An Investigation into the Factors that Affect the Pedagogical Progression of Information and Communication Technology in Post Primary Schools in Ireland

Marie Hayles
BSc HDip ICT

Submitted for the award of
Master of Arts
In
Digital Media Development for Education

University of Limerick

Supervisor: James Gill

Submitted to the University of Limerick

October 2009
Declaration

I declare that this is my own work and that it has not been submitted for the award of any other degree at any other university.

_________________
Marie Hayles

October 2009
I would like to thank the following people for their help and support during the writing of this thesis:

Mr James Gill, University of Limerick
The staff and students of the schools that participated in this study
My mother and late father, Frances and Henry Hayles
My brother and sisters, in particular Angela, who proofread this paper
My husband, David Flynn

And finally,
My children, Aoibh, Ruairi and Eoghan
It is to them that I dedicate this work
Abstract

An Investigation into the Factors that Affect the Pedagogical Progression of Information and Communication Technology in Post Primary Schools in Ireland

Marie Hayles

October 2009

Information and Communication Technology (ICT) has the potential to transform the methods in which teachers teach and students learn. ICT, such as computers and the internet, can enhance the quality of teaching and learning and expand educational opportunities. The objective of this paper is to investigate the factors that lead to the pedagogical progression of information and communication technology (ICT) in post primary schools in Ireland.

This thesis examines the use of ICT in Irish schools under the following headings: technical support; leadership; ICT in the classroom, pedagogical integration of technology, hardware and broadband; software and digital content; funding; teacher professional development and innovative use of ICT in the classroom.

Quantitative and qualitative data was collected from six Irish post primary schools in the form of questionnaires, interviews and observations.

This study found that the use of technology in schools has significantly increased in the past decade, due to improved ICT infrastructures, guidance from government policies promoting the integration of ICT in teaching and learning and investment for technology in education. However, this study found that the pedagogical use of ICT could be accelerated in Irish post primary schools if there was more access to progressive instruction for teachers in technology, a significant increase in funding for ICT and a greater range and availability of software for the Irish education system.

Finally, this thesis examines how ICT can be used in innovative ways in the education process and how technology can be developed and used to its optimum potential in Irish post primary schools.
List of Appendices

1.1 Cover Letter for Questionnaires sent to Schools......................1.1
2.1 Questionnaire Distributed to School Principals.........................2.1
3.1 Questionnaire Issued to Teachers..........................................3.1
4.1 Questionnaire Distributed to Students of Mainstream Classes.......4.1
5.1 Questionnaire Distributed to Post Leaving Certificate Students.....5.1
6.1 Interview Questions for Principals...........................................6.1
7.1 Interview Questions for Teachers.............................................7.1
8.1 Interview Questions for Students.............................................8.1
9.1 Interview Questions for Post Leaving Certificate Students.........9.1
10.1 Glossary of Terms...............................................................10.1
List of Graphs

**Fig 2.1** Timeline for Education Policies and Initiatives for ICT in Irish post primary schools

**Fig 3.1** Flow chart outlining the research methods used for this study

**Fig 4.1:** Gender of Respondents

**Fig 4.2:** Age of Principals, Teachers and PLC Students

**Fig 4.3:** Age of Mainstream Students surveyed

**Fig 4.4:** Gender of Students attending schools surveyed

**Fig 4.5:** Number of students enrolled in schools surveyed

**Fig 4.6:** Is the level of Technical Support satisfactory in your school?

**Fig 4.7:** Who is responsible for Technical Support in your School?

**Fig 4.8:** Should The Department of Education and Science take responsibility for maintaining ICT equipment in schools?

**Fig 4.9:** Should ICT Advisors be re-instated to Education Centres?

**Fig 4.10:** The school principal determines how ICT is used in a school

**Fig 4.11:** How often do school principals use ICT as an administrative tool?

**Fig 4.12:** Are inservice courses worthwhile for teachers?

**Fig 4.13:** Is there effective ICT planning in your school?

**Fig 4.14(A):** Who should be involved in ICT planning in schools? (Principal’s response)

**Fig 4.14(B):** Who should be involved in ICT planning in schools? (Teacher’s response)
Fig 4.15: Should ICT be integrated into all subjects?.................................77
Fig 4.16: Is the educational experience enhanced by the inclusion of ICT in
teaching and learning?..............................................................................78
Fig 4.17: Is ICT integrated into all subjects?.............................................79
Fig 4.18: Is ICT used for the teaching and learning of languages in your school?........................80
Fig 4.19: Is ICT used for the teaching and learning of Gaeilge in your school?....81
Fig 4.20: Is ICT used for presentation purposes in your school?......................82
Fig 4.21: How can the use of ICT be encouraged in schools?...........................83
Fig 4.22: Is the broadband facility in your school suitable for use in the teaching
and learning process?.................................................................................84
Fig 4.23: Is the computer laboratory the most suitable layout of ICT equipment in
schools?...........................................................................................................85
Fig 4.24: Does the use of a data projector enhance teaching and learning for
teachers and students?................................................................................86
Fig 4.25: Does the educational software used for schools enhance teaching and
learning?...........................................................................................................87
Fig 4.26: Do teachers value ICT as a teaching and learning tool?.......................89
Fig 4.27: Should computers be situated in classrooms for student use?............90
Fig 4.28: Should learning ICT skills become a State Examination subject?...........92
Fig 4.29: Are teachers’ attitudes to technology important to the success of ICT in
the classroom?...............................................................................................93
Fig 4.30: Do teachers want to use ICT in the classroom?....................................94
Fig 4.31: What are the main uses for ICT in your school?..............................96
Fig 4.32: Is sufficient funding provided to schools for ICT equipment and
instruction?.....................................................................................................97
Fig 4.33: Does your school avail of any Public Private Partnerships?.................98

Fig 4.34: What areas should be prioritised when funding for ICT in schools?.....99

Fig 4.35: Are teacher inservice courses in ICT successful in increasing the use of technology in the teaching and learning process?.....................................................100

Fig 4.36: How often should teachers attend inservice courses?.......................102

Fig 4.37: Should courses that further educate teachers in the use of ICT be a mandatory part of teaching?.................................................................103

Fig 4.38: What areas of ICT should be prioritised when planning inservice courses?.................................................................................................................104

Fig 4.39: Are inservice courses more important to some subject teachers than others?.................................................................................................................105

Fig 4.40: Identify the barriers to professional development in ICT for teachers?..107

Fig 4.41: How can the DES encourage the innovative use of ICT in the classroom?.................................................................................................................108
List of Tables

Table 3.1 Methods of Data Collection can be divided into Qualitative and Quantitative Research…………………………………………………………………………………34

Table 3.2 Types of Interviews, their Characteristics, Strengths and Limitations..41

Table 3.3 Types of Observation and their Advantages and Limitations………43

Table 3.4 Table Outlining Schools Involved in this Study……………………...49

Table 4.1 Rate of Response for Questionnaires:………………………………...57

Table 4.2 Number of Interviews Conducted: ……………………………………57
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DES</td>
<td>Department of Education and Science</td>
</tr>
<tr>
<td>FETAC</td>
<td>Further Awards and Training Council</td>
</tr>
<tr>
<td>ICT</td>
<td>Information and Communication Technology</td>
</tr>
<tr>
<td>IT2000</td>
<td>IT2000 - A Policy Framework for the New Millennium</td>
</tr>
<tr>
<td>Lab</td>
<td>Laboratory</td>
</tr>
<tr>
<td>NCTE</td>
<td>National Centre for Technology in Education</td>
</tr>
<tr>
<td>NCCA</td>
<td>National Council for Curriculum and Assessment</td>
</tr>
<tr>
<td>PLC</td>
<td>Post Leaving Certificate</td>
</tr>
<tr>
<td>TII</td>
<td>Technology Integration Initiative</td>
</tr>
<tr>
<td>SIP</td>
<td>Schools Integration Project</td>
</tr>
<tr>
<td>VEC</td>
<td>Vocational Educational Committee</td>
</tr>
</tbody>
</table>
# Table of Contents

DECLARATION...........................................................................................................II

ACKNOWLEDGEMENT AND DEDICATION.........................................................III

ABSTRACT.............................................................................................................IV

LIST OF APPENDICES..........................................................................................V

LIST OF GRAPHS..................................................................................................VI

LIST OF TABLES...................................................................................................IX

LIST OF ABBREVIATIONS.....................................................................................X

CHAPTER 1 ..............................................................................................................1

Introduction ..............................................................................................................1

1.1 Rationale for Research ................................................................................3

1.2 Background of Research ............................................................................3

1.3 Context of Research ....................................................................................5

1.4 Structure of Thesis ......................................................................................6

CHAPTER 2 .............................................................................................................9

Literature Review ..................................................................................................9

2.1 Education Policies for ICT in Irish Post Primary Schools ....................11

2.2 Technical Support ......................................................................................13

2.3 Leadership and ICT Planning .................................................................16

2.4 ICT in the Classroom ................................................................................18

2.5 Pedagogical Integration of Technology ......................................................19

2.6 Hardware and Broadband .........................................................................21

2.7 Software and Digital Content ....................................................................24
4.6 Classroom of the Future ................................................................. 77
4.7 Pedagogical use of ICT / Integration of ICT in the classroom ........ 80
4.8 Hardware and broadband ............................................................. 84
4.9 Software and digital content .......................................................... 87
4.10 Use of ICT in schools ................................................................. 90
4.11 Funding for ICT in schools .......................................................... 97
4.12 Professional Development ......................................................... 100
4.13 Innovative use of ICT in schools ............................................... 108

CHAPTER 5 ...................................................................................... 109
Discussion ......................................................................................... 109

5.1 How ICT is used in the Teaching and Learning of Language Subjects 111
5.2 Technical Support ........................................................................ 112
5.3 ICT Planning ............................................................................... 114
5.4 Broadband and Hardware .............................................................. 116
5.5 Leadership .................................................................................. 117
5.6 Pedagogical use of ICT ................................................................. 118
5.7 Use of ICT in Schools ................................................................. 119
5.8 Funding for ICT in Schools .......................................................... 121
5.9 Professional Development ........................................................... 122
5.10 Innovative use of ICT ................................................................. 123

CHAPTER 6 ...................................................................................... 124
Conclusion ......................................................................................... 124

6.1 ICT and Teaching and Learning of Language Subjects ................... 126
6.2 Technical Support ....................................................................... 127
6.3 ICT Planning ............................................................................... 128
6.4 Broadband and Hardware................................................................. 129
6.5 Leadership....................................................................................... 130
6.6 Pedagogical use of ICT ................................................................. 131
6.7 Use of ICT Equipment in Schools ............................................... 132
6.8 Funding for ICT in schools ......................................................... 133
6.9 Professional development ......................................................... 134
6.10 Innovative use of ICT in the Classroom .................................... 135

CHAPTER 7 ........................................................................................... 136
Recommendations ................................................................................. 136

4. REFERENCE LIST............................................................................. 139

5. SOURCE LIST.................................................................................. 147
Chapter 1

Introduction
Information and communication technology (ICT) is the broad term given to encompass the fields of computer sciences, telecommunications and electronics. These technologies allow us to input, process, store, retrieve and circulate data in text, sound and video form.

The application of technological advances has rapidly changed the ways in which we communicate and share information and has led to an increasingly interconnected global network.

With such rapid transformations in technology coupled with significant changes in how people acquire knowledge, it is now imperative that educational establishments progress to embrace ICT. These establishments should strive to adjust educational systems to modern technologies in order to maximise the benefits that ICT can bring to schools.

This paper examines how ICT, such as computers and the internet, is being integrated and used in post primary schools in Ireland. Schools experience of ICT over the past decade has been reviewed and compared to government policies concerning the inclusion of ICT in education.

The core objective of this study is to determine the factors that lead to the pedagogical progression of information and communication technology (ICT) in post primary schools in Ireland.
1.1 Rationale for Research

A considerable body of research has been undertaken relating to the use of ICT in education in Ireland, among which is Mulkeen (2002) and the Department of Education and Science (2008).

This study seeks to further expand existing research and to ascertain whether educational establishments influenced by government policies have been successful in advancing the integration of ICT in the teaching and learning process. It also examines how schools manage advances in technology and adapt to changing methods of knowledge acquisition.

Finally, this study aims to investigate the factors that may influence whether ICT is used successfully in the teaching and learning process.

1.2 Background of Research

At the turn of the last century, Ireland experienced unprecedented economic growth, known as the ‘Celtic Tiger’, which would last for over a decade. Between the years 1993 and 2001 the annual growth rate of the Irish economy was more than double the average recorded over the previous three decades (Clinch et al, 2002). After this, economic growth slowed until 2009 when Ireland was deemed to be in recession, along with the United States and many other countries in Europe and Asia.

Ireland’s rapid economic development was fuelled by growth in information and communications technologies and substantial inward investment (Breathnach, 1998). The years of economic growth in Ireland coincided with significant global technological progress, including the expansion of the World Wide Web. Some aspects of the government policies that led to economic expansion in Ireland included confidence in economic openness to global markets, low tax rates, and investment in education.
In 1997, ‘IT2000 - A Policy Framework for the New Millennium’, commonly known as ‘IT2000’, was jointly launched, by an Taoiseach Bertie Ahern, the then Minister for Education and Science, Michéal Martin, and Mr Alfie Kane, the Chief Executive of Telecom Éireann. ‘IT2000’ was a national policy document on information technology in education and its launch was notable as it was seen to signal the beginning of Public Private Partnerships between ICT related industries and education in Ireland.

The main objectives of ‘IT2000’ were to ensure that pupils achieved computer literacy and that teachers received instruction to enable them to utilise ICT as part of the learning environment. ‘IT2000’ aimed to develop a technology infrastructure through the use of multimedia computers and Internet access to schools. It also endeavoured to create a support infrastructure that would provide advice and guidance to schools (NCTE, 1997).

In December 2000, the Department of Education and Science published ‘Blueprint for the Future of ICT in Irish Education - a three-year strategic action plan 2001-2003’. Its aims were to advance the use of ICT in education by: granting additional ICT funding to schools; increasing access to ICT equipment; further integrating ICT into school curricula and improving professional development opportunities for teachers. A total investment of €107.92m was allocated under this plan for the period 2001-2003. The Schools Internet Access Scheme operated between 1998 and 2004 and during this time €157m was invested in education by the Irish Government (NCTE, 2009).

‘Investing Effectively in Information and Communications Technology in Schools 2008-2013’ is the latest government report to be released, which seeks to advise on the priorities for investment in ICT in schools, focusing on the on the factors that support integration of ICT into learning and teaching. However, this report was released on 10 July, 2008 at approximately the same time as Ireland began to plunge into a major economic recession.
1.3 Context of Research

The research undertaken for this study focuses on six post-primary schools located in the south east of Ireland. This geographical area is broadly representative of Ireland as a country in social, economic, political and cultural terms.

The schools consulted during this research process were chosen as they represent an extensive section of schools throughout Ireland.

- Four schools surveyed were vocational and two were non-vocational schools.
- Four of the participating schools were co-educational, two schools teach one gender only.
- One participating school offers only Post Leaving Certificate (PLC) courses.
- Three schools were located in towns with a population greater than 10,000 people and three schools were located in smaller towns.
- One school had recently moved into a new, purpose-built campus, complete with multimedia language laboratory, two computer laboratories and wireless networking, while the other five schools were in buildings older than ten years.

Principals, deputy principals, year heads, teachers and all classes including transition year and PLC students are represented in this study.
1.4 Structure of Thesis

This thesis is structured as follows:

Introduction

At the outset, this study introduces the term ‘information and communication technology’ (ICT). This is followed by a brief outline of Ireland’s recent economic growth and how it has impacted on the development of ICT in post-primary schools. The background of the schools chosen for this study are summarised and their inclusion in this research is justified.

Literature Review

The literature review aims to present an overview of the relevant and significant literature relating to the factors that affect the progression of ICT in post-primary schools in Ireland. This research is limited to the years 1997 to the present, as this is when government policies began to include measures towards integrating ICT into schools in Ireland. This era is a time in which Ireland experienced unparalleled economic growth and globally, ICT evolved at an extremely rapid rate.

Although much of the literature in this thesis is taken from Irish sources, it is important that this research is considered in wider terms as many of the ICT related issues that are discussed are relevant to education in other countries.
Methodology

The issues arising from the literature review informed the methodology of research. Data was gathered through the use of questionnaires, interviews and observation.

The justification for using these three methods of data collection is as follows:

- Both quantitative and qualitative data is recorded.
- Triangulation is achieved, where a combination of several research methodologies are employed in the study of the same subject. Triangulation is used to overcome the weakness or intrinsic biases and limitations that can result from studies using single methodologies.

Questionnaires were devised from issues raised in the literature review. School management, teachers, students and PLC students each received a questionnaire tailored specifically to their group, as a number of issues arising would affect some groups to a greater extent than others.

Interview questions were informed by the responses given in the questionnaires. A selection of management, teachers, students and PLC students were invited to participate in interviews.

Observation was undertaken by the researcher from January to May 2009 and was achieved among a sample of respondents, including school management, teachers, students and PLC students. Respondents were observed in the classroom during classes where ICT was used in many forms including computers, data projectors and white boards, among other technologies.
Findings

The findings chapter of this research document present the data and results in the order that they appear in the questionnaire. The findings from the questionnaire, interviews and observations are presented and analysed.

Discussion

This chapter of the study discusses the findings, and evaluates them against the literature review. The data in this research is analysed and compared to information from other sources, as detailed in the literature review. The findings and an explanation of the outcome of the comparisons is presented.

Ultimately, this chapter endeavours to make links between the aims of this research, the findings and the literature review.

Conclusion

The conclusion chapter in this research aims to draw all arguments and findings together. It summarises the key findings and presents the limitations and implications for this research.

Recommendations

The recommendations chapter suggests directions that future research may focus on.
Chapter 2

Literature Review
This literature review explores how Information and Communication Technology (ICT) has evolved in post primary schools in Ireland over the past decade. Outlined within are government policies that focus on the integration of ICT in education and how schools have adapted to their implementation. This chapter gives an account of the benefits and challenges that have been documented in relation to the introduction and use of technology in the teaching and learning process.

As this research concentrates on the use of ICT in post primary schools in Ireland, the literature review contains many references from Irish sources.

The literature review is presented under the following headings:

2.1 Education Policies for ICT in Irish Post Primary Schools
2.2 Technical Support
2.3 Leadership and ICT Planning
2.4 ICT in the Classroom
2.5 Pedagogical Integration of Technology
2.6 Hardware and Broadband
2.7 Software and Digital Content
2.8 Funding
2.9 Teacher Professional Development
2.10 Innovative Use of ICT in Classrooms
2.1 Education Policies for ICT in Irish Post Primary Schools

The ‘ICT in Schools Program’ commenced in 1998 following the publication of ‘IT2000 - A Policy Framework for the New Millennium’, published by the Department of Education and Science in November 1997 (NCTE, 1997). ‘IT2000’, as it is commonly known, was the first significant policy document released by the Irish government that focused on the inclusion and integration of information and communication technology (ICT) in the teaching and learning process in Irish schools. The objective of this policy was to supply funding, advice and technical support to Irish post primary schools.

The National Centre for Technology in Education (NCTE) was established in 1998 and was charged with managing the implementation of ‘IT2000’. The NCTE is responsible for the national realisation of ICT policies in schools, including the provision of a range of school supports for ICT and the operation of a regional ICT advisory service (Ireland, Department of Education and Science, 2008).

