CHAPTER **FIVE**

MOBILE ICT - ORGANISATION AND MANAGEMENT

The previous chapters illustrated in various ways how flexible and mobile ICT may help to achieve significant gains for students. However, the consistent replication of these end-benefits requires clearly thought out and well-managed organisational frameworks. This is important because ICT systems in education can be delicate – if one element doesn't work effectively, then the entire enterprise may break down, especially if the effort required to use and master the technology begins to outweigh the perceived benefits. Therefore, *ad hoc* arrangements and lack of attention to detail are unlikely to produce consistently good outcomes.

As ICT planning and development is dealt with in detail elsewhere – e.g. **www.ncte.ie/ICTAdviceSupport** – it is not intended to provide a comprehensive overview of this topic here. Rather, the experience of the Laptops Initiative raised particular questions about management and organisation as a prerequisite to effective ICT integration into everyday teaching and learning. Therefore, these lessons, gleaned from this practical experience of 31 schools over an extended period, are especially examined. These insights can be discussed in three broad categories:

- Control and management of mobile ICT
- Students' core competencies
- Teachers' professional development.

Control and Management of Mobile ICT

The effective control and management of mobile ICT can be informed by the approaches developed by the Laptops Initiative schools. While laptops were primarily used in this project, the principles and procedures under consideration can be related to the use of other mobile ICT applications.

Mobile ICT

There are many forms of mobile ICT, of which conventional laptops are just one example. For many years, computing technology in education was synonymous with desktop or laptop computers and terminology was relatively clear. Now, the trend is for technology to become smaller and more mobile, for differing technologies to adapt and converge and for their potential in education to be explored simultaneously.

However, all of the various technology formats are just different ways of providing advantageous functions, many of which relate to interactive learning, data storage and retrieval, audio and visual dimensions, accessibility, and connectivity and collaboration.

The PDA (Personal Digital Assistant) is an example of this type of development in mobile ICT and its role in education. Originally aimed at business people, its use was soon explored by adventurous teachers. As PDAs become more sophisticated, specialist educational applications are now being developed and much exploration of their use in education is being carried out. The PDA is also an example of technology convergence – as PDA and mobile phone technology converge, the potential use of both increases.

Another branch of mobile technology is the development of the Tablet PC from the more common laptop. Much smaller and more compact, and incorporating many of features of the laptop, Tablet PCs are becoming even more versatile as their technology also converges with the PDA.

Other terminology, such as 'pocket PC' and 'handhelds', is also applied to various developing forms of mobile technology. Some other types of mobile ICT include:

- Datalogging equipment
- Mobile phones
- Digital cameras
- Assistive technology devices
- Portable word processors (e.g. *Alphasmart*)

Further information is available in the NCTE Advice Sheets (**www.ncte.ie/ICTAdviceSupport/AdviceSheets**).

Promoting Student Responsibility

Concerns about the vulnerability of laptops, in combination with Principals' regard for the good management of a valuable resource, initially slowed down the deployment of laptops outside of *fixed* settings in some Laptops Initiative schools. Gradually, however, confidence grew as it was realised that the attrition rates were far lower than expected and that students became very responsible with the machines. While there was an inevitable degree of damage and some thefts, even students who might normally be considered disaffected became quite responsible with the laptops.

A number of factors promoted these levels of responsibility:

Firstly, students who might normally be regarded as reluctant learners came to appreciate structured and meaningful learning activities on the laptops and drew great satisfaction from achievement and progression in their learning. This included the teaching of 'core competencies', which is examined further below. There was less appreciation when activities were more *ad hoc* – for example, where laptops were used as an occasional 'treat' or 'reward'.

Secondly, students tended to have more regard when they developed a strong sense of 'ownership' of laptops, even where these were shared. This was encouraged by assigning the same laptop to a student each time and allowing some level of personalisation, such as students applying their own 'desktop wallpaper' and individual 'user-settings'.

Thirdly, many schools involved parents. Some held open nights and others insisted that parents attend the school to discuss the issues around a laptop being brought home. Various forms of 'contracts' were also developed. By and large, parents were delighted to be involved and were very supportive.

Given these conditions, it was found that students became quite protective of 'their' laptop.

Responsibility – Some Approaches

Student responsibility with laptops was promoted by:

- The structured use of laptops in meaningful learning activities
- The teaching of core ICT competencies relevant to mainstream laptops use
- Fostering a sense of 'ownership'
- Involving parents.

