John Oakley
National Computer Educator of the Year 1993

Congratulations to our National Computer Educator of the Year for 1993

The winner of the ACCE National Educator of the Year for 1993 was announced in June at APITITE '94. John Oakley is a senior lecturer in the School of Teacher Education at Charles Sturt University. He is a former school principal and has been lecturing for over 20 years, and in computer education since 1982.

John is one of the founders of the NSWCEG and three times its president. He was the foundation editor of the Journal of Australian Educational Computing which he edited for two years. In 1993 he was awarded the NSWCEG prize of ‘Computer Educator of the Year — 1993’ and the Australian Council for Computers in Education prize of ‘Educator of the Year — 1993’.

His current research interests relate to the process of technological innovation in schools with particular reference to computerised spatial information systems.

The Australian Capital Territory Education Information Network: ACTEIN Pilot Program Report November 1994

BY MICHELLE HUSTON
ACTEIN Training Co-ordinator

INTRODUCTION
Within a few short years the Internet has reached into many areas of activity, often acting as an agent of profound change. This revolution is now happening within our primary and secondary school environment, and the Internet is now commencing to play its role in creating a new model for the classroom across the globe.

The deployment of such technologies into the Australian education environment has been very limited to date, yet it is in this environment that perhaps the most striking developments can be undertaken, and the essential groundwork accomplished for the longer term productive integration of information technologies into our society. Accordingly there is much that has to be accomplished to ensure that we can sensibly realise the opportunities such technologies offer to the classroom and the children. At this stage the efforts to utilise communications networks within the K-12 educational environment are largely pioneering efforts carried out by dedicated individuals, which bear many of the hallmarks of experimental projects rather than of wide scale programs. However there are valuable lessons to be gleaned from these efforts in terms of selecting appropriate paradigms for subsequent wider deployment.

One such pioneering effort is the Australian Capital Territory Education Information Network: ACTEIN Pilot Program Report November 1994.
The pilot program to introduce the Internet to the ACT K–12 education environment began in May 1994 with the provision of dialup Internet access to 16 primary and secondary schools and the O’Connell Education Centre (the ACT education resource centre) located in Canberra, Australia.

OBJECTIVES OF THE ACTEIN PILOT PROGRAM
The ACTEIN Pilot Program aimed:
1. to create a self-sustaining core of Internet expertise in each school;
2. to work collaboratively with the teaching staff at the schools to examine the educational benefit of Internet access to the K–12 education sector;
3. to provide informed information to organisations looking to provide Internet access to K–12 schools;
4. to establish leadership in the role of introduction of Internet access to the Australian community at large; and,
5. to encourage collaboration between industry, government, educational institutions, researchers, teachers and students within the region in the development of educational tools and services.

ACTEIN BACKGROUND
The Australian Capital Territory Education Information Network (ACTEIN) Program is a collaborative venture between the four Universities within the ACT: the Australian National University, the University of Canberra, the Australian Defence Force Academy and the Australian Catholic University.

The project evolved from a number of developments, though its inception largely came from a mutual interest within the Australian National University, the University of Canberra and the Australian Defence Force Academy in the establishment of a broadly-based ACT network linking public and private organisations in the ACT to each other and into AARNet and the Internet.

From these initial discussions evolved the plans for the ACT Education Information Network (ACTEIN) pilot program to provide Internet access to schools in the ACT. The aim of the ACTEIN pilot was to examine in collaboration with members of the ACT teaching community the educational benefits of Internet access and indeed the feasibility of Internet access to the K–12 education environment. The schools were selected from the independent and government sectors and spanned the range from Kindergarten through to Year 12.

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connection. All other network software modules noted here require MacTCP to support their communications requirements. MacPPP has adequate scripting facilities to allow the connection via the modem to be established with a single mouse click, and can also operate in a fully automatic mode where the dial-up connection is established whenever an application needs to access the Internet.

Trumpef Winsock is required to support the Internet connection for the IBM compatible systems and is a shareware package developed in Australia. Trumpef Winsock contains a telnet application program.

