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Experiences In Facilitating Internet Access For Schools In Ireland

Dr. Chris Bleakley

Broadcom Eireann Research Ltd., Kestrel House, Clanwilliam Place, Dublin 2.

Tel: +353-1-6046000, Fax: +353-1-6761532, E-mail: cb@broadcom.ie

Abstract: Since 1995, Broadcom, a telecommunications research company, has been providing Internet access to three schools in Ireland as part of a project named "Classroom of the Future". This paper describes the technical and educational issues addressed by the project and makes recommendations on the use of the Internet in the classroom.

1. Introduction

This paper describes Broadcom's experiences in the application of high-speed Internet access to schools in Ireland. The experiences detailed were obtained as part of an on-going three-year research project investigating the uses of telecommunications technology in education. The project was divided into three phases.

In the first phase, Internet access via ISDN (Integrated Services Digital Network) was provided to three schools in the Dublin area in September 1995. The project involved the installation of the technology, providing training and support to the teachers, monitoring and encouraging the use of the facilities, and investigating future applications for telecommunications in education.

Based on the results of the first phase, the second phase of the project was launched in May 1996. This phase involved the development of a Web Site, a guidebook and an informational poster. These materials were designed to encourage and facilitate Irish teachers in using the Internet in their schools. The guidebook and poster were distributed free of charge to schools throughout Ireland.

The third phase of the project is to study longer term issues associated with the introduction of telecommunications into the classroom. It is intended that it examine some of the educational questions in more detail and the application of more innovative technology will be investigated.

2. Background

Broadcom is an independent telecommunications research company based in Dublin, Ireland. The company was established in 1987, as a joint venture between Telecom Eireann, Ericsson and Trinity College, Dublin. Broadcom specialises in research and consultancy in the areas of network management and advanced telecommunications services.

In 1995, it was suggested by Telecom Eireann that Broadcom undertake research on applying telecommunications to education. As a result, the "Classroom of the Future" project was initiated.

At the time of the project's launch, the uptake of Internet technology in Irish schools was quite low. However, the number of Irish schools that are on-line has increased rapidly over the past year. At the moment, we estimate that, of the 780 secondary schools and 3,200 primary schools in the Republic of Ireland, roughly 500 are on-line and 50 have developed home pages. It is noticeable that the on-line schools tend to be situated in more affluent areas or have particular demographics. For example, schools on the Aran Islands, an Irish speaking region, have specially funded computer and ISDN facilities. Most of the major Internet Service Providers offer free connectivity to schools. Overall, Irish teachers are of the opinion that computer education in schools is inadequately funded.

3. Phase 1 "Bringing Down The Walls Of The Classroom"

3.1 Approach

The aim in the first phase of the project was to investigate how telecommunications and computer technology could be used in the classroom.

Since the Internet is the most widely available telecommunications information resource, it seemed logical that our starting point be to provide Internet access to a number of schools and to

study its uptake in the classroom. In addition, the decision was taken to provide high-speed access using ISDN. ISDN provides access speeds of up to 128 kb/s and can support a class sharing simultaneous Internet access via the school LAN (Local Area Network).

Three schools were identified as having appropriate facilities and a motivated teaching staff. These schools were Pobalscoil Neasain (secondary, ages 12-18), St. Andrew's College (secondary) and Good Shepherd National School (primary, ages 5-11). A steering group, or Project Advisory Group (PAG), for the project was then formed with representatives from Broadcom, from the schools involved and from the Blackrock Education Centre.

Internet access was provided to the three schools in September 1995 [Jeacle 1997]. Broadcom installed a PC in each school to act as an Internet server for the school LAN, see [Fig. 1]. These servers were configured with the Linux operating system and had an ISDN Terminal Adapter card installed. The Terminal Adapter cards are connected to ISDN lines supplied by Telecom Eireann and wholly subsidised by Broadcom. Thus, via the server and the ISDN network, the schools can access the Broadcom corporate LAN. This allows them to access the Internet via Broadcom's permanent leased-line connection supplied by Eunet, Ireland. The overall system provides the schools with high-speed access to the World Wide Web (WWW), Telnet, FTP and E-mail.