Responsibility is not encouraged where laptops are:

- Used as an occasional 'treat' or 'reward'.

Given these conditions, even students normally considered to be somewhat disaffected became quite responsible with 'their' laptop.

> *"They feel they have ownership of the laptops. We have had no problems with students mistreating them."*
> **Marian Fitzpatrick, Coláiste Dhúlaigh, Dublin.**

> *"All the laptops are still in working order after two years."*
> **Heather Keane, Terence Mac Swiney Community College, Cork.**

> *"The students as a group have shown the highest regard for the laptops and have proven this by taking great care of them."*
> **Paul D'Arcy, St. Brendan's Community School, Co. Offaly.**

Schools involved parents in various ways.

> *"We had a 'parents' night'. This included demonstrations on the laptops and software, via a data projector. This was received very positively."*
> **Paul Masterson, St. Enda's School, Galway.**

> *"Parents were required to attend a meeting before laptops were released to the pupils, for home use, in order to discuss the issues."*
> **Ann Barry Curtin: Kilrush Community School, Co. Clare.**

> *"Students borrowing a laptop sign a contract. Their guardians also have to come in to sign the contract and receive brief training on the use of the laptop."*
> **Deirdre Doyle, Larkin Community College, Dublin.**

Managing the Technology within Schools

The clear message from the Laptops Initiative schools was that responsibility for managing the laptops should be clearly designated, either to an individual or small group, and that supervisory systems should then be established with the strong support of the principal.

While needing to be clear, these systems should not be overly-complicated as a delicate balance has to be struck between control and security on the one hand, and ease and accessibility on the other. Systems that are cumbersome, or which make access difficult, eventually discourage use.

All 31 Laptops Initiative schools developed different management systems for the laptops. While a few schools incorporated this into the existing ICT arrangements, many developed a fresh approach with the strong involvement of learning support personnel. The more effective systems had common elements of:

- Clear delegation of responsibility, strongly supported by the principal
- Agreed and understood systems of control, supported by recording documentation
- Consideration of security while prioritising accessibility
- Building around the strengths of local personnel and circumstances
- End-users – mainly learning support personnel in this case – playing a central role in managing the technology.

"We have learnt that it is necessary for a teacher to have direct responsibility for the hardware."
Katherine Bates, St. Paul's Community College, Waterford.

Laptops Initiative schools developed a range of documentation to assist with monitoring and regulating laptop use. For example, Larkin Community College in Dublin first produced a laptop policy that set out, in basic terms, the general rules for laptop use. Then, the day-to-day control and monitoring of laptop use was assisted by three further documents (Appendices 4-6, pages 83-85):

- *A Laptop Booking Form* – to regulate and monitor the booking of laptops
- *A Laptop Problem Report Form* – to record problems and assist with maintenance
- *A Laptop Signout and Return Sheet* – to regulate the removal of laptops from the school.

"I believe it is important to maintain tight control. This can only be done by detailed planning and by delegating responsibility to the appropriate personnel."
Marian Fitzpatrick, Coláiste Dhúlaigh, Dublin.

Other schools developed a range of technology management documentation. For example:

- Contracts with students and/or parents – e.g. Terence Mac Swiney Community College, Cork (Appendix 7, page 86)
- *Rules for Home Use* – e.g. St. Enda's School, Galway (Appendix 8, page 87)
- *Laptop Booking Form and Laptop Home Use Permission Form* – e.g. Boherbue Comprehensive School, Co. Cork (Appendices 9-10, pages 88-89).

Maintenance and Day-to-Day Issues

A broad range of issues arose in the Laptops Initiative in relation to the normal day-to-day use of laptops in a busy school environment:

General maintenance: While many problems were avoided by promoting student responsibility and implementing basic monitoring systems as outlined above, maintenance issues inevitably arose. In general, these were mainly of the routine type that normally arise with computer usage.

The main recommendation in this regard is summed up in a comment from Paul Masterson from St. Enda's in Galway: "A full three-year collect-and-return warranty from a reliable supplier is vital."

In addition to the normal ICT problems that arose, a range of specific issues also presented themselves:

Keyboards: damage to keys, by students prising them off, was the most common hardware problem identified by Laptops Initiative teachers. In some cases the keys could be directly pressed back on, but keyboards had to be replaced in others. The main lesson learned here is to consider purchasing machines where the keyboard in not permanently damaged if a key is prised off.

