



CHAPTER FOUR

A MOBILE TECHNOLOGY DEPLOYMENT FRAMEWORK



Children with literacy difficulties receive provision under a variety of supports and organisational arrangements that differ from school to school. If mobile technology is to be used as part of this provision, and integrated into regular teaching and learning activities, it must be made available to teachers and students in these varying contexts.

For example, supporting laptop use by a student with dyslexia in an honours Leaving Certificate class will call for different organisational arrangements to the support required for a 'banded' class of first-year students with general learning difficulties.

With this in mind, there is need for a technology deployment framework that will assist schools in planning mobile ICT provision to meet such varying needs. We are fortunate that such a framework emerged from the work of the Laptops Initiative schools. This framework is outlined below, along with practical examples of its implementation from the project schools. Various teaching approaches are also mentioned in relation to these arrangements.

These examples are not intended as prescriptive models as each school has to develop strategies to suit its own way of doing things. However, the work of these teachers can provide a structure from which other schools can draw, along with a variety of practical ideas.

Suggested procedures for the management and monitoring of the technology is provided in the next section of this book.

The *Fixed, Floating and Fostered* Deployment Model



Paul D'Arcy, the Laptops Initiative school coordinator in St. Brendan's Community School, first described a three-strand deployment model.

The *Fixed, Floating and Fostered* deployment model was first outlined by Paul D'Arcy, the Learning Support Coordinator in St. Brendan's Community School in Birr, Co. Offaly. In the school's original Laptops Initiative *Project Implementation Plan* of 2002, Paul described the St. Brendan's approach as follows:

"It is planned to have the laptops divided into three strands. Ten are to be situated in a room which is to be adapted to cater for them, three are to be given to pupils to use both at home and in school, and two are to be floated to classes as students require them."

The <i>Fixed, Floating and Fostered</i> Deployment Model		
Fixed	Floating	Fostered
Laptops are 'fixed' in one location	Mobile laptops are available in varying locations on a flexible basis	A dedicated laptop is designated to a specific student – it is considered 'theirs'
<p>Typical <i>fixed</i> locations included learning-support rooms, libraries and dedicated 'laptop rooms'. Two main variations of the <i>fixed</i> model developed in the Laptops Initiative:</p> <p>(1) A layout resembling a conventional computer laboratory. Laptops offered considerable saving of space and could be easily removed for other uses</p> <p>(2) The laptops were largely confined to one room but could be arranged flexibly within this. This facilitated different teaching styles and arrangements.</p>	<p>Two main <i>floating</i> patterns evolved within the Laptops Initiative:</p> <p>(1) A number of laptops were available on a variable-needs basis. These were used, for example, in learning support 'withdrawal' situations or brought to classes as needed for varying learning support tasks</p> <p>(2) A larger number of laptops were available for use by whole-class groups with a literacy support dimension: e.g. 'banded' classes; Leaving Certificate Applied classes (LCA); Junior Certificate Schools Programme groups (JCSP).</p>	<p>Variations of the <i>fostered</i> model included:</p> <p>(1) The student having the dedicated laptop all of the time, at home and at school</p> <p>(2) The laptop being available in school only</p> <p>(3) The laptop used at home only, perhaps for an initial trial period.</p>

The *Fixed* Model

The question immediately arises as to why laptops might be used instead of conventional desktop computers in *fixed* situations, especially given the perception that desktop computers are more robust.

However, when Laptops Initiative teachers were asked if they would in future prefer laptop or desktop computers for *fixed* settings, the almost universal response was that laptops would be the preferred option.

The reasons behind this approach are varied. Firstly, laptops were found to be much more flexible and could be more easily fitted into existing arrangements. Therefore, they tended not to dictate classroom practice as much as desktops – as Séamus Knox from St. Paul’s in Waterford commented: “A great advantage of the laptops is that they can be put away.”

A second factor that came to light is that laptops are more conducive to social and collaborative forms of learning. This is facilitated by the size and mobility of the machines which allows them to fit in better with groups of children who are working collaboratively.

The third factor was that students seemed to become more engaged with laptops than desktops, especially when combined with meaningful learning activities and opportunities to personalise the machines.

And, fourthly, the laptops were found to be much more robust than anticipated – with reasonable levels of monitoring, attrition rates were much lower than expected.

