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Collaborative Online Projects in a global community
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ABSTRACT

What is evident in recent literature reviews of the use of Information and Communication Technologies (ICT) in Education is the lack of accessible documentation on the development of, and participation in, collaborative online projects by educationalists. (Blackmore et. al. 2002, Downes et. al. 2001). The major source of information comes in the form of anecdotal evidence from teachers, project facilitators and organisations (Gragert 2000, Carr 2001, Tate 1998, Robertson 1999). Other literature reviews and research that focus on the use of ICT in education have significant gaps in this area and yet it is increasingly promoted in educational policy and supported and promoted by education systems.

This paper identifies and explores the extent and impact of educational technology in the context of collaborative online projects in a global educational community. A general identification of a wide range of local and international collaborative online projects and the groups/communities in which they operate, is followed by a closer look at a selection of case study projects. The case study projects have been selected for their potential to provide new perspectives on the role of technology in education and its potential impact on teaching and learning in a global context.

This paper provides definitions and examples of collaborative online projects, their history and their diversity. It explores the level of participation afforded by the projects and presents a detailed section that focuses on a sample of projects. The collaborative online projects in the case study section are The Environmental Mystery Competition, The First People's Project, Lewin - an Anthology of Children’s Writing and The Teddy Bear Project. The case study projects will be looked at from the perspective of the project facilitators and project participants. In many of the projects items such as books and calendars are products of the projects. Examples of these items will be shown in the presentation.
INRODUCTION

My interest in collaborative online projects dates back to 1995. In that year I was a specialist computer teacher in a state primary school and I attended the International Education and Resource Network (IEARN) teachers’ conference in Melbourne, Australia. Following this I worked with classroom teachers in my school to support them to participate in collaborative online projects. I found that the projects I was encouraging my teachers to become involved in did not allow for high levels of collaboration. In most cases the teachers and students prepared materials to be sent to the facilitating school and only saw a product such as a printed book, some time later. Some projects promoted the concept of ‘keypals’ with limited educational outcomes. Teachers in my school found this frustrating and asked how they could become more involved in the projects. They were requesting higher levels of collaboration. In late 1996, yo try to meet this need, I started a collaborative online project called The Teddy Bear Project. This project was run through the IEARN community.

At their best collaborative online projects are associated with the use of communication technologies to communicate and collaborate effectively with schools in various locations to participate in projects which may be interdisciplinary or cross curricular in nature, with a defined purpose or theme in order to facilitate meaningful and authentic student learning. Other terms such as ‘eLearning projects’, ‘learning technology online projects’ and ‘collaborative projects’ are also used in the literature. Collaborative online projects use online communication technologies such as email, mailing lists, newsgroups, discussion boards, bulletin boards and/or websites to communicate across the country or the globe. They include the facility to use communication technologies to collaborate on a theme, or for a purpose, defined by the project. The level of collaboration may vary depending on the project. Projects may have a limited life span or be ongoing. It can be argued that collaborative online projects provide authentic purposes for the use of the communication technologies. In some cases collaborative online projects focus on humanitarian and/or environmental issues.

Grager (2000) when discussing teachers who use computer technology for teaching and learning; who integrate computer technology into their classrooms in ways that support meaningful thinking and involve collaborative project work and sharing of ideas with their peers argues that 'The Internet is a powerful tool for connecting learning to action as students collaborate on real issues facing young people in the world today.' Carr (2001) believes that collaborative online projects provide valuable learning experiences for students. She says that collaborative online projects can be powerful social contexts for learners, enabling a variety of social experiences. Collaborative online projects have played a significant role in the integration of computers into teaching and learning throughout the world and to the internationalization of the curriculum.

The use of online communications for collaboration opens the boundaries of both physical location and what are often stand-alone curriculum content areas. Collaborative online projects provide an opportunity to use a variety of electronic tools including communication tools, multimedia software, scanners, digital cameras and publication software.

Most of the more current literature is overwhelmingly positive about the potential of technologies to be powerful components in accomplishing current educational visions. Such visions include helping students to "develop a broad, deep, and creative understanding of community, culture, economics and international politics, past and present, and acquire the social skills to work across differences and distances" (Riel, 1993).

Collaborative online projects take many different forms and the collaborative aspect varies. Some projects are embedded in online communities such as IEARN and others are run by individuals. Some are run under the auspices of groups e.g. Global SchoolsNet and European SchoolsNet. Others may be the brainchild of a single teacher; such is the nature of the Internet.

BACKGROUND
The history of the involvement of schools in collaborative online projects dates from the 1980s when the use of telecommunications in teaching and learning was pioneered by the early adopters in the education profession. At this time collaborative online projects used mainly plain text-based communication tools. Access to the Internet was not available in many schools at this time and access to the World Wide Web (WWW) was rare. For the limited number of Australian schools that had access it was usually through a dial up account using a single telephone line.

‘Those who were involved when (or before) … 1988 will recall the steps we took to configure a modem to stops/7 or 8 bits/no parity at 2400 baud, if one was fortunate to have even that “broad” a bandwidth connection.’ (Gragert, 2002).

What would now to be considered crude communication tools, such as email and conferences/newsgroups and bulletin boards, were at the leading edge of communication technologies at this time. Some of the early adopters of these forms of communication technologies in countries such as Argentina had even lower level internet access through bulletin boards. Even so early adopters of communication technologies in teaching programs were excited by the human interaction it enabled. The all-too-often passive WWW sites that were later developed, did not necessarily enhance communications and human interactions, in collaborative online projects.

In 2002 there are many people in the world who still do not have any kind of internet access as demonstrated in a recent bulletin from the APCNews, the monthly newsletter of the Association for Progressive Communications that describes how n 2002 they are ‘working with impoverished and disenfranchised sections of communities in Argentina, Brazil, the Philippines and many African nations including Namibia, Nigeria, South Africa, Tanzania and Zimbabwe’ who have little to no technology.

In one example of the early adoption in Victoria, Australia in the early ‘90s, Coppinger & Hocking (1996) took a leading role in the promotion of collaborative online projects through IEARN (International Education And Research Network) and the Whalesong Foundation. As teachers at Broadford Secondary College, in country Victoria, Coppinger and Hocking worked with other teachers and students in Australia and around the world to create a low-cost, people centred, telecommunications model to demonstrate that elementary and secondary students could make a ‘meaningful contribution to the health and welfare of the planet and its people. The Whalesong Foundation archives describe the foundations ongoing commitment to understanding the application of online collaborative technologies and how these technologies will assist in equipping individuals and entire communities to understand and effectively participate in a rapidly and profoundly changing world.

In November of 1994, The Directorate of School Education in Victoria, Australia, agreed to support the Whalesong Foundation's design of a two year plan to co-ordinate and implement a Statewide telecommunications project for all Victorian Schools based on the IEARN model. The Whalesong’s (1996) report on Stage 1 of the Global Classroom Project in schools in Victoria, explained that one of the aims of the project was to ‘expose Victorian teachers and students to the IEARN collaborative theme-based project model’, describing IEARN as a global educational network that was a unique organisation of educators from across the globe committed to the health and welfare of the planet and its people.

Collaboration in these online projects was conducted in online conferences (newsgroups). The only related literature that was identified was COPPINGER & HOCKING's 1996 report on the Global Classroom Project. Teachers and students from around the world communicated by sending electronic messages that could be accessed with very low bandwidth, to the online conferences (newsgroups). The closed conference/newsgroups used only plain text for messages and were available to members only – teachers and students. The focus was on expanding students knowledge and understanding of their world from humanitarian and environmental perspectives. One of the powerful aspects of these projects was the international online community in which they operated.