Eudora is an e-mail package with a very easy to use interface and is available for both the Macintosh and IBM compatible platforms. Eudora has proved to be extremely successful. Teachers have become competent users quickly and with minimal instruction. Eudora operates in an on-line/off-line mode. Messages can be composed using any of the school's computers, and a batch of such messages can be sent outward on the Internet in a single dial-up session.

Turbo Gopher for Macintosh and Hgopher for IBM are gopher user agents with a user friendly graphical interface. The gopher world is one of information sources, organised using a web of references which span the network. Users can retrieve information (text, pictures, sounds etc.) by following through a sequence of menu choices, or can pose specific information queries to a gopher query server (or in gopher language a veronica). The gopher world encompasses many thousands of Megabytes of information, and the user agent successfully manages to provide a single, consistent and simple interface to this wealth of information.

Mosaic (for Macintosh and IBM) has been developed by the US National Centre for Supercomputer Applications at the University of Illinois. The tool is a window to a number of network information models, including the gopher model and the World Wide Web (WWW) hypertext information model. The information is accessed via a consistent graphical interface where information and references are embedded within text. Retrieval of information is achieved by clicking on bolded words within documents. Mosaic is very user friendly, but achieves its functionality at the expense of large amounts of data transfer, so its usefulness is severely restricted by the speed of the connection into the Internet.

Netscape (for Macintosh and IBM) is the most recent software development to address the problem of information retrieval from the vast array of Internet resources and is poised to replaced Mosaic as the favoured web browser. Netscape achieves significantly improved download speed making it a useable tool at the lower speeds afforded by modem access.

Fetch for Macintosh and WS-FTP for IBM were found to be reliable and user-friendly FTP clients.

**ACTEIN computer software**

The ACTEIN service computerisa Unix platform with the following applications software: gopher, WWW server, sendmail, popper, WAIS, anonymous FTP, Pine and mailing lists.

**PRIMARY SCHOOL USE OF THE INTERNET**

Students from Kindergarten to year 6 have participated in Internet activities. A freedom afforded the Primary School is the integration of a theme or project through all areas of the curriculum. The Primary School setting has the advantage of flexibility not only in curriculum but also time.

**Where on the Globe is Roger?**

Roger Williams, global adventurer and raconteur, is communicating with students world-wide while driving around the world in his 1982 Dodge truck. He sends e-mail reports using his personal computer and modem about the exotic places he visits and introduces the students that he meets to students from other parts of the world. Students communicate with Roger and each other via e-mail or snail mail. Students are also encouraged to participate in geography and cultural exchanges.

**ACTEIN participant schools enjoyed a visit from Roger Williams while he visited Canberra and the ACTEIN Program. Students were able to discuss with Roger his experiences while driving through South America and question him about Bubba (his truck) which has become his home for the past 9 months.**

**The Geogame**

Classes complete a questionnaire involving geographical information about their location. The coordinator collects responses from all the participating sites, scrambles the information, and returns the data to participants as puzzles for the classes to solve.

Students, with help from maps, atlases, and other reference materials, match the description of each location (based on the questionnaire) with the name of the corresponding city. At the conclusion of the project, the coordinator e-mails the correct answers. An ACTEIN school was named among the winning participants.

**Koala Information**

A Koala was donated to the Indianapolis Zoo which then found itself with a Koala and little or no information about Koalas in their reference material. The children answered their Internet plea to provide information for the thousands of visitors annually to the Zoo. The children have provided a unique set of resources which the Zoo is using within their Koala exhibit. All the material (with the exception of the Koala!) has been collected and dispatched using the Internet.

**Real-time Communication**

Kidlink is a worldwide grassroots organisation that is co-ordinated from Norway. The Kidlink organisation maintains a closed IRC server for 10 to 15 year old students. Students from the ACT have been able to communicate in real time with their peers from around the world.

**Christmas Cultural Exchange**

Kindergarten, grade 1 and grade 2 students are involved in a project to share Christmas traditions across the globe. Students will share songs, celebrations, recipes, etc in addition to designing a summer wardrobe for Santa and an alternative mode of transport.

