

OECD/CERI ICT PROGRAMME

A Case Study of ICT and School Improvement at St. Luke s School

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Introduction

The research for this case study was carried out in St. Luke School in January 2001. The research was carried out in accordance with the methodology outlined in pages 8 to 15 of the OECD/CERI workbook using interviews, questionnaires, classroom observations, and the collection of additional evidence from the school. The report focuses on the current school reforms and the role that ICT has played in these reforms as well as its overall use within the school.

Overview

Description of the School

St. Luke's is a Christian Brothers School with a population of 455 students and a staff of 37 teachers. It is situated in a provincial market town with a population of 6,000 which is the location for some manufacturing industry. The local economy benefits from agriculture and tourism. The Christian Brothers came to this town in 1862. The new school was built in 1970 and an extension was added in 1988.

The philosophy of the school, as stated in the school prospectus is as follows:

St Luke's is a Catholic school which:

- *operates an open policy of admission*
- *promotes Christian values in a caring and safe environment*
- *challenges students to reach their full potential by means of a balanced approach to work and leisure*
- *promotes respect for oneself, for others and for the environment*
- *promotes a sense of pride in the school by encouraging staff, students and parents to participate in relevant school activities and decisions*
- *Seeks to develop every aspect of the well-being of its students - physical, social, spiritual and intellectual*

The school has a Students' Representative Council, a Pastoral Care system based on a system of Class Heads and a Sixth-year liaison group which acts as a support for First Years and helps them to adjust to their new environment. All students are required to wear the school uniform and one of the Special Duties teachers is responsible for implementing this policy. Hurling is the dominant sport in the region and in the school. The School Band, which has made a number of records and has performed at festivals throughout Ireland as well as in France and Germany, is drawn from the pupils of the adjacent primary school as well as St. Luke's.



Typical of boys' secondary schools (Hannan, 1987), St. Luke's places a strong emphasis on achievement in the academic subjects, with over eighty per cent of its graduates progressing to third level. The dominant concern with covering the syllabus content and with examination success was reflected in the teachers and parent interviews. As one parent put it, the main emphasis of the school is academic because of the points system [for entry to third level]. That's the number one thing... everything has to be geared to exams in this country.

There is normally one staff day each year when external speakers are invited in to deal with topics such as Multiple Intelligence and Educational Psychology. The school's involvement with Department of Education and Science (DES) curriculum developments began in the mid nineties with the introduction of the Transition Year Option (TYO) and the Leaving Certificate Applied (LCA). The Deputy Principal has been deeply interested in ICT since the early eighties.

Like many religious-run schools today, there are no longer any Christian Brothers on the teaching staff. There is an active Parents' Council which helps with fundraising and with organising mock interviews for Leaving Certificate pupils. The prospectus states that the important role of parents in the life of the school is reflected in an active Parents' Representative Council, a Home-School Liaison system and regular meetings with parents, including formal Parent-Teacher Meetings. There are four parents on the school's Board of Management, two of whom are nominated by the trustees and two by the parents.

The atmosphere in the school is calm and business-like and the members of the research team were made to feel very much at home and received every possible co-operation from all members of staff. The building and grounds are well kept and the rooms are bright and clean. Photographs of Leaving Certificate class groups from previous years are displayed around the school along with the county hurling team and some school teams. No displays of students' work were noted.

ICT in the school

ICT developments at St. Luke s have been driven by the Deputy Principal and, to a lesser extent, by the teacher with responsibility for Special Educational Needs (SEN). The use of laptops with the Leaving Certificate Applied class and two first year groups distinguishes the school from other Irish post-primary schools.

The school computer room contains sixteen networked iMacs, giving a ratio of approximately one computer to every twenty five students when the students who have laptops have been excluded. The computer room is scheduled for use by first, second and fifth year classes as well as Transition Years.



There are two SIP projects in the school under the auspices of the national initiative, *Schools IT2000*. Each of the fifteen Year 2 LCA students was given an Apple Laptop (iBook) computer around Easter, 2000. These machines will be passed on to next year s LCA (year 2) class when the current class graduates. Under the second SIP project the whole school has been networked with airport technology and provided with Phase 1 and 2 training for teachers, ICT training for parents, educational software, two data projectors, a printer and scanner, DVD equipment and an iMac for the staff room. Most of the twenty four students in each of two of the four first year classes in the school have purchased iBook laptops, often with the support of the local Credit Union. At the time when the research was being undertaken these students were bringing their laptops to school on Wednesdays. This has subsequently been extended to include Fridays as well at the insistence of the students. Full internet access is available on the school airports for laptop users as well as in the school computer room and staff room.

The school does not have technical support in any subject area. In the case of ICT such support is provided by the Deputy Principal - most problems I can fix, myself. He is supported by some other members of staff and by a locally based retail company whose representatives come out at a moment s notice when there s something that he can t cope with. This company has also given the staff training sessions without

any pay. [1] One of the main problems faced by the school is the Apple policy whereby, if a machine is under guarantee, it has to go back directly to Apple themselves - that means going back down to Cork, and then across to Holland, then back to Cork and then back up here. The whole process takes five weeks and is seen by the Deputy Principal as a nightmare scenario. The co-ordinator of the LCA SIP project feels that the school could do with a full-time technician. Another teacher who helps out with maintenance believes that the staff are playing catch up all the time, we would need a half day a week of technical support. Related issues which arose included problems with the internet, the need for an ISDN line and additional airports as well as ongoing printer problems. The zip drive used for the administration package is backed up once a week. Student material is currently stored on the school server. It is hoped to install a tape backing system.

The Reforms

The main school improvements identified by interviewees were as follows:

1. Increased levels of staff participation in school decision making. This development must be located in the context of a religious owned school where, until relatively recently, the Christian Brothers, as the trustees, would have taken responsibility for the running of the school and the role of the lay staff was confined to teaching. The emphasis on staff involvement and decision-making and on caring for less-academic pupils is broadly attributed to the second last religious principal (who will be referred to as Brother Murphy for the purpose of this report). The current principal described him as very caring ... he moved from streaming to mixed-ability classes and the extension was built in his time. The current principal, who is the first lay person to fill the post, was a member of the staff of the school when these ideas were introduced and he has taken them on board enthusiastically.

1. Another reform attributed to Brother Murphy is that levels of support for pupils with learning difficulties have increased - the main improvement is that we are catering for wider abilities. The SEN teacher felt that the main improvement is that we are more caring for wide abilities. The school prospectus contains the following statement in relation to learning support:

[St. Luke s] CBS has adopted a whole school approach designed to cater for the needs of all its students. Learning support is offered through a co-ordinator, a full-time remedial teacher, two resource teachers and a back-up team of teachers. Resources include computers and the latest software.

The only other mentions of computers in the prospectus occur when Information Technology is mentioned as part of a long list of subjects at junior and senior cycle and under school facilities where the existence of computer rooms is mentioned.

1. The introduction of Transition Year and the Leaving Certificate Applied (LCA) was also identified as an improvement in the school. Transition Year was first offered in 1996 when the programme became available nationally. [2] While problems were experienced in the early years it is felt that the programme has been improving year by year in the school. The programme is described as being still a minority interest...25% are opting for it.. mostly younger, brighter pupils with the more enlightened parents (teacher interviewee).

The LCA was introduced in 1997 because it opens up an avenue for the weaker lads.. they end up with a qualification and they get a lot of work experience (Co-ordinator). This was a logical progression for students with learning difficulties and Special Educational Needs. There were 24 students in the first two LCA classes. This was found to be unsatisfactory by the staff who put their foot down with the result that class size was reduced to 15 in 1999. This includes two students with very special educational needs, one because he has Downs Syndrome, another with cerebral palsy. There was a widespread belief that the

LCA helps to retain students . It would appear that both of these reforms are there to stay .