Compatibility: There were continuous ICT compatibility problems in many schools. These occurred between software and operating systems, between software and peripherals such as scanners, and between software and network systems.

This problem is best avoided by carefully checking compatibility prior to purchase.

Power and Batteries: There were occasional problems with batteries running out, especially for students who used laptops regularly in mainstream classes. In some cases sockets were not convenient or students were sensitive about having to change seating arrangements. Along with this, batteries have finite lifespans and gradually degrade over time.

Various ways of approaching this include:

- When purchasing hardware, check for length of battery operation time and consider the option of a longer-life battery if available
- Maximising battery functioning may be dependent on charging sequences – read the relevant literature that comes with the device
- Consider buying a spare battery and budget for the option of replacing batteries every two years
- Consider having a bank of spare batteries and a battery charger available in the school – a damaged laptop can also be used as a charger and, if some laptops are permanently in a fixed location, their batteries may be used as spares
- Have a secure area accessible to students where they can conveniently charge batteries during breaks
- Teach students to become familiar with the power management options of their laptops, and how to set these up in order to maximise battery capacity.

Storage During Class Breaks: Students needed a secure yet easily accessible location to leave their laptops during breaks. The school offices, staffrooms, as well as some learning support rooms, were preferred locations.

Printing: Many Laptops Initiative teachers initially underestimated students' need to be able to present their work in printed format, especially to mainstream teachers. Therefore, they needed easily-accessible printing facilities.

Most printing of this nature was done in learning support rooms. However, even some of these were not accessible at times. Consider making easily-accessible wireless printing stations available.

Short Class Periods: This was a problem as the setting-up and putting-away time could be large in proportion to the overall class period.

This constraint is created by normal school organisational arrangements and these have to be worked around in the best manner possible as dictated by local circumstances.

Security from Theft: A very small number of schools lost laptops during the course of burglaries. While this is a normal security issue that relates to all property, schools might consider supplementary security measures for mobile technology. There are many options commercially available – for example, the chemical etching of laptops with the school's name. Especially when bright and conspicuous, this etching reduces the value of equipment for thieves (see, for example, **www.loxit.com**).

Balancing Control and Access

It is necessary to balance security with accessibility and flexibility. While reasonable care must be taken, mobile technology will be less used if procedures for its access become too complicated and bureaucratic:

> *"We weren't reckless but we took a fairly liberal approach and did not give security priority over students having access to laptops – a lot of very tightly-locked cupboards was not part of our agenda. We have had no major problems."*
> **Siobhán Quinn, St. Enda's School, Galway.**

> *"Laptops were located in a secure press in the computer room and used by five teachers involved in learning support. The problem with this system is that the more control and security there is, the less the computers tend to be used – it can be a hassle for teachers to access the computer room and press."*
> **Deirdre McLoughlin, Killinarden Community School, Dublin.**

Technology Control and Management – Three Approaches

Various forms of technology control and management were applied in the Laptops Initiative, each suited to local school circumstances. In most cases, the learning support teacher(s) took direct responsibility for managing the laptops, usually based in a learning support room or other convenient location. Des Cunnane, the Learning Support Coordinator in Pobalscoil Neasáin in Dublin, described a typical storage and monitory system:

> *"Laptops were numbered. Each student was assigned a number and used the same laptop on each occasion. This promoted individual responsibility and accountability. Bags, containing leads etc., were numbered and associated with a numbered place on a shelf. Simple luggage labels were used. Computers were signed out and back, library style. This system has proven simple and effective."*

Heather Keane developed a similar system in Terence Mac Swiney Community College in Cork. She stored the laptops in a steel roller-front press in an ICT annex off the staffroom, along with all the necessary peripherals and software. From here she allocated laptops to both class groups and individual teachers:

> *"Each student is allocated a laptop alphabetically so that each will have the same numbered laptops every week. All lists of classes are placed on the wall so students can easily identify their laptop number."*

For allocating laptops to teachers, Heather placed a blank timetable beside the cupboard where the laptops were stored and teachers indicated their preferred times for using the laptops. Any software withdrawn was similarly signed out.

St. Paul's Community College in Waterford is one of a number of schools that managed their laptops from the school library. Here, day-to-day responsibility for the control and distribution of the laptops was the responsibility of Kathleen Moran, the school Librarian.

Using a bar-coding system and library management software, Kathleen found it very easy to track laptops and other equipment throughout the school. This system worked very well: "You know who has what, where it is, and when they got it – all the equipment can be tracked in this way."