[1] A single dial-up telephone link currently runs at approximately 56,000kb – over 20 times the speed, and new connection systems run at significantly higher rate than that]
In recent years teachers and students have participated in many hundreds of collaborative online projects. The development of the World Wide Web component of the Internet, the associated increase in bandwidth for many users and the promotion of ICT by educational systems has led to a proliferation of collaborative online projects.

The literature and definitions of ‘Collaborative Online Projects’.
The literature surrounding collaborative online projects provides little in the way of useful definitions of the term ‘collaborative’ or the meaning implied in the term ‘collaborative online projects’. Most project registers/listings do not provide definitions or explanations. In most cases there seems to be an expectation that understanding of the term is a ‘given’.

The ‘Ask Jeeves’ UK website, provides this support to help the user develop some understanding the concept.

‘In Collaborative online projects students are often faced with problems that are best understood by talking with others, collecting data from remote sites, or going through a series of problem solving activities.’ (2002)

In this example the task is the focus without providing any understanding of the ‘collaborative’ aspect.

The IEARN group’s website provides this definition:

‘Collaborative projects bring together two or more groups of students who work together on a theme or question or who contribute to a compilation of materials on a topic. IEARN collaborative projects use the full range of ICT, including newsgroups, email, web pages, video-conferencing. Many projects also involve physical exchanges of student work either as part of the process of the project or as a culmination of it.’ (IEARN, 2002)

This example does bring out some aspects of collaboration in that it mentions students ‘working together’.

The Macquarie Dictionary tells us that to ‘collaborate’ is ‘to work with one another’. So it can be expected that in collaborative online projects students work together with other students online.

Collaborative online projects share some similarities with Project-Based Learning (PBL) in that learning is organised around projects. But PBLs, (Thomas, 2000) as they have become known, are projects ‘focused on questions or problems that “drive” students to encounter (and struggle with) the central concepts and principles of a discipline’. Collaborative online projects tend to be focused on overarching ‘issues’ whether they are scientific, environmental or humanitarian and are often global in nature. They may well also include ‘questions or problems’ but the overarching ‘issues’ drive the encounters. They also include the use of online technology to facilitate communications.

Collaboration/participation

The level of collaboration/participation varies between the collaborative online projects identified. With many there is little more than a requirement for a class to prepare some data they have collected, student writing, or artwork and send it to the class/teacher ‘running the project’ – very much ‘peripheral participation’. In projects of this type the managing class and teacher may be involved in a high level of interpretative work and collaboration with their students but much less involvement is available for other participants. This level of participation was often seen as suiting classes new to this approach. These could be described as more ‘contributory’ than ‘collaborative’. Some so called ‘collaborative projects’ seem to have nothing more that an online presence to provide information about activities. Other projects require a more sophisticated level of collaboration and interaction with participants contributing and on a more equal level. Participation in this more collaborative form, requires ongoing communications with responsibility for many aspects of the project taken by all participants.

At their best ‘collaborative online projects’ are associated with the use of communication technologies to communicate and collaborate effectively with schools in various locations to participate in projects which may be interdisciplinary or cross curricular in nature, with a defined purpose or theme in order to facilitate meaningful and authentic student learning. Even though an internet search of the term ‘online collaborative project’ will bring up many listings the level of collaboration allowed for in the project may vary from minimal to full participation.
Figure 1. Types of collaboration/participation

Collaborative online projects – in the context of this paper the term collaborative online project is taken to mean that the project encourages a level of collaboration where teachers and students participate online in active communication with other participants associated with the project, based around a theme or purpose. When project participants work together collaboratively and are in active communication they could be considered to be working within a ‘community’.

Communities of Practice/Learning Communities

Community is a term widely used in the online world. ‘Virtual community’ and ‘online community’ are terms commonly used by groups who use ICTs for communication. Virtual and online communities develop without the usual need for face-to-face meetings or communications. Meetings and communications take place over the Internet in synchronous (live chat) or asynchronous modes. Terms such as ‘an inclusive and culturally diverse community’ can be found on many of the websites that host project listings (IEARN, 2002).

Allard & Cooper (2001), argue that to build different forms of community an ongoing commitment to and use of ‘designed’ cooperative learning among groups and across differences as a pedagogical technique works to build co-reliance among members and as well, provides for a sense of belonging. The process of working through shared tasks where all members contribute in order for the different groups/community to achieve the goal is a means that can help to give value and respect to all contributions. In collaborative online projects it could be inferred that higher levels of collaboration could be compared in terms of use of cooperative learning among groups and building of different forms of community. This process could be seen to be part of the value of participation in collaborative online projects to the learning community.

Wenger (1998) describes how, functioning at its lowest level, ‘a community of practice is a living context that can give newcomers access to competence and also invite a personal experience of engagement by which to incorporate that competence into an identity of participation. When these conditions are in place communities of practice are a privileged locus for the acquisition of knowledge.’ (p. 214). But, Wenger goes on to say that ‘a well functioning community of practice is a good context to explore radically new insights without becoming fools stuck in some dead end.

A history of mutual engagement around a joint enterprise is an ideal context for this kind of leading edge learning which requires a strong bond of communal competence along with a deep respect for the particularity of experience. When conditions are in place communities of practice are a privileged locus for the creation of knowledge’ (p. 214). Participation in collaborative online projects allows for ‘mutual engagement around a joint enterprise’ and ‘leading-edge learning’ and can lead to a ‘well functioning
community’ or at a minimum ‘legitimate peripheral participation’ (Lave & Wenger 1991). The joint enterprise being the communications in the online collaborative project and/or the products created as a result of participation for example publications such as the Faces of War CD ROM (Tate, 1998), ‘The Meeting Place’ magazine and the calendar of art work from the First Peoples’ Project or the ‘Anthology of Children’s Writing’ published in hard copy by the student management team in the Lewin Project.

Van House’s (2002) explanation regarding the ‘process of gaining credibility’ helps explain the vast amount of time spent on publications especially in the form of hard copies of books, calendars and magazines (products) in what is otherwise an electronic form of working. This apparent contradiction may be explained in terms of how the products provide a means for the student’s work to be valued but also provide a means of publicizing and ‘proving’ the value of collaborative online projects, of gaining credibility in that they ‘carry the work’ to a larger audience in the wider community in such a way that ‘its meaning and significance are irrefutable’ and contribute to a communal memory.

Bede (2000) talks about technology creating a paradigm shift towards knowledge networking and virtual communities that have communal memories. Collaborative online projects could be seen, particularly in the case of projects identified as facilitating high-level collaboration, as empowering this paradigm shift with the participants behaving as ‘virtual communities’ that develop ‘communal memories’.

Threaded conversations and the development of communal memories

Threaded conversations play a major role in the development of a communal memory in online communities such as IEARN. They can take place on web boards and in electronic conferences or newsgroups. They are similar to electronic mail (email) in that they include messages that are transmitted electronically but they are different in that the messages are sorted and viewed based on the topic in the subject line. Both email and threaded conversations are asynchronous in that they are not happening in real time, as is the case in a ‘live’ chat session. Email users may receive a multitude of seemingly unrelated electronic mail messages that may or may not be about the same subject. In comparison, threaded conversations in electronic conferences (or newsgroups) and web boards all messages related to a topic appear under that topic and indicate who instigated the topic and which messages are responses to the topic. In this way a ‘threaded’ conversation can be seen to be happening.

