Exploring the integration of, and interaction between, the new ICT Tools, to support learning

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Abstract

We have seen the new Information and Communication Technologies - email, email attachments, websites and video-conferencing - being used to very good purpose in the support of learning across a wide range of secondary school curriculum subjects (See Poskole '97, '98, and '99). However, at the Holy Cross School we have so far been exploring the use of these ICT technologies largely as separate tools for learning. The next challenge for us, therefore, is to explore in what ways educational benefits can be gained by working with these tools in combination with each other, so that their different strengths can be harnessed together, to create even more exciting and successful learning outcomes for our students. The first section of this paper looks retrospectively at the cumulative advantages of the Holy Cross cross-curricular model, and the second section looks forward to our newer thinking about the combined deployment of the new ICT tools within this existing cross-curricular framework.

Section One

Creativity and commitment - the advantages for the students

We have found that by constructing an effective cross-curricular framework of learning, there has been an enormous release of creative energy in the students themselves. It seems that, given a balanced combination of clear targets coupled with considerable freedom to choose some aspects of their studies, our students are powerfully stimulated to excel; to share their ideas with their friends; to beat their own last performance target in very positively self-critical ways. It has been very exciting to see the release of this creativity. Recently, for example, I had a group of extremely experienced teachers in my classroom, critically evaluating the work of my Year 7 students (aged eleven years) who were engaged in a new curriculum project in English. I had to inform my visitors that the three most creative tasks, seen in the computer room during the English lesson on which the girls were working, were not mine but the students' own ideas. These were: making a board game for other children, created using a combination of word-processing and graphics programs; writing a visually creative poem using an art package, instead of a word-processor; and the use of a digital camera by a group of pupils to support their interviewing skills. I am, however, proud rather than ashamed to admit this. If, by truly understanding the creative potential of computer programs, my students can create for themselves better and more imaginative tasks through which to develop their English skills, so much the better. They have learned to be creative.

Another unexpected outcome of this way of working is the amazing confidence with which the girls are able to explain to our visitors what they are doing. They develop enormous pride in their

work, and are delighted to share their enthusiasm with others. As Christina Preston, Director of Project Miranda at the Institute of Education, University of London, said after her visit to the Holy Cross school, "The innovative cross-curricular use of ICT is unique in my experience. It seems to develop in the children a real understanding of their work. I have spoken at length to the pupils, who are articulate and self assured in explaining what they have learnt, and the value that their lessons have had for them."

The integrated model of learning at Holy Cross - the advantage for teachers

In addition to the advantages that using computers to facilitate an integrated and international approach brings to the Holy Cross students themselves, there is the further advantage that working together with teacher colleagues from other subject disciplines through these cross-curricular projects (The Caribbean Project, The Light Project and the Japan 2000 Project) has brought the teaching staff themselves together in a much greater understanding of one another's work. As the Head Teacher, Mrs. Mary Watson puts it, "This integrated method brings all subjects together, all students together and all staff together. Our Panda Report also shows a rapid rise in pupils' achievements from below the National Average to well above it, over a four year period." So successful has this method been that, in spite of the current severe constrictions of the timetable, we are nonetheless finding ways of extending the time slots available for these Projects, as well as adding new, broad topics on Time, World Citizenship, and Media into Years 8 and 9 (students aged 13 and 14). Some of this work will also, of course, prepare the students for their later GCSE studies (Public Examinations at age 16). In this development we are now being helped by some of our parents, who are able to bring their own skills, interests and knowledge into the school curriculum. We are therefore creating stronger connections with the local, as well as with the international, communities.

The spreading of these ideas - and a new Science Conference

As a result of reading in "The Times" newspaper about the video-conferencing collaborative work of Holy Cross Convent School and Ikeda Junior High School, a producer from Anglia Television arrived to find out more for himself. During his preliminary visit, he was also shown some aspects of the famous Holy Cross Light Project, the cross-curricular model which is steadily being adopted across the world. He immediately saw the significance of the Project, and felt that this work, too, should be included, as central to his documentary series. Accordingly, two producers, together with a film crew, arrived to look first of all, at the video-conference work with Japan, and then to see some Holy Cross classes "in action" recreating and extending parts of the Light Project, using computers. It is important to us as a school that when we are asked to recreate our work (for the BBC, for example, or for NHK - Japanese Television) we co-operate as best we can, but we also try at the same time to add a new dimension to the work, so that the pupils' learning outcomes are extended and developed. We do not wish our students to stagnate, even when they are performing on television. Accordingly, we decided to add a new Science element to link the Japan work with our Science work.