Kathleen kept the laptops stored in a trolley which had an inbuilt charging system and she described this as invaluable: "The laptops are always charged and ready to go – it would be much more difficult to administer the system otherwise." Removing and replacing the laptops became routine for the students and the trolley could be moved to a secure room at the end of the day.

St. Paul's Librarian, Kathleen Moran, issuing a laptop to Resource Teacher, Orla Curran, for one-to-one use with a student. Kathleen used a bar-coding and library management system to keep track of the laptops that were used throughout the school. A trolley with a charging facility was used to store the laptops. This meant they were always charged and ready to go and the students became very adept at removing and replacing the laptops.

Student Core Competencies

Students obviously need ICT skills and knowledge as a component of the integration process. However, even in ICT-rich schools with a strong focus on teaching computer skills, Laptops Initiative teachers found that students' lack of core ICT competencies, necessary for the independent day-to-day use of a computer, was an impediment to the integration process.

In their normal ICT teaching, schools tended to concentrate on teaching ICT applications with a view to vocational applications and terminal certification such as that provided by the ECDL (European Computer Driving Licence). However, this approach did not always provide students with the appropriate skills necessary to become independent computer users, especially in the Junior Cycle. The need for good typing skills, for example, was consistently commented on.

Therefore, if mobile technology integration was to be achieved for students, the question arose as to how they were to achieve these necessary core competencies. Along with this, teachers found strong evidence of the 'digital divide' – many students in need of learning support lacked computer skills which their peers had picked up at home or elsewhere.

Based on these experiences, many of the teachers instituted basic ICT programmes for their learning support students, independently of the ICT programme in place for the broader school population. The learning support locations proved ideal for this. According to Paul Masterson, from St, Enda's in Galway: "The *fixed* model has been a very useful way of training and matching individual students to software and the use of a laptop. I would even suggest that the *fixed* model approach is a pre-requisite to wider laptop use."

While taking various formats, this teaching of core competencies tended to fall into two main categories:

- teaching ICT competencies discretely as a prerequisite to the use of specialist software
- integrating the teaching of these competencies, in parallel with ICT-based learning support activities.

Liam Faughnan, the Principal of Moyne Community School in Co. Longford, offered a useful insight into the relative advantage of these two approaches:

> *"The original plan was to introduce the target group to computers in the same way as students taking ICT as a subject. This involved spending some considerable time teaching keyboard and other rudimentary skills. Upon reflection, I think that time was lost using this approach and it could have been better used in getting the students to actually work with the software – the process of teaching the mechanics of starting up the computer, loading the CD, starting the programme and so forth, is achieved in a shorter time when the students are focused on the reward of actually using the software."*

The Learning Support team in Terence Mac Swiney Community College in Cork adopted this integrated approach and utilised the Junior Certificate School Programme (JCSP) *Statements of Learning* targets as a basis for teaching the core competencies. This particular JCSP *area of experience* has six elements: Keyboarding, Typewriting, Computer Skills, Word Processing, Educational Computer Software, and the Internet (Appendix 11, page 90).

Considering the desirability of these core competencies, as highlighted by the Laptops Initiative teachers, schools that aim to avail of the opportunities presented by the integrated use of ICT need to consider ways in which students can achieve these competencies.

Heather Keane, Learning Support Teacher in Terence Mac Swiney Community College, Cork, was also the Laptops Initiative coordinator in the school. This school utilised JCSP targets for teaching core competencies to students.

Core Competencies – Levelling the Playing Pitch

"I found that some students are very familiar with computers while others were not, so it was important to level the playing pitch."
Lucille O'Sullivan, Causeway Comprehensive School, Co. Kerry.

Based on this objective of minimising the 'digital divide', Lucille implemented a special ICT programme for her learning support students. It had the following core elements:

- Switching the laptop on/off correctly
- Opening files/documents
- Saving to hard drive/disc
- Inserting floppy disc/CD ROM
- Opening programmes on CD ROM
- Printing
- Mouse use – right and left click
- Help button
- Changing font size, type and style
- Page setup
- Using basic keyboard buttons – return/ enter, backspace and delete.

Core Competencies – Peer-Tutoring

A number of schools developed peer-tutoring systems to quickly develop the core competencies of Laptops Initiative students:

"We involved older students. It was essential to familiarise first-year students with the technology and software programmes they would be using. This took much longer than anticipated so we sought the help of the Transition Year students who began a 'peer-tutoring' programme with the class. This meant, in effect, one-to-one tutoring for each student. This was very beneficial for Junior Certificate students."