Project groups, such as IEARN, that utilize communication tools that use ‘threaded conversations’ provide a powerful means for developing ‘virtual communities and communal memories’. The communications processes involved in the use of online forums, conferences and newsgroups (e.g. Web boards, newsgroups etc.) facilitate online communications that support participation that can be at first, in the words of Lave and Wenger (1993) ‘legitimately peripheral’ but that increases gradually in engagement and complexity. The ‘threaded conversations’ allow for a person new to the ‘community’ to initially take on a virtual voyeuristic role. When interest is activated and/or as the new member gains sufficient confidence, they are able to place an occasional response in a ‘conversation’. In this way they are able to legitimately participate on the periphery whilst moving toward full participation (Lave & Wenger 1991, p. 29.) (see Appendix 2 for example of a threaded conversation).

As mentioned previously Bede (2000) talks about a shift towards ‘knowledge networking and virtual communities that have communal memories’. Virtual communities develop communal memories. Collaborative online projects that operate within overarching organisations such as IEARN are especially well placed to develop and draw upon ‘communal memories’. Threaded conversations within online forums in their various forms are particularly well placed to support the ongoing development and use of ‘communal memories’ (see an example of threaded conversations in Appendix 2).

Actor Network Theory

Durrant & Beavis (2001) explain that ICTs don’t function simply as a resource but are prone to affect the contexts of their use: they have become influential actors in the social technology of schools. Keele (in Ryder, 2002) provides this useful explanation of Actor-Network Theory: ‘This framework (network) is comprised of components (actors) ... The network consists not only of people and social groups, but also
artifacts, devices, and entities.’ Actor network theory can inform our thinking about collaborative online projects in terms of the ‘social groups, … artifacts, devices, and entities’ that play some part in the participation of people in collaborative online projects. Actor-network theory (ANT) evolved from the work of Michel Callon (1991) and Bruno Latour (1992) at the Ecole des Mines in Paris. Their analysis of a set of negotiations describes the progressive constitution of a network in which both human and non-human actors assume identities.

In this context collaborative online projects can been considered in terms of the various participants (people and social groups) and also the ICT tools and networks they operate within (artifacts, devices and entities). The level of participation afforded by the IEARN network is increased because the communication tools (devices) required to participate are lower cost than is the case for projects that work in the higher end bandwidth. For many schools in central Europe (up until the late 1990s) and South America and countries on the African continent costs have prohibited them from participating in projects that require high end Internet access and powerful computers (artifacts and devices).

The IEARN group also encourages participation, which can at first be 'legitimately peripheral', by incorporating a teacher’s conference (newsgroup), called iearn.teachers This is a ‘virtual staff room’ for teachers to comment on, discuss, make proposals in an informal atmosphere. The sociability of this aspect of online communication has encouraged participation in their collaborative online projects as well as supporting legitimate peripheral participation as mentioned. Another device used by IEARN is an annual meeting/conference for teachers. Teacher are given the opportunity to travel to one of the participating countries for a face to face meeting with colleagues many of whom they have only know online until this time. A youth section also allows students to meet face to face after working together on collaborative online projects. In this way the ‘virtual community’ is developed first then reinforced or enhanced through face-to-face meetings later.

Perusal of the current literature surrounding the use of ICT in schools demonstrate ‘gaps’ or ‘silence’ when it comes to collaborative online projects. Even though many dedicated teachers and organisations have contributed large amounts of time and effort to the development, facilitation and participation in collaborative online projects they seem to be ‘invisible’ to the wider community, especially the academic community who tend to carry out the research and write the reviews. Van House (2002) says that texts (including journal articles, conference papers and presentations, grant proposals, and patents) are central to the process of gaining credibility. Van House describes, in terms of Actor-network theory (ANT), ‘… how decisions are made about what is known which later become central to the process of gaining credibility. They carry work to other people and institutions. They present work in such a way that its meaning and significance are irrefutable’. It would seem that in the case of collaborative online projects that the lack of visibility or presence in the literature of academia, has lead to a lack of credibility and a further lack of visibility. The work of collaborative online projects has not been carried to other people and institutions. It has remained with the online collaborative community where for the most part only participants are aware of them and the contribution they may make to education.

As mentioned previously my history of work in collaborative online projects dates back to 1995. During this time I have been part of the IEARN online collaborative community. It therefore seemed appropriate for me to carry out a review of the literature in an attempt to present this work in such a way that its ‘meaning and significance become irrefutable’ and in the process gain some credibility for this major body of work and to address the lack of research or evaluation of this aspect of the use of ICT in education by members of the research communities within the university sector.

CASE STUDIES

Two organisations with close links to the selected case study projects are iEARN and the Global Classroom Project. They will now be described because the individual case studies operate within, or have historical links to, these organisations.

IEARN
IEARN (the International Education and Resource Network) describes itself as ‘a global community of persons committed to its goal that learning and the quality of life on the planet can be enhanced through meaningful collaborative work among young people around the world.’ (IEARN, 1997). IEARN is a non-profit organization made up of over 4,000 schools in nearly 100 countries. The stated goal of IEARN is to empower teachers and young people to work together online at very low cost using the Internet and other new technologies. Since 1988, IEARN has pioneered on-line school linkages to enable students to engage in meaningful educational projects with peers in their countries and around the world.

IEARN became involved in collaborative projects when Internet access was in its infancy. They used very low-level technology initially because that was all that was available, but a commitment to this approach became part of the community’s philosophy in order to be accessible to as many schools as possible, including those in the most economically disadvantaged countries.

IEARN collaborative projects are developed and facilitated by practicing teachers. Some teacher/facilitators organise a student management team, usually within their own school, to help run the project. The project is promoted through the online newsgroups or forums. Interested teachers register their classes. The classes then work closely with the facilitating teacher and other participating classes to meet the aims of the project. Communications can take place on the online newsgroups or forums that use threaded conversations or by email. Many projects have supporting websites to publish various aspects of the project.

Often hard copy publications are prepared by project facilitators and presented to participating schools. Communications in these projects, for students from around the world, are conducted in IEARN conferences (newsgroups). The closed conferences (newsgroups) use only plain text and are available only to IEARN members – teachers and students. They can be accessed with a very low bandwidth using offline newsreaders to help reduce costs. The focus is on expanding students knowledge and their understanding of their world from humanitarian and environmental perspectives. The projects are interpreted by individual teachers for use with their students. One of the powerful aspects of this organisation is that it operates in an international forum. There were 132 IEARN facilitated projects listed on their website for participation by members in October, 2002.

The Global Classroom Project

In November of 1994, the Department of Education in Victoria, Australia, decided to support The Whalesong Foundation's design of a plan to co-ordinate and implement a State-wide telecommunications project for all Victorian schools based on the IEARN model. This became known as 'The Global Classroom Project'.

The Department of Education, Victoria, Australia actively encouraged teachers in their education system to participate in collaborative online projects with local and international educators. Support was provided in a variety of forms through the Global Classroom Project. Systemic support was provided in terms of advice on how to connect to the Internet, the identification of teacher mentors to support new schools to participate in collaborative projects and encouragement for early adopters to develop collaborative projects and to act as project facilitators (Coppinger & Hocking, 1996). This project was run through the Whalesong Foundation, by Coppinger and Hocking, both of whom also had a leadership role in IEARN and, as a result the history of these two groups is intertwined.

