This paper describes pioneering in the area of telecommunications and the use of the Internet across the curriculum in Australian schools through the I*EARN (International Education and Resource Network). Topics discussed include: (1) changes to the traditional learning approach and school structure, including the role of the teacher and resource equity; (2) positive spin-offs from collaborative projects, including real outcomes from the author's experience; (3) problems associated with collaborative Internet learning, including time, money, and access to equipment and login facilities; (4) industry and organization involvement; (5) equity and access; and (6) three successful projects from the I*EARN project--War and Peace 1995, National Identity 1995-1996, and Faces of War 1996-1998. (DLS)
Abstract: My pioneering in the area of telecommunications and the use of the internet across the curriculum in Australian schools has been achieved through involvement with the *EARN (International Education and Resource Network) network. I have initiated a number of very successful international collaborative projects. This is a very exciting time to be involved in education! For the first time as classroom teachers, we have the capacity to harness technology to curriculum creativity and on a global level. This type of learning experience cuts across the traditional borders and barriers of our educational systems. It links like-minded teachers globally and allows curriculum development to become a flexible, collaborative process that tackles a broad range of immediate issues and needs. Primary, secondary and tertiary institutions can mobilise combined teams of human resources that challenge our traditional employment bases and concepts. This type of curriculum design extends effectively into the general community and invites interest from business and corporate bodies keen to encourage a technology smart workforce.

Changes to the Traditional Learning Approach and School Structure

1. The Role of the Teacher

When embraced at the classroom level, collaborative learning will accelerate the changes in the role of the teacher that have been occurring over the last decade. These changes include the shift of role to facilitation for the teacher, rather than the teacher being the source of all knowledge. The teacher will be needed to guide the learning process and to assist with the location of information in the labyrinth that is the internet. In a collaborative project, teacher time is also spent for example on establishing working partnerships on the net, seeking links with outside organisations and resources in the community, looking for new ways of utilising the technology in the project, presenting students with information on protocols and design recommendations for WWW page writing and collaborating with other teachers involved in the project. Collaborative learning means that teachers must be prepared to really work across the curriculum in a spirit of cooperation. There is no room for single minded approaches to subject areas or the inability to be flexible in course design and planning. The linking together of subjects through collaborative projects provides students with a holistic educational pathway and can lead to the development of real problem solving skills. Using the technology, educationalists can develop powerful networks of contacts and resources to draw upon outside of the school boundaries. It is important to maintain suitable levels of communication and protocol within these networks. These partners can often become long standing colleagues, involved in future collaborative projects and providing links to other global resources.

2. Resource Equity

Heavy school financial commitments in the area of technology mean that the issue of equal access across the curriculum is paramount. It is to be expected that subject areas with a comparatively small budget would resent the vast amounts of money that are put into the school computer lab if they can see no real use for their subject area or if they cannot gain physical access due to traditional computing subjects blocking out the timetable. For collaborative learning experiences to occur schools need to be working towards a model where enhancing technology is inherent in each subject area and staff and students look to it appropriately as an accessible tool. Technology must not remain the property of the (traditionally) privileged few staff in an educational setting; disseminate the knowledge throughout your staff workforce. As networking in schools becomes more common, it is an individual and often financial decision as to where the technology platforms will be located. Given that most
school still find the traditional one or two room lab the most practical solution, I would like to suggest that schools at least trial the ACOT (Apple Classrooms of Tomorrow) model in one or two general purpose classrooms if possible. A cluster of 3 or 4 machines are stationed in the room to be used as required. Keep a log book of use and timetable a range of classes into the room a range of subject areas. See what happens, then move on from there.