Nuala Farrell, St. Kilian's Community School, Co. Wicklow.

Core Competencies – Typing Skills

Weak typing skill was the competency deficit most identified by Laptops Initiative teachers as an impediment to the integrated use of laptops. Their persuasive comments indicated that this is an important digital literacy element and a key to integration:

"The lack of typing skill among the students has been a huge difficulty in effecting laptop integration."
John McCarthy / Mary Landy, St Oliver's Community College, Co. Louth.

"We have been trying to introduce the whole concept of using the laptops in class but the lack of typing skills is the biggest problem for individual students using the laptops in mainstream classes."
Patricia Sheridan, Bailieborough Community School, Co. Cavan.

"The simple task of taking notes down from the board leaves the child at a disadvantage if typing skills are not up to required levels."
Paul D'Arcy, St. Brendan's Community School, Co. Offaly.

Paul Masterson, of St. Enda's in Galway, developed a simple rule-of-thumb in relation to typing competency:

"No student takes a laptop into a mainstream situation until their typing speed is at least as fast as their handwriting speed."

"The use of the laptops as a personal support tool is delayed by weak keyboarding skills – this makes pupils reluctant to use the laptops in an exam situation."
Sandra Mullen, St. Dominic's Secondary School, Dublin.

Perhaps this should not be surprising – a lot of time and rigor is applied to the teaching of handwriting in primary schools and, if students are to become fluent in this alternative form of writing, then time, energy and structure needs to be applied to typing and keyboard skills also.

Laptops Initiative teachers took a variety of approaches to this problem. Paul Masterson, for example, developed a simple rule-of-thumb: "No student takes a laptop into a mainstream situation until their typing speed is at least as fast as their handwriting speed."

Kate Plested, of St. Kilian's Community School in Bray, described her school's approach:

> *"The pupils learnt how to touch-type and it was an important skill to master. It was also very useful for those who took a laptop into classes like English and so forth.*
>
> *I taught the skills to first-year and second-year students. As expected, many of them weren't too enthusiastic at first as this is not a quickly mastered skill. I found it best to concentrate on the typing for one 40-minute period a week and then ten-minute sessions mid-week if possible. It took one term of concentrated effort to get the basics. Ten-minute slots are more suitable for those with ADHD but it depends on the needs of the group. Some students got frustrated but it was good for fostering patience!*
>
> *The software programme we used was* UltraKey. *This is a good programme as each pupil can work at their own speed and get regular updates on progress. Extra practice is also available in areas of difficulty, which the software identifies. For example, the students might consistently confuse 'a' and 's' on the keyboard.*
>
> *The programme first advises students on posture and keyboard use and there is a short video clip. Then skills are built up gradually and the computer will talk back, giving praise and encouragement. At the end they can look at a chart showing their progress, along with areas of strength and difficulty.*
>
> *I feel that students need to touch type if they are to use a laptop regularly but you need to plan adequately and persevere – there will be lots of moaning until they begin to improve!"*

Kate Plested, St Kilian's Community School, Bray, Co Wicklow.

A typical *UltraKey* interface as used by Kate Plested in St. Kilian's.

> *"Make sure that students learn the basic typing skills."*
> **Ann Barry Curtin, Kilrush Community School, Co. Clare.**

Along with Kate Plested in St. Kilian's, other Laptops Initiative teachers tackled the typing problem with a variety of approaches, often using typing software. A large variety of typing tutors are available for this – some companies offer free downloadable trial versions. Along with *UltraKey* (**www.bytesoflearning.com**) used in St. Kilian's, other typing programmes used by Laptops Initiative teachers included *Type to Learn* (**www.sunburst.com**) and the Mavis Beacon range (**www.riverdeep.com**).

> *"It was a great help that they had studied typing and this enabled them to type up answers to questions at a good pace."*
> **Helen Ahern, Presentation Secondary School, Limerick**
>
> *"Mavis Beacon was used to improve the student's keyboard skills and letter recognition."*
> **Deirdre McLoughlin, Killinarden Community School, Dublin.**

Professional Development

"Fears of our own inadequacies were the biggest hurdle".

Paul D'Arcy, St. Brendan's Community School, Co. Offaly.