The Global Classroom Project website tells the reader that the Global Classroom Project is now in its seventh year. During this time it says that thousands of schools from Australia and around the world have participated in the range of collaborative online projects the Global Classroom has to offer. Schools from as far away as Argentina, Sweden, France and Latvia (just to mention a few) have collaborated and contributed to the teaching and learning activities taking place in Victorian classrooms.’ (Global Classroom Project, 2002)

The Global Classroom Project site says that it offers teachers access to collaborative online projects covering all year levels, curriculum levels and skill levels and that Victorian teachers can also call upon the expertise of the Global Classroom Mentors, who are there to support Project Coordinators.
In 1996 the Whalesong Foundation was commissioned by the Ministry of Education in Victoria to carry out an evaluation of the first two years of the Global Classroom Project. The results and findings of this evaluation were based on the data collected through Teacher Interviews, Online participation and observation records, and Formal Student and Staff surveys. The evaluation and report were intended to provide the Directorate of School Education in Victoria, with the data and observations necessary to assess the validity of a “collaborative, theme-based project” approach to the integration and use of telecommunications and related technologies in Victorian schools. The evaluation was also designed to provide the data required to make the necessary decisions on the future development of the Global Classroom concept and related activities through which classrooms engaged in international collaborative project work. It found dramatically positive rates of teacher satisfaction with teaching and learning (Coppinger & Hocking 1996).

There were 34 Global Classroom Projects listed on this site in October, 2002. (Appendix 1)
Case Study Projects

The projects selected for the case study are the 'Environmental Mystery Competition', the 'First Peoples' Project' and 'Lewin, An Anthology of Children's Writing'. All have had links to IEARN and the Global Classroom Project at some stage of their development.

The Environmental Mystery Competition

In 1995 Kyneton Secondary College was selected as a participant in the Victorian Department of Education’s Global Classroom Project. The project theme involved the exchange of data on habitat and water quality of local streams based on the Water Watch model. At that stage most of the schools in the project (including Kyneton SC) did not have the equipment or expertise to carry out much of the water testing and were all struggling to learn how to post messages to the IEARN newsgroup. What was needed was a simple online project that would allow schools to participate immediately without having to buy water monitoring equipment and arrange field trips. As a consequence Kyneton SC devised and ran a simple environmental competition that ran over several weeks on the iEARN.aqua conference (newsgroup). This was well received and seemed to fill a need, so similar environmental competitions have been run in each subsequent year. Over 2000 students from more than 10 countries have since been involved in the competitions. Many other schools have followed the competition or used the material on the website in their classes but have not participated directly in the competition.

The first Environment Mystery Competition that commenced in June 1998 attracted participants from 44 schools in 8 countries. This competition won an award in the 1998 Ford One Planet Environmental Awards (EHNPS, 2002). Kimber & Deighton (1999) argue that projects such as the EMC lend themselves to a wide variety of teaching and classroom management strategies and provide the teacher with the opportunity to explore many of the suggested middle school years teaching and learning strategies and as such are considered very successful project for students in the middle years of schooling. The EMC was originally established and coordinated by David Francis of Kyneton SC in Victoria, Australia. It is currently being facilitated by Eaglehawk North Primary School.

The Environmental Mystery Competition is an online collaborative project that involves an environmental mystery competition that is presented in episodes in the narrative genre. The episodes are published on the project web site over a period of 6-8 weeks. Students use the clues presented within the narrative to try to solve the mystery. Classes compete to be the first to solve the environmental mystery.

Participating schools enter one team of from 2 to 30 students in the competition. Each school emails one or more responses each fortnight and these are posted to the web pages for all the other schools to see. Schools can discuss each other’s ideas on the web pages and so collaborate to solve the mystery. The first school to solve the mystery is the winner.

Episodes of the ‘mystery’ are written by the facilitating school. Initially the project was run by Kyneton Secondary College. They found the writing of the episodes to be a significant body of work. Their year 8 students wrote each episode that contained many clues to will take students off in various directions so that the mystery could eventually be solved, but not too easily, so as to maintain the interest of the students over a six to eight week period. The Kyneton students had to ensure that all the environmental and geographical information that was included was accurate. They also had to respond to the responses of students around the world. In 1995, in the first ‘mystery’, the platypus disappeared from the river in the local Kyneton area. One school in Latvia wrote that they thought that the ice on the river may have caused the platypus to disappear. The Kyneton Secondary College students quickly learnt that they had to provide extra information to support students from outside Australia whose experience of a climate was very different from their own.

In this project the level of participation/collaboration is extremely high for the facilitating school – writing, publishing (in the IEARN newsgroups and on the World Wide Web) and communicating with participating schools. For the participating schools the experience of participation in the Environmental Mystery Competition are expected to read each episodes of the mystery over time, carry out research to better understand the ‘clues’ within the narrative, and compare their answers with the answers of others (which are also published). The level of participation for schools, other than the facilitating schools that write the
episodes, could be considered medium. The level of participation for these schools is more than for projects in which students send writing and/or artwork to the facilitating school for publication or environmental projects in which data is sent to be included in a large database for analysis.

The Environmental Mystery Competition does not build a strong ‘community of practice’. Participating schools often engage deeply with the environmental and geographical content but collaboration is limited to students’ sending their solutions to the mystery by email to the facilitating school. Solutions are added to the web site but online conversations do not take in place in any form. Participants do not work together to create an end product. As a result ‘peripheral participation’ does not lead to the development of a community of practice.

The First Peoples’ Project
Ellis (2002) describes how in the First Peoples’ Project ‘Indigenous students on five continents share their stories, poems, photographs and art work’. The First Peoples’ Project (Carter & King, 2002) operates within the iEARN network. The project originated, in early 1996, as email and newsgroups discussions held between students and teachers on issues of indigenous history and culture and was further developed through discussions held at the IEARN International Teachers’ Conference, Budapest, July, 1996. The project links indigenous students around the world in a range of activities: writing exchange, art exchange, discussion of issues relating to indigenous people. The three main components of the project are:

- Writing Exchange: students write about topics of interest to them. This may include a variety of formats, eg: poetry and prose. It also includes research and reporting on historical or cultural events of the participating groups and the interviewing of elders. This writing is compiled into a magazine, The Meeting Place, which is then distributed to all participants. Selected pieces of writing are featured on the project’s WWW site. The magazine is published in English and Spanish. An editorial team of students and teachers from Bairnsdale Secondary College, Australia prepare the magazine for publication and a team of students from Escuela CPEM #3 in Argentina undertake the translations.
- Art Exchange: students complete art work on a predetermined theme. In December each group sends artwork to each of the other participating groups. Each community holds an Indigenous Global Art Exhibition, featuring the artwork they have received. A calendar is produced featuring the artwork from each group. A world wide web site is produced featuring the art work from each participating school:
- Humanitarian Effort: students in the project have worked to raise money to support two communities of indigenous students: Sumu in Nicaragua and Karen in Thailand. Students in Victoria - Australia, New Mexico - U.S.A., Mississippi - U.S.A. and Bangkok – Thailand have raised money to enable the purchase of school supplies, a generator, blankets and the employment for four years of a teacher aide in one of the schools we are working with. Recently 70 – 80 blankets were sent to the Karen students from Australia, courtesy of QANTAS. These blankets were produced as the result of another IEARN project. Students in New Mexico – U.S.A. and Mississippi – U.S.A. have also raised money to enable the purchase of school supplies and a boat motor for Sumu communities in Nicaragua.