Positive Spin Offs From Collaborative Projects

* Increased connectivity for real cross-curriculum based work amongst schools
* Experience in the use of new age technologies for communication with a purpose for staff and students
* An enhancement of the trust relationships between Australia and other countries
* The publication of student work in a booklet is concrete evidence of the bonds of friendship and understanding built during the project and continuing through telecommunication long after a project's successful completion
* Other schools take up the model for this method of communication
* Developed appreciations for the unique elements of our own culture and the culture of others
* Heightened awareness of Australia's identity in the global community
* Imparting of critical technological skills to participating teachers and students, providing valuable training for global competitiveness in the 21st century
* Potential for multimedia applications with real purpose for the students
* Involvement of traditionally technology resistant subjects

Real Outcomes

It is important that when we are using a medium as intangible as the internet that we plan to have outcomes for students that are real and tangible. The possibilities are endless, but some that I have found successful are:

* Global magazines that put into print a selection of writing and artwork collected during the course of the project. These magazines utilise other aspects of the technology through desktop publishing. It is important that all participating schools globally are represented in the publication, and that they receive copies. In many cases this will assist them in convincing their administration of the value of the students involvement and of course is a great thrill for the students to receive. We presented copies sent from New York for one project our students had been involved in at a general school assembly - it made a nice change to sporting awards! A magazine is a lasting document that can be read in more places that a computer monitor!

* Global art exhibitions that commit schools to producing a number of pieces of work on a central theme by a particular date. Samples are sent to all participating schools from each base school. Exhibitions are set up in the school and comments on the work are collected from art classes and emailed to the artists who have sent the pieces. We have always organised an opening with guest speakers on the theme, and had students read out related theme based written pieces from representative countries at the opening. A virtual gallery gives interested students a chance at designing a WWW page of immediate interest to participating schools.

* A composite quilt made up of appliqued squares that represented the project theme is a great tool for bringing in the materials technology subject area and for involving a large number of interested schools. The National Identity Quilt, toured Russia, Budapest and Canada.

* A video resource of suitable materials uncovered in the project for general school use. Students see feedback on processes such as interviewing that they have been directly involved with. This is a lasting resource for school use.
* A CDROM disk resource of suitable materials uncovered in the project for general school use. Once again a lasting resource.

Associated Problems
The problems encountered come back to basics; time, money and access to equipment and login facilities. With determination, despite your school's resource situation, you can overcome these and be involved in major collaborative learning experiences. At Lake Bolac Secondary College all the success stories mentioned in this article were achieved with one phone line and modem linked to a single machine. It may fall back on a few people to download student writing prepared on other machines, at convenient times, but don't let the promise of next year's technology budget deter you from launching into current projects now. Great opportunities arrive daily through your email and networks. My problem is how can I involve my school in all that is available with limited hours in the day!

Other problems encountered can be overcome with careful and flexible initial planning. These include for example, conflicting international school holiday calendars and receiving firm commitment from participating schools. Don't expect to get other schools immediate involvement, remember we all have our administrative, curriculum and teaching commitments to juggle and negotiate. Be prepared to plan a year ahead when launching a collaborative project of large proportions. Raising money is never easy. There are certain organisations interested in this type of project support, such as the Australian Foundation for Culture and the Humanities. By meeting their annual criteria with your project description you can gain access to the necessary funds to support projects. Be ready for some disappointments, but roll with the punches and look in other directions that may be suggested to you. Be sensitive to the fact that in many countries teachers are meeting the costs of telecommunications personally for their students. They will not appreciate being asked the same questions time and again if the information has been supplied and is available in say a virtual conference on the I*EARN network for all to read. In many countries the approach to computers is still very much traditional programming. We need to support our pioneer colleagues who will be fighting odds, curriculums and administrations less sympathetic than our own. Treat your international contacts with respect.