In 2000, ‘Blueprint for the Future of ICT in Irish Education - Three Year Strategic Action Plan 2001-2003’ was published (NCTE, 2001). The objectives of this action plan were to:

- Increase the ICT capital provision to schools
- Further integrate ICTs into school curricula
- Enhance teacher professional development
- Expand internet usage

This policy undertook to: provide networking infrastructure and broadband to all schools; lower the computer/pupil ratio; develop teaching skills with the intention of integrating ICT into teaching and learning; facilitate the development of software and multimedia resources.

The Schools Internet Access Scheme ran in parallel to the ‘IT 2000’ and ‘Blueprint for the Future of ICT in Irish Education’ policies. Between 1998 and
2004, the Department of Education and Science invested €157m to advance the use of technology in schools (Ireland, Department of Education and Science, 2001).

‘Investing Effectively in Information and Communications Technology in Schools 2008-2013’ (2008) is an Irish government report designed to advise on the priorities for investment in ICT in Irish schools. The ‘Technology Integration Initiative’ (TII) (2008) is based on the recommendations of ‘Investing Effectively in Information and Communications Technology in Schools 2008-2013’. While recognising that schools will vary in their technological needs and potential, the TII identifies some basic recommendations for the integration for ICT infrastructure into learning and teaching for schools. The TII initiative aims to provide advice and support to schools on technology related areas.

Fig 2.1 Timeline for Education Policies and Initiatives for ICT in Irish Post Primary Schools

1997
IT 2000 - A Policy Framework for the New Millennium

2000
Blueprint for the Future of ICT in Irish Education- Three Year Strategic Action Plan 2001-2003

1998 - 2004
The Schools Internet Access Scheme

2008
Investing Effectively in Information and Communications Technology in Schools 2008-2013

2008
Technology Integration Initiative
2.2 Technical Support

The success of ICT in schools is dependent on the quality of the ICT infrastructure present (Ireland, Department of Education and Science, 2008). NCTE (2001) found that the implementation of ‘IT 2000’ resulted in

- Increased availability and use of technology in schools, including internet access
- That teacher education in the use of ICT was successfully provided
- That support mechanisms for ICT were put in place
- That a number of public/private partnerships were established

Additional funding was awarded to schools that were designated as disadvantaged\(^1\). This resulted in many small rural schools and schools in disadvantaged areas received proportionally more funding than schools outside of this category. Mulkeen (2001) stated that an interesting effect of ‘IT2000’ was a narrowing of the gap between the best equipped schools and those with least ICT equipment.

The publication of ‘Blueprint for the Future of ICT in Irish Education’ (2001) reinforced and extended the priorities identified in ‘IT 2000’ and was deemed to successfully build on ‘IT2000’ (Carr-Chellman, 2004). While ICT progressed in schools as a result of the funding and direction given by Irish government policies, one of the factors that mediated against successful integration of ICT in the curriculum was the effective management of technical support (Galvin, 2002).

Technical support is defined as a variety of services that provide assistance with technological products that may be found in a classroom. The Department of Education and Science (2008) found that in general, school ICT systems can vary enormously and schools do not have the knowledge or time available within their

---

\(^1\) Educational disadvantage in Ireland refers to the situation where students derive less benefit from the education system than their peers, usually due to economic or social constraints.
own staff to maintain these systems, all of which contribute to difficulties with technical support. Korte and Hüsing (2006) found that better technical ICT maintenance and support is a key issue for two thirds of European schools, including Irish institutions.

The Department of Education and Science (2008) recommended that for schools to maintain their ICT equipment in good working order, a uniform, consistent technical support service is necessary. The DES advised that investment in equipment will be less successful if such a support system is not subsequently put in place. The Department of Education and Science (2008) also recommends ‘greater homogeneity’ in future school ICT systems, where diagnostic and troubleshooting can be performed remotely from a central technical support service desk.

Obsolescence of ICT equipment can be a barrier to successful integration of technology in schools (Richardson, 2000). A high proportion of obsolete hardware is still in use in the classroom, with the result that students often meet industry-standard hardware and software at home rather than in school (Kennewell et al, 2000). Outdated hardware can prove costly for schools to replace and dispose of (Ireland, Department of Education and Science, 2008). Bransford et al. (2002) argue that it is not necessarily how much money a country invests in ICT in education, as much as how and if it is adopted and used by teachers in the classroom.
With the launch of ‘IT2000’, the Department of Education and Science announced that 20 full-time and 10 part-time Education Centres were to be provided throughout the country. The role of the Education Centres was to support teachers by providing ICT inservice courses and to offer a range of activities which included ICT advice on technical and pedagogical issues. An ICT advisor was appointed for each centre (NCTE, 2002) and was responsible for the following duties:

- To liaise with school staff and if required, visit schools and offer advice on the purchase of hardware and software
- To provide ICT instruction for teachers
- To define, support and underline uses of ICT in the classroom
- To offer a support network

As a result of restricted educational budgets following a Value for Money Review of the ICT Support Service (2008), the role of the ICT advisor has now been withdrawn from Education Centres (O’Keeffe 2008).
2.3 Leadership and ICT Planning

When the issue of integration of technology into education was initially introduced to Irish schools, many principals and teachers perceived it as being more important as an administrative tool than as a teaching tool (National Policy Advisory and Development Committee, 2001). Despite this, early studies into the evolution of ICT in schools have pointed to the key role of the school principal in steering and advancing new ideas and technologies (Pelgrum 1993 cited in Mulkeen 2003). The significance of the school principal as a leader in developing ICT in their school is recognised (Mulkeen, 2001, Jeffers, 2004). Principals have an important role in determining the ICT needs of schools, namely planning infrastructures and facilitating teachers in advancing their knowledge of ICT through inservice courses (Ireland, Department of Education and Science, 2008).

Woods (2001) stated that as schools have different ICT requirements, principals and teachers should be given the opportunity to develop an ICT plan specifically tailored to suit the needs of their institution. An ICT plan is currently required for each school and must be in order before funding is granted (Ireland, Department of Education and Science, 2008). The ICT Planning Matrix was established to help schools determine their level of development in terms of ICT usage (NCTE, 2006). Local Education Centres were to provide guidance, along with practical assistance, on how to plan and meet the individual needs of schools. The Department of Education and Science (2008) has recommended a model of planning that encourages regular monitoring and systematic review.

While it is accepted that many teachers use ICT as part of the teaching and learning process (Mulkeen, 2003), there have proven to be inconsistencies in the methods adopted by schools in dealing with planning and coordinating ICT (Ireland, Department of Education and Science, 2008).
Some of the methods of ICT planning employed by schools are:

- The principal or deputy principal fulfils the role of the school ICT coordinator
- ICT coordination is attached to a post of responsibility within the school
- ICT coordination is undertaken on a voluntary basis by a teacher
- ICT coordination is contracted externally to a third party

The Department of Education and Science (2008) states that in general, a wide variety of tasks are undertaken by the ICT coordinator and that ICT planning constitutes only a minor part of the role. Its findings also state that the majority of teachers with responsibility for ICT coordination would prefer to see this role as having a greater emphasis on pedagogy than on the area of troubleshooting or technical issues.

However, Mulkeen (2002) points out that the term ‘coordinator’ may mean different things in different schools, ranging from key players in ICT development to a token responsibility. Issues can also arise when an ICT coordinator leaves a school, taking their technical expertise with them, and other solutions must be found to the school’s technical difficulties (Shiel and O’Flaherty, 2006).

Among the factors which can act as obstacles to ICT integration in schools are: (Hadley and Sheingold 1993, Schofield 1995, Becker 2000, Dawes 2001, as cited in Hennessy et al, 2002).

- Dealing with ICT planning
- Technical difficulties
- Lack of confidence among teachers in their ICT abilities and knowledge
- Issues of motivation
- Poor access to resources
- Timetabling problems
To overcome these and other negative factors that arise, the Department of Education and Science (2008) has recommended that a steering committee is convened and an ICT coordinator appointed in each school. The steering committee would have a role in the development of an ICT plan and would be responsible for supervising and evaluating its progress. The ICT coordinator, as part of a post of responsibility, would manage and organise the technological needs of the school including identifying and facilitating inservice courses for staff.

2.4 ICT in the Classroom

Schools recognise the importance of ICT as an essential tool for learning, and its potential to enhance and enrich the way students learn (National Council for Curriculum and Assessment, 2004). The Department of Education and Science (2008), echoing Owston et al. (1999) acknowledges that the use of ICT contributes to teaching and learning in a myriad of ways. These include: the vast amount of information that can be easily accessed from the World Wide Web; the facility for teachers to adapt teaching materials to their students needs; how technology can engage learners and therefore act as an incentive for students; the way in which it facilitates multi-sensory learning; encouraging students to work at their own pace and level; the provision of feedback which affirms students’ efforts; student-centered learning which encourages learners to take responsibility for their own work.

Since the introduction of ‘IT2000’, schools have worked to improve the level of ICT infrastructure and increase the student-computer ratio (Mulkeen 2003). By boosting the student-computer ratio, the use of ICT should filter through to all teaching and learning. The Department of Education and Science (2008) states that Irish schools should aim to equip not just all schools, but all classrooms with a computer for teacher use, a sufficient broadband connection and a data projector. This system is recommended above the purchase of an interactive
whiteboard which, although advantageous for the classroom, requires specific ICT knowledge and an established ICT culture in schools. However, the integration and assimilation of ICT into every classroom must be underpinned with an equally ambitious strategy for maintenance and technical support of equipment (Kennewell et al, 2000). In relation to the use of technology in education, Freeman and Gilleran (2001) state that the traditional methods of teaching are no longer the only viable goal for education and that ICT should be integrated throughout the teaching and learning process.

It is imperative that principals and teachers are included in the development of individual ICT plans designed to meet the infrastructure and further education in ICT requirements of their particular schools (NCTE, 2001). Bottino (2004) concludes that when classrooms are designed to incorporate technology, the whole learning situation should be considered, including: the technology; the teacher; the method in which ICT will be used; the curriculum objectives; the classroom environment; and way in which learning is organised.

2.5 Pedagogical Integration of Technology

When used appropriately, ICT enriches learning and enhances teaching (Passey et al, 2003). There is however, a clear distinction between learning about ICT and learning with or through ICT. Integration of technology into teaching and learning should be encouraged, even though this requires teachers of all subjects to become involved in the process (Ryba and Anderson 1995, cited in Hogan and Farren 2000). Reynolds et al (2003) state that to fully integrate ICT in the classroom, teachers need to believe that ICT will progress their teaching and their students’ learning.

The NCTE (White, 2006) encourages the integration of ICT in the classroom and considers it a tool which can aid and support the delivery of the curriculum. White (2006) states that the successful introduction and integration of ICT in learning
usually lies in the process undertaken by teachers and students, as much as the technology itself.

The Department of Education and Science (2008) acknowledges that some subjects make use of technology more than others. It affirms that ICT is used in 70% of science subjects, 64% of applied science subjects and 61% of mathematics subjects. The Department of Education and Science (2008) also shows that ICT is most commonly used for the development of students’ research, investigation, writing and presentation skills and found that ICT was rarely used in conjunction with teaching Irish.

Mulkeen (2003) concludes that to encourage further integration of ICT in schools, policy makers need to build a ‘vision’ for the use of technology and to make it part of the way that subjects are taught. The use of ICT is becoming more integrated into post primary education and indeed is an essential tool for some subjects in the curriculum. Revised syllabi have been introduced (Hanafin, 2005) to four Leaving Certificate technological subjects. The subjects, collectively known as ‘T4 Technology Subjects’, include a new Leaving Certificate subject of Technology, and revised syllabi in Design and Communication Graphics (previously known as Technical Drawing), Engineering Technology (previously known as Engineering), and Architectural Technology (previously known as Construction Studies).

The method of purchasing the necessary equipment and resources for these subjects (Ireland, Department of Education and Science, 2006) pioneered a new, centralised process in the procurement of hardware and software in schools in Ireland. This approach was deemed necessary for assessment in State Examinations for several reasons, including consistency of access to required ICT equipment for each student. Despite this, the Department of Education and Science (2008) has stated that while centralised purchasing of hardware, software and the provision of technical support can be used effectively to provide efficient and cost-effective solutions, it is expensive and time consuming to put such provisions in place.
Schwartz et al. (2004) point out that project-based learning is quite common in various fields including music and languages. Projects can play a large role in the context of educational environments because the steps involved in project completion are seen as a way to reach education goals. Newer technologies such as ‘wikis’\(^2\) and ‘blogs’\(^3\) can present a very effective tool for educational use and for project planning and documentation (Parker and Chao, 2007).

### 2.6 Hardware and Broadband

The use of Information and Communication Technology can offer a wide range of resources to the classroom and to teaching and learning in general (Ruthven et al, 2005). However, the success of technology in education depends on the quality of the infrastructure present (Mumtaz, 2000). The ‘IT 2000’ and ‘Blueprint for the Future of ICT in Irish Education’ policies focused on investment in computer hardware, on teacher education in technology and on inventive ICT practice in schools. In order to achieve a good level of ICT usage in schools the Department of Education and Science (2008) recommends that the following factors are implemented by schools:

- Teacher education that embraces new learning technologies
- Availability of appropriate software
- Sufficient computers and technical support
- Reliable broadband
- Infrastructure that implements and supports investment
- Support for ICT research

The Department of Education and Science (2008) stated that facilities that enable the use of ICT are now widely available in schools – in classrooms, staff rooms,

---

\(^2\) A collaborative website which can be directly edited by anyone with access to it

\(^3\) An online journal or diary, available for others to read
administrative areas and libraries. However, it is evident (The Department of Education and Science, 2008) that a significant majority of all post primary schools organised ICT equipment in a dedicated computer laboratory. Computers were also evident in areas that were used for students with special education needs.

The computer laboratory is generally used to teach computer skills to full class groups, for project work (Ruthven et al, 2004) or laboratory work (Rule et al. 2003). These school laboratories usually follow one model, i.e. they provide a seated computer station, are networked using wired technology and broadband is available. However, Ruthven et al (2004) noted that timetabling of the computer laboratory can pose a challenge to some schools. It has been acknowledged (Mulkeen, 2000) that teachers are discouraged from taking students to computer laboratories because of the practicalities involved, including length of class time and technical issues.

Reynolds et al (2003) conclude that integrating ICT into the classroom is more practical and allows greater flexibility of use. Reynolds et al (2003) advise against the installation of large computer laboratories, in favour of the use of computers in smaller areas which are more freely accessible by students, teachers and whole classes. This system also has the benefit of requiring less space than a full suite of computers, thereby enabling greater flexibility of use (Reynolds et al. 2003).

When computers are incorporated into the classroom, the issue of classroom management arises; teachers have to plan carefully to ensure each pupil gets sufficient access to the computer during a lesson. This system does indeed correlate with the suggestion that ICT should be a tool for teaching, not a subject to teach in itself and therefore should be integrated into classrooms, and not made into an independent department. (Reynolds et al. 2003).

Of course, ICT in schools is not confined to computer use alone, but encompasses many other types of hardware. Employing data projectors and interactive whiteboards engages the students to a greater extent than conventional whole class teaching, thereby increasing enjoyment of the subject and motivating the student to learn more (Becta, 2004). Printers were shown (Ireland, Department of
Education and Science, 2008) to be the most commonly used ICT peripheral followed in order of frequency of use by scanners, mobile data projectors, digital cameras, fixed data projectors, digital video cameras, dataloggers and finally, interactive whiteboards. It was further observed (Ireland, Department of Education and Science, 2008) that teachers saw the data projector as a device that could significantly augment the teaching and learning process. It was described as a ‘visually effective tool’ for students and allowed more time for teachers to engage with students, as opposed to having to spend time writing or drawing on the blackboard.

Different learning styles are encouraged by the nature of the lesson, and specifically by the use of diverse technologies. These technologies focus the learners’ attention, encourage direct engagement with students, promote collaborative learning and allow ideas and documents to be saved in a systematic manner (Trench, 2007).

While reliable broadband connectivity has been realised in the majority of post primary schools (Ireland, Department of Education and Science, 2008), it is recognised (Morrissey, 2004) that a high quality infrastructure is vital to deliver the vast array of rich educational resources available on the internet to the classroom. Through the use of broadband, learning can take place asynchronously and the user can potentially access an enormous range of materials and information (Tangney et al, 2004). 73% of post primary schools have their own website (Ireland, Department of Education and Science, 2008) and regard it as a method of promoting the work of the school and informing the public about the school. However, of these only 52% show student work on the school website. Lack of technical expertise and time commitment among staff members were the primary reasons cited for the lack of development and maintenance of a schools website.
2.7 Software and Digital Content

Digital and interactive technology can facilitate access to many new resources for the classroom and to learning and teaching in general due to its varied applications (Hooker, 2008). The Department of Education and Science (2008) states that all schools need access to ‘relevant, engaging and educative digital content and content creation tools.’ It acknowledges however, that a balance is needed between providing offline software (CDs, DVDs), online content and online content creation tools that allow teachers and students to create and share their own teaching and learning content and resources.

There is a strong demand from teachers for software suitable to the Irish curriculum (Digiscoil, 2002, Tangney et al, 2004). It was noted (Ireland, Department of Education and Science, 2008) that little Information and Communication Technology was employed in the teaching and learning of Gaeilge. It has been observed (Hegarty 2001, cited in Tangney 2004) that the production of software for minority languages can be challenging. Following the ‘IT2000’ programme, the Digiscoil symposium was developed specifically to increase digital resources both for teaching Irish and for teaching through the medium of Irish, and Scoilnet, a portal to educational resources in Ireland was established.

The Department of Education and Science (2008) found that teachers were often unaware of the range of software available to them through their school. It recommended that an up-to-date list of the software should be generated by each school and distributed to teachers. It was shown that the most popular type of application used in the teaching and learning process was word processing (71%) followed by presentation software (59%) reference software(47%) and finally content-rich software (36%). The selection of software was often made by school management and teachers through the use of educational websites or from advice or recommendations from colleagues.
2.8 Funding

The ‘IT2000’ report committed an Irish government investment of £40 million for ICT in education. This was followed by an investment of £107.92m as recommended in the ‘Blueprint for the Future of ICT in Irish Education’. The most recently anticipated budget (Ireland, Department of Education and Science, 2008) for the provision of ICT in schools is €337 million. This figure was announced before the decline in the Irish economy, and may therefore not be realised.

One of the concepts encouraged in ‘IT2000’ was that of Public Private Partnership. Levin (1999) states that there is a close connection between the public and private goals of education. Education essentially serves both public and private interests.

A Public Private Partnership is an arrangement between the public and private sectors with clear agreement on shared objectives for the delivery of public infrastructure and/or public services by the private sector that would otherwise have been provided through traditional public sector procurement (Department of Finance, 2001). The main private contributor to ‘IT2000’ was Telecom Éireann, who supplied funding of £15 million to the project (NCTE, 1997). Under this agreement, each school was supplied with an Internet connection, a multimedia computer, free installation of a telephone line and free rental of the line for two years. This timeline was further extended under the Information Age Schools (IAS) scheme (2000). Other companies to participate in Public Private Partnerships with Irish post primary schools included IBM, Siemens and Intel (NCTE, 1997).

Among the goals and benefits that were expected (Department of Finance, 2001) from Public Private Partnership were prompt, proficient and gainful delivery of projects; value for money for the taxpayer; amalgamation of public and private sector skills, growth of knowledge and expertise; accountability; and effective utilisation of state assets. McGarr et al (2001) stated that the links between schools, local businesses and parents are strengthened, because of the schools' need for both resources and expertise.
However, Tangney et al (2004) state that the purchase of hardware is wrongly assumed to be the major part of the investment. In fact, the purchase price of a computer system represents only 25% of the cost of its use over the lifetime of the machine. The total cost of running a successful information system may also include:

- The cost of supplying and maintaining computers
- Peripherals
- Network infrastructure
- Software
- Support and maintenance
- User instruction

It is stated (Tangney et al, 2003) that while Public Private Partnerships have a role in funding technology in schools, care must be taken to ensure that the pedagogical objectives are not dictated by commercial concerns.