1. The laptop projects with the LCA and two first year classes have taken place independently of the above improvements. ICT has become a key part of the LCA programme. There is also some use of ICT in the context of TYO involving Desk Top Publishing. Computers feature very strongly on the school promotional video and, according to a teacher interviewee, this is used as a selling point with parents at a time when we have to compete for pupils . The history and future of these improvements will be dealt with in the following section.

Other improvements mentioned by staff at St. Luke s included:

- Ø the wider range of subjects available to fifth year students;
- the introduction of a school discipline system which revolves around a Year Head system;
- some interviewees saw school improvement in terms of student performance in state examinations while one teacher was anxious to stress that innovation does not necessarily mean improvement.

The Past

History of the reforms

As has already been stated, the former principal, Brother Murphy, is given credit for introducing the democratisation process and the increased focus on caring for students of lower academic ability. The Special Needs teacher has played an important role in the implementation of the latter reform. Both reforms have clearly been supported by succeeding principals as well as the teaching staff of the school.

Both TYP and the LCA were introduced while the last principal was in office. The LCA was seen as a logical corollary of the increased care for students who experienced learning difficulties. Teachers participating in both initiatives have had the support of the relevant national support services which operate under the aegis of the In-Career Development Unit of the DES.

History of ICT

The Deputy Principal has been a longtime proponent of computer use in his school. What he referred to as his love affair with computers began in the early eighties when he went to a meeting of the Irish Mathematics Teachers Association and was shown a Commodore Pet working on solving a cubic equation by evaluating the different values of x . Having gone out to purchase a Commodore he came home with an Apple as a result of some persuasive sales talk.

The school couldn't afford a computer at the time so he brought his own Apple to school and taught classes in Basic, with an emphasis on Mathematics. On the basis that in those days you nearly had to be a Mathematician to know anything about computers, he feels that Maths teachers more than any other group saw the potential of computers. He believes that the first teachers to promote ICT were responsible for training the people who started the Celtic Tiger ... these were the kids who went on to do IT in a more sophisticated way after they left school . The Deputy Principal sees the SIP projects as critically important to the promotion of ICT - without SIP I don't think we would have got anywhere because we wouldn't have had the money, the official acknowledgments, the interest .

The first of the two SIP projects at St. Luke s - the LCA project - was the brainchild of the SEN teacher. Through her involvement in Mol an óige^[3] she had been to visit a special project for disadvantaged youth at Ponty Pridd College^[4] in Wales which was heavily dependent on ICT. This gave her the idea for the LCA laptop project, with the result that she applied for SIP funding, more in hope than in confidence, to test the efficacy of IT as a teaching tool . The third cohort of LCA students was in place at the time and teachers who had taught all cycles and had experienced the difficulties involved felt that a new approach should be considered.... we felt that IT in general, and portable technology in particular, would benefit the boys and would offer a different approach to a course, which has a strong orientation towards production of research work presented in folders.

Under the auspices of SIP the whole LCA class and some of the teachers made what was seen as a very worthwhile trip to Ponty Pridd College. The St. Luke s boys were astounded by the workshop approach of the students [whereby] the course tutors, in conjunction with a small group of programmers, devised worksheets in each area of study using only a word-processing package. These were completed by the students in their own time. As a follow up, the Welsh teachers came to St. Luke s to give a weekend course on topics such as PowerPoint to the whole staff.

The first time that other teachers at St. Luke s were required to use ICT was when the school became involved in an EU funded COMENIUS project for language teaching that necessitated contact with other schools in Paris and Italy. While much of this involved fax transmission, email was also used.

The Deputy Principal (who was also the ICT co-ordinator) was the inspiration for the second SIP project, the first year laptop project. He sees this initiative as having many advantages - it has got publicity [for the school] in a period when school populations are falling and schools are competing for students [that] is no bad thing. It has got us funding from local industries, which is something the schools actually need. It certainly has helped various students into the right career paths .. they have no problems at all in acquiring career information on the Internet. Staff development for both initiatives has overlapped insofar Phases 1 & 2 of IT2000, which focus very much on basic applications, have been provided in the school.

There was a generally critical reaction on the part of teachers and parents to the circumstances in which the first year laptop initiative was introduced at St. Luke s. As a member of the Board of Management (BoM) recalled, it was sold to the kids first.. they came to the national schools and told all the kids that they were going to have laptops, which sounded wonderful. During the summer we were told the price, which was very expensive. The Board of Management was not consulted, the parents were not consulted .

Nonetheless, several teacher interviewees saw a certain inevitability about the introduction of computers to the school curriculum. For example, the co-ordinator of the LCA SIP project commented that children take it for granted, they are growing up with it.. quite a lot of them watch TV in the morning before they come to school .. you re trying to compete with that, they all have some element of IT in their lives . The school principal spoke of the importance of computer knowledge for people when they go to work if you want kids to fit in after they leave school and college .. there s no modern business that doesn t have computers in some shape or form . A Language teacher commented that this is the way the world is going at the moment . The teacher with responsibility for SEN feels that you have to move on with the world. I did a course because I felt that the pressure was coming from the world... you couldn t be in education without knowing something about computers . A teacher of Science and Maths stated that we have to keep up to date, to keep informing ourselves... we are exposing the young lads to something they need to know about, they re all going to walk into. They need to know computing

Parent interviewees also saw a certain inevitability about the use of computers at post-primary:

- by the time they get to third level there s no time for learning computers, they have to be able to use them because time is so precious .

- it's important that they are well educated to meet the needs of third level and take whatever life throws at them. They have to know about [computers] at third level.
- they are thinking ahead, they don't want to be left on the sidelines
- no matter what job they are going to be there... kids will learn about the net

In summary, ICT developed at St. Luke's from two distinct perspectives - the mainstream, as represented by the Deputy Principal with his lifelong interest in computers and Mathematics, and the SEN area which had been developing since Brother Murphy prioritised it during the eighties. The support of SIP has been vital in the case of both developments. Very different strategies were employed in the introduction of each initiative. While parent and teacher interviewees sensed a certain inevitability about the onset of ICT in schools, the issue of consultation has been problematic in the case of the first year laptop initiative but not in the case of the LCA.

Barriers that were overcome

Some of the main barriers to the various reforms at St. Luke's include

- Until the onset of *Schools IT2000* and SIP, the absence of resources constituted a major barrier to the use of ICT in Irish schools. As the deputy principal put it: the main problem all the time until NCTE was created was finance... I don't think we would have got anywhere, because we wouldn't have had the money, we wouldn't have had the official acknowledgments, we wouldn't have had the interest. SIP has been crucial... the next problem, and it's probably related to the money, was an insufficient number of machines.... So in the early days you either taught programming or you weren't using ICT at all, there was no other way to get involved. He reflected the views of other colleagues when he identified the current problems in terms of teachers' lack of security or lack of confidence in their ability. They know much more than they think they know... they keep being afraid children know more than them.
- While the SIP project provided the infrastructure for wireless ICT in the school, several of the first years would not have been able to afford to purchase their own laptops without the assistance of the local Credit Union which provided special loans to parents who wished to purchase laptops for their children.
- The provision of *Schools IT2000* training courses in the school has ensured that teachers are well prepared in the application of some of the basic skills of ICT.
- It emerged during the interviews that there was a strong sense of a lack of incentives for teachers to become involved in ICT:

not all teachers have computers at home. And to learn to use ICT properly you need that ... there are no concessions on either tax relief or on any sort of financial inducement to help teachers purchase computers... the training must be done in the teacher's own time... with the exception of the NCTE, which of course is marvelous.

Yet, according to the teacher survey, two thirds of the respondents had a home computer and one third of these used it several times a week or more. Certain incentives for teachers to purchase computers and software were subsequently built in to the Labour Court's package in its attempts to resolve the pay dispute between the ASTI and the government. This package has since been rejected in a ballot of all ASTI members.

There are some significant barriers to the use of ICT at St. Luke's which have yet to be resolved. These include staff and parent resistance to the first year laptop project; the emphasis on content coverage in the context of the state examinations.