Industry And Organisation Involvement

My first experience in linking technology students with industry was when I approached the International Wool Secretariat about putting all their educational materials on the WWW. This project allowed students to gain a first hand understanding of the protocols of industry and the processes involved in developing a prototype and working with a professional digital designer. The wool industry was of course close to our hearts being from the Central District of Victoria. We were able to compare the end product with the professionally developed American version that was being developed simultaneously. At this stage the students and myself had little experience with the use of HTML and this was a positive introduction to what was to become a new multimedia inclusion to the curriculum. We are still receiving emails and enquiries about the page from a wide range of internet surfers. We went on to visit and prepare a simple Web page for the National Wool Museum. This meant the school needed to invest in a digital camera so we split the costs with the nearby Primary School. As the students' skills developed in HTML, they have written pages for organisations like, the Grampians National Park and the National Trust Property, 'Mooramong'. Our text based work in the I*EARN virtual conferences can now be complimented by Web page development on the project. At this point in time students at technology conscious schools are rapidly developing advanced skills in this area. In many cases industry is keen to have a Web presence, but uncertain how to obtain this, opening up a perfect partnership for real outcome curriculum work. The possibilities are endless for all key learning areas as many previously closed doors open for industry research prior to Web page development. Other organisations like the Asian Education Foundation are pleased to involve students in Web work in their efforts to improve the studies of Asia in our curriculums. Recently, one of my students launched her page detailing the International teaching fellowship to India at the Education Victoria Conference. The Melbourne Holocaust Museum has been a wonderful resource and partner for collaborative project work.

Equity And Access

The collaborative approach has proved a very attractive use of technology for female as well as male students. Female students enrolling in senior technology courses are electing to use HTML as one of their software types and looking to community based projects that interest them. The percentage of female students electing to take these courses has increased dramatically at our school. Working in a team to develop an appropriate, creative solution to a real life problem is an attractive way of utilising new technologies.
Three Success Stories

1. War and Peace 1995

With nuclear testing hot on the media, students were keen to use the internet to make a statement about the issue. This statement met with over 2000 supportive responses across the I*EARN network and was teased out to become a collaborative project that examined the issues of war and peace in general. This was my first experience in how technology based cross curriculum ventures could produce impact on the whole school in a number of ways:

*English

*The issue of Peace was taken up through text studies and by addressing the question of whether the A-Bomb should have been used in WW2. Finished pieces were posted into the electronic conference. Needless to say, the Japanese students had a different view on the A-Bomb to some of our students!

*Studies related to senior texts on the Holocaust were conducted and resulting writing sent into the conference. A visit to the Holocaust museum resulted. Student worked in a second I*EARN conference here, specifically on Holocaust issues. They were able to contact survivors personally over the internet. Some heated discussion was generated with New York students over one controversial essay!

*In history students were examining WW2 and propaganda and wrote up some interesting pieces on Hitler

*The Art department recognised the power of the technology and the first global art exhibition was organised, with school from 7 countries participating and a real and virtual exhibition resulting.

*The Regional Rotary Public Speaking Competition saw a student representative win with a speech on World Peace that she had prepared for her Year 12 Writing Folio and the global audience.

*The launch of the art exhibition occurred in a whole school Peace Week. Guest speakers from the Holocaust Museum addressed the whole school. Live phone calls from the US and Israel were put over the speaker system. The broader school community was invited to attend and much media attention was attracted due to the death of Prime minister Rabin the day before. Students elected to represent various countries and read out messages of peace that had been sent into the conference.

*A Peace Garden was created by the History students, and a commemorative plaque opened by a Holocaust survivor.


This project was interactive and cross-curriculum by nature. It relied on the use of technology to maximise global participation, access and input, and focused on The Arts, Culture and Humanities and the Sciences within its content. It examined the myths and realities of the National Identity and our emerging image globally. It allowed students to explore the impact of multiculturalism, the Arts, politics, economies, technology and history on the dynamic, evolving society we have today. Students participating came closer to knowing what it meant to be Australian. Particular emphasis was placed on symbols and events, and their implications and interpretations.

Written component

Global surveys, focusing on the range of subject areas mentioned above, collected data from I*EARN youth though the internet. The focus was on involving as many subject areas across the curriculum as possible. Interactive responses to clarify issues and discuss interpretations between students was achieved using email and the project conference topic. The key schools took on the responsibility of forming a joint editorial team, working across the internet to organise all editorial functions and decisions for a global magazine publication containing student writing collected throughout the project. Illustrations for this publication were taken from student entries in the project's global art exhibition based on the same theme.

Global Art Exhibition
The global art exhibition organised over the I*EARN network, established a number of global sites to display Australian students' work on the theme. The Australian sites received work from other participating schools in Australia and Internationally. An interactive feature of this exhibition was email discussion between the artists and student body, during the exhibition periods. A virtual gallery of the art work was constructed on the World Wide Web. This allowed all schools to access work on display at other sites internationally.