Most of the Laptops Initiative teachers had no prior experience of using ICT in their teaching. Equally, the technology integration challenge was new to all. Therefore, the very steep 'learning curve' that ensued provided a strong test of the professional development processes necessary to sustain all the elements involved in implementing a mobile integration strategy and associated methodologies.

The value of multiple professional learning experiences, both within schools as well as outside, became evident during this process. One source of this learning was the opportunities created by the Laptops Initiative to enable teachers and principals to share experiences, concerns and successful approaches over the course of the project. This form of collaborative professional learning was valued by all and complemented other related professional development approaches. These can be described under two headings: formal courses and in-school collegial support. Opportunities to become familiar with technology and its use in teaching within the special needs 'comfort zone' also helped to get over initial concerns and fears.

"Give teachers plenty of access to laptops in order to encourage them to look at ways they can use them."
Nuala Farrell, St. Kilian's Community School, Co. Wicklow.

"Most teachers train by doing – expertise is achieved by trial and error, a time consuming way to learn."
Liam Faughnan, Moyne Community School, Co. Longford.

"All the teachers involved undertook some training in their own time to familiarise themselves with IT."
Lucille O'Sullivan, Causeway Comprehensive School, Co. Kerry.

Formal Courses

Many teachers involved in the Laptops Initiative availed of formal courses such as the NCTE's range of ICT training courses. For example, the *ICT and Special Needs – Learning Support* course, which is available to all teachers through the Education Centres, was undertaken by many as part of the project supports and found to be very useful. Schools also benefited from a range of other external professional development opportunities organised locally.

"Staff development was arranged for the whole staff at the local Education Centre."
Patricia Fielding, St. Joseph's Secondary School, Co. Mayo.

"The laptop coordinator and the librarian and three other learning support teachers attended training on the use of Clicker *organised by the local Education Centre. It lasted for six weeks, two hours per week."*
Katherine Bates, St. Paul's Community College, Waterford.

"Six teachers attended a one-day workshop on the Kurzweil *programme organised by the supplier. This training was perfect. We were taken through the entire programme and given time to familiarise ourselves with it."*
Deirdre McLoughlin, Killinarden Community School, Dublin.

In-school Collegial Support

While these formal professional development opportunities were important, schools' internal collegial support structures played a key role. According to Paul D'Arcy of St. Brendan's Community School in Co. Offaly: "Fears of our own inadequacies were the biggest hurdle in the beginning." Collaborative peer-supports, often of an informal or semi-formal basis, were crucial in overcoming these initial fears and sustaining progress.

These collegial supports fell into three broad categories:

1) **Formal delivery** – teachers giving tailored courses to their colleagues:

   "I ran a course in our school which involved training teachers in the use of digital media in education – I borrowed all types of different curriculum software from our local Education Centre for use in the training sessions."
   Helen Ahern, Presentation Secondary School, Limerick.

"In-house training was provided by the ICT co-ordinator."
Tim Tornsey, St. Aidan's Community School, Dublin.

"We used a questionnaire to ask teachers what they want to know and myself and another ICT teacher built a course around that."
D.J. McSweeney, Boherbue Comprehensive School, Co. Cork.

2) **Just-in-time peer-mentoring** – colleagues being available to support each other on a 'need-to-know' basis:

"I do a lot of training of staff on an informal basis. When a teacher wants to use the laptops with a group of students I am available to answer any questions."
Carol Carey, St. Kevin's Community College, Dublin.

"Informal training is taking place on an ongoing basis – the ICT co-ordinator is always available to tell me what I need to know. Then I pass on the information to the other teachers involved as the need arises."
Rita McAuliffe, Boherbue Comprehensive School, Co. Cork.

"The focus of the training this year was on a one-to-one basis. This approach worked better than holding a training session as you could focus on the particular needs of each teacher."
Helen Ahern, Presentation Secondary School, Limerick.

3) **Collaborative practice and team-teaching** – clusters of teachers working collaboratively, formally and informally, and catalysed around the leadership of a particular teacher:

"A substantial amount of time was used to set up collaborative work environments, where participating teachers could plan and evaluate 'joint work' practices. More time went into this aspect of the project than any other aspect and a system of 'team teaching' has been introduced at Junior Cycle."
Katherine Bates, St. Paul's Community College, Waterford.