The First Peoples’ Project encourages the development of literacy, art and technology skills and fosters understanding of the students’ own culture and the experience of other indigenous cultures. It provides an authentic context in which to develop these skills. It requires perseverance and a commitment to complete the work in a meeting timelines for editing and publishing. The students work collaboratively with other indigenous students from around the globe. It helps indigenous students to see their cultural experiences from a wider perspective both politically and historically.

In 2002 the project supported 10 students from the Karen community with scholarships to help them complete their Secondary education, as well as continuing the support for the teacher aide. More than 1000 students worldwide are active in the project, with more than 40 coordinating teachers and their indigenous students including:

KAREN, Thailand, Baan Nu-Se-Plo School, Umphangkee School, Samakkee Wittaya School

MAPUCHE, Argentina, Escuela CPEM#3

TAOS, U.S.A. Taos Day School

CYGANY, Hungary, Children's Home, Pecs

NUNGA, Australia, Kaurna Plains Aboriginal School

NYOONGAR, Australia, Narrogin Senior High School

KUNWINJKU, Australia, Gunbalanya Community Education Centre

ZAPOTEC, Mexico, Escuela Matutina Benito Juarez

KEKCHI, GUATEMALA, ten schools in Guatemala participated as part of the Educating The Girls' Program

KOORIE, Australia, Nowa Nowa Primary School, Bairnsdale Secondary College, Bairnsdale Primary School, Bruthen Primary School, Paynesville Primary School, Bairnsdale West Primary School, St. Mary's Primary School, Bairnsdale, Swan Reach Primary School, Grange Secondary College, Woodglen Primary School

WISCONSIN WOODLANDS NATIONS, The Indian Community School

King (2002, the project facilitator, explains that 'Indigenous students have generally been marginalised in the education systems of their nations. The education systems have neither recognized their cultural and historical heritages nor have they provided a vehicle for success for indigenous students.' She explains how The First Peoples’ Project seeks to give indigenous students a situation where they can engage in high-profile activity which both engages them and creates an environment in their schools where their history, culture and their communities are recognized and valued. Through creating situations of public recognition, the First Peoples’ Project endeavors to provide incentive to indigenous students to achieve excellence in a range of skills, including research, writing and art. The project seeks to provide a basis upon which the schools and the local indigenous communities can work collaboratively and positively, a situation where the contributions of indigenous community members become an intrinsic part of the school curriculum.

The First Peoples' Project was a winner in the 1999 International ChildNet Awards (London) and the Global Bangemann Challenge (Sweden).

**The First Peoples’ Project and the participating indigenous communities**

All activities and initiatives carried out in the First Peoples' Project rely on the endorsement and approval of recognized authority within the relevant indigenous communities. All portrayals of traditional stories, whether in written or visual form, undergo an approval process with community elders and/or cultural officers of local indigenous organizations. This approval relates to both the accuracy and cultural sensitivity of student work. Maximum possible use is made of local indigenous people in instruction in approaches to art and writing and in the treatment of traditional and oral histories. The Project emphasizes collaborative relations between schools and their local indigenous communities, liaising closely with parents, elders and with indigenous organizations (King, 2002).

The Mississippi Band of Choctaw Indians, which runs the largest and one of the most tech-savvy tribal school systems in the country, has participated in the First Peoples’ Project since its inception. For the Choctaw Community, gaming revenues and other economic initiatives have fueled a school building boom and the proliferation of technology in the classroom. But 'prosperity' presents a new set of challenges for this community. 'I don't want kids to [stop] playing stickball or forget about traditional dancing, cooking, or speaking their own language," says athletic instructor Jason Bell. "I hope we can influence these kids that we need to keep our culture alive for the next generation.' (in Ellis, 2002) He sees the First Peoples' Project as providing the opportunity for these students to learn to use the newest technology to celebrate their timeless culture and share its wisdom with the rest of the world, to 'value' their traditions and to increase communications with their tribal elders (Ellis, 2002). In this way this online collaborative project is supporting, in Wenger’s terms, the members of this indigenous community to participate in 'leading-edge learning'. They would appear to be 'a well functioning community of practice'. They have a 'history of mutual engagement around a joint enterprise'. This being an ideal context for leading-edge learning a strong kind of communal competence along with a deep respect for the particularity of
experience. Their communities of practice being 'a privileged locus for the creation of knowledge'.
(Wenger 1998, P. 214)

It would seem that sensitive and skilled project facilitation has resulted in the development of a 'well functioning community of practice' for indigenous communities who have participated in the First Peoples' Project.

The Lewin Project

Lewin is an anthology of students' writing from around the world. The anthology's title comes from the language of the Ganai/Kurnai (Australia) people and means Messenger. Students from around the world are invited to contribute their writing in the various genres including poetry, autobiographies, opinionative, informative and creative.

The project is for students of all ages. Lewin is currently coordinated by teachers in Karachi, Pakistan and Bairnsdale, Australia and edited by students at Sultan Mohammad Shah Aga Khan School Karachi, Pakistan and Bairnsdale Secondary College, Australia. Students can write on any theme and in any format. Writing can be emailed to the Coordinators or submitted via the IEARN newsgroup/forum called iEARN.lewin. Hard copies of the Lewin booklet are sent to participating schools in November. Contributions to Lewin can also be viewed the Lewin website.

The Lewin Project is contributory for most of the participants in that they contribute their writing which goes through an editing and publication process handled by the facilitating schools. In the first year of the project schools in Australia carried out all the editing work and a management team of students at Keilor Downs Secondary College handled the final stages of publication. As noted previously this collaborative online project is currently facilitated by Bairnsdale Secondary College teachers and students working closely with a team of students from Pakistan on the editing and publication process. Recently the students from Pakistan have become increasingly more active in the process moving from peripheral participation to full participation. The project facilitator describes how students from Pakistan introduced her to Instant Messaging (IM) that they had started using with the students from Australia for editorial decision making. (King, V. 2002, pers. comm. 18 November).

The project facilitator attempted to make this project more collaborative. King says that 'We told all the student editors that they had several responsibilities including making sure that every single contribution on the Lewin conference [newsgroup - a threaded conversation] was responded to. This encouraged response from other kids and also led to many of the kids around the world responding to other kids' (King, V. 2002, pers. comm. 8 November). This demonstrates one way in which collaboration can be supported by online communications and contribute to the development of a 'community of practice' and also demonstrates that Stolle's (1995) argument that computers 'isolate us … and work against literacy and creativity' (p.3) is unfounded.

The Teddy Bear Project

This stated aim of this collaborative online project is to 'fostering tolerance and understanding of cultures different to your own' and at the same time provides an audience and purpose for the development of literacy and technology skills. It is available in English, Spanish and German. In this project teachers register their classes in an online web database. The project facilitator matches classes with another class of children of similar age but located in a different country. Initially the goal was to have eight classes in the project but the concept has proved very popular. Students from five years old to twenty years of age have participated including senior high school and university students, with the latter being mainly second language students. Over 3000 classes from over 20 countries have participated since the project started in late 1996. In 1998 the project was awarded second place in the non-profit section of the ChildNet International Awards in London.

After they are matched, classes establish electronic communications. Each class sends a bear, or other soft toy significant to their geographical area or culture, by airmail to their partner class. An end product is not
the focus, ongoing communication by email is. The classes have equal levels of responsibility in order for an effective collaboration to happen. The project demands regular and ongoing communications from both partner classes.