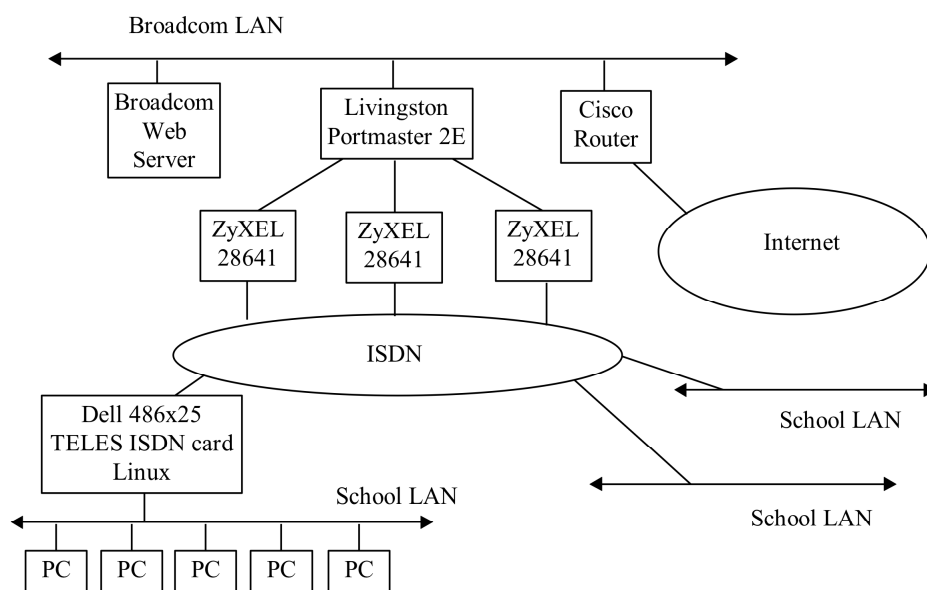


Figure 1: Schematic diagram showing the network configuration used to connect the schools to the Internet via the Broadcom corporate network.

The network configuration described was selected for a number of reasons. First, the Linux servers were cheap to set up and maintain, Linux being a free UNIX implementation. Second, ISDN is well suited to school Internet usage patterns since schools tend to access the Internet sporadically - intensive usage occurs during an Internet-related class, while there is almost zero usage during the summer months. Unlike its leased-line connection to Eunet, Broadcom only pays for the ISDN connections to the schools while they are in use. Third, ISDN allows high-bandwidth access to the Internet, so entire classes can use the facilities simultaneously. Finally, with ISDN the schools are not limited to just connecting to Broadcom - ISDN video-conferencing is possible with other schools, businesses and government organisations around the globe. In fact, the Good Shepherd National School has conducted a live video-conference with European Union (EU) ministers.

3.2 Findings

Our findings during phase one are described below. The findings are grouped into three categories according to the use made of the facilities by the schools. The three main uses were found to be: using the Web as a giant reference library, using a home site to promote the school and using E-mail to communicate with other schools.

3.2.1 A Giant Reference Library

Initially the schools used the Internet as a giant, up-to-the-minute reference library. Topics such as the weather proved to be a good starting point. The material was clearly relevant to the subject at hand, in this case geography, and the Web provided easy-access to well-presented, up-to-date information. Similarly, access to foreign language material, such as French newspapers, was deemed very useful since text books are frequently a little turgid and dated. Science is another area which is well represented on the Web. Perhaps not surprisingly, there is little material available on the Irish language. It is hoped, however, that, as it has already done for other interest groups, the Net will draw together geographically disparate groups interested in the Irish language.

The teachers found this reference library approach to the Web to be of use both for themselves and for their students. The teachers found that they could easily and quickly find new and relevant material for incorporation in their teaching activities. Also, they found that allowing the students to seek information themselves was a very positive exercise. First, the students, almost unwittingly, became efficient and confident in using the computer technology. In fact, it was noted that Web browsing is an effective introduction to the use of computers in general. Second, the technology enabled user-driven learning strategies. The students were set a goal and were required to do their own research, evaluating and assessing the information they found along the way. In some cases, it proved that this user-driven learning approach was almost too powerful for the teachers.

In the conventional classroom situation, the teacher “stands and delivers” the lesson. The teacher controls the class and directs their learning. In this context, the teacher is familiar with all the educational material available to the students and can, to a high degree of accuracy, predict what answer they will come up with. In the Internet-enabled classroom, however, the teacher is not familiar with all the educational material available. The teacher does not know what answer they will uncover and, due to the very nature of hypermedia, does not know what path they will use to find a solution. The scenario has shifted from one in which the teacher is the high priest of knowledge to one in which the teacher is the gatekeeper of knowledge.