When innovations take place in the context of national funding initiatives, certain pressures exist to take them on in a hurry and these pressures become barriers to reform. It was within such a context that the first year laptop initiative was introduced at St. Luke's over the summer of 2000. As one teacher put it we came back in September to hear that this was a *fait accompli*, that the school had been re-wired for airport technology at a cost of £12,000 .. that students had the option to buy computers at £1750. The media got onto it and before we knew it was too late to delay it. The timetable had been made up. Teachers who have the laptop classes feel they have to use them.

Indeed, almost every interviewee referred to the circumstances under which the first year laptops were introduced: the first year project came in when teachers weren't aware of it and a lot of people feel it was forced upon us ; it was introduced in an *ad hoc* manner ; it was brought in too quickly ; it didn't dawn on the staff until they read about it in the paper ; this is something that was foisted on us . This opposition was not confined to teachers. One member of the Parents' Council recalled that the parents felt very put out because they hadn't been consulted, it was sprung on them . A parent member of the Board of Management pointed out that the Board was not consulted, this was very wrong . This view is shared by the school principal. While he believes that the laptop project is a great idea , he feels in hindsight [that] it was a bad decision to have two classes in and two classes not in. I am unhappy with the haves and have-nots [situation] .

The Deputy Principal expressed regrets about the circumstances under which this project was introduced: it has caused a certain amount of division in the staff amongst the people who feel this is the way forward and people who feel that we're moving too fast. I would have preferred [if that had] not occurred, but it has occurred.

The Present

Description of the reforms

The LCA is a pre-vocational programme whose fundamental goal is to prepare students at the post-compulsory schooling stage for the transition from school to adult and working life. TYP is an optional inter-disciplinary, student-centred programme, taken after Junior Certificate, in the fourth year of post-primary education. By freeing students to take responsibility for their own learning, the programme helps them to learn skills to evaluate life in ways and in situations which are outside the boundaries of certificate programmes. From the perspective of the LCA, pupil discipline proved a significant problem in the early years. The reduction in class size and the introduction of laptops are seen as having contributed to successful tackling of this problem.

Within the challenging framework of the TYP, teachers gain greater flexibility and professional opportunities to design curricula, modules and short courses which are specially tailored to the needs of their students. (Department of Education:1995,50). The other improvements are self-explanatory.

Impact on stakeholders

Staff members believe that the LCA is more appropriate for non-academic students than the established Leaving Certificate. While retention rates for LCA students have been consistently high, those for the 1999-2001 class are particularly good. The LCA co-ordinator believes that without the LCA some would survive, others would be disillusioned. The LCA helps to retain them . Participating students commented very favourably on the programme, particularly on their experience with the laptops. Concerns were

expressed in relation to effects of constant laptop usage on LCA students when it came to writing their final exams in the traditional manner.

There was a general feeling that the school had come to terms with the special nature and demands of TYP after experiencing some problems in the early years.

What remains to be done

The LCA programme co-ordinator felt that greater attention to the care of students was necessary to try and keep them in school. There's conflict between the strict discipline system and family background. While he regards the LCA as the most important innovation in this school, he is conscious of its status - the established Leaving Certificate results sheet going out there to the public in August [is what matters] rather than the number of Distinctions in the LCA.

Description of ICT in the school

General level of use

At the time when the research team was visiting the school, first year students in the two participating classes were bringing their laptops to school one day a week; this has subsequently been extended to two days on the insistence of the pupils. The LCA students have their laptops with them with them all the time. Non-examination classes had one time-tabled period in the computer room per week. The staff room computer was in almost constant use during the visit of the research team.

When teachers were asked how they rated their ability to use a computer, there was a three way split. 27% rated themselves good, 41% fair and 32% poor. Based on the survey returned by 22(37) staff members, levels of teacher use of ICT vary considerably. Staff were most comfortable with the following computer uses: writing a paper (76%), sending and receiving e-mail (73%) and using a computer to search for information on the WWW (59%). There was general discomfort in relation to developing a data base and writing a programme.

Use of the WWW with students would appear to have been limited with only 13% using it several times a week and 27% saying they used it several times each month. No web pages had been created. Only one respondent set no restrictions when students were locating web sites to visit, while 32% either set down some restrictions or allowed searches on designated sites only. Use of spreadsheets and work-related emailing were also rare. Student use of a word-processing programme for work assigned by a teacher was fairly common - 38% said they did this several times each month and the same percentage had used a presentation programme for assigned work. The vast majority of teachers did not allow use of computers for playing games or encourage students to join an on-line forum or chat room for assigned work.

62% of teacher respondents had never used an instructional programme; 14% said they had used such software several times a month. 75% said that their students never used computers for assigned work while 25% used them several times each month on average. 59% of teacher respondents said that all their computer use was exclusively or mostly directly related to course content while 35% said that very little of their use was limited to course content. 44% of computer use was undertaken by students individually (laptops). Involvement of students in collaborative learning with students from other classes over the internet and collaboration with other teachers were very rare. According to the staff questionnaire, most teachers had no experience of updating application programmes, making changes to hardware, recovering a damaged file, creating a web site or developing a data base.

The most common example of teacher usage of computers at St. Luke's was for the preparation of

examinations - most teachers would use it for preparing their exams whereas before they would have handwritten them and the secretary would have to type everything up, so it has made life an awful lot easier for her. They also make the occasional handouts for students.. you re talking about maybe five or six who use it for PowerPoint presentations (Deputy principal).

Role of ICT in the academic programme

The LCA programme co-ordinator recalled that, when the laptops arrived, the students were bowled over. They showed huge enthusiasm . While they had a big problem with losing files at the beginning , he now sees ICT as opening up new avenues for LCA students when it comes to writing up the Student Tasks... it has proved invaluable to be able to type and print a document. They write letters, save assignments, it s very useful for storing stuff they aren t good to look after copies . He observed that students need direction with the WWW or else they tend to try search engines with the most ridiculous questions.

The LCA co-ordinator believes that ICT has opened up avenues that weren t there before. The nightmare of making mistakes is gone! Being able to type and print up the Student Tasks has proved invaluable. It s very useful for storing material . LCA students use the computer for a wide range of activities including letter writing, note taking, looking up web sites and encyclopedias when preparing Student Tasks^[5], typing mini-company accounts, keeping minutes, using the spell-checker. The SEN teacher uses programmes like Word Shark - a basic literacy course - and hopes to get creative writer and get each student to talk through a PowerPoint presentation. She makes some use of the data projector, does some statistics and hopes to put worksheets on the server for revision purposes. The research team observed one example of the creative use of ICT where one student sent his homework to the server for his friend then to download it.



The LCA programme coordinator finds that the laptops provide a focus early in the day when they come in, otherwise they are reluctant to open the [school]bag . He finds that the students are good at showing each other things that they learn on the laptop . He believes that the big stumbling block is the lack of knowledge on the teachers part.. . some teachers will get them to put the laptops away, others will get them to take down stuff and store it in their files . From a personal point of view he could do without ICT without any problem. My problem is using it... it would be much easier to do my traditional class without it . He believes that LCA can accommodate the use of ICT better than the Junior Cert. where they have a

course to follow. How do you teach when you have a textbook in front of you and a laptop beside it? It's easier in the LCA where they have no textbooks .

Laptop use with **first years** varies considerably from teacher to teacher. Some use learning packages, others use the laptops for notes and worksheets while others make no use of them whatsoever. The Deputy Principal believes that there is a very low dependency on ICT for classroom-based teaching...probably zero in most cases .. four teachers use ICT frequently for teaching and learning: Business, Science, Mathematics and Language also CAD.

Most use of the laptops was made for teaching Mathematics. One teacher reported that she puts worksheets and examination related material on the server. The Deputy Principal is a Maths teacher. He finds that use of packages such as Geometer Sketch Pad in part as demonstration tools for the teacher and in part as tools that the students can work with at home has changed the manner in which [he] teach[es] and the manner in many areas it improved students ability to learn... it makes class more interesting for the teacher, it makes the subject more alive and forces you to keep thinking about new ways of presenting data, [it] makes Mathematics something that the children understand far, far better

Interviewer: How do your classes differ now from the early eighties, your Math s classes?