2.9 Teacher Professional Development

One of the key aims of ‘IT2000’ was to educate teachers in the use of ICT (Department of Education and Science, 1997), as technology in the classroom is virtually redundant unless the teacher embraces it. Tangey et al (2001) identify the attitude of the teacher as being a vital factor in the successful integration of ICT in education. Teacher professional development and school empowerment is essential to ICT integration into teaching and learning (NCTE, 2001).

Bhatta (2008) argues that unless teachers are fully comfortable with new approaches to teaching methods necessary to ensure ICT integration, providing students with computers and educational content alone will have limited impact on the teaching and learning process. Teachers may need encouragement and support to realise the potential of ICT in education (NCTE, 2002). In 1998, 75%
of teachers had taken ICT skills inservice courses (Woods, 2001), where much of the instruction focused on providing them with basic computer skills. (NCTE, 2002).

Galvin (2002) concluded that a properly resourced, professional development programme delivered during the school day would promote the uptake of inservice courses. If teachers have time to reflect on their learning and an understanding of how change can be implemented, they may find teaching a more rewarding experience for both student and teacher (Galvin, 2002). To expand the use of ICT in teaching and learning, the Department of Education and Science (2008) has recommended that continuous ICT instruction and development should be offered to teachers. Those teachers that acquire relevant ICT skills can, in turn act as mentors to other staff members and this transfer of knowledge can be used as a method of distributing ICT skills throughout a school. It also advises that teachers of all subjects should encourage the use of ICT to develop a range of student skills including research, writing and presentation, collaborative skills and evaluation.

Education in technology constitutes not just basic ICT literacy but sustained professional development in utilising Information and Communication Technologies for pedagogical purposes (Tangney et al 2004). This requires a level of commitment from teachers, the ability to recognise the educational value of ICT in education and the belief in the transformative potential of ICT (Hennessy et al, 2005). However, findings demonstrate that a considerable number of teachers lack intermediate level ICT skills or better and that this tends to impede them from integrating technology into their teaching (Ireland, Department of Education and Science, 2008). Demetriadis et al (2003) concluded that reliable support and extensive instruction in ICT is necessary for teachers to feel sufficiently confident to integrate ICT in their teaching methodologies.

Waite (2004, cited in Sime and Priestly) stated that while teachers are motivated and interested in learning about the potential of ICT in education, in practice use of ICT in the employment of these technologies, as a teaching tool and as a learning aid, is relatively low.
Post primary teachers preferred to expand their knowledge of ICT in a tutor-led setting in a local Education Centre (Ireland, Department of Education and Science, 2008). Despite this, it was acknowledged that many teachers found a lack of progression between ICT courses on offer at Education Centres (Ireland, Department of Education and Science, 2008).

O’Connell states (2006) that teachers need to be facilitated in the courses they attend to reflect on their personal and professional abilities. Younger teachers perceive themselves to have higher levels of expertise in a range of ICT skills than more established teachers (Ireland, Department of Education and Science, 2008). This may reflect the pervasive nature of ICT in modern society, as well as an increase on emphasis in teacher training colleges.

2.10 Innovative use of ICT in classrooms

The Department of Education and Science (2008) encourages inventive use of technology in classrooms. It recognises that continued research into innovative practice with ICT in teaching, learning and assessment is ‘essential for our vision for an e-enabled education system to remain relevant and flexible.’ The experience of the Schools Integration Projects (1998-2002) demonstrated that pioneering projects can lead to continued, positive change and can be a motivating factor for learning in schools (Daly, 2001).

The Department of Education and Science, in conjunction with the NCTE, has organised several incentives for schools to use ICT, in the form of competitions, awards and certification. This encouragement is given for the innovative use of technology, for a whole school approach to ICT and for project work. The ‘Digital Schools Award’ was launched (Hanafin, 2005) with a view to acknowledging a quality approach to the integration of ICT in learning and teaching in a school. It promoted good practice and expertise while using technology in teaching and learning. Projects and awards currently offered by the NCTE include eSchola, SAFT, Soundbeam, and Cultural Ireland.
Exceptional use of ICT in schools has also been recognised by leading technology companies. Microsoft (Blake, 2008) awarded the Worldwide Innovative Teacher of the Year Award to Tommy Maher, the principal of Scoil Naomh Fiachra, Clontubrid, Co Kilkenny, for combining science, mathematics, language, literacy and the visual arts in a robotics project.
2.11 Issues arising from Literature Review

- The management of technical support in post primary schools
- Leadership role of the school principal in integrating ICT into teaching and learning in schools
- The adaption of the teaching and learning process to accommodate and integrate ICT
- Methods of ICT use in the classroom
- Issues surrounding hardware and broadband
- The use of software and digital content for educational purposes
- Funding for ICT in schools
- Professional development among school staff
- Innovative use of ICT in schools
Chapter 3

Methodology
Research has been defined (Kerlinger cited in Cohen et al. 2008) as the systematic, controlled, empirical and critical investigation of hypothetical propositions about the presumed relations among natural phenomena. For the purpose of this study, three methods of data collection are employed:

- The Questionnaire
- The Interview
- Observation

The research methods that are employed in this study are examined in this chapter.

3.1 Purpose of Study

The purpose of this study is to establish the factors that affect the progression of Information and Communication Technology (ICT) in post primary education in Ireland. The research focuses on the secondary school sector in the South East of Ireland and presents a thorough and detailed picture of the use and attitudes to ICT in the chosen schools.

A number of methods of data collection were considered while reviewing the literature on this topic. However, the extent of data collection was ultimately influenced by the amount of time available to complete the study, as outlined by Bell (2008).

The research approach was influenced by other limitations, namely:

- Opportunity to meet respondents
- Travelling distances
- Schools closure due to holidays
- Teachers and students preparing for examinations
- Willingness of a school to partake in a study
3.2 Method of Data Collection

There are many methods of collecting primary data and the main methods include:

- Questionnaires
- Interviews
- Focus group interviews
- Observation
- Case-studies
- Diaries
- Critical incidents
- Portfolios

The methods employed in this study are the questionnaire, the interview and observation.

These methods of data collection were employed to provide cross referencing or ‘triangulation’. Triangulation allows data to be observed from different perspectives and thus, be able to confirm or challenge the findings of one method with those of another (Laws cited in Bell, 2008).
Table 3.1 Methods of data collection can be divided into qualitative and quantitative research

<table>
<thead>
<tr>
<th></th>
<th>Qualitative Research</th>
<th>Quantitative Research</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objective / Purpose:</strong></td>
<td>− To gain an understanding of underlying reasons and motivations</td>
<td>− To quantify data and generalise results from a sample of the population of interest</td>
</tr>
<tr>
<td></td>
<td>− To provide insights into the setting of a problem, generating ideas and/or hypotheses for later quantitative research</td>
<td>− To measure the incidence of various views and opinions in a chosen sample</td>
</tr>
<tr>
<td></td>
<td>− To uncover prevalent trends in thought and opinion</td>
<td>− Sometimes followed by qualitative research which is used to explore some findings further</td>
</tr>
<tr>
<td><strong>Sample</strong></td>
<td>− Usually a small number of cases considered non-representative of the population of interest.</td>
<td>− Usually a large number of cases representing the population of interest.</td>
</tr>
<tr>
<td></td>
<td>− Respondents selected to fulfill a given quota</td>
<td>− Randomly selected respondents</td>
</tr>
<tr>
<td><strong>Data Collection</strong></td>
<td>− Unstructured or semi-structured techniques e.g. individual depth interviews or group discussions</td>
<td>− Structured techniques such as on-street evaluations or telephone interviews</td>
</tr>
<tr>
<td><strong>Data Analysis</strong></td>
<td>− Non-statistical</td>
<td>− Statistical data is generally produced in the form of tabulations. Findings are conclusive and usually descriptive in nature.</td>
</tr>
<tr>
<td><strong>Outcome</strong></td>
<td>− Exploratory and/or investigative</td>
<td>− Used to recommend a final course of action</td>
</tr>
<tr>
<td></td>
<td>− Findings are not conclusive and cannot be used to make generalisations about the population of interest</td>
<td></td>
</tr>
<tr>
<td></td>
<td>− Develops an initial understanding and sound basis for further decision making</td>
<td></td>
</tr>
</tbody>
</table>
Flow Chart

Fig 3.1 Flow chart outlining the research methods used for this study:

Phase 1 of Data Collection
Quantitative

Questionnaire

School Staff
Principal, deputy principal, teachers, year heads

PLC students

Mainstream Students
1st, 2nd, 3rd, Transition, 5th, 6th year students

Phase 2 of Data Collection
Qualitative

Interview

Selected School Staff
Principal, deputy principal, teachers, year heads

Selected PLC students

Selected Mainstream Students
(1st 2nd 3rd Transition 5th 6th year students)

Phase 3 of Data Collection
Qualitative

Observation

Selected School Staff
Principal, deputy principal, teachers, year heads

Selected PLC students

Selected Mainstream Students
1st 2nd 3rd Transition 5th 6th year students
3.3 Questionnaire as an instrument of research

The questionnaire is a widely used and useful instrument for collecting survey information. Questionnaires facilitate the accumulation of structured and numerical data. The information gleaned from the population of interest can be administered without the presence of the researcher, and is often straightforward to analyse (Wilson and McClean cited in Cohen et al. 2008).

**Used as a research instrument, questionnaires:**

- Lend themselves to analysis
- Reduce bias. There is uniform question presentation and influence from the researcher
- Are familiar to the majority of people
- The layout, format and method of response is conventional
- Allow a large sample of data to be collected at relatively low cost
- Are easy to administer
- Should be simple and quick for the respondent to complete
- Allow information to be collected in a standardised way
- Can be used for sensitive topics which respondents may feel uncomfortable speaking to an interviewer about
- Allow respondents time to think about their answers; they are not usually required to reply immediately (Cohen et al., 2008)
Limitations of a questionnaire:

- It may be difficult to get a sufficient number of responses, especially from postal questionnaires.
- Those who have little interest in the subject being investigated may be less likely to respond, skewing the sample.
- Respondents may ignore certain questions.
- Questionnaires may appear impersonal.
- Questions may be incorrectly completed.
- Questionnaires are not suitable to investigate long, complex issues.
- Respondents may misunderstand questions because of poor design and ambiguous language.
- Questionnaires are unsuitable for some kinds of respondents, e.g. visually impaired people.
- There is the danger of questionnaire fatigue if surveys are carried out too frequently.
- Questionnaires may require follow up research to investigate issues in greater depth and identify ways to solve problems highlighted.
How the questionnaire is used in this study

This study uses four different questionnaires in Phase 1 of data collection (Fig 3.1). These questionnaires are aimed at four different groups of people that may use ICT in a school environment

1. School management (principal, deputy principal and year heads)
2. Teachers
3. Students
4. Post leaving certificate (PLC) students

(Cohen et al., 2008)

Questionnaires were employed for use in this study because replies from each school can be examined together and the outcomes compared with each other, before moving on to the next method of data collection.

1. The principal / deputy principal

The researcher chose to distribute questionnaires to the principal and deputy principal and where applicable, to year heads. Other staff members who also use ICT were considered, for example, school secretaries, but it was decided that this would make the research too broad.

2. The teachers

The questionnaire was distributed to teachers of a range of subjects.
3. The students

Students were included in the research. A variety of schools were selected, including vocational and non-vocational, coeducational and non-coeducational schools. Transition year students were also included in the research.

4. Post Leaving Certificate students

Three of the schools surveyed offer Post Leaving Certificate (PLC) classes. It was deemed appropriate to include this valuable demographic in the research.

The questionnaires were designed to: flow logically; use clear language; avoid leading questions; be non-threatening; and to include built-in correction factors.
3.4 Interview as an instrument of research

The interview is a flexible tool for data collection, enabling multi-sensory channels to be used: verbal, non-verbal, spoken and heard (Cohen et al., 2008). It allows the researcher to gather complete answers and may lead to information being uncovered that was previously not considered. There are a variety of methods of interviewing respondents, among them: group interviews; one-to-one interviews; telephone interviews; semi-structured interviews; and focus groups. Each of these methods has strengths and limitations (Cohen et al., 2008).
Table 3.2 Types of interviews and their characteristics, strengths and limitations

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Strengths</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Informal Conversational Interview</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>− Questions emerge from the immediate context and are asked in the natural course of things</td>
<td>− Increases the salience and relevance of questions; interviews are built on and emerge from observations</td>
<td>− Different information collected from different people with different questions.</td>
</tr>
<tr>
<td></td>
<td>− There is no predetermination of question topics or wording.</td>
<td>− Less systematic and comprehensive if certain questions don’t arise ‘naturally’</td>
</tr>
<tr>
<td></td>
<td></td>
<td>− Data organisation and analysis can be quite difficult</td>
</tr>
<tr>
<td><strong>Interview guide approach</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>− Topics and issues to be covered are specified in advance, in outline form</td>
<td>− The outline increases the comprehensiveness of the information collected. It makes data collection somewhat systematic for each respondent.</td>
<td>− Important and salient topics may be inadvertently omitted.</td>
</tr>
<tr>
<td></td>
<td>− Interviewer decides sequence and wording of questions in the course of the interview.</td>
<td>− Interviewer flexibility in sequencing and wording questions can result in substantially different responses, thus reducing the comparability of responses.</td>
</tr>
<tr>
<td><strong>Standardised open-ended interviews</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>− The exact wording and sequence of questions are determined in advance.</td>
<td>− Respondents answer the same questions, thus increasing comparability of responses.</td>
<td>− Little flexibility in relating the interview to particular individuals and circumstances;</td>
</tr>
<tr>
<td></td>
<td>− All interviewees are asked the same basic questions in the same order</td>
<td>− Data responses are complete for each person on the topics addressed in the interview.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>− Reduces interviewer effects and bias when several interviewers are used.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>− Permits decision-makers to see and review the instrumentation used in the evaluation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>− Facilitates organisation and evaluation of the data.</td>
</tr>
<tr>
<td><strong>Closed quantitative interviews</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>− Questions and response categories are determined in advance.</td>
<td>− Data analysis is simple;</td>
<td>− Respondents must fit their experiences and feelings into the researcher’s categories.</td>
</tr>
<tr>
<td></td>
<td>− Responses are pre-determined in multiple choice format, for example; respondent chooses from among these fixed responses.</td>
<td>− Responses can be easily directed compared and easily aggregated.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>− Many short questions can be asked in a limited time frame.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>− May be perceived as impersonal, irrelevant and mechanistic.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>− Can distort what respondents really mean or experienced by so completely limiting their response choices.</td>
</tr>
</tbody>
</table>
How interviews are used in this study

This study uses a standardised open-ended interview to gather qualitative information in Phase 2 of data collection (Fig 3.1). The interviews were conducted among a sample of the respondents from Phase 1 – the school management, teachers, students and further education students. Using open-ended interviews as a research tool was suitable for this study because it allowed the researcher to structure questions based on the responses given to the questionnaire. It also gave the interviewee more scope to answer questions in detail.

Similar questions were asked to the four groups of respondents, as this allowed the researcher to gain a holistic view of how information and communication technology is used to enhance teaching and learning in the schools surveyed.

Observation as an instrument of research

The distinctive feature of observation as a research tool is that it offers the investigator the opportunity to gather ‘live’ data from naturally occurring social situations (Cohen et al., 2008).

Observation can record facts, events, behaviours, or qualities. There are several types of observations, among them are:

- Structured observation
- Event sampling
- Instantaneous sampling
- Interval recording
- Rating scales
- Duration recording
Methods of observation can be classified into two main types: covert observation (where the research is carried out without the participant’s knowledge) and overt observation (where the research is carried out with the knowledge and consent of the respondent).

Table 3.3 Types of observation and their advantages and limitations

<table>
<thead>
<tr>
<th>Type of observation</th>
<th>Advantages</th>
<th>Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covert Observation</td>
<td>− The researcher may gain access to social groups who would otherwise not consent to being studied. − The avoidance of problems of observer effect, the conception that individuals' behaviour may change if they know they are being studied. However, there are problems of recording data.</td>
<td>− The researcher may have to become involved in activities that may be dangerous or offensive. − Requirement to undertake tasks which the researcher may find distasteful or unethical. − The researcher may have to employ a level of deceit.</td>
</tr>
<tr>
<td>Overt observation</td>
<td>− As the group is aware of the researcher’s role, the problem of ethical conflict is avoided. − The group is being observed in its 'natural setting'. − Data may be openly recorded</td>
<td>− The behaviour of those under study may alter due to the presence of the researcher</td>
</tr>
</tbody>
</table>

How observation is used in this study

Observation was used as a qualitative form of research in Phase 3 of data collection (Fig 3.1). A sample of the respondents from Phases 1 and 2 were observed— the school management, teachers, students and further education students. Observation was suitable for this study because the researcher has had first hand access to all focus groups involved in this study between January and May 2009.

4 Permission was granted by the schools involved in advance of observation for this study.
3.5 Validity of Research Approach

Validity is an important key to effective research. If a piece of research is invalid then it is worthless. Validity is thus a requirement for both quantitative and qualitative research (Cohen et al. 2008).

Validity refers to the accuracy or truthfulness of a measurement. Spector (1981) stated that validity itself is a simple concept, but the determination of the validity is elusive. Validity determines whether the research truly measures that which it was intended to measure or how truthful the research results are.

While it is impossible for research to be 100% valid, the researcher should use measures to ensure that the data collected is as accurate as possible and that the results are properly collated and analyzed.

In qualitative data the following may be seen as a source of validity (Winter cited in Cohen et al, 2008):

- The honesty, intensity and range of the data
- The participants approached
- The extent of triangulation
- The objectivity of the researcher

In quantitative data, the following will add validity:

- Vigilant sampling
- Appropriate instrumentation
- Suitable statistical treatments of the data
The term validity can be categorised in a number of different ways. The main types of validity are as follows:

- Internal validity
- External validity
- Content validity
- Construct validity

**Internal validity**

The aim of internal validity is to demonstrate that the outcome of the collected research can be upheld by the data. The findings must accurately describe the experience being researched. This method of validation can be applied to both quantitative and qualitative research.

Some of the threats to internal validity include:

- **Selection bias** - Occurs when a majority of one type of person is among the study group
- **Drop-out** - More of one type of person may drop out of one of the groups
- **Reliability of measures and procedures** - Unreliable methods of data collection
- **Experimenter bias** - Experimenter bias occurs when the individuals who are conducting an experiment inadvertently affect the outcome by non-consciously behaving differently to members of control and experimental groups.
External validity

External validity involves the extent to which the results of a study can be applied beyond the sample.

Threats to external validity include:

- **Unrepresentative sample** - The sample does not represent the population
- **Reactive Effects** - Do study conditions cause subjects to react or behave differently than they would if they weren't being studied?

Content validity

Content validity is based on the extent to which a measurement reflects the specific intended domain of content (Carmines and Zeller, 1991). Content validity is determined by the extent to which the instrument of research represents the content of interest as established by a panel of experts. Careful sampling is necessary to ensure that a wide variety of respondents are surveyed.