In our experience, some teachers are unwilling to accommodate this shift in the education paradigm. Some refuse to “let the children loose”. They are uncomfortable and feel that the class is out of control. The only way to approach this problem is to equip teachers with the strategies and tools appropriate for this new form of teaching. The teachers themselves must be educated in integrating the new technology into their classroom methods. The problem is not just one of training teachers to use the technology, but is also one of training teachers to use the technology to educate effectively.

3.2.2 A Means For The World To Look In On Your School

Later, as the teachers and students grew in familiarity and confidence with the new technology, some of the schools developed their own home pages. It quickly became clear that school home pages fall into one of two basic categories.

The first category consists of home pages produced by a teacher-champion. These teachers are so interested in the technology that they develop and maintain the school home pages themselves. Generally, the pages are very well presented and are a glossy brochure for the school.

The second category consists of home pages created mostly by students. These home pages tend to be more erratic - the look-and-feel is inconsistent, some links don't work and there may be some negative comments about the school. However, in our opinion, home pages in this category are produced by schools where the students are encouraged to get involved, where they have access to the computer facilities, where user-driven learning is employed and where free speech is promoted. Certainly, having their work put on the Web for relatives in Australia and Canada to see is one of the greatest encouragements a student could have.

School home pages are excellent vehicles for marketing of the school to parents, boards of governors and the Department of Education. Teachers should think carefully about the type of school they want to portray. In our view, a school should focus on what its students are doing, not on what its teachers are doing. We believe that the school's Web site should reflect this.

3.2.3 Communication

Aside from the Web, the schools have access to E-mail and video-conferencing. These facilities have great potential for improving the schools' ability to communicate with the outside world.

For example, one of the schools has used E-mail to good effect in an EU-funded project called Energy (<http://www.psn.ie/projects/energy/index.html>). The project involves schools from seven countries and its goal is to study electrical energy usage in European households. Students collect the data in their homes and communicate the results to the other members of the project by E-mail. It is hoped that the project will promote increased inter-cultural awareness and knowledge of modern communication techniques.

This type of collaborative project exposes students to influences that they would not otherwise encounter. Since Ireland is an island, few Irish school children have been to two other countries, let alone six. Different cultures can best be appreciated by experiencing them. There is only so much that can be picked up from a text book. It is only via the close contact facilitated by telecommunications technologies that this sort of exposure can be achieved in a cost-effective manner. In this type of project, students learn, not only about the stated project topic, in this case electricity consumption, but also about the world in general.

However, interaction between schools must be given a *raison d'être*. One of the reactions which we encountered when trying to promote the use of E-mail and video-conferencing was the comment: "Well, why would we want to talk to other schools?". Teachers are used to giving a solo performance in the classroom. They must clearly be shown the advantages of introducing new influences. The kids also need an ice-breaker - a common purpose with the other students - something to get them talking. Once they have started it can be difficult to stop them. Also, the regularity of communication seems to be important. A once-in-a-while approach engenders a careless attitude, while an everyday approach creates a sense of anticipation.

Furthermore, communication is a two-way thing. It is up to both parties to put in the effort. This pressure weighs particularly heavily on the shoulders of the already over-burdened school teacher. More often than not, the teacher's principal will view these projects as extra-curricular activities, to be added on at the end of the school day. Projects such as these should be integrated into the day-to-day activities of the school. Teachers who are sufficiently motivated to get involved should be encouraged by being given time to contribute, not penalised by being over-worked.

3.2.4 Summary

There were two main conclusions drawn from the first phase of the project.

First, practical issues are uppermost in the minds of Irish teachers. Computer technology is expensive and is not well funded by the Department of Education. Schools pay peak rate prices for the use of phone lines. Even if the school has a computer and modem, creating easy access for students is a problem. Most schools do not have a dedicated computer room. Thus, teachers are either forced to bring the computer to the class on a trolley and trail a telephone cable down the corridor, or have to bring the students to the principal's office in order to use it. The former makes it difficult for the teacher and the latter is hardly conducive to the free expression of the students' opinions.

Second, we found that once these practical issues have been solved, as for the teachers involved in our project, a number of conceptual issues became important. Teachers are faced with a new teaching tool. They have been given little or no training in how to use it successfully in the classroom. The problem comes down to the individual. Some tackle it with vigour and are successful, usually after a few false starts. Some give up and try to ignore it. Still others, view it as their personal toy - something too valuable to share with the students.

4. Phase 2 "Enabling The Educators"

4.1 Approach

In phase two of the project we decided to address some of the conceptual issues on a national basis. To this end, we undertook three initiatives designed to promote usage of the Internet in Irish schools and to help teachers apply the technology in their classroom. The three initiatives were as follows: to develop an educational Resource Site on the Web for Irish Teachers, to commission a free booklet for teachers entitled "A Guide to using the Internet in Irish Schools" and to produce a free poster on the Internet aimed at school children.