Deputy Principal: I would use a data projector far more... in introducing a subject like calculus, where you might spend two full class periods in the eighties, trying to explain exactly what you meant by a chord turning into a tangent, as points move closer together. Two minutes on a data projector and the kids have the idea straight away. So it certainly speeds up things that way. And what's more they grasp the idea immediately. In first year Math s class you would spend a lot of time trying to demonstrate axial symmetries and central symmetries on a piece of paper. Now with a computer package you can animate the whole process. The children understand what's going on immediately and I find they don't make the same sort of mistakes . He found the laptops very effective for teaching Transformation Geometry and was planning to use them to teach other topics such as the processing of surveys.

A member of the research team observed the Deputy Principal teach Maths to one of the first year laptop classes using a data projector and was most impressed at the effectiveness of this software in the teaching of mathematical concepts and principles and the promotion of pupil collaboration.



Other uses include:

- A teacher of Business uses spreadsheets in the context of book-keeping. He feels that whether teachers prepare laptop-based work or not depends on the ability of the subject teacher to prepare it .
- According to the Deputy Principal, the English teachers are using the laptops to make Powerpoint presentations of topics in poetry for instance and the kids download these on to their machines and then read them at home.
- Some interviewees highlighted the importance of access to the data projector. From a teaching point of view one frequent user sees PowerPoint as good for presenting material and for worksheets because it saves time .
- An Irish language teacher saw ICT as being of benefit to teachers of Science and Maths mostly, because they are able to present the programmes they learned in the classroom.. if you re thrown in at the deep end you have to learn it . She felt that the main disadvantage is that it goes against writing skills, English communication skills, how to approach [exam] papers .
- A teacher of History feels that there is very advanced stuff in History on the web which is beyond the level of most secondary students, never mind most first years.. I can get better use out of an overhead projector .
- One teacher of first years finds that that he is making out handouts for Wednesday because the students have no books in with them.
- A teacher of one of the laptop classes who saw computers as a distraction - my job is to prepare the class for the Junior Cert. You go into the classroom, look at the homework, go round and look at the copies.. I m inclined to ignore the computers and get on with my subject. I did an exercise on the laptop one day but I can t see advantages. There s a very good book in my subject and I can t see a way of improving on that . He agreed that it would help for a project but *time* is the problem .

Uses with non-laptop classes

Teacher interviewees reported little use of ICT apart from the laptop classes, especially in the case of the examination classes. As one interviewee put it, use of ICT in ordinary subjects is very limited... the CD is used with Higher Level Leaving Certificate, but it takes too long to set up and you need the data projector . As another interviewee put it, every first year will know the basics of IT saving, loading, creating folders, introduction to word processing. There is some use in Year 2, but none in Year 3 because this is an examinations year. The emphasis in fifth year is on applications and web based research .

Several respondents complained about the lack of suitable software. An interviewee who is committed to ICT uses it for writing a novel with second years. She also uses it for worksheets and placing material on the server and she uses the WWW for research as well as using Power Point and word processing with fifth years. But she would prefer to see thirty Mac s in a lab as the strategy for integrating subjects into the computer room.. you could have two fantastic computers with the money spent on laptops which are too expensive... you could trade for more basic functions, a lot of the features of what we have are not used!!

There had been a Computer Club in previous years but it had been discontinued in 2000-2001. ICT is also used for administration purposes in the school - as a result of Information Technology we have a much tighter grasp of exactly where every student in the school should be at a particular time, of their results, of their potential, of what teachers are doing with them, of what programs are good and what programs are bad .

Virtually all staff members have taken Phase 1 and Phase 2 **training** in ICT under the IT2000 programme. When the research team visited the school in February it was explained that at the moment we are still doing training at night of teachers of the school on two nights a week. Four members of staff have been trained in Dreamweaver with a view to the development of the school web site.

When the LCA laptop project was introduced a guarantee was given by the school to the DES that they would also train the families of the students . That was done during 1999-2000 and was to begin again in February 2001, given by the same people who are doing all the training of teachers, so we have had to postpone the parents this year until these two nights finish off.

Impact on various stakeholders

Staff and teacher responses to the LCA laptop initiative are generally very positive. There was a widespread belief (on the part of the principal, ICT co-ordinator, LCA and SIP co-ordinators and others) that this initiative had been responsible for improved retention rates. All fifteen students who got the laptops were still attending when the field work was conducted in January 2001. The retention rates for the previous two years were as follows:

1998-2000: 22 out of 24 completed the course

1997-1999: 18 out of 23 completed the course.

The programme co-ordinator sees ICT as opening up avenues that weren t available before [especially] for writing up the Student Tasks. The nightmare of making mistakes is gone . According to the SEN teacher one of the main advantages of the laptop project is that the students know more than we do.. It s wonderful for them to feel that they are as good as the teachers. I would like it to produce a sense of inclusion. Up until we introduced the laptops the weaker ones weren t getting a fair shot. While she wants to use the technology she complained that you get burned out with it [when] you have a huge amount of work to do to revise a course . It should be noted that ex quota tutors were available to help the SEN students in the LCA class.

The Deputy Principal believes that the members of the LCA class have benefited enormously, even their spelling has benefited. We had read research on it, [which said] that using spelling checks would

disimprove their ability of spelling, but in fact we've had exactly the opposite experience. They will use the spelling checker because they don't want to see [mistakes]. This has knock on effects .. their essays, are far better than you would expect from that group, so we do find the weak kids have benefited enormously .

The Deputy Principal made the overall comment that the children certainly aren't frightened by the computers anymore. They're not afraid of learning any more either. In fact they learn without realizing that they are learning. But he pointed out that it's still very early days with the first years. They're still only using the laptops one day a week and that's been hit by industrial action over many, in the last term .. but their motivation for learning is obviously improved. It depends to an enormous extent on the teacher's imagination. If the teacher uses ICT as an alternative to teaching it's a disaster. If he uses it as another imaginative tool then it succeeds .

As already noted, teachers' responses to the first year laptop project were somewhat mixed, partly due to the rushed nature of its introduction. Typical responses included: while there's a huge drive towards ICT in the school.... if it wasn't there it wouldn't make any difference ;
the jury is still out.. it didn't dawn on the [staff] until they read it in the paper! I worry about the time spent on it ;
it was brought in too quickly .

Parent members of the Board of Management invariably referred to the first year project when they referred to laptops. While parents saw merit in this initiative they also expressed reservations about how it had been introduced. One respondent whose son did not purchase a laptop felt that one day a week had been wiped out by this initiative . Another parent respondent felt that the laptops were a bit much for first years who would be better employed learning key board skills . But advantages were also noted: if they were able to do more subjects through computers they would have to carry less books to school, they can keep up contact with foreign students through email.

Positive student responses

Participating first year students identified the laptops as one of the features of school that they liked most and said that they would like to have the laptops in on more than one day. They were very positive about the use of the laptop in Maths and Science and also referred to other uses such as worksheets, looking up Charles Dickens on internet and History . They were critical of the fact that at the moment half the teachers don't know what to do with the laptops .

First years mentioned uses such as: emailing in your homework if you aren't able to attend school; sending emails; using Scoil Net; language learning; looking up cheats for games; using chat rooms. While the students see Apple Macs as being more user friendly, they would like to be able to send files from PC to Mac. They found that their learning was benefiting in Maths and they also found spreadsheets enjoyable. They felt that their parents would expect more of us! While they felt that learning might suffer in the short term until teachers caught up and appropriate software became available the long-term future of ICT was positive.