**The Monster Project**

This project was completed by kindergarten children. Classes participating in the Monster Project read the book "There's a Nightmare in My Closet. Each class was then given a part of the monster to describe and then asked to create/construct a monster using the collaborative description. Photos of the monster were then distributed. This project was integrated into a unit about the human body and integrated into all curriculum areas.
The Antarctic
Opportunities have arisen whereby students have exchanged e-mail with NASA scientists and Australian researchers working in the Antarctic.

Travel Brochures
Students have exchanged information about the local Canberra attractions (from the perspective of an 11 year old) for equivalent information from Washington DC.

Collaborative Story Writing
An interesting cultural exchange arose from collaboratively composing a story with a school from Long Island, New York. Canberra students started the story with a distinctly Australian flavour and the US students provided the conclusion with an American flavour.

Rainforest Project
This project has been initiated from Canberra and involves schools in Indonesia, Hawaii, Nebraska and an Oxford IT specialist who will be accompanying a scientific expedition to the rainforest Guyana. Plans are being made to exchange e-mail with the specialist while he is in Guyana.

SECONDARY SCHOOL USE OF THE INTERNET
Curriculum restraints imposed by the secondary curriculum and organisational structure have lead to a different approach to Internet use in the secondary schools.

Mountains Project
This project was conducted in the form of a questionnaire to the six participating schools. While this project began as a specifically geography theme it developed also into a cultural exchange with the exchange of recipes and ongoing friendships have developed.

Newspaper Project
Students are involved in creating their own newspaper using not only local information but also information obtained from their peers across the Internet. Schools then send copies of the Newspapers produced via snail mail.

American Literature Study
Pre-service teaching students from Ohio-State University take on the part of characters from the American Novel, The Great Gatsby, and reply to the school students as that character.

William Shakespeare Project
Canberra students have shared ideas about Romeo and Juliet with their peers in the USA in addition to writing to 'William Shakespeare' himself in a project involving students from the USA, Russia and Australia.

Japanese Language Study
Students have communicated with Japanese students to enhance their use of the language and to further their cultural knowledge.

Dickens
The benefit from inviting other adults into the classroom has been realised with a group of students discussing Dickens with an adult in LA.

Alternative Energy Project
A Canberra class is exchanging information on alternative energy sources with a class in Finland. This exchange goes beyond just scientific information and discusses the political issues that arise from the production of electricity using nuclear energy.

The International Baccalaureate
Students in Australia studying the International Baccalaureate have the opportunity to communicate with their peers worldwide.

INDIVIDUAL TUITION
It is interesting to note that some schools have begun individual projects for students with special interests. Individual students are exchanging information about Christmas with students from Finland and the UK.

One student has extended their interest in Ancient Egypt through information provided via the WWW and a mailing list dedicated to ancient history. The mailing list is providing the opportunity to correspond with other students and academics with a similar interest.

INFORMATION PROVISION ON THE INTERNET
Students have received tuition in the writing of HyperText Markup Language (HTML) documents, allowing them to be information providers on the Internet. ACT students have created WWW documents with general information about their schools and have laid the foundations for future students to add to the diverse information resources available on the Internet.

THE GLOBAL SCHOOLHOUSE PROJECT
The Global Schoolhouse Project uses the capabilities of personal computers and the Internet to construct a virtual classroom around the world, with each location linked in via a video and audio patch. The Global Schoolhouse Project is an initiative of the US National Science Foundation. The NSF provides the seed funding to create a framework whereby the communications industry and the community work together for the benefit of school education.

Within this framework of collaboration the children are provided with the necessary tools and training to allow them to do collaborative research and use video conferencing over the global Internet to communicate with each other and National and International leaders. The Global Schoolhouse Project demonstrates the use of video conferencing on personal computers over the Internet. Cornell's CU-SeeMe video conferencing software allows students to sit down at an Apple Macintosh or MS-DOS computer and work with students in other locations.

Video conferencing over the Internet is a key technology for students to communicate with each other and with educators, policy makers, scientists, and many other resources around the world. The network technology opens up the classroom, allowing students and teachers to take advantage of databases and people previously unavailable to them.

The Global Schoolhouse Project shows how students can talk to each other and policy makers. Many other populations of users are also on the Internet, including scientists, university students, corporate executives, librarians, and a wide range of other groups. Video conferencing over computer networks provides a unique opportunity for policy makers to talk to the general public, forming the basis for an Internet Town Hall.