Some of the threats to content validity include:

- **Gender difference** – People of different gender may have alternative opinions on any given data
- **Ineffective sampling** – The sample does not represent the full range of data sought

(Cohen et al., 2008)
**Construct validity**

Construct validity testifies to how well the results obtained from the use of a measure fit the theories around which the test is designed.

Some of the threats to construct validity include:

- **Interaction of different treatments** – Perhaps other practices that the group is involved in are influencing the outcome.
- **Administration procedures** – Are both groups tested in the same manner?

### 3.6 Triangulation

Triangulation is when the researcher applies and combines several research methodologies in the study of the same phenomenon. It can be employed in both quantitative and qualitative research. By combining multiple observers, theories, methods, and empirical materials, the researcher can hope to overcome the weakness or intrinsic biases and the problems that come from single method, single-observer, and single-theory studies.

In this study, the researcher strives for accuracy, clarity of research and truth. Therefore three methods of data collection are employed – questionnaires, interviews and observations.
Questionnaire validity

The validity of a questionnaire is based on reliability. Validity refers to whether the questionnaire measures what it intends to measure. The researcher should aim to avoid invalidity in questions, non-answered questions and non-returns of questionnaires.

Interview validity

Conducting valid research allows the researcher to gather reliable information. The interview demands careful planning and intelligent administration if the outcome is to be both reliable and valid.

Observation validity

The participant observer collects data by participating in the daily life of those he or she is studying (Mac an Ghaill, 1994).
### 3.7 Selecting Sample Size

To study the entire population is unfeasible for this study for the reasons of expense, time and accessibility. Therefore it was decided to study a sample group.

When selecting the size of the sample for this study, the researcher decided to focus on six schools, all within a 30 mile radius of each other in the South East of Ireland. The targeted schools were chosen due to the differing characteristics that define them: size; vocational or non-vocational; coeducation or non-coeducation; and the presence of adult students. There is a total of approximately 2000 students attending the selected schools. A total of 176 teachers were employed in the schools surveyed. It was deemed that no fewer than 100 respondents should be surveyed, as below this figure would make the study too small to be reliable and valid.

### 3.8 Identifying survey group

**Table 3.4 Table outlining schools involved in this study**

<table>
<thead>
<tr>
<th>Name of school</th>
<th>Type of school</th>
<th>Urban or Rural*</th>
<th>Co-educational Y/N</th>
<th>Number of Teachers</th>
<th>Number of Mainstream Pupils</th>
<th>Number of Adult Pupils</th>
<th>Classes surveyed</th>
</tr>
</thead>
<tbody>
<tr>
<td>School 1</td>
<td>Vocational</td>
<td>Rural</td>
<td>Yes</td>
<td>15</td>
<td>100</td>
<td>45</td>
<td>1st, 3rd, 6th PLC**</td>
</tr>
<tr>
<td>School 2</td>
<td>Vocational</td>
<td>Rural</td>
<td>Yes</td>
<td>53</td>
<td>600</td>
<td>0</td>
<td>2nd, 5th PLC</td>
</tr>
<tr>
<td>School 3</td>
<td>Vocational</td>
<td>Urban</td>
<td>No</td>
<td>14</td>
<td>0</td>
<td>160</td>
<td>PLC</td>
</tr>
<tr>
<td>School 4</td>
<td>Vocational</td>
<td>Rural</td>
<td>Yes</td>
<td>21</td>
<td>170</td>
<td>34</td>
<td>1st, 2nd, 6th PLC</td>
</tr>
<tr>
<td>School 5</td>
<td>Non-vocational</td>
<td>Urban</td>
<td>No</td>
<td>31</td>
<td>350</td>
<td>0</td>
<td>Transition 3rd, 5th, 6th</td>
</tr>
<tr>
<td>School 6</td>
<td>Non-vocational</td>
<td>Urban</td>
<td>No</td>
<td>42</td>
<td>550</td>
<td>0</td>
<td>Transition 2nd, 5th, 6th</td>
</tr>
</tbody>
</table>

*Urban = population >10,000 people, Rural = population <9,999 people

**Post Leaving Certificate (PLC)**
3.9 Processing data

Stage 1 - Questionnaire

Editing refers to the process of identifying and eliminating errors made by respondents. Moser and Kalton (1977) offer three main tasks in editing:

1. Completeness - A check is undertaken to ensure that there is an answer to every question. Most surveys require an answer, even if that answer is a ‘don’t know’.

2. Accuracy - Check that all questions are answered accurately. Incorrect calculations or tick in the wrong box can reduce the validity of the data.

3. Uniformity - Try to ensure that interviewers have interpreted instructions and questions uniformly. This may be an error on the part of the researcher.

The main task of data reduction is coding - this is where each answer is given a code number. This approach is not always possible in the case of open questions. Coding may be built into the construction of the questionnaire. This allows the data to be filtered in different ways to achieve an outcome.
The questionnaire in this study is sufficiently large to command the use of a computer program. There are several suitable programs that will process data. The computer programs that were used to process the information in this case are Microsoft Access and Microsoft Excel. There are several reasons for this choice of software:

1. Both programs allow large amounts of data to be processed
2. Both programs facilitate filtering of data
3. Several sources of data can be examined at once. In the case of this study, student questionnaire, teacher questionnaire, PLC questionnaire were examined consecutively.
4. Data can be compared, filtered, and studied, leading to clear outcomes
5. The researcher was familiar with the programs and used an informed opinion that this software was the correct tool to use to generate results from information collected.
6. The programs were readily available to the researcher

Stage 2 - Interview

The responses generated through the use of questionnaires – particularly those following open questions – often provide useful pointers to the types of issues it may be worthwhile to follow up in interviews (Bell, 2008).

In this study

- Interviews were one-to-one, where principals, teachers, students and further education students were represented
- All interviews were recorded and transcribed
- Microsoft Access was used to record, filter, query and report the available data
- Microsoft Excel was used to present the data
- Similarities, clusters, groupings, trends and items of particular significance were noted
Stage 3 - Observation

Observation can be a very useful research tool, but it exacts its price as it is costly in both time and effort (Cohen et al. 2008). The researcher has monitored the use of ICT in several school settings for a decade and will add personal observations to this study.

All three methods of data collection were merged to gain an overall picture of the use of Information and Communication Technology in the sample schools.

3.10 Limitations of Research

The limitations of this study are as follows:

• **Bias** – all three forms of data collection were open to being skewed if respondents gave biased opinions

• **Goodwill** – data collection was dependent on the goodwill of staff and students to offer their opinions and allow data collection to occur

• **Time limitations** – it was imperative that the research was undertaken before the schools broke for the summer. Unfortunately, this is always one of the busiest times for principals, teachers and students

• **Poor quality answers** – this may occur when the respondent wants to complete the chosen method of data collection in a hurry. This results in incomplete and unsubstantial data being collected. It may also result in the respondent ticking random boxes, without giving due thought to the question being asked

(Cohen et al., 2008)

The above limitations have been acknowledged by the researcher and their impact on this research will be minimised by the use of triangulation.
3.11 Ethics of Research

Cohen et al (2008) list the following as considerations that the researcher should address:

- **Informed consent** – The principle of informed consent applies to the subject’s right to freedom and self-determination. Consent therefore, protects and respects the rights of the subject.

- **Gaining access to and acceptance in the research setting** – Researchers need to gain official permission to undertake research in the chosen community.

- **The nature of ethics in social research generally** – Researchers should take into account the effect of research on their participants, and act in such a way to preserve their dignity as human beings.

- **Sources of tension in the ethical debate** – This relates to not harming or benefitting from the participants.

- **Problems and dilemmas confronting the researcher, including matters of privacy, anonymity, confidentiality, betrayal and deception** – Many types of tensions can occur during research and may only become apparent after the research has begun.

- **Ethical problems endemic in particular research methods** – Researchers should be aware of problems that may occur in educational research.

- **Ethics and evaluative research** – Two main principals are considered (a) benefit maximisation (the best decision is the one that results in the greatest benefit for most people) and (b) the principle of equal respect (respect the equal worth of all people).

- **Regulatory ethical frameworks, guidelines and codes of practice for research** – Regulation exists on many levels e.g. Legislation and ethics committees.

- **Sponsored research** – Is it unbiased?

- **Responsibilities to the research community** – The researcher has a responsibility to the research community e.g. not to damage a reputation.
Chapter 4

Findings
In this chapter, the responses to questionnaires, interviews and observation are presented and examined. The findings presented within this study are based exclusively on the actual data collected from the schools surveyed and are represented using charts, tables and written analysis.

**Rationale to Findings**

The findings are presented under the following headings:

4.1 Background to Survey
4.2 Rate of Response
4.3 Summary of Respondents
4.4 Technical Support
4.5 Leadership
4.6 Classroom of the Future
4.7 Pedagogical use of ICT / Integration of ICT in the Classroom
4.8 Hardware and Broadband
4.9 Software and Digital Content
4.10 Use of ICT in Schools
4.11 Funding for ICT in Schools
4.12 Professional Development
4.13 Innovative Use of ICT in Schools
4.1 Background to Survey

Six post primary schools located in the South East of Ireland were surveyed for this study. Three methods of research were employed to gather data - questionnaires, interviews and observation. Cross-referencing the information gathered from each source allowed the author to validate the research by employing triangulation.

The schools surveyed were chosen by the researcher, as they represent a sample of schools in Ireland. Principals, deputy principals, year heads, teachers and all classes, including transition year and PLC students, are represented in this study.
4.2 Rate of Response

This section details the number of questionnaires issued and how many questionnaires were completed and returned. The rate of response refers to the ratio of respondents to the survey, divided by the number of people in the sample and is expressed in the form of a percentage. This section also details the number of interviews that were completed and the observations undertaken.

Table 4.1 Rate of Response for Questionnaires:

<table>
<thead>
<tr>
<th></th>
<th>Number of questionnaires issued</th>
<th>Number of questionnaires completed</th>
<th>% Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal / deputy principal</td>
<td>35</td>
<td>22</td>
<td>64%</td>
</tr>
<tr>
<td>Teacher</td>
<td>80</td>
<td>50</td>
<td>62%</td>
</tr>
<tr>
<td>Student</td>
<td>110</td>
<td>68</td>
<td>63%</td>
</tr>
<tr>
<td>PLC</td>
<td>48</td>
<td>30</td>
<td>64%</td>
</tr>
<tr>
<td>Total</td>
<td>273</td>
<td>170</td>
<td>Average 63%</td>
</tr>
</tbody>
</table>

Table 4.2 Number of Interviews Conducted:

<table>
<thead>
<tr>
<th></th>
<th>Number of Interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principal / Deputy Principal</td>
<td>6</td>
</tr>
<tr>
<td>Teacher</td>
<td>12</td>
</tr>
<tr>
<td>Student</td>
<td>15</td>
</tr>
<tr>
<td>PLC</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
</tr>
</tbody>
</table>
Observation:

Observation was completed between January 2009 and May 2009, between 9.00 AM and 4.00 PM in the schools surveyed. It was carried out by the researcher, during classes that used ICT as part of the process of teaching and learning.

Observations were made in several different settings:

- Computer laboratories
- Classrooms with data projectors
- Classrooms with interactive whiteboards
- Classrooms with one or more computers for teacher/student use

In keeping with the previous methods of data collection used in this study, the following staff and students of the schools surveyed were observed:

- Principals
- Deputy principals
- Year heads
- Students of all years, including transition year
- PLC students

Note: In the findings, the term ‘Principal’ refers to school management i.e. principal, deputy principal, year head. “Student” refers to students of all classes including transition year.
4.3 Summary of Respondents

Gender of respondents:

Fig 4.1: Gender of respondents

- 51% of respondents surveyed were male and 49% of respondents were female (Fig 4.1).
Age of principals, teachers and PLC students surveyed:

- 19% of principals, teachers and PLC students surveyed are aged 18-30 years, 47% are aged 31-45 years, and 31% are aged 46-60 years and 3% are aged over 60 years (Fig 4.2).

Fig 4.2: Age of principals, teachers and PLC students

- 19% of principals, teachers and PLC students surveyed are aged 18-30 years, 47% are aged 31-45 years, and 31% are aged 46-60 years and 3% are aged over 60 years (Fig 4.2).
Age of mainstream students surveyed:

- 15% of students surveyed were aged 11-13 years, 68% were aged 14-16 years and 18% were aged over 17 years (Fig 4.3).
Gender of students attending schools surveyed:

- 61% of schools surveyed were co-educational, 26% taught boys only and 13% taught girls only (Fig 4.4).

- 80% of post primary schools included with a PLC section and 20% were PLC centres only.
The number of students enrolled in schools surveyed were as follows (Fig 4.5):

- 20% of schools had less than 100 pupils enrolled
- 19% had 101 to 250 students enrolled
- 20% had 251 to 400 students enrolled
- 15% had 401 to 550 students enrolled
- 26% had more than 551 students enrolled

- 64% of schools were vocational schools and 36% were non-vocational.
- 6% of management surveyed were principals, 15% were deputy principals and 12% were year heads.
- 87% of PLC students said that they used ICT at home and 73% of PLC students said that they had used ICT prior to beginning their course, primarily for Internet usage, email and photography.
4.4 Technical support

In this study, technical support is defined as the provision of a range of services that offer assistance with technological products such as computers, data projectors or other electronic goods that may be found in a classroom. Technical support can also include solving problems relating to software, such as installation and upgrading. It attempts to help the user solve specific problems with a product and does not include onsite teacher instruction, or inservice courses.

Is the level of technical support satisfactory in your school?

![Bar graph showing responses to the question: Is the level of technical support satisfactory in your school?](image)

- 67% of respondents were of the opinion that there was a good standard of technical support provided in the classroom in their school, 29% said that technical support was unsatisfactory in their school and 6% said they did not know (Fig 4.6).
Who is responsible for technical support in your school?

21% of respondents said that the school principal was responsible for technical support in their school, whereas 0% of respondents said this responsibility was held by the deputy principal. 60% of the responsibility for technical support was undertaken by teachers with responsibility for ICT support, 16% was undertaken by an outside source and 3% by a combination of principal and teacher (Fig 4.7).

65% of principals and teachers surveyed said that the Department of Education and Science (DES) should take responsibility for purchasing ICT equipment, 24% said that the DES should not undertake this task and 11% did not give an opinion as to who should be responsible for the purchase of ICT equipment in schools.

Respondents in favour of the DES purchasing ICT equipment for schools stated that obsolete equipment creates a significant financial burden on schools, that a uniform system of purchasing is preferable and that it is difficult to expect schools to update equipment with limited resources. Respondents opposed to the DES purchasing ICT equipment for schools stated that the option to purchase ICT equipment should be school specific and that schools would not have control for the goods purchased.
Should the Department of Education and Science take responsibility for maintaining ICT equipment in schools?

Fig 4.8: Should the Department of Education and Science take responsibility for maintaining ICT equipment in schools?

- 64% of respondents stated that the DES should take responsibility for maintaining ICT equipment in schools, 26% said that the responsibility for maintaining ICT equipment should not be held by the DES and 10% did not know who should take responsibility for ICT maintenance (Fig 4.8). Respondents stated that the DES has staff with a suitable knowledge base to maintain ICT equipment and that it was unsatisfactory to rely on the goodwill and enthusiasm of teachers to manage technical support.

- Respondents opposed to the DES taking responsibility for maintenance of ICT equipment in schools stated that the DES may be too slow to react if an ICT related issue occurs.
Should ICT Advisors be re-instated to Education Centres?

Fig 4.9: Should ICT Advisors be re-instated to Education Centres?

- 69% of principals and teachers stated that ICT advisors should be reinstated to Education Centres, 4% said that ICT advisors should not be reinstated and 27% said they did not know whether ICT advisors should be re-established (Fig 4.9). Respondents were of the opinion that ICT advisors provide a valuable resource for teachers and that no strategy has been developed to replace the role of the ICT advisor to schools. However, respondents said that support should incorporate ICT with subject specific courses.

- Students surveyed stated that technical support could be improved in the classroom by purchasing newer, more powerful computers, by offering more instruction to teachers and by making increased funding available for ICT equipment.
• 73% of PLC students surveyed said that technical difficulties did not interrupt teaching and learning, and that the majority of technical problems that occur were related to networks and printers.

• Overall, respondents surveyed listed the following as the main inhibiting factors to technical support in their school:

  o Funding
  o Lack of ICT qualifications and knowledge among staff
  o Lack of ICT equipment
  o Lack of time to develop and use ICT
  o Poor communication with ICT technicians
4.5 Leadership

The school principal determines how ICT is used in a school

![Bar chart showing responses from PLC, principal, students, and teachers regarding the principal's role in ICT use.]

**Fig 4.10: The school principal determines how ICT is used in a school**

- 47% of respondents agreed that the school principal determines how ICT is used in their school, 32% strongly agreed, 15% were uncertain, 4% disagreed and 1% strongly disagreed (Fig 4.10).

- Respondents stated that the principal’s interest in ICT is vital to its promotion in a school, that the principal should be proactive with ICT, that the ‘leader leads’ and that if the principal is disinterested in technology, ICT will not be sufficiently supported in the school.

- 45% of principals who teach, responded that they use ICT as part of the teaching and learning process every day, 27% stated that they use ICT once a month, 18% once a week and 9% said they never use ICT in the classroom. Principals surveyed also stated that they used ICT in the classroom for revision and presentation purposes.
How often do school principals use ICT as an administrative tool?

- 64% of principals said they use ICT daily for administration purposes, 18% once a month, 9% once a week and 9% said they never use ICT for administration (Fig 4.11).

- Principals surveyed stated that they used ICT for entering FETAC\textsuperscript{5} results into an online database, for student records, for letter writing and for email.

- Some principals and teachers noted that administration was the entry point to ICT for them.

\textsuperscript{5} FETAC is the Further Education and Training Awards Council
82% of principals surveyed responded that using ICT as part of the teaching and learning process is not disruptive to classes, stating that properly managed ICT can be advantageous for use in the classroom.

18% of principals surveyed agreed that ICT can be disruptive, particularly if teachers are unfamiliar with technology and problems arise that are beyond the teachers’ technical knowledge. Principals also noted that ICT is a tool and should not overshadow the content of a lesson or affect the teaching methodology.

36% of principals surveyed were of the opinion that ICT could help students achieve good examination results. 27% strongly agreed, saying that ICT is another means to learning a subject, that there is a large volume of extra information available through the use of technology and that ICT provides ways of explaining or demonstrating by visually stimulating students and helping them to retain knowledge.

A further 27% stated that ICT could not help students achieve good examination results, stating that there is no evidence to suggest that ICT helps students achieve higher examination results.
Are inservice courses worthwhile for teachers?

Fig 4.12: Are inservice courses worthwhile for teachers?

- 39% of respondents agreed that inservice courses are worthwhile, 29% strongly agreed, 18% were uncertain, 10% disagreed and 4% strongly disagreed that inservice courses are worthwhile (Fig 4.12). Findings show that inservice courses must have variety and be tailored to the needs of teachers, and that the need to upskill in ICT is essential.

- 64% of principals surveyed strongly agreed that ICT is worth using in the teaching and learning process, 27% agreed, while 9% disagreed with this statement. Respondents stated that ICT helps to vary teaching methodologies and that some pupils find it easier to learn visually than by other means.
• 52% of respondents agreed that the use of the computer laboratory is timetabled successfully in their school, allowing teachers to have adequate access and sufficient time to use the available ICT equipment. 21% of respondents stated that they were uncertain whether timetabling for the use of the computer laboratory could be improved in their school. Respondents stated that every student gets the opportunity to use ICT in the classroom.