LCA student interviewees were unreservedly positive about the laptop initiative. They found the LCA easier than traditional schooling and referred favourably to the laptop initiative as the following excerpt from the group interview reveals: it took us a couple of months to get used to them, but it was easy when you got used to them. I'd prefer coming to the school a lot more if we had laptops from the beginning.. it is good learning... no books, no writing, just all typing.. you can go at your own pace... it's easier to come in and sit down at the computer... school is much better than it used to be . One participant commented that, whereas before you'd see people finding excuses to go out of class.. now you wouldn't see one person going out of class.. we couldn't wait to come back in September when we had the laptops.. we know more about it than the teachers.. half of them can't use them . They use the laptops mainly for typing, writing up

tasks, looking up material for projects (Student Tasks). Other uses include: dictionary, spell check, games, chat, looking up special interest sites such as sports and cars, learning keyboard skills.

Issues raised by stakeholders

Equity

A teacher interviewee felt that there was a danger that the better off got them. He was also conscious that there's pressure on the students and the parents [because] in a country area there's respect for the teachers. Another teacher felt that the school is very short of money for general subjects... there's concern about whether the laptop classes are being treated differently... Science could do with money. Another colleague expressed the view that the laptops accidentally brought in streaming of a sort.. those who were buying laptops were put into two classes [which] has had a slightly negative effect, has put a lot of middle class kids together into one room. The school principal noted that first year parents had expressed concerns in relation to potential barriers between those who do and don't have computers.

A parent member of the Board of Management complained that the introduction of laptops had created a major division in the first year.. two classes with computers and two without. She wondered what would happen the laptop classes when streaming replaced mixed ability in second year. She had not bought her son a laptop because she objected to the price, the idea, the make and everything. He bitterly resents not having a laptop and is trying to put on pressure to see if he can extract one. Another member of the Board of Management expressed concern that if there's too much money going to one section others will be neglected and expressed fears in relation to the pressure experienced by parents - where children are going home and looking for laptops because others in their class have them ... the mission of the school is to treat all the children equally.. so we had to find out if all the children that all the children that needed a laptop did and we were informed that they did.

Consultation

Parents as well as staff complained that they had not been consulted in theory it is great, in practice it went ahead without the proper consultation (Member of Board of Management). A member of the Parents Council felt that parents were informed but not consulted.

Another member of the Parents Council thought that parents were very put out because they hadn't been consulted before the thing was decided... it was sprung on them... it was up and running, that was the end of it. Another parent member of the Board of Management felt that it had been introduced without proper discussion... it was a rather expensive item. There was a worry that a student in a class that didn't have computers might be seen as lesser.

The Deputy Principal understood the situation perfectly - there was no resistance at all to the implementation of Information Technology, until this autumn and the reason for the resistance then is most understandable. Before the summer holidays he had floated the idea of using the Credit Union to help incoming first years to purchase laptops and they thought it would be a good idea .. but nobody actually envisioned where that would go... during the summer, when the school was closed, NCTE decided they would give us money to network the school for these laptops and when we came back in autumn suddenly it was a fait accompli. We had two first year classes who had laptops and who'd expect them to actually use them in school and the school was networked and teachers were, were very worried.... They felt things were done behind their backs. And that wasn't really what happened, but that was the perception, and you

know, perception is quite important.

Pressure

Concerns were expressed about the perceived pressures resulting from the introduction of the laptops in first year and the attendant publicity: For example:

1. the profile has been raised but there s a lot of pressure too - we had Nationwide^[6] down, headlines in the paper, the £1,700 has brought pressure that hasn t been dealt with training-wise. (teacher respondent).
2. We have no choice but to continue it... if your students have paid out all that money you have to justify it.
3. I m not sure if we re going to make a go of it.... Parents will expect value for their £1700, that a young fellow will have £1700 worth of knowledge up in his head that he didn t have.
4. some parents felt under pressure because they couldn t afford it...others who had a computer at home didn t want it (parent interviewee)
5. this was an awful lot of money to have to pay out... yet you don t want your child to feel hard done by, left out. Some won t send their boys here if it s going to go on next year
6. One parent revealed that her son who will be coming in to St. Luke s next year is already saving .

Impact on the image of the school

Asked whether the school had benefited from the introduction of computers teachers frequently identified the enhancement of the image of the school as an outcome of the laptop initiative:

the image has improved.. the Minister was down once or twice, this was on the front of the [local paper].

That will help with numbers.

the Minister came to open the LCA project [which] has given the school high profile.. this brings in all the students .

this is the age of propaganda as well, it s all appearances .

Adequacy of training?

Teacher interviewees expressed concerns about the adequacy of the training that they had been given when the first laptop project was introduced:

it was introduced in an ad hoc manner. The laptops are at an experimental stage, not enough training has been given to staff.

I m glad that I am not in there because I haven t got enough training

Technology [is being seen] as an end in itself, I see it as a tool. I am quite critical of the first year [laptop programme] - an awful lot of teachers haven t got a level of competence to use it effectively .

The Deputy Principal recognised the need for training, not in how to use a computer, but in learning how to use a computer in a specific subject area to teaching. But I feel the school is going to have to produce this because I don t think it s available anywhere else .

Knock on effect for examinations

Concerns about the perceived difficulties which students, having become dependent on laptops, would face in traditional exams, were commonplace. The Deputy Principal pointed out that until the Department allows children to use information technology to do their exams, then in a sense you might be actually effecting them adversely by using it because they re not getting the same practice of writing as they did before. Another teacher interviewee made a similar point - the reality is that students must write the Junior and Leaving Cert exam within time constraints and they need practice with actual writing as well....

if DES said they would allow laptops in the exam then I would revise my ideas. Similar fears were raised by some parents.

Availability of software:

Several interviewees expressed concerns about the availability of suitable software. While the LCA SIP project co-ordinator had envisaged [himself] sampling commercial software [he] soon came to the same conclusion as the Ponty Pridd school, namely that there was little available for students of lower academic ability. Another teacher felt that a lot of it is geared towards the English market and there s a lot of drill and repetition.. not geared to secondary. Teachers felt that available software tends to be PC oriented and inappropriate in an Irish context: there is need for software specific to Irish context.

The Deputy Principal felt that at the moment we re lucky, because the NCTE are using us as a pilot school for testing software, so we actually don t have to make any provision from school funds. I know that situation won t last.. Prior to that [the amount] was small and it was from school funds and individual teachers would buy software and donate it to school . He was emphatic that schools need a software grant from the Department. The Department has to recognize that the schools are already pressed as tight as they can for money .

Other fears

- A parent remarked that computers can be a very lonely world, will they be able to work as a team, are they playing games at lunch time rather than exercising?
- A member of staff expressed financial concerns - when the guarantee runs out we ll have to pay for it out of school funds.. could be a problem...The school is perpetually in debt, constantly looking for money. The amount of financial resources going in [to computers] is phenomenal .

Planned expansions in ICT

Since the fieldwork was completed, students in the first year laptop class bring their laptops to school on two days a week. This is as a result of pressure from students. It has also been decided that the laptop project will be extended to incoming first years along the same lines as in 2000.

Hypotheses

Hypothesis 1

Technology is a strong catalyst for educational innovation and improvement, especially when the World Wide Web is involved. The rival hypothesis is that where true school-wide improvement is found, technology served only as an additional resource and not as a catalyst, that the forces that drove the improvements also drove the application of technology to specific educational problems.

The introduction of the laptops to Sixth year LCA (at Easter 2000) and two first year classes (September 2000) is too recent to have been a catalyst for significant educational improvement at St. Luke s. The sixth year LCA students use laptops primarily for word processing, though there has been some worthwhile use of the WWW in the context of the Student Tasks in General Education. While LCA retention rates were

always high, only one student from the cohort in question (out of fifteen) has dropped out up to this point in the academic year, reflecting improved motivation. All students, particularly SEN students, find it much easier to present their work using the laptops.