The *Fixed* Model in the Library of St Paul’s Community College

St. Paul’s Community College in Waterford operated all three deployment models and the library and an LCA room were developed as two *fixed* bases under the Laptops Initiative.

Bright and spacious, and with an air of informal orderliness, the library was an attractive environment for teachers and students alike. With the addition of laptops as a resource, it became heavily utilised throughout each day as a support for St. Paul’s literacy and inclusion strategy. Given its space and the flexibility



A typical *fixed* model in St. Brendan’s Community School in Birr, Co. Offaly. Paul D’Arcy had the desks in his learning support room specially designed so that the laptops can be neatly slipped under the lids when not in use. Paul found this very useful as desktop computers would not have been viable. In this case, the laptops could be more easily integrated into day-to-day activities and can be moved when necessary.

of the laptops, each teacher involved was able to adopt the computers to suit his or her particular teaching styles and strategies.

Two key supports led to the success of this approach in St. Paul’s – the role of the Librarian, Kathleen Moran, and the role of the school’s Learning Support Coordinator, Katherine Bates.

Kathleen managed the library as a school resource. For example, she took bookings from teachers and looked after the day-to-day management of the laptops. This ensured that they were always available and charged when teachers arrive. She also helped out with teaching activities.

In her role as Learning Support Coordinator for the school, Katherine Bates sees one of her main functions as supporting ‘mainstream’ teachers in developing strategies for the teaching of children with literacy difficulties. Therefore, while she used the laptops in her own learning support teaching, she spent a good deal of time working alongside mainstream teachers in the library. This, she said, was part of St. Paul’s inclusive approach to learning support and the laptops were deployed in supporting this strategy.

Laptops and Inclusion in St. Paul's

The successful inclusive use of laptops in St. Paul's was facilitated by their being absorbed into a clearly articulated inclusive learning support strategy.

In this regard, the Learning Support Coordinator, Katherine Bates, outlined her role:

- To assist teachers working with students who require support across the curriculum
- To introduce different teaching methodologies to promote teaching for understanding
- To promote examples of good practice in general
- To facilitate teacher professional development in learning support.

One example of this was Katherine's use of the 'process approach' to personal writing and her support to mainstream teachers in encouraging them to apply it in their teaching of children with literacy difficulties. Katherine summarised the methodology as follows:

"The process approach to teaching narrative writing – or personal writing as it is referred to in the Junior Certificate – is a five-stage approach that begins with the teacher discussing the content of the story with the student. Then it goes through various stages of discussion, collaboration and re-drafting, before culminating with the publishing of the story."

Tina Woods, an English and Geography teacher in St. Paul's, is a typical teacher who adopted laptops into her mainstream teaching within this support structure. Using the library base, she successfully applied the 'process approach' with the use of laptops:

"When we go down the students take out their own numbered computers, open up their files from the previous class and start working straight away – they are always fully charged and ready."

With little or no previous ICT experience, Tina did not find the task too daunting: "I just took the laptop home with whatever literature that I needed – there was a lot of trial and error." She attributes her progress to a close working relationship with the Librarian and the Learning Support Coordinator: "Without their support it just wouldn't have worked."



Even within the fixed setting, laptops allow great flexibility and do not dictate organisational arrangements or teaching practices. English and Geography teacher, Tina Woods, was one of the teachers who was introduced to ICT-based strategies for mainstream literacy development in St. Paul's Community College as part of the Laptops Initiative.

This fixed location was an initial 'comfort-zone' in St. Paul's, where teachers developed confidence and experience in the methodologies before embarking on the *floating* and *fostered* strands. The creative development of this arrangement clearly illustrates the flexibilities that laptops allow, even within a fixed setting. Similarly, the following range of impressions from the school further illustrate the potential of this approach in supporting a school's literacy and inclusion agenda.

Principal, Séamus Knox:

"It was a whole new idea and it took some time for people to realise what the possibilities might be. But as soon as the laptops began to be used, there was a great interest in getting involved and using them creatively in teaching. Their location in the library helped with this initially – people who were passing could see children, who might normally not be very interested in learning, being very engaged by the technology. All in all, there were very few negatives about our experiences."