4.1.1 A Resource Site for Irish Teachers

One problem frequently encountered by teachers new to the Internet was the question of where to find anything useful. As we all know, the Web can be intimidating and finding a useful piece of information can be like trying to find a needle in a haystack. The Resource Site we have developed is designed to be a first port of call for teachers who are searching for useful material (<http://classroom.broadcom.ie>).

The site was developed by two secondary level students who were employed by Broadcom over the summer holidays. The students had some prior experience of developing home pages and quickly adapted to the Broadcom working environment. Their work included developing HTML pages, writing CGI scripts and setting up mail servers. With little direction from the permanent staff, they have produced a site which is both professional and functional. In our opinion, the site is an excellent example of what school students can produce when they are motivated and empowered.

The site includes:

- a library of links to educational resources on the Web categorised by subject
- a map of Ireland which can be “clicked” to retrieve a county-by-county listing of on-line schools
- a system for teachers to develop on-line worksheets
- information on useful Internet tools, such as IRC, Usenet
- home pages for the three schools in the project
- an on-line version of the Internet guidebook
- a guest book and a mailing list

Eventually, our intention is to hand the Resource Site over to an Irish educational body who will maintain it on an on-going basis.

4.1.2 A Guide to Using The Internet in Irish Schools

Since the booklet was to concentrate on the conceptual issues of using the Internet in education, rather than on the technical issues, it was decided to engage the services of two teachers with practical experience of using the Internet in their classrooms. Although it contains information on how to get on-line and how to use the Internet, the focus of the text is on how it can be used effectively in the schools. The booklet is full of examples of how the Net can be incorporated into Irish school life.

The booklet includes:

- an explanation of the Internet
- subject-by-subject examples of how the Internet can be effectively employed in schools
- case studies of how teachers involved in our project have used the Internet
- a guide to getting on-line and using Internet tools, e.g. Web browsers, E-mail, FTP

4.1.3 A Poster for Irish School Children

The poster is designed to encourage and motivate schools kids to use the Internet. It provides a brief explanation of the main tools and gives an Internet Timeline to help students understand its history. Also included are screen-shots of the Broadcom Resource Site and of the Irish Times site on the day Michelle Smith won her fourth medal for Ireland at the Atlanta Olympics.

4.2 Findings

The reaction to the three initiatives has been extremely positive. The project has been featured on national television, radio and newspapers. The Resource Pages have been accessed from over 5,500 distinct hosts in 50 countries and we have had over 2,500 requests for the booklet and poster. We have received encouragement, thanks and congratulations from teachers in Ireland, Norway, Sweden, Canada, and the USA: “It’s great to see the resources available”, “The way of the future”, “Keep up the good work”, “A very welcome development”.

5. Phase 3 “Long Term Research”

Our goal for the final phase of the project is to examine some of the longer term issues involved with the application of telecommunications technology to education. Although this phase of the project has not yet started, the approach that seems most appropriate is to fund educators who will conduct the research and to supply the technical support and expertise ourselves.

6. Conclusions

We have drawn a number of conclusions from our experience working with educators on the introduction of Internet technology to schools in Ireland.

First, appropriate training for teachers is essential. The move to Internet-enabled teaching involves a paradigm shift in educational methods. Teachers must be taught how to subsume the new technology into their teaching techniques and must be shown how to get the best from the facilities and the students. Clearly, training such as this is expensive to implement. However, any investment in computer technology is pointless without it.

Second, to get the most from any telecommunications technology, the user community must have a common purpose which will drive their interaction. Without a rationale and the commitment of the parties involved, the dialogue quickly becomes redundant. In our opinion, national and international educational institutions have a role to play in facilitating and developing this communication. In particular, the European Union has much to gain in strengthening the cultural links between students within Europe. We are headed for an integrated Europe, Irish children must see themselves as part of it.

Third, technologists can only assist educationalists in applying information technology to schools. It is up to the educationalists to solve the educational issues.

Finally, educating our children in the use of technology is essential for the future economic well-being of our nation. Ireland missed the Industrial Revolution, it cannot afford to miss the Information Revolution.

7. References

[Jeacle 1997] Jeacle, K. (1997). Classroom of the Future, Proc. USENIX and USELINUX Conf. 1997, Anaheim, CA. Invited Talks, 127-145.

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