Some teachers involved with the first year laptop classes are showing keen interest in ICT and a commitment to its use for teaching and learning. Levels of use of the WWW are low. Teachers report difficulties with locating appropriate software in their own subject areas for use with Apple computers. While some ninety per cent of the teachers are taking training in basic ICT skills, teachers are mostly at the survival stage and the use of ICT for teaching and learning has yet to be addressed in any comprehensive way in this school.

In relation to the rival hypothesis, the various forces that drove the other school improvements mentioned earlier have not been instrumental in the introduction of ICT. The SIP projects exist because of the presence of two champions on the school staff, one attempting to cater for the special needs of LCA pupils, the other very committed to ICT over many years. Were it not for the existence of SIP projects in the context of IT2000, neither project could have taken place at St. Luke s.

In summary there is little support for either version of Hypothesis 1 in the case of St. Luke s.

Hypothesis 2

The diffusion of the innovation/improvement (and therefore of ICT) followed the traditional diffusion pattern for innovations, as outlined by Rogers (1995). The rival hypothesis is that technology functions differently from traditional innovations and that therefore different diffusion patterns occur.

The diffusion of ICT at St. Luke s must be seen in the context of the dominant role of examinations in Ireland s post-primary education system. Several respondents expressed fears that students who had become dependent on laptops would suffer when they came to sit their written state examinations. In this context, the paradigm shift required whereby teachers make the move from transmitters of knowledge to facilitators of learning (where students use ICT as a tool) is particularly difficult to achieve.

While the ICT initiatives in this school would not have taken place without the existence and support of IT 2000, Roger s pattern is clearly in evidence. A small number of teachers are following the lead given by the innovators, the deputy principal and the teacher with responsibility for SEN students. While some ninety per cent of the staff are learning basic ICT skills, very little attention has been given to the use of ICT for teaching and learning. There is significant resistance to the first year laptop project because of the very rushed introduction of this initiative over the Summer holidays without prior consultation and because of teachers perceptions that they lack the necessary knowledge and skill in the area of ICT based teaching.

The rival hypothesis is valid insofar as ICT innovations in this school were dependent on outside assistance to get started. Some teachers falling into Roger s Early Adopters group are becoming involved because they feel that the computers must be used, now that so much money has been invested in them by the parents. Teachers awareness of students superior ICT competence also motivates them to learn. Nevertheless, it would be more accurate to talk of tolerance rather than adoption in some cases, while there is also a significant body of laggards.

At this very early stage in St. Luke s there is some evidence for both hypotheses. The innovation owes a great deal to the leadership of a small number of innovators and to the emergence of some early adopters. There is significant resistance from both teachers and parents. There is also some evidence for the rival

hypothesis insofar as certain external factors are causing teachers of the two first year classes to feel pressurised to implement an innovation which was introduced without their knowledge.

Hypothesis 3

Successful implementation of ICT depends mostly upon staff competence in the integration of ICT into instruction and learning. This hypothesis assumes that teachers mediate ICT applications when they are successful, and that ICT's academic value relates positively to teacher competence. The rival hypothesis is that the school technological infrastructure and student ICT competence rather than staff competence determine ICT implementation outcomes.

Staff members have experienced very little formal education and training in the use of ICT for teaching and learning. The introduction of laptops to first years was a particularly ambitious project which was undertaken hurriedly and in the absence of a clear strategy, probably because of the exigencies of the SIP project. While some ninety per cent of the staff are taking school-based courses in **basic** ICT skills, interviewees expressed reservations about teachers' levels of competence in the use of ICT for teaching and learning. Nonetheless the training has been focused exclusively on skills training rather than on teaching.

Some first year staff are experimenting with software packages, although the availability of effective software for use on the Apples was perceived as problematic by many teachers. One very effective lesson was observed involving the use of Geometer Sketch Pad. Use of the laptops was also observed in a Language lesson and in a History lesson (where the WWW was used). First year students interviewed as part of this research expressed very positive views about the use of ICT for teaching and learning. The sixth year LCA students used the laptops for the preparation and presentation of Student Task reports.

It was very clear from the interviews that staff members felt that both competence and confidence are crucial for the effective integration of ICT for teaching and learning. While the availability of wireless technology means that the WWW has the potential to be extremely valuable in the classroom situation, teachers need much more in-service in the area. Members of the research team found themselves at the receiving end of several requests for help in relation to the identification of appropriate web sites.

As seen above in relation to Hypothesis 2, there is also some support for the rival hypothesis. The pressure resulting from the existence of a good school infrastructure and the desire of some teachers to match student competence both help to determine ICT implementation outcomes. The current infrastructure is relatively new and those technical problems arising at this time are competently dealt with by the ICT co-ordinator in the school.

To summarise, there is considerable evidence for the first hypothesis in the case of this school. While the extent to which ICT is being integrated into teaching and learning at this very early stage of the laptop initiatives is limited, those teachers with competence and confidence in ICT have begun to successfully integrate it into teaching and learning. The focus of existing training provision is on basic skills rather than pedagogy. There is also some evidence for the rival hypothesis insofar as the resulting pressure motivates teachers to develop the necessary competence.

Hypothesis 4

Gaps in academic performance between high and low poverty students will not increase when all

students have equal access to ICT. The rival hypothesis is that equal access to ICT will lead to more advantaged students increasing the performance gap with disadvantaged (high poverty) students.

All students do not enjoy equality of access to ICT in **St. Luke s CBS**. The LCA laptop project represents an example of positive discrimination in favour of students from relatively high poverty backgrounds. While the parents of relatively high poverty students have used the local Credit Union to purchase laptops, there are concerns about the pressures of repayments - particularly if several members of one family were at school simultaneously - and some teachers fear that this may be socially divisive.

The general tendency was to say that the academically less able benefit most from ICT . Participating teachers feel that the academic motivation and performance of LCA students has improved, particularly in relation to the presentation of Student Task reports. Two SEN members of the LCA class are seen to have benefited greatly. While LCA students have used the laptops primarily for word processing purposes, they have also used the web for research purposes, as well as using the spell checker and dictionary. There are concerns about how they will perform in the external written examinations when they have become so dependent on laptops for their work.

According to the Deputy Principal, the low ability students use it far more than high ability students because of the LCA initiative. I think the low ability students are the ones who really gain from, not even from laptops, but from any difference in teaching. It livens the class and they need that to keep their attention going. The better-off kids will have tended to have a computer at home anyway and may not have opted into this scheme, so we ve no control over what they are doing at home. The socially deprived who are using them more than the better off.

While first year students only bring their laptops to school on one day per week, there has been some usage for teaching and learning in a way not found in the context of the LCA. It is too early to decide whether the academic performance of first years has been affected. Usage of ICT outside of the laptop classes is aimed at the acquisition of ICT skills.

There is some evidence for the first hypothesis and no evidence for the rival hypothesis in this school.

Hypothesis 5

Successful implementation of ICT will lead to the same or higher academic standards in spite of the low quality of many ICT materials. Academic standards are a function of teacher and school expectations and not of the standards of textbooks, ICT materials, and the like. The alternative hypothesis is that ICT use will lead to a lowering of academic standards as students spend more time on marginally beneficial searches and in browsing poor quality Web and courseware content.

The academic standards reached by the LCA class at St. Luke s in terms of work presentation and motivation had shown improvement. Their student task reports in general education had also improved as a result of Internet use. Some LCA students ability to use the web for research purposes is very limited because of readability and other problems. It was observed that LCA students spend a lot of time on non-academic use, especially when they tire of academic work . Students in the first year laptop class only bring them in one day a week with only some teachers using them on that day. Exposure to ICT is limited to skill acquisition in the case of the other years.

There are fears about how students will cope with written examinations because of lack of practice with pencil and paper work. In the context of an examination-focused system, teachers of laptop classes

commented on the amount of time that Internet-based work can take up.

In support of the rival hypothesis some interviewees felt that students were inclined to spend time on poor quality web content and games. Even though student use is tightly monitored.