School Librarian, Kathleen Moran:

"The reaction of the children to the laptops is wonderful. Their normal reaction to books is to put them to one side as quickly as possible but they find this much more exciting – they enjoy learning and don't realise that they are learning."

Learning Support Coordinator, Katherine Bates:

"I found that the laptops assist me in my task of making the provision of learning support more inclusive in the school. The technology helped me to introduce something new to teachers who were working with children with different learning needs and they recognised that laptops could help them with reading and writing tasks. Teachers were also more open to have me working with them in their classes – teachers who had previously not been involved with using technology were amazed that they could teach different programmes with support from the learning support teacher.

It has also been a really positive experience for the children. There has been increased fluency in reading and writing, and also in self-esteem which previously had been quite low. Sometimes the class would be over and they would not realise it – this would have been unusual before the introduction of the laptops."

English and Geography teacher, Helena O'Connor:

"I had no problem with the Learning Support Coordinator or having the Librarian work with me and my class. As a result, I know how to use the laptops when teaching the children different approaches to writing. The students love it and it is better for all to work together in the class rather than to 'withdraw' one or two for learning support. They all benefit in this way and nobody is isolated. And I am learning also."

Coming toward the end of the Laptops Initiative, St. Paul's began planning to sustain the process beyond the life of the project. Essentially, they aimed to adopt the approach into their normal routines. Through the school's regular planning procedures, they addressed the sustainability question in five broad areas:

- To continue to engage staff by providing in-house professional development
- To ensure coordination time for the relevant staff
- To assimilate examples of good practice from elsewhere
- To encourage staff to engage in reflective practice
- To manage the maintenance and renewal of the hardware.



Coming from a public library background, Kathleen Moran, the school Librarian, found laptop use in the library an ideal way to reach young people with literacy difficulties.

"Their normal reaction to books is to put them to one side as quickly as possible but they find this much more exciting – they enjoy learning and don't realise that they are learning."



Katherine Bates, Laptops Initiative School Coordinator in St. Paul's:

"It has been a really positive experience, with particular reference to literacy. There has been increased fluency in reading and writing, and also in self-esteem which previously had been quite low."

The *Floating* Model

ICT has to be mobile in order to support teaching and learning in various locations in a school. Mobility, however, can be problematic in a busy school environment. Laptops Initiative schools found that laptop trolleys were very useful in this regard and they offered additional advantages. For example, while providing good storage and security features, most have charging facilities so that the laptops are automatically charged up when in storage. All in all, trolleys contributed greatly to the *floating* concept of deployment as illustrated by the experience of Wexford Vocational College.

The *Floating* Model in Wexford Vocational College

When Séamus O'Leary became Laptops Initiative School Coordinator in Wexford Vocational College, he decided that one of the first steps in fulfilling his brief would be to get laptops to teachers, in their classrooms, as quickly as possible. To do this, he saw the need for some convenient means of moving the computers and, being a teacher of Engineering, he designed and built a trolley-cum-workstation.

In developing the concept, his trolley had to fulfil the following requirements:

- It had to be easily mobile
- The laptops had to be secure
- It should contain all necessary peripherals, such as a scanner, printer and cables
- It could act as an independent ICT workstation in any location in the school
- It should be inexpensive.

With the help of some of his Engineering students, Séamus quickly brought the design to fruition by adapting an old redundant press. Holding eight laptops, along with a printer, scanner and extension leads, it worked very well: "There was initial concern about the taking out of laptops and setting them up in classrooms etc, but the students quickly became used to dealing with this."

Séamus was in charge of managing the laptops and his approach was to make this as uncomplicated as possible. He circulated a blank timetable and teachers indicated for what class periods and locations they needed the laptops. He then pinned this to the lid of trolley. At a glance, anyone could see when it was booked and where it was. "The children quickly



Séamus O'Leary, the Laptops Initiative School Coordinator in Wexford Vocational College, with the trolley-cum-workstation that he designed and built for implementing the *floating* model of ICT deployment.

became used to it," he said. "They respected it and enjoyed having the responsibility of managing it."