• In contrast, 28% of respondents stated that they do not have adequate access to the computer laboratory and that it is not successfully timetabled in their school.
Is there an effective ICT plan in your school?

Fig 4.13: Is there effective ICT planning in your school?

- 38% of respondents disagreed or strongly disagreed that there is effective ICT planning among staff in schools, stating that although some ICT planning takes place, it is not reviewed to assess its effectiveness. Lack of time was also cited as a reason for ineffective ICT planning. 28% of respondents agreed that there is effective ICT planning, with 7% strongly agreeing and 28% were uncertain (Fig 4.13). Respondents stated that ICT planning is part of a new approach to professional development.
Who should be involved in ICT planning in schools? (Principal’s response)

31% of principals surveyed stated that the school principal should be involved in ICT planning in schools, 15% stated that the deputy principal should be involved, 8% stated that teachers should be involved, 38% stated that a whole school approach should be taken and 8% said that parents should take part in ICT planning (Fig 4.14a).
Who should be involved in ICT planning in schools? (Teacher’s response)

- 30% of teachers surveyed stated that the school principal should be involved in ICT planning in schools, 11% stated that the deputy principal should be involved, 41% stated that teachers should be involved, 19% stated that a whole school approach should be taken and 0% said that parents should take part in ICT planning (Fig 4.14b).
4.6 Classroom of the Future

Should ICT be integrated into all subjects?

Fig 4.15: Should ICT be integrated into all subjects?

- 69% of respondents agreed that ICT should be integrated into all subjects on the Irish school curricula, 17% stated that it should not be incorporated into specific subjects and 14% gave no opinion (Fig 4.15).

- 82% of respondents agreed that ICT acts as an incentive for teaching and learning, 2% stated that ICT does not act as an incentive and 16% gave no opinion.

---

6 Junior Cycle Curriculum and Senior Cycle Curriculum
Is the educational experience enhanced by the inclusion of ICT in teaching and learning?

89% of respondents stated that the educational experience is enhanced by the inclusion of ICT in teaching and learning, 1% said that ICT does not improve education and 10% did not know (Fig 4.16).

Respondents cited that Information and Communication Technologies should be used because they offer: greater variety of resources; enhanced educational experience; and greater scope for information research. They also expressed the opinion that the use of ICT equipment can lead to visually stimulating feedback.

It was noted that ICT is a tool and should not overshadow teaching and learning.

Respondents stated that ICT is a part of everyday life and makes subjects more ‘real’ to students. It was also stated that technology should be used to enhance subject matter and should be used in the teaching and learning process when relevant to the particular lesson.
Is ICT integrated into all subjects?

- 27% of principals said that ICT is integrated into all subjects in their school, 45% said that it was not incorporated and 27% did not know whether ICT is used in all subjects (Fig 4.17).

- Respondents said that only teachers who are ICT competent use technology and many cited a lack of facilities and timetabling issues as reasons that ICT is not integrated into all subjects.

- 84% of principals and students use ICT for research, 7% said they do not use ICT for this purpose and 9% were unaware if ICT was used for research.

Fig 4.17: Is ICT integrated into all subjects?
4.7 Pedagogical use of ICT / Integration of ICT in the classroom

Is ICT used for the teaching and learning of languages in your school?

Fig 4.18: Is ICT used for the teaching and learning of languages in your school?

- 50% of respondents said that ICT was used for purpose of the teaching and learning of languages in their school, 28% said that ICT was not used for this purpose and 22% said they did not know. A percentage of those canvassed were not language teachers (Fig 4.18).

- Respondents that gave an affirmative answer in the above survey stated that ICT was used to teach the following language subjects:
  - English
  - Spanish
  - German
  - French
  - Irish

- Respondents from one of the schools surveyed stated that they have a purpose-built multimedia laboratory for teaching and learning languages in their school.

- 80% of language teachers stated that they use ICT in the teaching of languages.
Fig 4.19: Is ICT used for the teaching and learning of Gaeilge in your school?

- 30% of respondents said that ICT was used for the teaching and learning of Gaeilge in their school, 34% said that ICT was not used during Irish classes and 35% said they were unaware if ICT was used, mainly because they were not Irish language teachers (Fig 4.19).

- Many teachers surveyed stated that they did not know whether ICT was used in teaching Gaeilge, as they were not Irish language teachers.

- 53% of *Irish language* teachers stated that they used ICT during Irish classes

- Irish language teachers cited lack of independent digital material and restricted choice as obstacles to using ICT in the classroom
Is ICT used for presentation purposes in your school?

37% of principals and students said that they used ICT for presentation purposes, 37% said that they did not use ICT for this purpose and 25% were unaware if ICT was used for presentations (Fig 4.20).

Respondents stated that ICT was used for presentation purposes during school awards ceremonies, assemblies and for presenting project work.

100% of principals surveyed agreed that school ICT equipment should be audited to rate its effectiveness as a teaching tool. Respondents gave their opinion that it is important to realise what a useful and effective resource an item of technology is to a school.

73% of students said they used ICT for project work and 27% said that they were unaware if ICT was used for this purpose.

Respondents said that ICT was used for many subjects including the following:

Art; Home Economics; Technical Graphics; English.
How can the use of ICT be encouraged in schools?

The following lists the responses given as ways of encouraging use of ICT in schools (Fig 4.21):

- Inservice for teachers (17% of respondents)
- More time using computers (16% of respondents)
- Planning (14% of respondents)
- Laptop/data projector in classrooms (9% of respondents)
- Staff communication (7% of respondents)
- Availability of software (9% of respondents)
- Integration into classroom subjects (13% of respondents)
- Better equipment (15% of respondents)
4.8 Hardware and broadband

Is the broadband facility in your school suitable for use in the teaching and learning process?

84% of respondents agreed that the broadband connection in their school is satisfactory, 13% were unsatisfied with their broadband connection, and 3% did not give an opinion (Fig 4.22).

Those who were not satisfied with the broadband in their school cited lack of wireless network as the main reason causing lack of effectiveness. Respondents were satisfied that the Schools Broadband Network, as part of the NCTE, successfully filters unsuitable websites from more appropriate content for schools.

57% of respondents said that the risk of technical difficulties occurring acts as a deterrent for teachers using ICT, 23% said that technical difficulties did not deter teachers from using ICT and 20% did not give an opinion.

Respondents stated that if teachers have sufficient knowledge in the use of ICT, then technical difficulties should not pose a problem.
Is the computer laboratory the most suitable arrangement of ICT equipment in schools?

- 53% of respondents stated that a computer laboratory is the most suitable room layout for ICT in schools, in terms of access to ICT equipment, safety and classroom management. 24% stated that a computer laboratory did not represent the most suitable room layout for ICT and 23% did not give an opinion (Fig 4.23).

- Some respondents stated that ICT equipment should be available in every classroom, but cited security of the equipment as an issue for schools.

- Respondents stated that successful timetabling for the use of the computer laboratory can be a challenge for schools and ICT equipment may be required in general subject rooms.
Does the use of a data projector enhance teaching and learning for teachers and students?

- 95% of respondents agreed that a data projector enhances teaching and learning for teachers and students, 1% stated that using a data projector in the classroom does not enhance teaching and learning and 4% gave no opinion (Fig 4.24).

- Respondents stated that the use of a data projector can add variety to teaching methodologies, that a data projector is more flexible in its uses than textbooks and/or whiteboards, and that it is more mentally and visually engaging, making it easier for some students to learn.
4.9 Software and digital content

Does the educational software used for schools enhance teaching and learning?

- 28% of respondents said that the educational software that is used for schools enhances teaching and learning, 16% said that the software used did not enhance teaching and learning and 56% were unaware if it enhanced the teaching and learning process. (Fig 4.25).

- Teachers surveyed said that the software that was effective in aiding the teaching process was available in the subjects of Biology, Geography and English.

- Respondents stated that insufficient instruction is available for the use of software in schools. It was also stated that much of the existing software is not written specifically for the Irish schools curricula and may therefore need to be adapted for use in Irish classrooms.
• 72% of principals and teachers said that they use educational websites as part of their teaching, 13% said that they did not use educational websites and 15% said that they did not know.

• Respondents stated that they use websites for exam marking schemes, guidance resources and puzzles and games for subjects such as maths and geography. It was observed that many of the websites are American based, and need to be adapted to make them suitable for the Irish curricula.
Do teachers value ICT as a teaching and learning tool?

Fig 4.26: Do teachers value ICT as a teaching and learning tool?

- 66% of teachers and students surveyed said that teachers value ICT as a teaching and learning tool, 12% said they do not value ICT as a tool in the education process and 22% had no opinion (Fig 4.26).

- Respondents stated that technology may be used to aid the progression of teaching and learning, citing the use of interactive whiteboards and data projectors as examples of how technology may be incorporated into the classroom.

- It was acknowledged that teachers who have little or no experience of ICT may be hesitant to integrate new technologies into their teaching practices. Some teachers stated that it is difficult to have time to complete the necessary curriculum aside from introducing new teaching methodologies that include ICT.
4.10 Use of ICT in schools

Should computers be situated in classrooms for student use?

Fig 4.27: Should computers be situated in classrooms for student use?

- 69% of respondents stated that computers should be situated in classrooms for student use, 19% said that computers should not be placed in classrooms for student use and 11% gave no opinion (Fig 4.27).

- Respondents stated that student project work may be more successful if computers are available in general subject classrooms. In contrast, some teachers stated that it may be difficult, in terms of classroom management, to have a number of students working on computers while teaching the rest of the class. It was also stated that students need some time without computers and should not become excessively reliant on technology.
• 37% of principals and teachers disagreed that computers are used more in their school for administration purposes than for teaching, 32% gave no opinion and 25% agreed that computers are used more often for administration purposes.

• 85% of principals and teachers agreed that ICT should be integrated into the Irish post-primary school curricula, 6% stated that ICT should not be integrated and 9% of respondents did not give an opinion.

• Respondents said that ICT is currently an integral part of T4 subjects: Technology; Design and Communication Graphics; Engineering Technology; and Architectural Technology. Respondents commented that using ICT in teaching methodologies prepares students for the future. It was noted that on a global scale the use of ICT in the classroom could make Ireland more competitive, as its post primary students would be ICT literate. Respondents stated that ICT is a tool and that resources and sufficient instruction would have to be made available to ensure teachers are familiar in the use of technology.
Should learning ICT skills become a state examination subject?

- 62% of respondents agreed that learning ICT skills should become a subject on the Irish post primary curricula and therefore be included as a subject for state examinations, 25% stated that learning ICT skills should not become an examination subject and 14% gave no opinion (Fig 4.28).

- Respondents stated that by encouraging the integration and use of technology in schools, it may lead more students to follow ICT-related careers. They felt that this in turn could help to keep Ireland economically competitive and encourage foreign investment in the future.

- ICT skills were seen by teachers as a life skill and it was stated that schools should strive for all students to be computer literate when they leave school.

- Respondents stated that there are sufficient subjects on the Irish post primary curricula and that ICT could be considered as a transition year module.
Are teachers’ attitudes to technology important to the success of ICT in the classroom?

- 97% of respondents agreed that the attitude of teachers to technology is important to its successful integration in the classroom, 2% stated that teachers’ attitude to ICT is not important and 1% gave no opinion (Fig 4.29).

- Respondents said that the teachers’ general approach is important to every subject and class that is taught, irrespective of whether ICT is used.
Do teachers want to use ICT in the classroom?

- 67% of respondents said that teachers want to use ICT in the classroom, 5% said that teachers did not want to use ICT and 28% gave no opinion (Fig 4.30).

- Respondents answered that an apprehension about technology or the use of new practices may deter teachers who use traditional teaching methodologies. It was stated that lack of time and insufficient funding for inservice courses and updating ICT equipment may be reasons why teachers do not want to use ICT in the classroom.

- Respondents cited the teachers’ age as one of the reasons for not wanting to use ICT in the teaching and learning process, as more recently qualified teachers are more likely to use ICT than teachers who are closer to retirement age. Respondents stated that older teachers may not want to invest time into ICT-related teaching methods that they may only use for a relatively short time.
• 36% of respondents said that teachers feel confident using ICT in the classroom, 17% said that teachers were not confident using ICT and 47% were unaware if teachers were confident using ICT for teaching.

• Respondents stated that confidence in ICT use comes with competence and education in the use of technology, but other respondents said that little resources or time are allocated to allow for familiarity with hardware or software.
What are the main uses for ICT in your school?

The following lists the responses given as the main uses for ICT in schools surveyed (Fig 4.31):

- Research (8% of respondents)
- Presentation (13% of respondents)
- Administration (11% of respondents)
- Enhance teaching and learning (9% of respondents)
- Language (9% of respondents)
- Ensure computer literacy of students (10% of respondents)
- As a resource (9% of respondents)
- Visual aid (8% of respondents)
- Project work (8% of respondents)
- Communication (6% of respondents)
- LCVP / ECDL / DCG / Careers (10% of respondents)
4.11 Funding for ICT in schools

Is sufficient funding provided to schools for ICT equipment and instruction?

![Bar chart showing responses to whether sufficient funding was provided for ICT equipment and instruction, broken down by role (principal, teacher, combination of responses from principals and teachers).]

Fig 4.32: Is sufficient funding provided to schools for ICT equipment and instruction?

- 68% of principals and teachers said that insufficient funding was provided to schools for ICT equipment and instruction, 24% said that funding was sufficient and 8% gave no opinion (Fig 4.32).

- Respondents stated that the schools surveyed rely on grants or fundraising to buy ICT equipment.

- It was acknowledged ICT equipment may become obsolete quickly and that a long-term plan should be put in place to deal with this issue.
57% of schools surveyed do not avail of any Public Private Partnerships (PPPs), 2% have been involved with PPPs and 41% do not know whether they have benefitted from PPPs (Fig 4.33).

82% of principals and teachers were unaware if Public Private Partnerships were successful in providing equipment for schools, 16% said that in their opinion, PPPs are successful in helping to provide ICT equipment for schools and 2% said that PPPs were unsuccessful in supplying technology for schools.
What areas should be prioritised when funding for ICT in schools?

Fig 4.34: What areas should be prioritised when funding for ICT in schools?

- The following lists the responses given as to which areas should be prioritised when funding for ICT in schools (Fig 4.34):
  - Resources (40% of respondents)
  - Instruction in the use of Technology (48% of respondents)
  - Networks (46% of respondents)
  - ICT technician (41% of respondents)
  - Reduce number of users (73% of respondents)
  - Communal software library (75% of respondents)
  - Online resources (77% of respondents)
4.12 Professional Development

Are teacher inservice courses in ICT successful in increasing the use of technology in the teaching and learning process?

![Chart showing responses to the question](chart.png)

**Fig 4.35: Are teacher inservice courses in ICT successful in increasing the use of technology in the teaching and learning process?**

- 81% of principals and teachers agreed that inservice courses are successful in increasing the use of ICT in the classroom, 8% stated that inservice courses did not increase ICT usage and 11% gave no opinion (Fig 4.35).

- Respondents stated that teachers learn new ICT skills and how to apply these skills in the classroom at inservice courses. Others said that inservice courses tend to be ‘one-offs’ or ad-hoc arrangements and that a concerted and sustained plan should be put in place to ensure that teachers receive beneficial ICT instruction.
• 86% of principals and teachers said that inservice courses are successful in increasing teacher knowledge of ICT for use in the classroom, 8% that inservice courses did not increase teacher knowledge and 6% gave no opinion.

• Respondents answered that the practical use of ICT encourages in-depth knowledge and that inservice courses give teachers the confidence to use ICT. It was also stated however that inservice courses can be ineffective due to lack of progression.
How often should teachers attend inservice courses?

Fig 4.36: How often should teachers attend inservice courses?

- 61% of principals and teachers stated that teachers should attend one inservice course per year, 20% said that teachers attend one inservice course every two years, 17% said that teachers should attend one inservice course per term, 2% said that teachers should attend one teacher inservice every five years and 0% said that teachers should never attend inservice courses (Fig 4.36).
Should courses that further educate teachers in the use of ICT be a mandatory part of teaching?

69% of principals and teachers said that courses that further educate teachers in the use of ICT should be a mandatory part of teaching, 18% said that ICT further education courses should not be a mandatory part of teaching and 13% gave no opinion (Fig 4.37).

Respondents stated that inservice courses are part of teacher development and help to make teachers aware of ICT as a tool. They also stated that some teachers will only attend if inservice courses are mandatory.
What areas of ICT should be prioritised when planning inservice courses?

Fig 4.38: What areas of ICT should be prioritised when planning inservice courses?

- The following lists the responses given as to which areas should ICT inservice courses should focus on in schools (Fig 4.38):
  - Networks (20% of respondents)
  - Classroom resources (33% of respondents)
  - Software (28% of respondents)
  - Troubleshooting (25% of respondents)
  - Use of Hardware (20% of respondents)
  - Presentations (22% of respondents)
  - Internet (30% of respondents)
  - Instruction in the use of a Data Projector (14% of respondents)
  - Sourcing ICT equipment (8% of respondents)
Are inservice courses in ICT more important to some subject teachers than others?

Fig 4.39: Are inservice courses more important to some subject teachers than others?

- 68% of principals and teachers said that ICT instruction is more important to some subject teachers than others, 17% stated that ICT instruction is important to all teachers and 15% gave no opinion (Fig 4.39).

- Respondents stated that education in the use of ICT is vital to some subjects such as Technical Graphics and Music, where computers are a mandatory part of the course.

- 66% of principals and teachers said that teachers are motivated to learn how to incorporate ICT into teaching and learning, 19% said that they were not encouraged to incorporate ICT and 15% gave no opinion.
• Respondents stated that many teachers have attended ICT inservice courses and used what they learned in their teaching, while others said that other issues within the school should have a higher priority, that there is a lack of time and money to devote to ICT inservice courses and that state examinations do not give credit for using ICT.

• 56% of teachers surveyed said that teachers realise the value of ICT in the classroom, 28% said they don’t realise the value of ICT and 16% gave no opinion.
Identify the barriers to professional development in ICT for teachers?

The following lists the responses given as to what are considered the barriers to professional development in ICT for teachers (Fig 4.40):

- Time (35% of respondents)
- Funding (34% of respondents)
- Age of teacher (6% of respondents)
- Lack of recognition (17% of respondents)
- Management disinterest (21% of respondents)
- Lack of equipment provision (22% of respondents)
- Lack of interest (19% of respondents)
- Courses outside school hours (31% of respondents)
- Resistance to change (15% of respondents)
4.13 Innovative use of ICT in schools

How can the DES encourage the innovative use of ICT in the classroom?

- The following lists the responses given as to how the Department of Education and Science can encourage the innovative use of ICT in the classroom (Fig 4.41)
  
  o Better inservice courses (25% of respondents)
  
  o Improved ICT facilities (34% of respondents)
  
  o Greater funding for ICT (27% of respondents)
  
  o More software (21% of respondents)
  
  o Financial incentives (5% of respondents)
  
  o Giving schools the latest technology available (22% of respondents)
  
  o As a resource (15% of respondents)
  
  o Visual aid (28% of respondents)
  
  o Project work (15% of respondents)
  
  o Communication (5% of respondents)
  
  o LCVP / ECDL / DCG / Careers (3% of respondents)
Chapter 5

Discussion
The research findings of this study reveal factors that affect the use of ICT in post primary schools in Ireland. In this chapter, the findings from this study are compared to the literature review and the discussion analyses the similarities and differences.

