



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Staff development of ICT skills: Those previously wedded to the paper version of the lesson plans now actively embrace the on-line versions as access only requires basic skills and saves much in the way of time as one is not searching through all of the folders in all of the different locations to review resources. All staff view this positively. This has also had the knock on effect of staff intending to modify worksheets, PowerPoint presentations, etc, to better suit their classes needs, which translates into the professional development of their ICT skills based around recognition of how the development of those skills can motivate, support and engage learners, and so optimise their potential. One example of this was Learning Support Assistant (LSA) time was used to differentiate many of the KS3 worksheets, which required her to master scanning, hyper-linking and book-marking – she has now been able to transfer these skills to train other staff and develop other curriculum areas.

Another simple but formidable technique was to use of a search engine e.g. Google, to find freely available resources by a judicious use of keywords e.g. animation, PowerPoint, GCSE. This means the Internet site document is constantly being updated as links die and others are discovered.

Staff development of teaching and learning skills: This follows on from the above point, but having all of the resources at the touch of a button has caused further development and generated debate and discussion about teaching and learning. For instance, having the differentiated Past Paper

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Questions associated with a module and embedded within individual lesson plans has meant new staff, staff unfamiliar with an area of the specification, NQT's (Newly Qualified Teacher's), more experienced staff, etc, has generated a feeling of expertise more quickly and an understanding of how a specification translates into examination practice. Another example is in our busy lives we can often overlook materials and resources that we have not used that might be more appropriate to learners needs which this system can overcome as all of these resources are only the click of a mouse.

"I didn't see the point but now I do. I couldn't go back. It is just so easy, so easy. Click, click and you are there!"

Staff and sharing of 'good practice': Improved practice and new resources can now be accommodated quickly into the lesson plans and posted on-line almost immediately. Whilst good practice is discussed regularly at meetings there is often a time lag between the initiative and a meeting. A 'good idea' can now be posted as soon as its success is realised. This has been a great leveller in terms of all grades of staff feeling able to contribute to lesson planning, and to see their contribution on-line quickly, from supply staff, LSA's, NQT's, Return To School students, Technical Support Staff and the 'old lags'.

"It's there, very quickly, for everyone! You want it to be there. And when you put your first one up there it is so good. You have arrived."

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Improved resource deployment: The whole system is linked to the Technical Support Staffs' ordering system, freeing further staff time to engage in discussing the appropriateness and development of resources.

"We've been begging to get a workstation in the Prep Room so we are up to date. Thank God it's here!"

Students: They have access to these lesson plans in their shared area and they can also be accommodated on a CD-ROM for use at home. They are able to quickly navigate their way around the materials. This means if students missed lessons, work can be caught up on. The areas that emerged from the focus groups discussions was overwhelmingly in favour of the notes, Internet sites, PowerPoint presentations and, favourite of all, Past Paper Questions with answers in the module summaries and individual lessons.

"Thank you for the Mark Schemes. It's OK teachers giving us the papers but without the answers they're useless. You could do with some help on putting some animated GIF's in them."

Dissemination of the Innovation at Whole School: This work has been presented to all staff on a Professional Development Day and to Governors at my present school causing the development of all schemes of work and lesson planning centring around hyper-linking and book-marking. Due to the enthusiasm this has been greeted with, the school has employed an e-Learning Resource Assistant to help all Departments in their developments

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and the school now has an e-Learning Coordinator to drive forward these developments.

### Dissemination of the Innovation to Wider Community:

The Local Education Authority LEA have also picked up on this development and have placed a modified version of KS3 e-lesson plans on-line. I have delivered a presentation to Heads of Department from across Suffolk LEA about how to develop e-lesson planning within their own schools, outlining my experiences in terms of resources, skills and time involved and given them copies of the work to date.

In 2004, the Department for Education & Science (DfES) gave this development there top Innovation Award for that year.

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BECTA site which gives examples of ICT in practice.

[http://www.ictadvice.org.uk/index.php?section=tl&catcode=as\\_cu\\_sec\\_03](http://www.ictadvice.org.uk/index.php?section=tl&catcode=as_cu_sec_03)

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Curriculum On-Line gives examples of software that could be used in the classroom situation.

<http://www.curriculumonline.gov.uk/default.htm?cookie%5Ftest=1>

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