To use CU-SeeMe software effectively it is necessary to have at least a 64K ISDN connection to the Internet. The Universities have established a facility located at The Australian National University that allows schools to use CU-SeeMe. It is anticipated that four video conferences

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will be held during November. The schools involved in the Global Schoolhouse Project will conduct collaborative research on the topics of Trash, Energy and Weather using the e-mail facility at their school and will then use the University facilities to hold a conference via the Internet.

PROFESSIONAL DEVELOPMENT
Through the use of Internet:

- Teachers have accessed the library catalogues of the local universities in the process of upgrading their qualifications.
- Secondary teachers have the ability to keep up to date in their field of expertise via the special interest group mailing lists and information accessed by the World Wide Web, (WWW).
- Teachers have discussed issues of pedagogy with their peers worldwide via e-mail and using the CU-Some video conferencing facility at the Australian National University. ACT teachers participated in a video conference with teachers from the Global Schoolhouse Project that also included scientists, researchers and Internet information providers from the USA and Norway.

ACTEIN program teachers have become information providers about the highly successful Reading Recovery Program used in ACT schools. A World Wide Web page providing information about the Reading Recovery Program has been developed in collaboration with ACT teachers.

CONCLUSIONS
The Internet expands the K–12 classroom by making many resources from all over the world directly and immediately available to students and teachers alike. It brings information, data, images, and people directly into the classroom, creating an environment richly populated with resources, information and ideas. In particular, the provision of individual tuition is one not usually afforded by the traditional classroom. The typical student to teacher ratio found in many ACT classrooms does not create an environment whereby individual student needs or interests can be addressed. The Internet allows teachers to seek the support of adults from the worldwide Internet community who can provide to the classroom a wealth of experiences and expertise that would not otherwise be available.

The Internet allows each class to respond to such an environment with their own inputs of thought, creativity and imagination, publishing their own resources, capabilities and ideas back onto the Internet for others to use and enjoy. An environment of creativity and sharing is an essential attribute of the K–12 educational program, and the Internet constructively challenges this environment by allowing this creativity and sharing to take place within a truly global domain.

The approach of providing a high degree of specialist support at an individual level to start off the project appears to be an optimal use of resources. ACTEIN schools are now achieving a level of capability which is now self sustaining, with a core of highly motivated teachers providing a constant stimulus of new ideas to the entire school community.

The Pilot Schools Program has established ACTEIN as a leader in the provision of computer assisted communications in school education. ACTEIN is now providing leadership Australia wide to universities, governments and commercial enterprises looking to develop similar programs to provide Internet access to schools. Through the program ACTEIN principals have been involved in or made presentations to Questnet, ITEC (Education and the Information Highway), the fourth Catholic Secondary Teacher/Librarian Conference and the National Scholarly Communications Forum (Round Table on Public Access to Networked Information).

ACTEIN has established a global presence through its association with the US-based Global Schoolhouse Project. ACTEIN students and teachers have participated in Global Schoolhouse special events including video conferences with students and teachers from the United Kingdom and the United States of America.

The major conclusion that can be drawn from the work to date is that there is a definite and indeed highly essential role the Internet can play in all years of formal education in the K–12 classroom, and that this can be achieved in a highly cost effective and productive manner.

The second conclusion is that a program of widespread introduction of this facility into the country's schools will have to be undertaken with due care and attention paid to the provision of helpful specialist advice during each school's initial steps along this particular path. This is not an environment where traditional top down approaches, such as the application of program money with centrally administered in-service teacher education programs, are going to be effective. Indeed it is reasonable to suggest that such programs will be more damaging than helpful! Perhaps the most effective program is going to be that of a wavefront, where startup resources are concentrated on each school as they pick up the program, and moving onto a new school once a level of self-sufficiency is reached.

NOTES
Participating schools
Primary Schools: Arawang Primary School, Charnwood Primary School, Fadden Primary School, Farrer Primary School, Giralang Primary School, Kaleen Primary School, St Thomas Aquinas Primary School, Wanniassa Hills Primary School.


ACTEIN: Steering Committee
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