Channel 4 Visit to Holy Cross

At 9.30 UK time (17.30 Osaka time), two Holy Cross girls, Charlotte and Sarah from Year 8 as chairpersons; the Holy Cross School Choir; a Year 10 Science group with their teacher Mrs. Michell; and a group of Irish dancers, all assembled in the Kells Library to wait for the "Incoming

Call" signal from Japan. Holy Cross students were particularly excited because, as well as performing for the television film crew, they could all see their Japanese partners much more clearly on the new 55 inch colour monitor, with a ten speaker sound system, which had arrived only a couple of days earlier.

The conference began with four Year 10 Holy Cross students showing Ikeda some of their work in GCSE Science, including a "live" chemistry experiment, which they described and discussed. The purpose of this activity was to explore in what ways it might be possible to share scientific knowledge and understanding through the use of the new video-conferencing technology. Having carried out a chemistry experiment, a second, document camera was then used to show Ikeda some of the computer calculations which the girls had made, and had printed out as part of the recording of their Science work for GCSE coursework assessment.

The Japanese contribution began with a "surprise" item, when two Ikeda Science teachers gave us a fascinating chemistry experiment, in reply to the Year 10 contribution. There is excitement both in Japan and the UK about how this work can be extended in the future. We learned, for example, that it is easily possible to demonstrate a scientific experiment in this way, and that if a second document camera is connected to the same system, then detailed statistical information can be read and discussed by the students in both countries. The potential of this is enormous, although a great deal of careful planning will be necessary to ensure effective learning outcomes in both countries. It was the start of the thinking about the integration and combination of the ICT tools.

Next, the Ikeda students presented a lovely series of dances and songs, which they had either researched or composed, as part of their own musical studies in the school. There were many beautiful, colourful costumes on display, and many musical instruments were played, with audio-tape recordings also used to accompany this musical feast. We were fascinated to learn that the Japanese children's songs, which were also danced to, were similar in many ways to the songs and dances of English children, such as our own "Oranges and Lemons". The results of the Ikeda students' research into their musical heritage were very clearly seen on the huge Projection Television, and were appreciated both by the Holy Cross students and by the Channel 4 film team. Then the Holy Cross Choir, now a regular feature of our conferences, sang two lovely songs, in two part harmony accompanied by Steve on the guitar, to the delight of all, and this was interspersed with some stunning Irish dancing. Incidentally, the dancers had earlier used the new TV as a video tool to view their dance rehearsals, and found this to be a very valuable new use of the large TV monitor and camera system. By looking at their own images on the large 55 inch monitor as they rehearsed their Irish dance steps, they were able to make careful and detailed corrections to their positioning relative to the camera, and improve the co-ordination of their dance routine. The conference ended with Claire, a Holy Cross student, teaching a group of Ikeda students some of the actual steps which she had previously performed as part of her Irish dance.

This was an important day in the life of the two schools, who share a common vision of how teaching and learning styles must evolve in the new millennium.

Section Two

Future developments at Holy Cross - the need to combine these new technologies

The new ICT tools - email, email attachments, the Internet and video-conferencing - are powerful in very different ways. Email, for example, is extremely useful as a day-to-day communication tool, allowing time for reflection and planning in relation to the written content of messages;

attachments allow the additional exchange of image files, General Midi and MP3 music files; the Internet is an increasingly useful source of information for many aspects of learning; and video-conferencing brings a sense of immediacy and directness in face-to-face exchanges. (See Poskole '99 for further details and practical guidelines about the use of VC equipment.) We have, nonetheless, tended to develop the use of these tools in isolation from each other.

The next task for Holy Cross and Ikeda JHS, therefore, is to explore in what ways these tools can be successful when used in combination with each other: our own video-conferences are always planned, developed and evaluated by email, for example. We feel very strongly, however, that there are potentially many more powerful ways of working than this. As our next step, therefore, we are setting out to see how a new project, called The Banner Project and involving product development in Textiles, can lead us to harness the combined power of some of these new ICT tools.

The Banner Project

The objective of this next Project is for Holy Cross students to design and make a series of decorative banners for our partner school, Ikeda JHS, Osaka, in time to be displayed during their Open Day, when many important visitors will arrive from all over Japan. We therefore have a clear and fixed deadline to meet. As part of their Year 9 Japan studies, the students will set about creating a series of colourful fabric designs, using CAD software, for later manufacture into banners which will be sent to Japan. The preliminary designs for these banners will be emailed to Osaka, where the Japanese students will be encouraged to ask for suitable adjustments to be made to the colour, shape, size, or material of the products. Artistic ideas from Osaka may also be incorporated into these designs. The new specifications will then be emailed back to London, for further development by the Holy Cross students. These final design specifications will then be made up into the finished banners, which will be posted by "snail mail" to Osaka.