The Study Tour

An exchange of students with two schools in Moscow for a three week period, allowed representative global classroom students to experience another culture and lifestyle in contrast to their own. Intensive interaction using the I*EARN network's bulletin board conferences, before, during and after the trip, allowed this visit to have broad benefits to I*Earn students Australia wide. In other words, the number of students and teachers involved in and impacted by this component of the project was dramatically larger than the number of persons who actually participated in the exchange. Students prepared materials emerging from the project and drew upon conference entries from other students Australia wide, to present what they believe to be a realistic view of Australian society today to the students in Moscow. Comparisons between the identity of Russian and Australian Society formed a special section of writing by participating students were included in the Project's publication which was launched and distributed at the I*EARN international teachers' conference in Budapest in 1996.


This project opens up the possibilities for education to use new communications technologies effectively and creatively in the study of life experiences of ordinary people in traumatic and global circumstances. This project creates an opportunity to reconsider history and scale it to the dimensions of people rather than politics, ideologies or national movements. It binds generations and cultures through sharing. The project marks the first edition of an ongoing commitment by a team of schools to produce a globally distributed magazine. The 1997 edition of 'Faces of War', commemorates the victims of Wars since 1938 (veterans, P.O.W.'s, refugees, Holocaust survivors). In consultation with National Returned Soldiers Leagues (R.S.L) and Holocaust Museums, Australian students are invited to join the project, conducting taped interviews with relevant individuals, which will then be presented as transcripts to be published on the internet, in a global magazine and in an oral history resource on video and CDROM. International students conduct similar interviews and transcripts and this serves to stimulate electronic exchanges with Australian students globally. Subsequent responses to the transcripts, and related theme writing sent into the internet conference from National and International schools were published in the global magazine which was sent to all participating schools and every Victorian school. A large vibrant web site was established in 1997 to supplement the original bulletin board conference (I*EARN network). However, the bulletin board continues to enable schools with low level technology to participate in the project. Selected Australian interviews were video taped professionally and edited to create an oral history CDROM resource made available to Victorian schools, and educational institutions. This was distributed by the Directorate of Education and sponsored by the University of Ballarat who involved some of their students in the design. This CDROM also published for the first time an original WW2 prisoner of war diary with teaching and learning materials developed across the curriculum and linked to each diary page.

A global art competition and exhibition was held. Australian and International Schools were asked to send in work on the theme for a central Metropolitan exhibition. Samples of this work were entered into a virtual gallery on the World Wide Web site and constructed by students. Visitors to the Melbourne exhibition were asked to make an entry into a virtual visitors' book on the WWW page. The work clearly shows the difference between the experiences of war for each cultural group of students. After the Australian exhibition, samples from the exhibition are mailed to participating schools for exhibition Internationally. The gallery can be accessed from the web site. Students undertook to construct the Victorian R.S.L. web site as part of the project. This major undertaking was launched in conjunction with the opening of the art exhibition at the headquarters of the Victorian RSL. Major educational leaders and veterans attended this gathering and it was held on one of Australia's commemorative days, the 11th of November. Mr Peter Copen (I*EARN U.S.) has worked on organising feedback from students involved in the project and the evaluation of these comments. In 1998 the project offers students globally a number of literary and art competitions and has attracted funding from the Department of Veteran Affairs. We will focus on setting up
teams of human resources in 1998 to answer student questions on the theme of 'War', thus utilising the grey workforce and their living experience. Problem solving using the technology takes on a new dimension when a student has to present memorabilia or original letters and diaries to capture the atmosphere of time and trauma. A large number of teaching and learning ideas are available for teachers on the web site and reach across the curriculum.

In Conclusion

The rewards available in teaching and learning through the collaborative approach will outweigh the extra effort that may be involved as you get deeper into working with networks outside the school boundaries. It is important that we all strive towards establishing a working environment and curriculum that allow us flexible access to the opportunities now open to education. The technology in our schools is only as good as the curriculum innovation and enhancement we achieve with it.

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