**Rationale to discussion**

The discussion is presented under the following headings:

5.1 How ICT is used in the Teaching and Learning of Language Subjects
5.2 Technical Support
5.3 ICT Planning
5.4 Broadband and Hardware
5.5 Leadership
5.6 Pedagogical use of ICT
5.7 Use of ICT in Schools
5.8 Funding for ICT in Schools
5.9 Professional Development
5.10 Innovative use of ICT
5.1 How ICT is used in the Teaching and Learning of Language Subjects

Research carried out for this study clearly indicates that Information and Communication Technology is being widely used in the teaching of language subjects in the schools surveyed. 80% of language teachers reported that they use ICT to support the teaching and learning of language subjects including: English; Spanish; German; French; and Irish. ICT has been integrated into teaching methodologies in the following ways:

- Teachers use online material, which can offer current and relevant information
- Data projectors are used as a teaching and learning aid
- There is online communication between schools, situated in Ireland and other countries
- Resources are often stored and accessed from DVD or other digital media

The inclusion of ICT in the teaching and learning of language subjects was seen as a motivating factor for the teachers and students surveyed. This confirms Freeman and Gillerans (2001) findings that the traditional communication of knowledge and skills as an approach to learning is no longer the only viable goal for education.

One of the schools surveyed has a purpose-built multimedia language laboratory, which is used extensively for the teaching and learning of languages. Teachers from this school acknowledge that the inclusion of ICT in the teaching of languages enhances learning, while students stated that using the multimedia laboratory made learning languages more interesting and learning techniques more varied.

While ICT was employed in some language classes in the other schools surveyed difficulties were reported, such as: timetabled access to a computer laboratory; availability within the school of suitable software and hardware and time taken to organise ICT equipment. There was found to be a significant contrast in language teaching methodologies between the school with the multimedia laboratory and those schools without access to such a resource. This establishes an argument
which suggests that it is advantageous for schools to be appropriately equipped to include ICT in language teaching, preferably in a dedicated language laboratory.

30% of respondents said that ICT was used for teaching and learning of Gaeilge in their school. However, in contrast with the findings of the Department of Education and Science (2008), 53% of Irish language teachers stated that they incorporated ICT in their teaching methodologies.

Evidence was found to support Hegarty’s findings (2001) that the production of software for minority languages can be challenging. Many of the schools surveyed used a range of online and offline content to teach Gaeilge, with Foinse and Scoilnet cited as examples. Despite this, other teachers of Irish cited lack of independent digital material and restricted choice as obstacles to using ICT in the classroom.

While evidence demonstrates (Department of Education and Science, 2008, Owston et al., 1999) that the inclusion of ICT can enhance the teaching and learning of languages, findings from this study show that schools need to be supported with suitable technology in appropriate environments. While there is limited digital content for teaching and learning Gaeilge, research findings show that a wider variety of ICT resources would benefit teachers.

### 5.2 Technical Support

The majority (67%) of schools surveyed reported that the standard of technical support for ICT in their school is satisfactory. This establishes a marked improvement from the first implementation of ICT in classrooms during ‘IT2000’ (1997) and is in keeping with ‘The Technology Integration Initiative’ (2008).

Despite this, the schools surveyed have adopted different methods of managing technical support for ICT. In the VEC sector, a technician is employed to carry out technical support, has responsibility for purchasing hardware and software and offering advice to the schools. However, findings show that if a minor technical issue arises, a staff member with ICT knowledge may attempt to remedy the problem, as the issue can be resolved in a shorter space of time than if the school
has to wait for a technician to address the problem. In the non-vocational schools surveyed, a member of staff, usually the principal or a teacher, takes on the responsibility of technical support. In some cases, the principal organises an outside contractor to deal with the technological issues in ICT that may arise.

Findings show that this ad hoc approach to technical support leads to schools having varied experiences of ICT, as acknowledged by the Department of Education and Science (2008), and can be seen as one of the factors that determine whether ICT is successfully integrated in schools, supporting Galvin’s findings (2002). Staff members that are involved in technical support stated that there should be recognition for their work in terms of additional pay, posts of responsibility or extra time allocated to ICT maintenance. Findings show that schools are highly dependent on the goodwill and knowledge of staff to deal with continuing ICT technical support, concurring with Mulkeen (2002).

Findings correspond with the Department of Education and Science (2008) that the DES should take responsibility for purchasing and maintaining ICT equipment, as with the T4 subjects. It was acknowledged that ICT Advisors in Education centres provided a valuable resource for schools staff and respondents agreed that they should be reinstated.

Findings show that the main inhibiting factors to technical support are:

- Poor funding for purchase and maintenance of ICT equipment
- Lack of ICT qualifications among teachers and school management
- Lack of up-to-date ICT equipment
- Timetabling issues for the use of computer laboratories
- Poor communication with technicians

In summary, while the level of technical support in schools has improved during the past decade, greater emphasis needs to be placed on providing a uniform, streamlined support system for ICT in schools, which would ultimately lead to less dependence on teachers to maintain ICT equipment in schools.
5.3 ICT Planning

While schools have different ICT priorities and requirements, it was found that a comprehensive ICT plan is necessary if a school is to succeed in short and long-term ICT development. Findings show that ICT planning is ineffective in schools due to:

- Insufficient time allocated to planning, particularly long-term planning
- Lack of sufficient ICT knowledge and confidence among teachers to plan for progression of ICT in their school
- Time dedicated to ICT is usually taken up by technical issues

This finding echoes previous research: Hadley and Sheingold (1993), Schofield (1995), Becker (2000), Dawes (2001), as cited in Hennessy et al, (2002). Research findings confirm that although limited ICT planning took place in the schools surveyed, the planning was not systematically reviewed and monitored to assess its effectiveness, as recommended by Department of Education and Science (2008).

In 2008, the Department of Education and Science recommended that an ICT coordinator be appointed within each school, as part of a post of responsibility⁷, and that the selected person would manage and organise the technological needs of the school. Presently, the responsibility of ICT coordinator can be an informal responsibility within the school, often relying on goodwill from staff members. Findings show that the absence of a formal ICT coordinating role within a school can result in poor and inconsistent planning. The majority of respondents were of the opinion that the Department of Education and Science should take responsibility for purchasing and maintaining ICT equipment in schools, leaving the role of ICT coordinator to concentrate on pedagogy and planning, rather than on technical issues.

---

⁷ A post of responsibility is a duty taken on by a teacher for which they receive financial reward. The teacher interviews for a post of responsibility and it is considered a promotion in their career.
Respondents were clear that although the principal should steer ICT planning in schools, a whole school approach is advisable in order to advance ICT as a pedagogical tool, corresponding with the Department of Education and Science (2008). It was recommended that a steering committee within the school would participate in the development of an ICT plan and in supervising and evaluating its progress.

Therefore, it was found that long and short term planning is essential if ICT is to progress in schools. While it is advisable that planning involves a whole school approach, some key players, notably the principal and a formally appointed ICT coordinator should steer the direction of the plan.
5.4 Broadband and Hardware

Findings concurred with Morrissey (2004) that a high quality infrastructure is necessary to successfully deliver the many educational resources that are available online to the classroom. Reliable broadband connectivity has been realised in the majority of post primary schools in Ireland (Department of Education and Science, 2008). Findings show that the majority (84%) of respondents agreed that broadband in their school operates to a satisfactory level, meaning that users are satisfied with the speed and the level of connectivity of the broadband connection. However, it was observed that inadequate availability of wireless broadband in schools is a significant disadvantage, as ICT is more accessible and suited to the process of teaching and learning when it is portable.

Findings show that principals and teachers are satisfied with the Schools Broadband Network, which filters unsuitable websites from more appropriate content for schools. However, it was found that students surveyed cited filtering of websites as a reason for unsatisfactory broadband.

The reasons for this may be twofold.

- Firstly, it may demonstrate a misunderstanding of how broadband is delivered to schools as students may be of the opinion that because an unsuitable website is blocked from view, the broadband connection may be at fault.
- Secondly, while unsuitable websites are blocked from view, other websites that are suitable for viewing in school are also prohibited and therefore students are of the opinion that the filtering system used within schools could be improved.

The combination of a data projector and a laptop was found to be an adaptable and widely used resource for the classroom. Findings concur with Becta (2004) that using a data projector as an educational tool reinforces learning, engages students and motivates them to learn.
5.5 Leadership

The findings of this study show that the level of interest that the school principal has in ICT as a pedagogical tool is shown to affect how it is used in that school, reflecting Pelgrum’s (1993) findings. The principal’s interest in incorporating ICT into teaching and learning is seen as vital, as principals are the steering force behind the implementation and funding of ICT and further education regimes for staff, as is recognised by the Department of Education and Science.

The majority of teaching principals8 surveyed use ICT as a teaching methodology and strongly agree that ICT is worth using in the classroom. It was found that using technology as part of the teaching and learning process helps to vary the methods of delivery of information and engages the learners. Principals found that technology can be disruptive to teaching and learning only if teachers are unfamiliar with ICT and technical faults arise which are beyond that teacher’s knowledge.

Principals stated however, that ICT is a tool and should not overshadow the content or the teaching methodology, mirroring the opinion of Schwartz et al. (2004), and (Schaffert, Bischof, et al., 2006).

Findings show that ICT is widely used for teaching and learning throughout the schools surveyed. This is seen as a development from when ICT was first introduced into Irish schools, as it was seen as being an administrative tool rather than a teaching tool. (National Policy Advisory and Development Committee, 2001). ICT is now widely employed in schools, both for administration purposes and for teaching and learning in the classroom. Findings show that administration has been the entry point to ICT for some principals and teachers, and by becoming adept in this area it has allowed them to build on their ICT knowledge and use it in their teaching practices.

---

8 Principals who have the dual roles of school management and classroom teaching
As recognised by Galvin (2002), a properly funded, professional development programme within working hours will encourage the uptake of inservice courses in ICT and therefore lead to improved use of technology in the classroom. Respondents to this study deemed inservice courses to be worthwhile and the need to upskill essential, but they stated courses must be planned in a logical, progressive manner that tailors to the needs of teachers, as recommended by Department of Education and Science (2008). A positive approach by school principals to creating a technological knowledge base among staff and integration of ICT was found to positively affect its development within an institution.

5.6 Pedagogical use of ICT

In concurrence with Hooker (2008), principals and teachers surveyed found that ICT can act as an incentive and an enhancement to teaching and learning. The findings correspond with those of Trench (2007), who stated that different learning styles are encouraged specifically by the use of technology. It was found that the incorporation of ICT in teaching methodologies helped to: focus learners’ attention; promote engagement with students; encourage collaborative learning; and allow ideas and documents to be saved in a logical manner.

Respondents cited the following motivating forces for using ICT in the classroom:

- Technology can provide a variety of resources for use in the education process
- ICT offers enhanced educational experiences
- There is greater scope for information research
- It can be visually and aurally stimulating

This may be seen as an extension of Reynolds et al (2003) who stated that to fully integrate ICT in the classroom, teachers need to have faith that ICT will progress their teaching and their students’ learning. Respondents were of the opinion that incorporating ICT into the teaching and learning process would enhance
classroom subjects such as: Art, Home Economics, Technical Graphics, English, Career Guidance, Geography; and History.

In the schools surveyed, ICT was mainly used for research, project work, surveys and essays. It was also used for presentation purposes - to educate students, staff and parents at open nights, during award ceremonies, incorporated into teaching methodologies and for presenting completed project work.

Findings show that teachers who are confident in the use of ICT systematically include it as part of their teaching methodologies. Many cited inadequate facilities and lack of access to computer laboratories and other ICT equipment as reasons that ICT was not integrated into all subjects, mirroring the findings of Reynolds et al (2003).

5.7 Use of ICT in Schools

As recognised by the Department of Education and Science (2006), the success of Information and Communication Technology in education depends on the quality of the ICT infrastructure present. Findings show that schools vary in how computers are positioned for student use. In the schools surveyed, the computer laboratory is the most prevalent arrangement of computers; where banks of approximately 30 networked computers are located in one room. In accordance with the Department of Education and Science (2008), findings show that full class groups are brought to the laboratory for project work, research or other ICT related work. The findings of this study correspond with Mulkeen (2000) and the Department of Education and Science (2008), that while a computer room is a successful model of use of ICT in schools, it may cause difficulties to arise. Challenges may include:

- Limited access to the computer laboratory
- Instruction for teachers for use of a computer laboratory
- Length of class time
- The occurrence of technical difficulties
Another model of integration of ICT in the classroom that was observed in the findings is the use of a laptop connected to a data projector in general subject rooms. This equipment is primarily used by the teacher, but is also available for student use. The majority (95%) of respondents to this study agreed that the use of a data projector enhances the education process for students and teachers (Becta, 2004). Findings show that the use of a data projector also adds variety to teaching methodologies, has more scope than textbook and/or whiteboard, makes it easier to present information and stimulates student learning and activates imagination. This echoes Bottino (2004) who concluded that when classrooms are designed to incorporate ICT, the whole learning situation should be considered, including the technology, the teacher, the method in which ICT will be used, the curriculum objectives, the classroom environment and way in which learning is organised.

Findings reveal that by incorporating a laptop and data projector into the classroom (usually on the teacher’s suggestion), ICT is introduced in a subtle, user-friendly way. This concurs with Reynolds et al. (2003), who stated that ICT should be a tool for teaching, integrated into classrooms rather than as an independent department. Respondents acknowledged that if teachers have sufficient knowledge in the use of ICT, then technical difficulties should not be an issue in schools, emulating the Department of Education and Science (2008).

Other technologies were found to have impacted on the schools surveyed, such as digital cameras, mobile telephones, digital storage devices and portable music players. As ICT becomes more prevalent and pervasive in everyday life, findings show that it is beneficial for schools to embrace new technologies and adapt different ideas into teaching practices to maintain student interest and enthusiasm.
5.8 Funding for ICT in Schools

In this study, principals and teachers stated that in their opinion, insufficient funding was provided to schools for ICT equipment and educating staff in the use of technology. This is despite an investment of £107.92m from the Irish government since 2001 (Blueprint for the Future of ICT, 2001). A further €337m was promised in 2008, but due to cutbacks across the education system, this figure currently seems unlikely to be realised.

One of the main funding issues that arises from this study is that technology progresses relatively quickly, therefore creating a need for schools to regularly update their ICT equipment. As outlined by Richardson (2000), this generates obsolete hardware and software and causes difficulties for the schools surveyed to decide what to purchase and how to budget for ICT equipment. Respondents acknowledged that equipment becoming obsolete is a significant financial burden for schools and that a uniform system of purchasing hardware and software is preferable. Findings reveal that because schools have a limited ICT budget, they are aware that detailed planning should occur before any ICT equipment is purchased, ensuring value for money is achieved for the school. Findings show that this can be a costly process, both in terms of time and finances, to research, install and master new hardware and software.

All principals surveyed agreed that school ICT equipment should be audited and rated for effectiveness as proposed by Department of Education and Science (2008), as this would gather important information and inform future purchases. Public Private Partnerships between schools and companies that could supply ICT equipment and expertise were encouraged (Ireland, Department of Education and Science, 1997, Levin, 2000). However, there was little evidence among the schools surveyed of any affiliations with private companies. The majority of respondents were uncertain whether Public Private Partnerships are successful in providing equipment for schools. Public Private Partnerships were one of the concepts encouraged in ‘IT 2000’ and endorsed by McGarr et al (2001). However, a note of caution was raised by the schools surveyed, which stated that care should be taken to ensure that pedagogical objectives are not dictated to by commercial concerns, reflecting the views of Tansey et al (2003).
5.9 Professional Development

Research findings in concurrence with Galvin (2002), show that the majority of respondents believe that inservice courses are successful in increasing the use of ICT in the classroom and expanding teachers’ knowledge of ICT for use in the classroom.

This fulfils one of the key aims of Schools IT 2000 (Department of Education and Science, 1998). Respondents to this study stated that teachers learn new ICT skills and their application in the classroom at inservice courses, reflecting Tangney et al (2004), who concluded that educating teachers in the use of ICT constitutes not just basic literacy but sustained professional development in utilising ICTs for pedagogical purposes.

 Principals and teachers surveyed stated that ICT inservice courses should be a mandatory part of teaching and that teachers should attend at least one teacher inservice course per year. This reflects the findings of Demetriadiis et al (2003) who concluded that reliable support and extensive instruction is necessary for teachers to feel sufficiently confident to integrate ICT in their teaching methodologies.

However, respondents acknowledged that inservice courses can suffer from a lack of progression and that a well devised ICT plan should be made available to teachers to ensure successful ICT inservice courses. This reflects the findings of Department of Education and Science (2008) and O’Connell (2006), who states that teachers need to be facilitated in the courses they do to reflect on what they do.

Respondents accepted that continuing expansion of knowledge of ICT is important to some subjects in the schools surveyed such as Technical Graphics and Music, where the use of technology is an essential part of these subjects. This is in accordance with the findings of Schwartz et al. (2004) who stated that project-based learning is common in various fields including music and languages.
Lack of time for building ICT knowledge, insufficient funding, lack of recognition for awareness of ICT, inservice courses outside of school hours, management disinterest and resistance to change were cited by respondents as barriers to the progression of ICT in schools.

5.10 Innovative use of ICT

While the Department of Education and Science (2008) encourages inventive use of technology in classrooms, it was found that there are several areas where innovative use of ICT is being actively promoted. Schools Integration Projects (1998-2002) were acknowledged as a starting point for innovative use of technology for many schools.

It was found that schools actively participate in competitions and initiatives such as Fís projects, elearning and eschola⁹, among many others. Participation in such events was seen to be rewarding and worthwhile for students and teachers alike.

---

⁹ Projects managed by the NCTE designed to develop the innovative use of ICT in schools
Chapter 6

Conclusion
The objective of this research has been to investigate the factors that affect the progression of information and communications technology (ICT) in post primary schools in Ireland. This study has been successful in establishing the significance of the inclusion of ICT in the teaching and learning process. It has demonstrated that in general, ICT is widely used within schools for a variety of purposes and teachers are enthusiastic about its inclusion in the classroom. To determine what current factors affect the use of ICT in education, research was carried out under the following headings:

6.1 ICT and Teaching and Learning of Language Subjects
6.2 Technical Support
6.3 ICT Planning
6.4 Broadband and Hardware
6.5 Leadership
6.6 Pedagogical use of ICT
6.7 Use of ICT Equipment in Schools
6.8 Funding for ICT in Schools
6.9 Professional Development
6.10 Innovative use of ICT
6.1 ICT and Teaching and Learning of Language Subjects

ICT is widely used to aid the teaching and learning of language subjects. ICT is regarded as a motivational factor in the learning of languages, as it adds variety to teaching and learning, allows alternative teaching methodologies to be employed and was seen to engage students to a higher level than when ICT was not employed.

ICT is frequently and successfully used when teaching Gaeilge and both online and offline digital content is employed. This finding contradicts previous research which states that there was little evidence of ICT being used to teach language subjects and that ICT was rarely used in the teaching of Gaeilge.

Although the production of software for minority languages can be challenging, there are a number of ICT resources available to schools to assist the teaching and learning of Gaeilge, as developed by the Digiscoil symposium.
6.2 Technical Support

Schools are satisfied with the range of services provided to assist with technology in the classroom and they believe themselves to have a good standard of technical support.

However, this technical support is inconsistent. It may be managed by a technician specifically employed for this purpose and whose expertise is shared between a number of schools. In other schools, the technical issues are handled by a teacher whose motivation is a strong interest in ICT and goodwill towards their school.

Principals and teachers are in favour of a centralised, uniform approach to the purchase and maintenance of ICT equipment in schools, organised by the Department of Education and Science. While it is acknowledged that all schools have individual ICT needs and requirements, by adopting a standardised approach, technical difficulties would be reduced due to all schools using similar ICT equipment.