The Integration of these ICT tools for Learning

It will be possible for us to move the video-conferencing equipment from its present location in the Kells Library into a computer room, so that the students can see each other, and talk about various aspects of the project, while they are actually working on the designs. There is also the powerful document camera coupled up to the video-conferencing equipment which can be incorporated into the system to show, in excellent close-up, details such as individual stitches, patterns, or intricate design points. The Ikeda students will be able to see the development of the design work on the Holy Cross computer screens as a mobile camera moves around the computer room, talk to the Holy Cross students individually in real time, as well as being able to see the close detail provided by the second camera. By switching between these different tools, we hope to be able to develop the final textile banners to very precise design specifications, involving the Ikeda students in many different ways, as indeed is the case with actual industrial practice. The problem of teaching what is otherwise a quite dryly theoretical aspect of the school's Textiles course in Technology is thereby imaginatively resolved, and our partners will have the pleasure of displaying to their many visitors the banners which the Japanese students have themselves clearly helped to design. The whole process can then be published on the web sites of the two schools, for others to see and to develop further. In this way, the combined power of the tools can be explored effectively.

Japan Festival 2001

Beyond this, we plan to draw all of our experience from the previous projects together into an even more ambitious Drama production. It is hoped that this will fall under the banner of the Japan Festival 2001. The Project will bring together the "Kabuki Gift" experience of working with Ikeda

Junior High School on a collaborative international drama; the music workshops created by the London Symphony Orchestra and the Japan Philharmonic Orchestra; our cross-curricular Japan 2000 Project work; the new integrated uses of the ICT tools, for which the Banner Project now provides the working model; and a specially written play, designed to explore virtual reality through the life-size images of Ikeda students on the 55 inch colour monitor. The Project is clearly feasible, because each aspect of the use of the different use of these ICT tools has already been separately explored, and found to be successful within individual projects. (See Poskole '98 and '99 for details of these developments.)

The theme of this drama will be strongly linked to ideas of peace and friendship, and many aspects of the performance will be created by the Holy Cross students themselves. As much as possible of the planning will also be carried out with the Ikeda students, using email, email attachments, coupled into the video-conferences, as outlined in the Banner Project above. All students at Holy Cross now have their own individual email addresses, and this Project will also allow us to develop the students' skills in using this tool purposefully.

Drama introduced into Japan

The "Kabuki Gift" of June 1998 has led to a very unexpected success story. Ikeda students were extremely excited and stimulated by their first taste of Drama, becoming more confident in their whole approach to school life, and their school suggested to the Ministry of Education in Japan that Ikeda JHS should be allowed to be a National Pilot School for developing Drama in the curriculum. This request was accepted, and so for a period of several years, Ikeda will trial Drama as a tool for learning. Most National Pilot Projects are accepted. If, when evaluated, the trials are deemed to be a success, then Drama will become a new National Curriculum subject in Japan. We are all very proud to have been instrumental in developing this important curriculum initiative. Holy Cross School has been asked to assist the Ikeda teachers in this exciting new venture, and as part of this process, we are planning to take a group of Holy Cross students to Japan in July 2000 to assist in the development of teaching methods there, and to work on the new virtual reality play, which we have already begun to prepare. Through this Virtual Reality Drama Project, we hope to draw together every aspect of the ICT work undertaken so far.

The Virtual Reality Drama Project - Planning the Two Phases

It is likely that the co-ordination and implementation of all these new developments within one Project will be spread over two years, leading to a final performance within the Japan Festival 2001. By July 2000, we hope to have successfully completed the Banner Project, as an exploration of textiles for costumes of the play, and to have written the first draft of the play, prepared at Holy Cross by the staff and students. The first performance live both in Osaka and at Holy Cross can, like the very successful "Kabuki Gift" performance, be seen as an experiment in the possible dramatic uses of virtual reality. This first draft of the play will then be developed at Ikeda, through the proposed drama workshops, and possibly with other interested Japanese teachers, for fine tuning of both the final text, and the full development of the virtual reality aspects of the play's concept.

The potential learning outcomes, in both countries, are an extremely exciting prospect.