Classes often send local artifacts, maps etc. with their teddy bear. Once it arrives the bear writes home a diary regularly – at least once a week. The children provide the bear with many experiences and write the diary entries that are sent by email to the partner school. They also received emails from their bear and so learn about the different culture. The diary emails provide authentic reading and writing opportunities for the students. It is expected the students will learn about the traditions, culture, food, climate and other aspects of the new country. For the younger students particularly the arrival of the visiting bear and its belongings is a time of excitement. The bear provides a tangible component to what may otherwise be a very abstract concept for younger students.

Many of the classes that have participated in this project did so because they found it a valuable way to improve their skills in English as a Second Language. For these ESL students being able to take the time to formulate their language in their own time and at their own pace in order to communicate with first language learners was a found to be a very non-threatening and valuable experience. As a result it is suitable for older students as well as younger primary classes. This project is relatively open-ended in that once classes are matched they can adapt the collaboration depending on the age of the students, the interests of the teachers and students and the technology level the schools have access to. As a result collaboration/participation is high between the matched classes. They are dependent on each other and the quality of their collaboration for this project to work for them. There is no facilitating school or hard copy publication as a final outcome.

DISCUSSION

Becker (2000) argues that under the right conditions, where teachers are personally comfortable and at least moderately skilled in using computers, where the school's daily class schedule permits allocating time for students to use computers as a legitimate part of class assignments, where enough equipment is available and convenient to permit computer activities to flow seamlessly alongside other learning tasks, and where teachers' personal philosophies support a student-centered, constructivist pedagogy that incorporates collaborative projects computers are clearly becoming a valuable and well-functioning instructional tool.

Jing-Yi Su et al. (2000) in their study titled ‘The Project-based Cooperative Learning on Internet - A Case Study on Geology Education’ carried out in Taiwan, found that participation in collaborative online projects was very beneficial to their students partly because their students tended to be very shy and lacked confidence when performing live in front of teachers and their peers. Online collaboration allowed them the opportunity to think through responses in their own time and manner. They explain that:

Almost all students were interested in the learning mode centering at Project-Based Cooperative Learning on Internet. They thought this learning mode could stimulate them to think about wider range of learning. We found distinct characteristics of the participating students. Most students were shy, tense, and conservative. Teachers can design a learning project knowing these characteristics of students to help them free from shyness and passiveness in learning process.

(Jing-Yi Su et al. 2000)

Indigenous students who participated in the First Peoples’ Project were often similarly shy. Many of them also lack confidence partly as a result of being treated as second-class citizens in their homeland and because they have generally been marginalised in the education systems of their nations. In the Teddy Bear Project many of the classes from non English speaking backgrounds, also found this method of using their second language for communication to be a non-threatening but meaningful experience with a real audience for their writing and an authentic purpose for their reading.

Blackmore’s 2001 research into ICT learning and disadvantage found that much of the research has focused on using computer programmed instruction contexts, and therefore maps certain effects and not other
effects such as social and pedagogical effects. She notes that there is little attention paid to how different ICT can be used for different purposes or to benefit particular social groups. The First People's Project has been found to be highly beneficial in engaging what is often described as the most disadvantaged, disengaged and at risk group of students in Australia. King describes how participation in the First People's Project led to improved students attendance rates, increased levels of engagement and closer links to the local indigenous community. Added to this the students demonstrated increased responsibility for their own learning.

The use of ICT in the form of collaborative online projects could be seen as an area for researchers to focus on in order to distinguish the effects of participation especially in relation to the benefit of particular social groups such as those who experience the disadvantage associated with indigenous and/or rural backgrounds as well as the effects of low socio-economic status and gender.

**Impact of Collaborative Online Projects**

**Changes in teaching practice**

(attributed, directly or indirectly, to the incorporation of ICT in the form of collaborative online projects)

It is often argued that schooling has changed little in the past 100 years. Teachers have a vested interest in their particular curriculum area and often defend the boundaries zealously. Even so those involved in collaborative online projects found that participation led to a ‘blurring’ of traditional boundaries. Tate (1997) describes how her ‘National Identity’ project was interactive and cross-curriculum by nature, (focusing on the arts, culture and humanities, and the sciences) relying on technology to maximize global participation.

In terms of general use of computer-based teaching and learning Swan & Mitrani (1993) found that student-teacher interactions were more student-centered and individualized during computer-based teaching and learning than during traditional teaching and learning. In terms of collaborative online projects Tate (1998) states that ‘when embraced at the classroom level, learning through participation in collaborative online projects will accelerate the rate of change in the role of the teacher. These changes include the shift of role to facilitation for the teacher, rather than the teacher being the source of all knowledge. Teaching styles and willingness to release control of their classroom environment may also affect which end of the scale of collaboration a teacher will be most comfortable working in. Teachers who are less willing to relinquish control in their classroom may be more comfortable working in projects that allow for limited collaboration and are therefore more contributory in nature. Welburn (1996) found that co-operative/collaborative environments were seen to be enhanced by the introduction of technology, which also increased teacher-student interaction’. It can therefore be seen that changes in the role of the teacher are highly likely when teachers and students participate in collaborative online projects. The degree of control is reduced as teachers start to work more collaboratively, in partnership with their students.

Changes in teaching practice can also be related to the content area that a teacher is functioning within (this is particularly relevant to secondary schools). In relation to the increased use of computers (not necessarily encompassing collaborative online projects) Meredyth et. al. (1999) found that ‘Teachers of Society and Environment, English and Technology and Enterprise (in Australia) appear to have achieved a high integration of computers in classroom tasks’ (p. 4) but this is not the case for all teachers of these content areas and especially not the case for teachers of other content areas. Barnes et. al. (2001) describe how, in Discovery Schools of South Australia (high-tech schools), there was an ‘extension of ways of learning, the amplification of exploration and discovery, and the transformation of learning.’ The Apple Classrooms of Tomorrow (ACOT) schools (Dwyer, 1994) found that long-term benefits included' students learning to organise and undertake schoolwork differently. In these technology rich classrooms in both South Australian and in the Apple Classrooms of Tomorrow, changes in teaching practice lead to students developing improved inquiry, collaborative, technology and problem-solving skills compared to students in more traditional classrooms.’

The July 1998 Navigator Schools Report named one of the key findings as ‘Learning technologies have challenged all teachers to reflect on their teaching philosophy and practices’. (DE&T, 1998)

The Navigator Schools Report claims that teachers in navigator schools:
• believe that technology is enhancing teaching and learning
• have moved towards student-centred classrooms
• can better cater for individual needs
• are not concerned by students knowing more than they do about technology
• feel comfortable about using student expertise in their classes
• reflect much more on their teaching practice
• are collaborating more in the development of curriculum
• are transforming their practice using a wider range of teaching strategies that appeal to a broader range of students
• enjoy learning new skills and teaching strategies and being able to prepare their teaching materials in a more professional way
• are experiencing a professional renaissance with new and enhanced job satisfaction
• are becoming risk takers, no longer conforming to perceived traditional roles
• experience new freedoms as they experiment with innovative and creative classroom practice
• feel empowered and unburdened by the efficiencies that technology, such as e-mail, networks, the Internet and the intranet, delivers to their work
• are no longer seen as the holders of all knowledge as ready access to a broad range of information in the classroom through the Internet, CD-ROM, e-mail has increased. (Ekinsmyth, 1998)

The findings in the Navigator School Report point to a change in teaching practice particularly in terms of power relationships. Many of the findings in this list point to teachers letting go of control of the learning environment. They mention teachers being more collaborative, not being concerned about not knowing more about the technology than the students, being comfortable using student expertise, learning becoming more student centred and teachers no longer being the holders of all knowledge.