Without sufficient funding, planning and education in ICT, technical support may become an inhibiting factor to the progression of technology in schools. ICT should be supported and developed in schools, as technology is an inherent part of a modern education.
6.3 ICT Planning

While ICT planning occurs in schools, this planning is concentrated on short-term projects and little consideration is given to a long-term approach to the progression of technology. ICT planning in schools should involve a whole school approach and should be led by the school principal.

Although a wide variety of tasks are currently undertaken by the schools ICT coordinator, ICT planning is only a minor part of their role. Due to the inconsistent nature of technical support in schools, most of the ICT coordinators time is spent addressing technical difficulties and installing new equipment, leaving little time for long-term ICT planning.

It was advised that if an ICT steering committee were organised within a school, it would have a significant role in the development of an ICT plan and overseeing and evaluating the progress of such a plan. It was recommended that ICT equipment should be systematically reviewed and monitored to assess its effectiveness.

Lack of sufficient planning for ICT in schools may have a detrimental effect on the progression of technology in education and its inclusion in the teaching and learning process.
6.4 Broadband and Hardware

Broadband in schools operates to a satisfactory level, meaning that respondents are satisfied with the speed and the level of connectivity of broadband within their school.

A high quality infrastructure is essential to deliver educational resources available on the internet to the classroom. Principals and teachers stated that they were satisfied with the Schools Broadband Network filtering scheme, which separates and blocks unsuitable websites from more appropriate content for schools.

The main reason given for dissatisfaction with broadband among principals and teachers was a lack of availability of wireless networking in schools. When ICT is portable and easily accessible, it is more suited to use in the classroom and in schools in general.

Fast, efficient and reliable broadband is considered a vital component in the development of ICT within schools.
6.5 Leadership

The school principal is the driving force behind the implementation and progression of ICT in schools. The level of interest that the school principal has in integrating ICT into teaching methodologies is shown to affect the use of technology within schools, in terms of budgeting, long term ICT planning, timetabling for ICT resources and staff development.

Principals agreed that ICT has an intrinsic value in the transfer of knowledge and that ICT helps to vary the methods employed for teaching and learning. Despite this, principals were keen to point out that ICT is a tool and should not overshadow the content of a lesson or the teaching methodology.

ICT is used in schools for a wide variety of tasks including administration, presentation and in teaching methodologies. It is therefore, ingrained in school evolution and progression.
6.6 Pedagogical use of ICT

ICT can act as an incentive and an enhancement to teaching and learning. ICT is mainly used in the classroom for research, project work, surveys and for presentation purposes.

ICT is a motivating force in education. Technology provides a variety of resources and can enhance the educational experiences by providing greater scope for information research and varying the delivery of information.

However, only teachers who are confident in the use of ICT include technology as part of their teaching methodologies. Lack of facilities, insufficient knowledge of ICT and timetabling issues were cited as being responsible for teachers’ reluctance to use ICT in the classroom. Teachers believe that ICT should be used when it enhances a subject and is relevant to the lesson and not for the sake of integration of technology.

The integration of ICT and its use in the teaching and learning process can be seen as a contributory factor to how technology will advance in Irish schools.
6.7 Use of ICT Equipment in Schools

The computer laboratory is the most popular arrangement of computers for student use. The computer laboratory consists of approximately 20-30 networked computers, located in the same room and has proven to be a successful arrangement for group project work, research or other ICT related work.

Although a computer laboratory is acknowledged as a favourable use of ICT in schools, concentrating all computers for student use in one area may cause difficulties to arise. These challenges may include limited access to the computer laboratory, timetabling issues, educating teachers in the use of the computer laboratory, length of class time and the occurrence of technical difficulties.

A data projector connected to a laptop computer is a widely used tool in schools. Used mainly by the teacher, a laptop computer and data projector are also available for student use in general subject rooms. The combination of a data projector and laptop is an unobtrusive method of introducing ICT to general subject classrooms, as teachers can familiarise themselves with the technologies away from the classroom and at their own pace. The laptop computer and data projector is a cheaper and less intimidating solution to the inclusion of ICT in the classroom than an interactive whiteboard.

Significantly, the use of a data projector enhances teaching and learning by introducing greater variety into teaching methodologies.
6.8 Funding for ICT in schools

Insufficient funding is provided to schools for ICT equipment and further development in ICT for teachers. As technology rapidly advances and progresses, schools need to regularly upgrade ICT equipment which can be time-consuming and costly. A further consequence of replacing ICT equipment is the generation of obsolete hardware and software.

Principals and teachers believe that the Department of Education and Science should be responsible for purchasing and maintaining ICT equipment in schools. ICT hardware and software in schools should be regularly audited and rated for effectiveness.

Despite the lack of funding available to schools for technology, there was very little evidence of schools acquiring ICT equipment through Public Private Partnerships. While Public Private Partnerships were encouraged in ‘IT2000’, there is little evidence among schools that affiliations with private companies have taken place. It is imperative that when schools consider entering into a Public Private Partnership, pedagogical objectives are not dictated to by commercial concerns.

Adequate funding for ICT equipment and further development in ICT for teachers is essential to the evolution of technology in schools.
6.9 Professional development

Inservice courses are successful in increasing the use of ICT in the classroom and expanding teachers’ knowledge of ICT for the teaching and learning process. Teachers learn new ICT skills and their application in the classroom at inservice courses. It was recommended that teachers should attend at least one inservice course per year, as they need to become sufficiently confident to integrate ICT in their teaching methodologies.

Regular inservice courses in ICT would keep teachers abreast of evolving technologies, provide a platform for questions and improve and expand the knowledge base amongst staff.

However, inservice courses can suffer from a lack of progression and were seen to occur irregularly and without any evident long-term objective. A comprehensive education plan for teachers in ICT should be developed to ensure successful inservice courses.

Lack of time for ICT instruction, insufficient funding, lack of recognition for further education, courses occurring outside of school hours, management disinterest and resistance to change were cited by respondents as areas that prohibit successful development of ICT knowledge among teachers.

Successful professional development is essential to teachers if they are to use technology to its full potential in the classroom.
6.10 Innovative use of ICT in the Classroom

The Department of Education and Science encourages inventive use of technology in classrooms. ICT is being actively promoted within schools in many original and interesting ways. Schools Integration Projects are acknowledged as a starting point for innovative use of technology for many schools.

Competitions, inter-school projects and other ICT inclusive activities can be rewarding and fulfilling experiences for students and teachers.

Innovative use of technology in the classroom can be used to advance ideas, communication and best practice in schools in an interesting and engaging manner.
Chapter 7

Recommendations
This report investigates the factors that progress the use of information and communication technology in the teaching and learning process in Irish post primary schools. The following are a list of recommendations:

7.1 Further opportunity should be given to schools to teach languages particularly Gaeilge, with the support of ICT.

7.2 Technical support should be executed in a concise, planned manner whether this entails employing a technician who is shared between schools or offering a post of responsibility or other incentive to a suitable and interested member of staff.

7.3 A well-researched, progressive template should be put in place for school ICT planning. Each school should aim to have both a short-term and a long term plan.

7.4 While schools surveyed are satisfied with their broadband connection, wireless networks may be considered.

7.5 Findings show that the school principal’s interest in ICT has a direct effect on how it is implemented within a school. Principals should be supported with education in the use of ICT and other incentives to embrace the use of technology.

7.6 The inclusion of ICT in the process of teaching and learning should be encouraged in the classroom, by making ICT equipment and instruction in its use available to teachers.

7.7 Although the computer laboratory is employed successfully for student use, laptops and data projectors should be made available to all classrooms.

7.8 For ICT to progress in the classroom, greater funding is required for: inservice courses in ICT; ICT equipment; technical support; and managing obsolete hardware and software.
Findings show that principals and teachers are in favour of attending ICT inservice courses at least once a year. However, these courses should be tailored to teachers needs, be certified and prove to be progressive.

Schools should be encouraged to use ICT innovatively, by way of financial incentives or other rewards.
4. Reference List


Dissolving Boundaries (2009) [online] available:  
http://www.dissolvingboundaries.org/aboutUs.html [accessed 2 April 2009].


National Centre for Technology in Education (2002) *Technology Integration Initiative (TII) -Supporting the Development of ICT Infrastructure to Schools*, National Centre for Technology in Education: Dublin City University, Dublin.


Sime, D. and Priestley, M (2005) ‘Student teachers’ first reflections on information and communications technology and classroom learning: implications for initial teacher education’, *Glasgow Centre for the Child & Society*, University of Glasgow.


5. Source List


10.0 Appendix

1.1 Cover letter for questionnaires sent to schools
23 October 2009

Dear (addressed to school principal)

I am currently studying for a Master of Arts in Digital Media Development for Education at the University of Limerick. I am investigating the following:

**The factors that affect the pedagogical progression of ICT in post primary schools in Ireland**

As part of this study, I am required to research the pedagogical value of ICT in schools. This research will help to build a picture of how ICT is used in schools, how funding is spent, how ICT can affect the teaching and learning process and other topics that may arise.

As part of my study, I have chosen to focus on the South East region of Ireland and to contrast vocational and non-vocational schools, co-educational and non co-educational schools, and schools that offer further education and those that do not.

I would be grateful if you could distribute the enclosed questionnaires to staff, and return to the enclosed collection box. All data collected from the questionnaire is private and confidential. The questionnaires will be collected one week after delivery.

If you or any participant has any questions or uncertainties, please do not hesitate to contact me. Thank you in advance for participating in this research.

Yours sincerely

_____________

Marie Hayles
2.1 Questionnaire Distributed to School Principals
ICT in Teaching and Learning – Principals’ Questionnaire

The attached document is a questionnaire that forms part of the research for a Masters Degree in Digital Media in Education.

Your answers will help to build a picture of how Information and Communication Technology (ICT) is used in schools in Ireland.

Your participation in this study is strictly voluntary, confidential and non-traceable. Participants do not need to identify themselves or their school. Any data collected will not be passed on or sold to any other source.

Please complete all parts of the questionnaire

Thank you for your participation
Section 1 – Background Information

1. Please list the subject(s) that you teach
   1. ___________________  2. ___________________
   3. ___________________  4. ___________________
   5. ___________________  6. ___________________

2. Please list the years (classes) that you teach (if any)
   1. ___________________  2. ___________________
   3. ___________________  4. ___________________
   5. ___________________  6. ___________________

*Please tick the appropriate box*

3. Are you
   Male ☐    Female ☐

4. Are you aged
   18-30 years ☐  31-45 years ☐  46-60 years ☐  over 60 years ☐

5. Are the pupils in your school
   Boys only ☐    Girls only ☐    Mixed (co-education) ☐

6. How many pupils are in your school?
   Under 100 ☐  101-250 ☐  251-400 ☐  401-550 ☐  over 551 ☐

7. Are you a
   Principal ☐    Deputy Principal ☐

8. Is your school a
   Vocational school ☐    Non-vocational school ☐
Section 2 – Technical Support

9. Is the technical support for Information and Communication Technology (ICT) satisfactory in your school?

Yes ☐ No ☐ Don’t know ☐

10. List 4 factors that inhibit technical support for ICT in your school?

1. ______________________________________________________________
2. ______________________________________________________________
3. ______________________________________________________________
4. ______________________________________________________________

Please tick the appropriate box(es)

11. Who is responsible for ICT technical support in your school?

Principal ☐ Deputy Principal ☐ Teacher with responsibility for ICT Support ☐

Other ☐ Please specify____________________________________________

12. Should the Department of Education and Science take responsibility for purchasing ICT equipment?

Yes ☐ No ☐ Don’t know ☐

Please explain ________________________________________________
________________________________________________

13. Should the Department of Education and Science take responsibility for maintaining ICT equipment?

Yes ☐ No ☐ Don’t know ☐

Please explain ________________________________________________
________________________________________________

14. Should ICT advisors be re-instated in Education Centres?

Yes ☐ No ☐ Don’t know ☐

Please explain ________________________________________________
________________________________________________
Section 3 – Leadership

Please circle the answer that you feel most closely represents your opinion

15. How often do you use ICT in the classroom?

Never           once a month               once a week  daily

Please explain  __________________________________ ______________ 
______________________ __________________________

16. How often do you use ICT as an administrative tool?

Never           once a month               once a week  daily

Please explain  __________________________________ ______________ 
______________________ __________________________

17. The level of a principal’s interest in ICT affects how it is used in a school

Strongly disagree  Disagree  uncertain      agree    strongly agree

Please explain  ___________________________________ _____________ 
______________________ __________________________

18. ICT can be disruptive to teaching and learning

Strongly disagree  Disagree  uncertain      agree    strongly agree

Please explain  ___________________________________ _____________ 
______________________ __________________________

19. ICT inservice courses are worthwhile for teachers

Strongly disagree  Disagree  uncertain      agree    strongly agree

Please explain  ___________________________________ _____________ 
______________________ __________________________
20. ICT can help students achieve good examination results

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>uncertain</th>
<th>agree</th>
<th>strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please explain</td>
<td>__________________________</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>__________________________</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

21. There is effective ICT planning among staff in your school

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>uncertain</th>
<th>agree</th>
<th>strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please explain</td>
<td>__________________________</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>__________________________</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

22. ICT is successfully timetabled in your school

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>uncertain</th>
<th>agree</th>
<th>strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please explain</td>
<td>__________________________</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>__________________________</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

23. ICT is worth using in the teaching and learning process

<table>
<thead>
<tr>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>uncertain</th>
<th>agree</th>
<th>strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please explain</td>
<td>__________________________</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>__________________________</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

24. In your opinion, who should be involved in ICT planning in schools?

____________________________________________________________
____________________________________________________________
____________________________________________________________
____________________________________________________________
Section 4 – Classroom of the Future

Please tick the appropriate box

25. Should ICT be integrated into all subjects?
   Yes ☐   No ☐   Don’t know ☐

   Please explain ________________________________________________
   __________________________________________________
   __________________________________________________

26. Can ICT act as an incentive for teaching and learning for students and teachers?
   Yes ☐   No ☐   Don’t know ☐

   Please explain ________________________________________________
   __________________________________________________
   __________________________________________________

27. Is the educational experience enhanced by the inclusion of ICT in teaching and learning?
   Yes ☐   No ☐   Don’t know ☐

   Please explain ________________________________________________
   __________________________________________________
   __________________________________________________
Section 5

Pedagogical use of ICT / Integration of ICT into the classroom

Please tick the appropriate box

28. Is ICT used for the teaching and learning of language subjects in your school?
   Yes ☐   No ☐   Don’t know ☐

Please explain ________________________________________________
                                   ________________________________________________

29. Is ICT used for the teaching and learning of Gaeilge in your school?
   Yes ☐   No ☐   Don’t know ☐

Please explain ________________________________________________
                                   ________________________________________________

30. List 4 ways that ICT can be encouraged in your school?

   1. _______________________________________________________
   2. _______________________________________________________
   3. _______________________________________________________
   4. _______________________________________________________
Section 5 – Part 2

Pedagogical use of ICT / Integration of ICT into the classroom

31. Is ICT integrated into all subjects in your school?
   Yes ☐   No ☐   Don’t know ☐

Please explain ________________________________________________
   ____________________________________________________________

32. ICT used for research purposes in your school?
   Yes ☐   No ☐   Don’t know ☐

Please explain ________________________________________________
   ____________________________________________________________

33. Is ICT used for presentation purposes in your school?
   Yes ☐   No ☐   Don’t know ☐

Please explain ________________________________________________
   ____________________________________________________________

34. Should school ICT equipment be audited and rated for effectiveness?
   Yes ☐   No ☐   Don’t know ☐

Please explain ________________________________________________
   ____________________________________________________________
Section 6 - Hardware and Broadband

35. Is the broadband connection in your school satisfactory?
   Yes ☐  No ☐  Don’t know ☐

Please explain ______________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

36. Do computer rooms represent the best use of ICT in schools?
   Yes ☐  No ☐  Don’t know ☐

Please explain ______________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

37. Do (the risk of) technical difficulties deter teachers from using ICT?
   Yes ☐  No ☐  Don’t know ☐

Please explain ______________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________

38. Does the use of a data projector enhance teaching and learning for students and teachers?
   Yes ☐  No ☐  Don’t know ☐

Please explain ______________________________________________________
____________________________________________________________________
____________________________________________________________________
____________________________________________________________________
39. Does the educational software that is used for the Irish curriculum enhance teaching and learning?

Yes ☐ No ☐ Don’t know ☐

Please explain ____________________________________________
________________________________________________________
________________________________________________________

40. Does the software that is currently available cover all subjects in the curriculum?

Yes ☐ No ☐ Don’t know ☐

Please explain ____________________________________________
________________________________________________________
________________________________________________________

41. Do you use educational websites that are suitable for use with the Irish curriculum?

Yes ☐ No ☐ Don’t know ☐

Please explain ____________________________________________
________________________________________________________
________________________________________________________
Section 8 – Use of ICT in schools - Part 1

42. Should computers be situated in classrooms for students use?
   Yes ☐  No ☐  Don’t know ☐
   Please explain __________________________________________
   _______________________________________________________
   _______________________________________________________

43. What, in your opinion, are the 4 main uses for ICT in schools?
   1.________________________________________________________
   2.________________________________________________________
   3.________________________________________________________
   4.________________________________________________________

44. Are computers used for administration more than teaching and learning in schools?
   Yes ☐  No ☐  Don’t know ☐
   Please explain __________________________________________
   _______________________________________________________
   _______________________________________________________

45. Should ICT be integrated into the curriculum?
   Yes ☐  No ☐  Don’t know ☐
   Please explain __________________________________________
   _______________________________________________________
Section 8 – Use of ICT in schools - Part 2

46. Should ICT skills become a curriculum subject?

Yes ☐ No ☐ Don’t know ☐

Please explain ___________________________________________________________

47. How can schools best manage the following ICT issues that may arise?

<table>
<thead>
<tr>
<th>Timetabling ICT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical issues that may arise as one teacher hands over a classroom to another</td>
</tr>
<tr>
<td>Technical glitches</td>
</tr>
<tr>
<td>Other (please list)</td>
</tr>
</tbody>
</table>

48. Is the teacher’s attitude important to the success of ICT in the classroom?

Yes ☐ No ☐ Don’t know ☐

Please explain ___________________________________________________________

49. Do teachers want to use ICT in the classroom?

Yes ☐ No ☐ Don’t know ☐

Please explain ___________________________________________________________

50. Do teachers feel confident using ICT in the classroom?

Yes ☐ No ☐ Don’t know ☐

Please explain ___________________________________________________________
Section 9 – Funding for ICT in schools

51. Is sufficient funding provided to schools for ICT equipment and training?
   Yes ☐  No ☐  Don’t know ☐

   Please explain ____________________________________________________
   ____________________________________________________
   ____________________________________________________

52. What 4 areas should be prioritised when funding for ICT?
   1. ______________________________________________________________
   2. ______________________________________________________________
   3. ______________________________________________________________
   4. ______________________________________________________________

53. Does your school avail of any public private partnerships?
   Yes ☐  No ☐  Don’t know ☐

54. Are public private partnerships successful in providing ICT equipment in education?
   Yes ☐  No ☐  Don’t know ☐

   Please explain ____________________________________________________
   ____________________________________________________
   ____________________________________________________
55. Are inservice courses in ICT successful in increasing the use of ICT in the classroom?