Séamus was very happy with the way that the mobility aspects provided teachers with an added resource for their teaching. Moreover, being an ICT teacher himself, Séamus believed that the feasibility of mobile technologies, demonstrated in this way, resulted in the school re-evaluating its ICT policy:

"The teachers have seen great benefits from being able to have the laptops at the pre-determined time or at any additional time. Those involved in ICT have also seen how successful the mobility aspect has been and I think the overall strategy for the future will change because of the success of this."

Laptop Trolleys

Laptop trolleys are made by a variety of companies and vary in sophistication and design. While all the schools in the Laptops Initiative that purchased these trolleys found them very worthwhile, some thought needs to be given to the best configuration to suit any individual school.

- **Security:** Some laptop trolleys are very robust and effectively act as safes. However, this must be balanced with ease of mobility if they are to be moved regularly.
- **Size:** It might seem to make sense initially to store all of a school's laptops in one trolley. However, this reduces flexibility and a large trolley may be difficult to move, especially if it is heavy and there are ramps or other obstacles in the school.
- **Charging:** It makes sense to have the laptops charging when not in use and a normal charging lead is usually connected to each laptop while in the trolley. This allows one lead from the trolley to be plugged into a socket in any location. Some companies offer 'docking' units to suit individual makes of laptops. This removes the need for wires. However, these may have to be changed if different machines are subsequently purchased.
- **Wireless:** Most companies offer various wireless networking arrangements associated with trolleys. For example, if the school has a wired network, it will be possible to connect the trolley to the school's wired system, but also to have each individual laptop connected to the trolley via a wireless connection. In a school networked by cable, this makes groups of laptops 'wireless' in any location where the trolley is available.
- **Peripherals:** Laptops Initiative schools found they sometimes needed to have a printer or scanner available with the laptops and some trolleys did not offer storage for these. You should consider whether you will need these. Also, a wireless connection, such as infra-red, between laptops and printer may be useful.

Laptops Initiative schools obtained information on mobile storage units from the followings:

LapSafe: www.lapsafe.com

Loxit: www.loxit.com

Bretford: www.bretford.com

CompuCharge: www.compucharge.co.uk



In Causeway Comprehensive School in Co. Kerry, Lucille O'Sullivan used two relatively basic trolleys to assist with storage and mobility of laptops. Each was capable of holding nine computers. The lockable trolleys were normally stored in her learning support room and were easily movable to other rooms as necessary. The students quickly became adept at removing and replacing them – each had an individual laptop assigned by number.

The *Fostered* Model

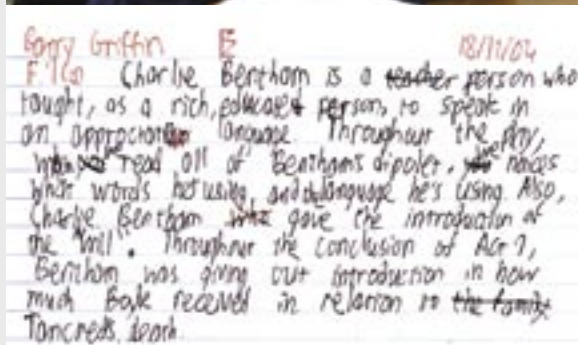
While the success of the fostered model depends on careful preparation, as outlined in the following chapter, it is not difficult to support once the initial groundwork has been done. This model, where a laptop is permanently assigned to a particular student, was found to be particularly effective for Laptops Initiative students with literacy problems arising from specific learning disabilities.

The *Fostered* Model in Causeway Comprehensive School

Barry Griffin, a student in Causeway Comprehensive School in Co. Kerry, was one student who benefited from this model. With a specific learning disability, Barry had a laptop for his own full-time use, at home and school, and found it to be extremely useful: "I find the laptop very helpful. If I write out something by hand the teacher could find it hard to read but it is a lot easier when I use the computer."

As well as *Microsoft Word*, Barry also used *Read&Write Gold* – a specialised word processor (see chapter 3). He gave one example of its features: "If you don't understand a word you can type it in and then it will call out its meaning." His learning support teacher, Lucille O'Sullivan, also explained that the layout and presentation of Barry's work was helped a great deal by the use of his laptop.

Barry used the laptop in his Junior Certificate, achieving an A grade in Ordinary Level English. Both he and his teachers agreed that he could not have done this without the computer. As a result, he planned to do Higher Level in most of his Leaving Certificate examinations.