In summary, the experience of the LCA class supports the hypothesis. While it is premature to draw conclusions in relation to the first years there are some indications that academic standards may improve where good software and appropriate web sites exist and are employed. In the case of both groups it is feared that the students will have difficulty with the written examinations.

Projection to the future

Sustainability

Perceptions of teaching and learning in the school

The authors feel that the dominant perceptions of teaching and learning are of great significance for the future integration of ICT at St. Luke's. The pressure of getting the course covered was the major concern of teachers at this site. Survey respondents saw ICT as important to teaching in the following situations: write a paper with a word processor (62%); search for information on the WWW (64%); present information: (57%). This emphasis on coverage was reflected in the popularity of the data projector. For example, one teacher put it as follows - if I was starting again everything would be prepared on the computer ready to be downloaded for the students. A teacher who is very enthusiastic about ICT tends to stick to chalk and talk because when we used it with second years we were moaning that we'd get more done with chalk and talk. It's very time consuming. Perhaps we should leave it to industry to train them.. we should make sure they get the points. A language teacher commented that she couldn't imagine how students would learn as much using ICT as in an ordinary class, they wouldn't learn as quickly, wouldn't have the ability to do the questions.... the normal way is better than ICT for my language. I would use it if there were better packages [but I am] worried about time wasted. Another teacher remarked that the laptops are not the ideal way of covering a course quickly but it makes them feel they are using it for a subject. A teacher of Science who enjoyed ICT use felt that too much time being taken from the core subjects. She finds it seriously time consuming... while computers level the playing pitch, structure the pupils' learning, it might be using up that time that should be given to a subject... last year I lost a class to computers and I was furious.

The room designated for use as a library in the school is not currently stocked with books and part of it is used as a classroom. The SEN teacher commented that she would love a proper library in the school as an access room for SEN. This could really increase learning. The power of laptops to call up libraries of stuff was seen by some interviewees as an important advantage of the laptop initiative.

In response to the question of how to improve teaching and learning, teachers referred to issues such as strong student discipline and responding to student difficulties arising out of home problems. For example: these kids don't have the discipline to sit down and learn.. levels of literacy are shocking... question of attention span.. the teacher has got to be an entertainer

ICT is a tool. The only way you can improve learning is to have consistency and discipline in a school. class size, literacy levels at junior levels - twenty five per cent on average are below. There's need for a second person in the room.

When asked about ways to improve teaching and learning, parents suggested new Science labs, smaller class size, school drop out and improving the school furniture and flooring.

Planning and evaluation

A teacher who is critical of the first year laptop initiative thought that a moratorium would be wise. He saw the need for a root and branch examination of where we are at and what we are doing.. we are way ahead of most schools... it wasn't looked at critically enough.. my impression is that the amount of use in the normal course of a day is limited enough.

Future of reform in the school

It would appear that the main reforms identified above will continue in the school. The principal and staff are committed to the continuance of greater staff involvement in the running of the school and it looks as if the new programmes (LCA and TYO) will remain. For example, the LCA co-ordinator feels that the most important development would be to build on the existing work with SEN students through the provision of a backup service for the teacher... Teachers need to be more aware of the problems facing pupils... there is a need for social and psychological services.

It is the hope of the Deputy Principal that the incoming first years will again get laptop .. my hope will be that in the long term every class in school will have laptops . In that event the present network won't then be able to cope with that, so we will have to get funding from somewhere [to] expand the network facilities. At the moment it can take all the computers we have in the school and we can expand it to take several hundred machines, that's not a problem. We are looking for support for that from local industry. We've been assured that certain industries will support it . He feels that ICT has now gathered its own momentum at St. Luke's - I don't think it matters who individually goes.

The Deputy Principal's dream was that if children throughout the country were given their own computers [and] their own e-mail address and if schools were given money to develop proper websites with proper subject content on the sites.. then children could continue their work at home and at school. He would like to see the NCCA encouraging greater integration of ICT into particular subjects. He pointed out that the trainers for Mathematics were recommending the use of specific computer applications into teaching of Mathematics. This will be published by the Department of Education and sent out to our schools very shortly. That is a first step. Up to now this department hasn't wanted to promote anything commercial.

While most respondents weren't as positive about ICT at St. Luke's as the Deputy Principal, there is a strong sense around the school of the inevitability of ICT . Yet few respondents were convinced of the role of ICT's in teaching and learning for students aiming at the traditional Leaving Certificate. The view of the SEN teacher would appear to be representative: it's a myth if people think that IT will replace the teacher.. for students you need the input of the teacher.. [shouldn't] mislead parents to think that computers will replace teaching. Management expect me to solve all the literacy problems with ICT!

Several interviewees identified the need for staff to gain more confidence and for software that was specific to the Irish situation. One enthusiastic teacher identified the need for more support from the DES for teachers if ICT was to be integrated into teaching and learning, adding that she would love to do a Master's if [she] could afford it .

Transferability

St. Luke's is a typical boys' secondary school where the main emphasis is on academic achievement. Teachers see conflict between the use of ICT's for teaching and learning with mainstream classes and the achievement of content coverage for examination success. In this they are probably typical of academic schools.

The enthusiasm of students and some teachers for the use of laptops is likely to be replicated in other schools, though hardly to the same extent in the case of the ICT specialist. Laptops are an expensive

commodity and this has implications for transferability if the fundamental principle of equity is to be upheld..

Teachers at St. Luke s are unhappy about the lack of advance planning. This would have to be addressed if this initiative were to be attempted elsewhere. Many of them also need to develop confidence through participation in further professional development programmes where the emphasis is on teaching and learning rather than basic skills. This would also have to be addressed in other schools wishing to introduce laptops to mainstream classes.

The success of the laptop initiative in the LCA setting is an exciting development which challenges the DES to consider the dissemination of this initiative with the same provisos in relation to teacher professional development. Because of the clear link between participation in the LCA and social disadvantage it would be necessary to put the same arrangements in place as in the case of St. Luke s. The excellent potential of ICT for improving the teaching and learning environment for SEN students, which has emerged clearly from the case studies, merits further attention from the DES and school authorities.

Concluding remarks

It must be recognized that the first year laptop initiative at St. Luke s had only been in place for some five months when the research team visited the school and that time in school had been seriously restricted by the ASTI s industrial action which involved some thirteen days of what was effectively school closure, often involving the designated laptop day . It was unfortunate that there had been no time for planning or classroom focused professional development in advance of this initiative. Despite these circumstances, pockets of good practice were evident and the students were remarkably enthusiastic about the use of laptops. Furthermore, the initiative has been extended from one to two days per week and it has been decided to give incoming first years the same opportunity.

The use of laptops with the LCA class has been remarkably successful and the students are loud in their praise of this initiative which is of particular importance for the future direction of SEN provision and for initial vocational education and training programmes such as the LCA. The laptop initiatives at St. Luke s are novel and uniquely interesting and they deserve to be monitored on an ongoing basis.

Appendix A

Fieldwork was undertaken during January 2001.

Teacher Interviews

Principal interview (Dr. Jim Gleeson) (60 minutes approx.)

IT Specialist interview (Dr. Jim Gleeson) (75 minutes approx.)

Business Studies teacher 1 interview (Dr. Jim Gleeson) (90 minutes approx.)

LCA co-ordinator interview (Dr. Jim Gleeson) (60 minutes approx)

Teacher of History interview (Dr. Jim Gleeson) (60 minutes approx.)

Teacher of Geography interview (Keith Johnston) (40 minutes approx.)

SEN teacher interview (Keith Johnston) (70 minutes approx.)

Teacher of Science 1 interview (Keith Johnston) (45 minutes approx.)

Teacher of Irish interview (Keith Johnston) (40 minutes approx.)

Teacher of Modern Languages interview (Oliver McGarr) (40 minutes approx.)

Teacher of Science teacher 2 interview (Oliver McGarr) (40 minutes approx.)

Parent Interviews

Parent interview 1 (Dr Jim Gleeson) (30 minutes approx.)