It appears that increased integration of computers into teaching and learning in general, not necessarily including participation in collaborative online projects, changes classroom dynamics and the experience of teaching and learning. If we accept Gragert’s (2000) view about the effects of participation in collaborative online projects on teaching, (huge change) then the combination of this, with the associated increased use of computers by participants, the increase in change for teachers becomes massive.

Carr’s (2001) work on Project Pillars found that teachers are learning when they participate in online projects and that good online projects have community-building tools such as email discussion lists and teacher forums to encourage opportunities for accessing, sharing, planning and communicating on a collaborative basis. Online projects do not tell the teacher how to implement the activities or manage student learning. Selection, organisation and management of student activity depend on the teacher’s own experience and understanding of how technology can be used to support and enhance learning. A good online project will provide learning opportunities as described in the following statement. Carr (2001) also says that good online project learning opportunities should be based, as much as possible, on authentic tasks and environments, and include opportunities for reflection and application. Good teaching is good teaching, regardless of the environment.

Gragert (2000) argues that to work effectively in collaborative online projects professional development must be focused on coaching educators how to teach collaboratively. This style of teaching, a key element of collaborative online projects, is new to many teachers. Most teachers have no experience working with the teacher down the hallway, much less with teachers in different time zones, across borders, speaking different languages, working in different educational systems and approaching life from very different cultural perspectives. Many teachers and their pupils will need to learn to feel confident in a classroom in which students assume some independent responsibility for their own learning through interactive discussions and cross-cultural exploration.

Collaborative online projects provide the opportunity for authentic learning in that they provide a ‘real audience’ for student writing, art and communication. Bede (2000), in presenting innovative ways that students work with ICT through reflective inquiry, argues that at risk students’ performance may be enhanced differentially when various strategies are used including involving students in virtual communities of practice, using tools similar to those in the workplace and enhancing student’s
collaborative construction of meaning via different perspectives and shared experiences. When students are involved in working collaboratively online with students in another country to select, edit and publish the writing produced by children from around the world as in the case of *Lewin - an Anthology of Children’s Writing*, it could be argued that they are meeting all the requirements above, as listed by Bede (2000).

Teacher-centred learning approaches often favor passive reception of knowledge, whereas learner-centred approaches encourage a process of active inquiry. Learners are best motivated to learn when they can take responsibility for their own learning, as it is an active process. Interactive technologies encourage active learning and, with the increased popularity of computers, today’s students are learning *with* technology, as opposed to learning *about* technology. As authors (Schweizer, 1999; Nelson, 2001) show, teachers can provide powerful learning opportunities through ICT when students are responsible for their own learning and are active learners defining their learning needs, finding information, assessing its value, building on their own knowledge base and communicating their discoveries. Robertson (1999) claimed that participation in collaborative online projects facilitated student-centred rather than teacher directed learning. These online activities need to be carefully designed, giving thought to the different preferred learning styles of students, cultural differences and different language backgrounds. Through their work in IEARN projects teachers and students learnt that our Argentinean members were insulted by the use of the term 'America' when referring to people from the USA. The Argentineans live in South America and therefore argue that the term 'Americans' includes them too. Members of this online community of practice learnt to respect cultural and language differences such as these.

The collaborative online projects in the Case Study section could be seen to meet the criteria identified in the literature above as leading to significant changes in the teaching and learning process.

**Gender**

The 1996 report on the Global Classroom Project (Coppinger & Hocking, 1996) found that in 30.5% of participating schools, 91-100% of their female teachers participated in their collaborative online projects. They argued that this reversed the notion of the Internet being a ‘male domain’. In over 50% of schools, 60% or more of the teachers involved were female.

Tate (1997) claims that how ‘The collaborative approach has proved a very attractive use of technology for female as well as male students. … The percentage of female students electing to take these courses has dramatically increased at our school’. In her school Tate argues that traditional content was brought alive to students by electronic ‘conversations’ with students from countries like Japan who had a very different understanding of, in one case, the A-Bomb. Mayer-Smith et. al. (2002) note the importance, in technology rich classrooms, of allowing time for student talk and interaction, encouragement of self pacing and negotiation of well established rules of operating in communities of practice'. The tendency of girls to enjoy highly verbal environments and to be more accepting of rules than boys may go some way to explain Tate's claims.

It is claimed by many authors that collaborative online projects lead to improved student outcomes and positive changes in teaching practice. From the literature, visible evidence of negative outcomes could not be found. Research to support or disprove these claims would be recommended. It would be worthwhile for this research to pay attention to how different ICTs can be used for different purposes and/or to benefit particular groups.

**Addressing disadvantaged**

The First Peoples' Project recognizes that indigenous students have generally been marginalised in the education systems of their nations. The education systems have neither recognized their cultural and historical heritages nor have they provided a vehicle for success for indigenous students.

The First Peoples’ Project seeks to give indigenous students a situation where they can engage in high-profile activity which both engages them and creates an environment in their schools where their history, culture and their communities are recognized and valued.
Through creating situations of public recognition, the First Peoples’ Project endeavors to provide incentive to indigenous students to achieve excellence in a range of skills, including research, writing and art.

The project seeks to provide a basis upon which the schools and the local indigenous communities can work collaboratively and positively, a situation where the contributions of indigenous community members become an intrinsic part of the school curriculum.

King and Carter (2001) describe how:

‘The Project focuses exclusively on the history, culture and stories of indigenous communities. It provides a range of methods of expression for indigenous students. It exists with the permission and encouragement of local indigenous communities and relies fundamentally on that support and endorsement. It engages and relies on the active teaching involvement of community artists, storytellers and artisans. It celebrates its successes within the indigenous communities. It provides, within such a context, high-motivation activities in writing, art, oral communication and public presentation. While rooted in the students' communities, the Project seeks to foster a pride within the students of bringing their achievements before the wider public through exhibitions and publications. The Project uses opportunities for public recognition to support students' confidence and pride. For example in February 2001, Australia Post used artwork from Australian participants as stamps on a prepaid envelopes issue.’

The facilitators of this collaborative online project argue that the benefits derived from participation in the First Peoples’ Project address issues of disadvantage, disengagement and alienation for indigenous students and their wider community. They describe how ‘Parents have become more comfortable with the schools that their students are attending and have participated in the educational program for the first time’ and that ‘the project has shown itself to be one way in which non-indigenous teachers and the schools in which they work can find a meeting place with indigenous communities and their children.’ ‘The project seeks to make the students' stories a valid part of their school and vehicles through which they can speak and through which they can learn.’ (Carter & King, 2002).

Successful outcomes attributed to participation in collaborative online projects

It is claimed by many authors that collaborative online projects lead to improved student outcomes and positive changes in teaching practice. It is claimed that participation has been a positive experience for girls, disadvantaged students from rural and indigenous backgrounds. It is also claimed that participation in collaborative online projects has been an effective way of breaking down the barriers of traditional content-based teaching.

Gragert (2000) says that there is value to the student from participation in IEARN collaborative online projects in terms of learning outcomes and positive attitude change. As evidence he uses teachers' testimonies that say that, on a frequent and consistent basis, students are more motivated to learn as a result of engaging in online collaborative work with peers internationally. Teachers and students both report that online collaborative work gives practical applications for learning in the curriculum areas of language and global issues courses. He argues that online collaboration within the IEARN community provides a safe and educationally sound environment for cultural exploration, while developing a comfort with working with a widely diverse international community.