"ICT use was new to us but we worked well together. While Heather Keane took the lead as the school's Laptop Initiative Coordinator, it was a

Teachers sharing and discussing their own work was a valued collaborative learning activity that was appreciated in the Laptops Initiative. Above: Lucille O'Sullivan from Causeway Comprehensive School in Co. Kerry, sharing her work with other Laptops Initiative teachers at a project workshop.

Also, a group of Laptops Initiative teachers in discussion (from left: Helen Ahern, Presentation Secondary School, Limerick; Des Cunnane, Pobalscoil Neasáin, Dublin; Tim Tornsey, St. Aidan's Community School, Tallaght; Raelene Stewart, Coláiste Eoin, Dublin).

Post-graduate Opportunities

A number of Laptops Initiative teachers undertook postgraduate studies during the course of the project and based some of their research on the development of the Laptops Initiative in their schools.

For further information on postgraduate opportunities directly related to ICT, see the NCTE website – **www.ncte.ie/ICTTraining/Postgraduate**.

The Special Education Support Service (SESS) also provides information on post-graduate and other professional development opportunities related to special needs. It also provides a wide range of other supports for teachers. See its web site for details (**www.sess.ie**).

team effort – we helped each other and learned from each other. It was nearly all team teaching."
Isabel Baker, Terence Mac Swiney Community College, Cork.

"Teacher fear was alleviated, in my opinion, because I was in classes with them to help them use the software – this is one of the ways of encouraging teachers to use the available software."
Helen Ahern, Presentation Secondary School, Limerick.

Professional Learning in the 'Comfort-Zone'

The learning support situations in which many Laptops Initiative School Coordinators operated provided a 'comfort-zone' in their initial stages of coming to terms with the use of the technology. Often having different relationships and methodologies to 'mainstream' situations, two key processes occurred within these 'comfort-zones' that laid strong foundations for the diffusion of the methodologies into the wider school environments:

- Validation and Affirmation: observing the significant benefits brought to students, even within a short space of time, presented evidence that the approach was a valid educational process and affirmed their decisions to become involved with ICT. This validation and affirmation provided strong motivation for teachers to persevere in learning the technology and its applications
- Technical Orientation and Parallel Learning: within these learning supports situations, many teachers were able to learn in parallel with the students and gradually gain knowledge of the technology without the need for the mantle of expertness that might have been expected, either from their colleagues or from students in 'mainstream' situations. Patricia Fielding's comment that "I learned with the students" was not untypical. This was also aided by the use of relatively undemanding reinforcement software during the early stages. Charlotte Brewer, from St. Columba's College in Co. Donegal, referred to this as the "*Wordshark* security-blanket syndrome."

The lesson from these insights is that the initial hurdle of teachers becoming satisfied about the educational value of ICT, and of gaining the early critical confidence to apply it in their teaching, can be overcome by the introduction of undemanding ICT applications in professionally unthreatening settings.

Professional Development – the NCTE

The NCTE's continuing professional development programme offers a range of professional development opportunities with configurations that will suit a wide range of requirements. Provided in collaboration with other educational partners, these courses are fully funded by NCTE and are available through the network of regional Education Centres. See **www.ncte.ie/ICTTraining** for full details of courses, course schedules, the ICT Advisor network based in the Education Centres, etc.

The NCTE's courses (**www.ncte.ie/courses**) fall into three categories, with varying options in each:

- Introductory ICT Courses
- Technical Courses
- ICT in Teaching & Learning.

There is a range of seven courses specifically aimed at special needs. An example of these is the 20-hour *ICT and Special Needs – Learning Support* course which found so much favour with the Laptop Initiative teachers. The target audience for this is learning support teachers at both primary and post-primary levels. However, mainstream teachers who have students with learning difficulties in their class or teachers of special classes for children with specific learning difficulties will also find it useful. The course provides teachers with information on the use of ICT in learning support, the confidence to introduce it into their classes, and specific strategies, tools and resources to use in the integration of ICT into the curriculum.

In addition to the extensive range of scheduled courses, schools can request that courses be run as 'whole school' events and tailored as necessary to the requirements of a particular school, taking place either in the Education Centres or in schools. These are ideal for supporting requirements particular to an individual school, such as arose in the Laptops Initiative. Yet another option is available through the 'support group' structure. Support groups provide more informal opportunities for teachers to meet and discuss ICT topics that they wish to explore in greater detail or to arrange short tutorials on specific software packages. Details are also available through the local ICT Advisor.

These various flexible options offer opportunities to support the type of peer-support and collegial interaction that Laptops Initiative teachers found helpful.