A sample of Barry Griffin's handwriting illustrates his difficulty with communicating in this way. The use of a laptop helps to overcome this and, because his speed of typing was much greater than his handwriting, it allowed him to perform better in examinations.

Fostered Model – Grant Aid

Circular M14/05 outlines the Department of Education and Science's scheme of grants towards the purchase of equipment for the use of pupils in second-level schools who have been diagnosed as having serious physical and/or communicative disabilities of a degree which make ordinary communication through speech and or writing impossible for them. The circular is available from the department's website – www.education.ie

The *Fostered* Model – Some Questions

When the option of *fostered* laptop use was first raised in Laptops Initiative schools, concerns were sometimes voiced about the difficulties that might arise from a student's individual use of a laptop in class. These included the possible disruption to the rest of the class, the possibility of the stigmatisation of the student, and concerns over some teachers' lack of computer skills.

J.J. Delaney was Barry Griffin's English teacher in Causeway Comprehensive and he didn't possess very strong ICT skills himself. The following were J.J.'s responses to these concerns, based on his experience of having Barry, with his *fostered* laptop, in his Junior Certificate English class:

Was Barry's laptop a distraction to the rest of the class?

"It impinges on the rest of the class in no way whatsoever. Initially, for a day or two, they might have taken some notice. Now they take no notice whatsoever – it is simply accepted."

Was his own level of ICT knowledge a problem?

"From a personal point of view, I have nothing to do with Barry's computer – he looks after the whole thing himself and I don't require any technical knowledge of the apparatus."

Was Barry being stigmatised by the laptop highlighting his learning difficulty?

"In no way does the fact that Barry brings a computer into the classroom single him out as far as the others are concerned. He is totally accepted. In fact, an awful lot more of them would now like to get their hands on a laptop."

And your impressions of the benefits?

"The main thing, in my opinion, is that it has given Barry enormous confidence. His handwriting is totally erratic – sometimes it can be illegible. Therefore, when he produces answers on the computer, prints them out and hands them to me, it gives him great confidence and he produces much more work which I can read. Also, he had the use of a laptop in his Junior Certificate which enabled him to get an A grade in his English – something I know he would not have achieved otherwise."

"Any doubts were dispelled once it was explained that students using laptops in classroom would not require any input from teachers. When mainstream teachers then observed improvement in students' work the feedback was very positive."

Paul Masterson, St. Enda's School, Galway.

Fostered Laptops Use – Some Pointers from the Laptops Initiative

Giving a laptop to a student without adequate support will limit the success of the *fostered* strategy. A number of lessons learned from the Laptops Initiative may help in this regard – some of these are further developed in Chapter 5.

- Strong-willed, independent-minded students are effective in piloting the initial *fostered* use of laptops in a school. After a short while, it then becomes accepted and is implemented for other students with less concern
 - Teachers need to be reassured that the novelty and distraction caused by a student having a laptop in class lasts for only a short time. Similarly, they need to be reassured that the student is an independent computer user and will not be relying on the teacher's ICT knowledge
 - In order to be effective in operating independently in mainstream situations, students need to have good typing skills
 - Along with this, students need to be taught good practice in relation to general computer use, such as attention to good file management and backup procedures
 - Students like to put the laptops away when they are not needed and therefore require a secure place to leave them during breaks. They also need to be retrieved conveniently. School offices or staff-rooms were found to be suitable
 - Students need convenient access to a printer in order to be able to give hard-copies to teachers. This was sometimes overlooked initially in Laptops Initiative schools. Convenient wireless access to a printer is ideal
- Some schools were concerned that a student seen walking to and from school with a laptop might invite theft. In this regard, the use of laptop rucksacks was found to be useful. Looking just like normal schoolbag, they do not invite attention and are more convenient for the student than handling two bags
 - A minority of students showed resistance to the *fostered* model. Laptops Initiative schools generally respected their wishes.

“Our school was originally concerned that the laptops would be stolen or damaged if they took them home each day. I discovered that instead of using the conventional laptop bag, a rucksack that has a hidden compartment, suitable for storing a laptop, could be used instead. Although this seems trivial, it overcame a problem that was not resolved before.”

Helen Ahern, Presentation Secondary School, Limerick.