A teacher of English in Latvia who, in 1999, worked in an IEARN online collaborative project with schools in the United States, Kazakhstan, Italy and Germany says that, ‘the project enriched not only the students, but also me, their teacher. It gave me an opportunity to work creatively, to widen my knowledge of computers, not only to teach students, but also to cooperate with them, and to build friendships that continue so far’ (Kolosovska, 1999, p. 65).

In 1998 the Victorian Department of Education reported that the benefits of use of ICT in general and in collaborative projects in particular through the Global Classroom Project. They argued that a transformation of the teaching and learning environment was evident in the overwhelming success of the Victorian Navigator Schools and Global Classroom Projects including improved student learning outcomes through routine access to learning technologies, networked communications and a commitment to changes in classroom practice. The findings of the first Navigator Report include an item that states 'that students in
Navigator Schools work more effectively as a collaborative team, increasingly construct their knowledge, are socially aware and independent, self-starting global learners who are motivated, engaged and challenged.’ (Ekinsmyth, 1998)

In the Australian Innovation and Best Practice Project, ICT schools, Cuttance’s (2001) findings included:
- enhanced social competencies through cooperative and collaborative learning
- teacher beliefs and attitudes about learning and teaching styles and practices changed from traditional ‘chalk and talk’ to student-focused learning.

Kimber (1999), asserts that introducing learning technologies into the learning environment has been shown to make learning more student-centred, collaborative and encourages cooperative, creative problem solving. He explains that one purpose of the Global Classroom project in Victoria, Australia, was to develop wide-ranging skills in students. He states that working collaboratively with others also provides students with the potential to develop leadership, organisational, project management, cooperation and negotiation skills. Gragert (2000) also argues that … participation in collaborative online projects using technology:
- provides a new sense of community by encouraging and furthering connections both within local schools, as well as far beyond school walls
- enables teachers to acquire new teaching/facilitating/learning techniques and skills
- positions teachers to become a cross-cultural asset/resource for the school and community
- motivates teachers by observing higher motivation and academic achievement among students’ (p.4).

Research in cognitive science (Kehoe & Guzdia n.d.) suggests that learning outside of an applicable situation can lead to brittle or inert knowledge, that is, knowledge that does not get transferred to new problems and new situations. Collaborative online projects provide authentic contexts with real audiences - 'applicable situations' therefore it could be expected that knowledge and/or skills developed in this type of context would be robust and successfully transferred to new problems and situations.

Yelland, (2001) concluded the effective use of ICT in schools, in general, not only influences learning outcomes in terms of the quality of work produced by students and affords them the opportunity to learn in new and dynamic ways that were not possible without the technologies

A body of evidence is now available to suggest that significant skills development results from on-line international interaction, including enhanced reading, writing, presentation skills, geographic knowledge, and self-confidence.” (Gragert, 2000?)

**Factors that lead to successful participation**

Successful participation in collaborative online projects depends on a number of factors. In ‘Project Pillars, Foundations for Success in Online Curriculum Projects’, Carr’s (2000) findings identified the factors that led to successful implementation of online projects in classrooms as ‘preparation, participation and pedagogy’. Becker (1999) found three factors critical to the successful use of technology in the classroom were: ‘teacher expertise, connectivity and pedagogical’. Both Carr and Becker identify ‘pedagogy’ as critical factors. Carter (2002) identified the following factors that indicate the success of an online collaborative project, ‘well-designed projects and teachers with commitment – to their students and to the project and to their teacher colleagues. King (2002) identified ‘project coordination as critical, enthusiasm of the project leader and interaction (communication) between students and coordinators’. She explained that indicators of success included the ‘extent to which the kids really believe that they are working with the other (overseas) group of students’ and student ‘enthusiasm’. She describes how the ‘kids talk in class as if the other kids are a real part of their learning’. Others would argue that the enthusiasm of the coordinator may not be a factor given that they have tried to ‘kill off’ their projects but other teachers continue to want to participate and therefore the projects continue regardless. (Carter & Wells, 2002 pers. comm., Robertson, 2002).

It is apparent that success may be influenced by many factors. It may be that there are certain factors that would indicate success but not all are necessary for a project to be successful. Projects that were only a
spark of an idea have been the catalyst for what became a successful project without extensive preplanning or consideration of good pedagogy or initial high levels of participation but for a project to be successful over time, it is apparent that a committed coordinator can overcome other factors that may cause problems. If we consider Carr’s list of ‘preparation, participation and pedagogy’ and accept King’s view that the coordinator is critical, a coordinator who has a good ‘feel for the game’ (in footballing terms) can quickly adapt and deal with issues as they appear as well as generate enthusiasm in others then the coordinators role in planning (preparation) and knowledge of pedagogy then these views more closely fit. Participation could also be related to the coordinators role in the promotion of the project which in turn could be a function of good planning. Well designed projects (Carter, 2002) could be seen as a function of preparation/planning as well as dependent on the coordinator. Such a coordinator needs to have a wide experience of classroom teaching, an in-depth understanding of teaching and learning and the practical issues relating to the reality of the everyday classroom experience and some experience in the use of ICT. Carr (2000) also maintains that good online projects have community-building tools such as email, discussion lists and teacher forums to encourage opportunities for accessing, sharing, planning and communicating on a collaborative basis. The case study projects made use of at least some of these tools. The IEARN projects had the added advantage of the teacher forums in the form of threaded discussions in the online newsgroups.

CONCLUSION

This literature review demonstrates the large number of collaborative online projects available. This has been made possible by the massive expansion of the Internet. Many teachers have participated in these projects and many claim successful outcomes for their students. Even so they remain, for the most part, invisible in the literature. Comprehensive research has not been carried out to verify the claims of improved/changed teaching practice and/or improved student outcomes. The difficulty of carrying out research that proves these claims is significant given the large number of variable involved. Clearly, in the case of the most disadvantaged students, namely indigenous students from rural areas and disadvantaged communities, anecdotal evidence would seem to support the teachers’ claims.

It is recommended that research be carried out that looks at the different types of collaborative online projects, evaluates their value in the teaching and learning process. It would be valuable to carry out research that analysed collaborative online in terms of the level of collaboration they provide. Very few projects are truly collaborative in nature allowing for fully functioning ‘communities of practice’. Many require all participants other than the facilitating school to only send in written material or artwork for publication thus keeping many participants on the ‘marginalities of [the] experience’. Very few allow for ongoing interactions. Many of the more visually attractive project websites do not incorporate high-level collaboration. Systems that invest large amounts of money in this aspect of education would do well to carry out research to validate their financial contribution.

Bigum, 2002, describes how;

‘The world beyond schooling has been characterised by significant and profound change largely supported by the deployment and utilisation of computing and communication technologies. Schools have been responding to these developments for over twenty years by purchasing large quantities of hardware and software, developing curriculum specialisations concerned with the new information and communication technologies and by making broad use of these technologies across the curriculum. Generally speaking, schools have positioned themselves in the so-called knowledge economy as consumers, in keeping with their historical role of engaging students in those aspects of the culture which are deemed worthwhile.’

While this may be the case for participants in collaborative online projects the reality can be more than this, while also being less than this. Participation in collaborative online projects can be more challenging, more communal, and more significant learning can take place, by both teachers and learners, and less in, terms of money spent on technology, need not necessarily mean less participation.
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