Parent interview 2 (Dr. Jim Gleeson) (40 minutes approx.)

Parent interview 3 (Keith Johnston) (30 minutes approx.)

Parent interview 4 (Keith Johnston) (30 minutes approx.)

Student interviews

Student interview 1: First Year Group (Keith Johnston) (40 minutes approx.)

Student interview 2: Transition Year Group (Oliver McGarr) (40 minutes approx.)

Student interview 3: LCA Sixth Year Group (Dr Jim Gleeson) (40 minutes approx.)

Classroom Observations

LCA	Student Task	Social Education (2 teachers + classroom assistant)	Base room (with laptops)	Jim Gleeson
LCA	English Student Task	English (2 teachers + classroom assistant)	Base room (with laptops)	Jim Gleeson
LCA	Information Technology	Business (teacher + classroom assistant)	Base room (with laptops)	Jim Gleeson

LCA	Irish	Irish teacher	Base room (with laptops)	Jim Gleeson
LCA	Vocational Preparation	Mini-Company (teacher + classroom assistant)	Base room (with laptops)	Jim Gleeson
LCA	Student Task	I.T. teacher	Base room (with laptops)	Oliver McGarr
LCA	Computers	Business teacher	Computer room	Oliver McGarr
5 th	Computers	Languages teacher	Computer Lab	Oliver McGarr
TYO	Mini-Company	Students working independently.	Media Studies room	Oliver McGarr
1 st	Mathematics	Mathematics teacher	Base room (with laptops)	Jim Gleeson
1 st	Mathematics	Mathematics teacher	Base room (with laptops)	Oliver McGarr
1 st	Business	Business teacher	Base room (with laptops)	Oliver McGarr
1 st	Geography	Geography teacher	Base room (with laptops)	Oliver McGarr
1 st	German	German teacher	Base room (with laptops)	Oliver McGarr
1 st	History	History teacher	Base room (with laptops)	Keith Johnston
1 st	French	French teacher	Base room (with laptops)	Keith Johnston
1 st	English	English teacher	Base room (with laptops)	Keith Johnston
2 nd	Mathematics	Mathematics	Computer room	Keith Johnston

Outside-of-Classroom Observations

Keith Johnston and Oliver McGarr

Appendix B

Questionnaire distributed to all staff members (??) with 22 responses.

How comfortable are you with using a computer to do each of the following?

Choices are:

1. Very comfortable
2. Comfortable
3. Somewhat comfortable
4. Not at all comfortable

	1	2	3	4
1. Write a paper	38%	38%	5%	19%
2. Search for information on the World Wide Web WWW	36%	23%	36%	5%
3. Create and maintain web pages	5%	9%	24%	62%
4. Use a data base	10%	35%	10%	45%
5. Develop a data base	14%	10%	19%	57%
6. Send and receive e-mail	50%	23%	5%	23%
7. Write a programme	5%	5%	24%	66%
8. Draw a picture or diagram	18%	18%	27%	37%
9. Present information (e.g., use PowerPoint or equivalent)	29%	14%	19%	38%

How important is each of the following computer-related skills for your teaching?

Choices are:

1. Very important,
2. Important,
3. So-so, and

1. Not important at all

	1	2	3	4
10. Write a paper with a word processor	48%	14%	14%	24%
11. Search for information on the WWW	32%	32%	23%	13%
12. Create web pages	0%	0%	29%	71%
13. Use a data base	10%	14%	33%	43%
14. Develop a data base	5%	24%	19%	52%
15. Send and receive e-mail	14%	29%	14%	43%

16. Write a programme	0%	10%	16%	74%
17. Draw a picture or diagram with a graphing/drawing application	15%	25%	20%	40%
18. Present information (e.g., use PowerPoint or equivalent)	24%	33%	14%	29%

During the past school year, how often did your students on average do the following for the work you assigned? Choices are:

1. Several times each week
2. Several times each month,
3. A few times
4. Never

	1	2	3	4
19. use the World Wide Web	14%	14%	27%	45%
20. create web pages	0%	0%	0%	100%
21. send or receive e-mail	0%	10%	30%	60%
22. use a word processing program	19%	19%	14%	48%
23. use a computer to play games	0%	0%	14%	86%
24. use a spreadsheet	0%	5%	33%	62%
25. use a graphics program	0%	0%	24%	76%
26. join in an on-line forum or chat room	0%	0%	5%	95%
27. use a presentation program (e.g., PowerPoint)	%	9%	29%	62%
28. use an instructional program (including simulations)	5%	10%	24%	62%
29. other computer uses (specify)	12.5%	12.5%	0%	75%

30. How would you rate your ability to use a computer?

Choices are: *(Please tick appropriate box)*

Good	27%
Fair	41%

Poor	32%
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Answer questions 31-38 based on experiences or policies from the last school year.

31. Was student computer use ever evaluated for grading?

(Please tick appropriate box)

Yes	11%	No	89%
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32. If you assigned World Wide Web searching, how much freedom did you allow students in locating sites to visit?

(Please tick appropriate box)

no restrictions	6%	some restrictions	47%	designated sites only	47%
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33. Did you create or modify a Web site with any of the classes that you taught?

(Please tick appropriate box)

Yes	4.5%	No	95.5%
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34. What portion of the computer use in your classes was directly related to the course content?

(Please tick appropriate box)

all	18%	most	41%	some	6%	very little	35%
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35. What portion of the computer use that you assigned was done by students individually?

(Please tick appropriate box)

all	11%	most	33%	some	28%	very little	28%
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36. If you have a computer at home, how often did you use it for preparing for teaching?

(Please tick appropriate box)

Several times a week	19%	Several times a month	19%
A few times	19%	Never	10%
No computer	33%		

37. Did you participate as a student or instructor in a virtual course through the Internet/World Wide Web?

(Please tick appropriate box)

Yes	19%	No	81%
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38. Did you involve your students in collaborative learning over the Internet/World Wide Web with students from other classes?

(Please tick appropriate box)

Yes	9.5%	No	90.5%
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39. Are you currently using technology to collaborate with other teachers (professional chat rooms, forums, or the like)?

(Please tick appropriate box)

Yes	19%	No	81%
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40. How many e-mail messages do you send each week on average?

(Please tick appropriate box)

More than 12	9%	6-11	9%
1-5	55%	None	27%

How many of the following have you ever done?

41. Made changes to a computer's hardware

(Please tick appropriate box)

Yes	29%	No	72%
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42. Updated an application program (word processor, graphics program, etc.)

(Please tick appropriate box)

Yes	29%	No	72%
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43. Recovered a damaged file

(Please tick appropriate box)

Yes	14%	No	86%
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44. Created a web site

(Please tick appropriate box)

Yes	19%	No	81%
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45. Developed a data base

(Please tick appropriate box)

Yes	29%	No	71%
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Appendix C

References

Hannan, D.with Boyle, M. (1987) *Schooling Decisions: the Origins and Consequences of Selection and Streaming in Irish Post-Primary Schools*. ESRI Paper No. 136.

Department of Education (1995) *Charting Our Education Future, White Paper on Education*. Dublin.

[1] He recalled one occasion coming when we really did need to have the network up and running for the first public demonstration of it, the two guys from Company X and my own son came out there at six o'clock in the evening and worked right through until ten to seven the following morning to make sure everything was alright.

[2] According to recent statistics it is offered in almost 90% of secondary schools.

[3] A Tipperary VEC (North Riding) initial vocational education project with EU funding.

[4] This is a second chance college located in an area of high unemployment where extensive use is made of computing as a teaching tool. Apart from CAD packages in the engineering and technical graphics areas, the only program in use is Microsoft Office. The staff there has greater back-up support in drafting programs and worksheets than would be available in a second level school .

[5] A very important part of the LCA, intended to achieve integration between the various programmes and to encourage the application of knowledge and skills to the solution of practical problems.

[6] A popular programme from the national TV station.