Yes ☐ No ☐ Don’t know ☐

Please explain ____________________________________________
__________________________________________________________
__________________________________________________________

56. Are inservice courses in ICT successful in increasing teachers’ knowledge of ICT?

Yes ☐ No ☐ Don’t know ☐

Please explain ____________________________________________
__________________________________________________________
__________________________________________________________

Please circle the answer that you feel most closely represents your opinion

57. In your opinion, how often should teachers attend inservice ICT courses?

Never ☐ one every 5 years ☐ one every two years ☐ one per year ☐ One per term ☐

Please explain ____________________________________________
__________________________________________________________
__________________________________________________________

58. What 4 areas should ICT training courses focus on?

1. __________________________________________________________
2. __________________________________________________________
3. __________________________________________________________
4. __________________________________________________________

59. Should ICT training courses be a mandatory part of teaching?

Yes ☐ No ☐ Don’t know ☐

Please explain ____________________________________________
__________________________________________________________
__________________________________________________________
Section 10 – Professional Development – Part 2

60. Is ICT training more important to some subject teachers than others?

Yes ☐  No ☐  Don’t know ☐

Please explain ________________________________________
______________________________________________________
______________________________________________________

61. What are the 4 main barriers to professional development in ICT for teachers?

1. ______________________________________________________
2. ______________________________________________________
3. ______________________________________________________
4. ______________________________________________________

62. Are teachers motivated to learn how to incorporate ICT into teaching and learning?

Yes ☐  No ☐  Don’t know ☐

Please explain ________________________________________
______________________________________________________
______________________________________________________
63. List 4 ways that the Department of Education and Science can encourage the innovative use of ICT in the classroom?

1. ______________________________________________________________
2. ______________________________________________________________
3. ______________________________________________________________
4. ______________________________________________________________

64. Name 4 ways in which good practise and expertise is encouraged in the classroom?

1. ______________________________________________________________
2. ______________________________________________________________
3. ______________________________________________________________
4. ______________________________________________________________
Please include any other comments that you think are relevant to ICT in education

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

If you would like to be considered for a short interview, as a follow up to this questionnaire, please add your name, email address and telephone number. Thank you.

Name ____________________________________________
Email ____________________________________________
Telephone_________________________________________

Thank you for your time and your participation in this research
3.1 Questionnaire Issued to Teachers
ICT in Teaching and Learning - Teachers’ questionnaire

The attached document is a questionnaire that forms part of the research for a Masters Degree in Digital Media in Education.

Your answers will help to build a picture of how Information and Communication Technology (ICT) is used in schools in Ireland.

Your participation in this study is strictly voluntary, confidential and non-traceable. Participants do not need to identify themselves or their school. Any data collected will not be passed on or sold to any other source.

Please complete all parts of the questionnaire

Thank you for your participation
Section 1 – Background Information

65. Please list the subject(s) that you teach
   1.___________________  2.___________________
   3.___________________  4.___________________
   5.___________________  6.___________________

66. Please list the years (classes) that you teach
   1.___________________  2.___________________
   3.___________________  4.___________________
   5.___________________  6.___________________

67. Are you
   Male ☐    Female ☐

68. Are you aged
   18-30 years ☐  31-45 years ☐  46-60 years ☐  over 60 years ☐

69. Are the pupils in your school
   Boys only ☐    Girls only ☐    Mixed (co-education) ☐

70. How many pupils are in your school?
   Under 100 ☐  101-250 ☐  251-400 ☐  401-550 ☐  over 551 ☐

71. Is your school a
   Vocational school ☐    Non-vocational school ☐
Section 2 – Technical Support

72. Is the technical support for Information and Communication Technology (ICT) satisfactory in your school?
   Yes ☐      No ☐      Don’t know ☐

73. List 4 factors that inhibit technical support for ICT in your school?
   1.____________________________________________________________
   2.____________________________________________________________
   3.____________________________________________________________
   4.____________________________________________________________
   *Please tick the appropriate box(es)*

74. Who is responsible for ICT technical support in your school?
   Principal ☐      Deputy Principal ☐      Teacher with responsibility for ICT Support ☐
   Other ☐      Please specify__________________________________________________________

75. Should the Department of Education and Science take responsibility for purchasing ICT equipment?
   Yes ☐      No ☐      Don’t know ☐
   Please explain________________________________________________________

76. Should the Department of Education and Science take responsibility for maintaining ICT equipment?
   Yes ☐      No ☐      Don’t know ☐
   Please explain________________________________________________________

77. Should ICT advisors be re-instated in Education Centres?
   Yes ☐      No ☐      Don’t know ☐
   Please explain________________________________________________________
Section 3 – Leadership

Please circle the answer that you feel most closely represents your opinion

78. The level of a principal’s interest in ICT affects how it is used in a school

Strongly disagree  Disagree  uncertain  agree  strongly agree

79. There is effective ICT planning among staff in your school

Strongly disagree  Disagree  uncertain  agree  strongly agree

80. ICT inservice courses fulfil teacher’s needs

Strongly disagree  Disagree  uncertain  agree  strongly agree

81. ICT is successfully timetabled in schools

Strongly disagree  Disagree  uncertain  agree  strongly agree

82. In your opinion, who should be involved in ICT planning in schools?

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________

__________________________________________________________________________
Section 4 – Classroom of the Future

Please tick the appropriate box

83. Should ICT be integrated into all subjects?

Yes ☐ No ☐ Don’t know ☐

Please explain ________________________________________________
________________________________________________
________________________________________________

84. Can ICT act as an incentive for teaching and learning for students and teachers?

Yes ☐ No ☐ Don’t know ☐

Please explain ________________________________________________
________________________________________________
________________________________________________

85. Is the educational experience enhanced by the inclusion of ICT in teaching and learning?

Yes ☐ No ☐ Don’t know ☐

Please explain ________________________________________________
________________________________________________
________________________________________________
Section 5
Pedagogical use of ICT / Integration of ICT into the classroom

Please tick the appropriate box

86. Is ICT used for the teaching and learning of language subjects in your school?
Yes [ ] No [ ] Don’t know [ ]

Please explain ________________________________________________
________________________________________________

87. Is ICT used for the teaching and learning of Gaeilge in your school?
Yes [ ] No [ ] Don’t know [ ]

Please explain ________________________________________________
________________________________________________

88. List 4 ways that ICT can be encouraged in your school?
1. ____________________________________________________________
2. ____________________________________________________________
3. ____________________________________________________________
4. ____________________________________________________________
Section 5 – Part 2
Pedagogical use of ICT / Integration of ICT into the classroom

89. Is ICT integrated into all subjects in your school?
   Yes ☐       No ☐       Don’t know ☐

Please explain ________________________________________________
________________________________________________

90. ICT used for research purposes in your school?
   Yes ☐       No ☐       Don’t know ☐

Please explain ________________________________________________
________________________________________________

91. Is ICT used for presentation purposes in your school?
   Yes ☐       No ☐       Don’t know ☐

Please explain ________________________________________________
________________________________________________

92. Should school ICT equipment be audited and rated for effectiveness?
   Yes ☐       No ☐       Don’t know ☐

Please explain ________________________________________________
________________________________________________
Section 6 - Hardware and Broadband

Please tick the appropriate box

93. Is the broadband connection in your school satisfactory?
   Yes ☐   No ☐   Don’t know ☐

Please explain ________________________________________________
   _____________________________________________________________
   _____________________________________________________________

94. Do computer rooms represent the best use of ICT in schools?
   Yes ☐   No ☐   Don’t know ☐

Please explain ________________________________________________
   _____________________________________________________________
   _____________________________________________________________

95. Do (the risk of) technical difficulties deter teachers from using ICT?
   Yes ☐   No ☐   Don’t know ☐

Please explain ________________________________________________
   _____________________________________________________________
   _____________________________________________________________

96. Does the use of a data projector enhance teaching and learning for students and teachers?
   Yes ☐   No ☐   Don’t know ☐

Please explain ________________________________________________
   _____________________________________________________________
   _____________________________________________________________
Section 7 – Software and Digital Content

97. Does the educational software that is used for the Irish curriculum enhance teaching and learning?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Don't know</th>
</tr>
</thead>
</table>

Please explain ________________________________________________
________________________________________________
________________________________________________

98. Does the software that is currently available cover all subjects in the curriculum?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Don't know</th>
</tr>
</thead>
</table>

Please explain ________________________________________________
________________________________________________
________________________________________________

99. Do teachers value ICT as a teaching and learning tool?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Don't know</th>
</tr>
</thead>
</table>

Please explain ________________________________________________
________________________________________________
________________________________________________

100. Do you use educational websites that are suitable for use with the Irish curriculum?

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Don't know</th>
</tr>
</thead>
</table>

Please explain ________________________________________________
________________________________________________
Section 8 – Use of ICT in schools - Part 1

101. Should computers be situated in classrooms for students use?

Yes ☐ No ☐ Don’t know ☐

Please explain ____________________________________________
________________________________________________________
________________________________________________________

102. What, in your opinion, are the 4 main uses for ICT in schools?

1. _________________________________________________________
2. _________________________________________________________
3. _________________________________________________________
4. _________________________________________________________

103. Are computers used for administration more than teaching and learning in schools?

Yes ☐ No ☐ Don’t know ☐

Please explain ____________________________________________
________________________________________________________
________________________________________________________

104. Should ICT be integrated into the curriculum?

Yes ☐ No ☐ Don’t know ☐

Please explain ____________________________________________
________________________________________________________
________________________________________________________
Section 8 – Use of ICT in schools - Part 2

105. Should ICT skills become a curriculum subject?

   Yes [ ]  No [ ]  Don’t know [ ]

   Please explain ____________________________________________________________

106. How can schools best manage the following ICT issues that may arise?

<table>
<thead>
<tr>
<th>Issue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timetabling ICT</td>
</tr>
<tr>
<td>Technical issues that may arise as one teacher hands over a classroom</td>
</tr>
<tr>
<td>to another</td>
</tr>
<tr>
<td>Technical glitches</td>
</tr>
<tr>
<td>Other (please list)</td>
</tr>
</tbody>
</table>

107. Is the teacher’s attitude important to the success of ICT in the classroom?

   Yes [ ]  No [ ]  Don’t know [ ]

   Please explain ____________________________________________________________

108. Do teachers want to use ICT in the classroom?

   Yes [ ]  No [ ]  Don’t know [ ]

   Please explain ____________________________________________________________

109. Do teachers feel confident using ICT in the classroom?

   Yes [ ]  No [ ]  Don’t know [ ]

   Please explain ____________________________________________________________
Section 9 – Funding for ICT in schools

110. Is sufficient funding provided to schools for ICT equipment and training?

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>Don’t know</td>
</tr>
</tbody>
</table>

Please explain ____________________________________________
__________________________________________________________
__________________________________________________________

111. What 4 areas should be prioritised when funding for ICT?

1. _________________________________________________________
2. _________________________________________________________
3. _________________________________________________________
4. _________________________________________________________

112. Does your school avail of any public private partnerships?

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>Don’t know</td>
</tr>
</tbody>
</table>

113. Are public private partnerships successful in providing ICT equipment in education?

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
<td>Don’t know</td>
</tr>
</tbody>
</table>

Please explain ____________________________________________
__________________________________________________________
__________________________________________________________
114. Are inservice courses in ICT successful in increasing the use of ICT in the classroom?

Yes ☐ No ☐ Don’t know ☐

Please explain ____________________________________________
__________________________________________________________
__________________________________________________________

115. Are inservice courses in ICT successful in increasing teachers’ knowledge of ICT?

Yes ☐ No ☐ Don’t know ☐

Please explain ____________________________________________
__________________________________________________________
__________________________________________________________

116. In your opinion, how often should teachers attend inservice ICT courses?

Never ☐ one every 5 years ☐ one every two years ☐ one per year ☐ One per term ☐

Please explain ____________________________________________
__________________________________________________________
__________________________________________________________

117. What 4 areas should ICT training courses focus on?

1. _________________________________________________________
2. _________________________________________________________
3. _________________________________________________________
4. _________________________________________________________

118. Should ICT training courses be a mandatory part of teaching?

Yes ☐ No ☐ Don’t know ☐

Please explain ____________________________________________

119. ______________________________________________________
120. Is ICT training more important to some subject teachers than others?

Yes [ ]                No [ ]                Don’t know [ ]

Please explain ____________________________________________________________

                                             ____________________________________

                                                 ________________________________

121. What are the 4 main barriers to professional development in ICT for teachers?

1. ______________________________________________________________

2. ______________________________________________________________

3. ______________________________________________________________

4. ______________________________________________________________

122. Are teachers motivated to learn how to incorporate ICT into teaching and learning?

Yes [ ]                No [ ]                Don’t know [ ]

Please explain ____________________________________________________________

                                             ____________________________________

                                                 ________________________________

123. Do teachers realise the potential value of using ICT in the classroom?

Yes [ ]                No [ ]                Don’t know [ ]

Please explain ____________________________________________________________

                                             ____________________________________

                                                 ________________________________
124. List 4 ways that the Department of Education and Science can encourage the innovative use of ICT in the classroom?

1. ______________________________________________________________
2. ______________________________________________________________
3. ______________________________________________________________
4. ______________________________________________________________

125. Name 4 ways in which good practise and expertise is encouraged in the classroom?

1. ______________________________________________________________
2. ______________________________________________________________
3. ______________________________________________________________
4. ______________________________________________________________
Please include any other comments that you think are relevant to ICT in education

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

If you would like to be considered for a short interview, as a follow up to this questionnaire, please add your name, email address and telephone number. Thank you.

Name ____________________________________________

Email ____________________________________________

Telephone_________________________________________

Thank you for your time and your participation in this research
4.1 Questionnaire Distributed to Students of Mainstream Classes
ICT in teaching and learning – questionnaire
Students

The attached document is a questionnaire that forms part of the research for a Masters Degree in Digital Media in Education.

Your answers will help to build a picture of how Information and Communications Technology (ICT) is used in schools in Ireland.

Your participation in this study is strictly voluntary, confidential and non-traceable. Participants do not need to identify themselves or their school. Any data collected will not be passed on or sold to any other source.

Please complete all parts of the questionnaire

Thank you for your participation
Section 1 – Background Information

Please circle the answer that you feel most closely represents you

1. What year are you in?
   1st  2nd  3rd  Transition  5th  6th

Please tick the appropriate box

2. Are you aged
   11-13 years  14-16 years  Over 17 years

3. Are you
   Male  Female

4. Are the pupils in your school
   Boys only  Girls only  Mixed (co-education)

5. How many pupils are in your school?
   Under 100  101-250  251-400  401-550  over 551

6. Is your school a
   Vocational school  Non-vocational school
Section 2 – Technical Support

7. Is there a good standard of Information and Communication Technology (ICT) in your school?

Yes ☐  No ☐  Don’t know ☐

Please explain ________________________________________________
________________________________________________

Please tick the appropriate box(es)

8. Who is responsible for ICT technical support in your school?

Principal ☐  Deputy Principal ☐  Teacher ☐
Other ☐  Please specify__________________________________________

9. What are the 4 main ICT technical problems that occur in your school?

1. ______________________________________________________________
2. ______________________________________________________________
3. ______________________________________________________________
4. ______________________________________________________________

10. How could technical support be improved in your school?

__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
__________________________________________________________________
Section 3 – Leadership

Please circle the answer that you feel most closely represents your opinion

11. In your opinion, does a principal’s interest in ICT affect how it is used in a school?

Strongly disagree  Disagree  uncertain  agree  strongly agree

Please explain ________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

Section 4 – Classroom of the Future

Please tick the appropriate box

12. Should ICT be integrated into all subjects?

Yes  No  Don’t know

Please explain ________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

13. Can ICT act as an incentive for teaching and learning for students and teachers?

Yes  No  Don’t know

Please explain ________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________

14. Is the educational experience enhanced by using ICT in teaching and learning?

Yes  No  Don’t know

Please explain ________________________________________________
________________________________________________________________
________________________________________________________________
________________________________________________________________
Section 5 – Part 1
Pedagogical use of ICT / Integration of ICT into the classroom

15. Is ICT used for the teaching and learning of language subjects in your school?
   Yes ☐  No ☐  Don’t know ☐

Please explain ________________________________________________
________________________________________________

16. Is ICT used for the teaching and learning of Gaeilge in your school?
   Yes ☐  No ☐  Don’t know ☐

Please explain ________________________________________________
________________________________________________

17. List 4 ways that ICT can be encouraged in your school?
   1.____________________________________________________________
   2.____________________________________________________________
   3.____________________________________________________________
   4.____________________________________________________________

18. Is ICT integrated into all subjects in your school?
   Yes ☐  No ☐  Don’t know ☐

Please explain ________________________________________________
________________________________________________
Pedagogical use of ICT / Integration of ICT into the classroom

19. Do you use ICT for research purposes in your school?
   Yes ☐  No ☐  Don’t know ☐
   Please explain ________________________________________________
   ___________________________________________________________

20. Do you use ICT for presentation purposes in your school?
   Yes ☐  No ☐  Don’t know ☐
   Please explain ________________________________________________
   ___________________________________________________________
   ___________________________________________________________

21. Do you use ICT to create projects?
   Yes ☐  No ☐  Don’t know ☐
   Please explain ________________________________________________
   ___________________________________________________________
   ___________________________________________________________

22. How else do you use ICT in your school?
   ___________________________________________________________
   ___________________________________________________________
   ___________________________________________________________
Section 6 - Hardware and Broadband

Please tick the appropriate box

**23. Is the broadband connection in your school satisfactory?**
- Yes ☐
- No ☐
- Don’t know ☐

Please explain ________________________________________________
________________________________________________
________________________________________________

**24. In your opinion, should one classroom be a dedicated computer room?**
- Yes ☐
- No ☐
- Don’t know ☐

Please explain ________________________________________________
________________________________________________
________________________________________________

**25. Do (the risk of) technical difficulties deter teachers from using ICT?**
- Yes ☐
- No ☐
- Don’t know ☐

Please explain ________________________________________________
________________________________________________
________________________________________________

**26. Does the use of a data projector enhance teaching and learning for students and teachers?**
- Yes ☐
- No ☐
- Don’t know ☐

Please explain ________________________________________________
________________________________________________
________________________________________________
Section 7 – Software and Digital Content

Please tick the appropriate box

27. Does the educational software that is used for the Irish curriculum enhance teaching and learning?
   Yes ☐ No ☐ Don’t know ☐

Please explain

________________________________________________

________________________________________________

________________________________________________

28. Do teachers value ICT as a teaching and learning tool?
   Yes ☐ No ☐ Don’t know ☐

Please explain

________________________________________________

________________________________________________

________________________________________________

29. Does the software that is currently available cover all subjects in the curriculum?
   Yes ☐ No ☐ Don’t know ☐

Please explain

________________________________________________

________________________________________________

________________________________________________

30. Do you use educational websites as part of your schoolwork?
   Yes ☐ No ☐ Don’t know ☐

Please explain

________________________________________________

________________________________________________

________________________________________________
31. Should computers be situated in classrooms for students use?

Yes □  No □  Don’t know □

Please explain ____________________________________________
________________________________________________________
________________________________________________________

32. What, in your opinion, are the 4 main uses for ICT in schools?

1. ______________________________________________________
2. ______________________________________________________
3. ______________________________________________________
4. ______________________________________________________

33. Should ICT skills become an exam subject?

Yes □  No □  Don’t know □

Please explain ____________________________________________
________________________________________________________
________________________________________________________
34. How can schools best manage the following ICT issues that may arise?

<table>
<thead>
<tr>
<th>Issue</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timetabling ICT</td>
<td></td>
</tr>
<tr>
<td>Technical issues that may arise as one teacher hands over a classroom to another</td>
<td></td>
</tr>
<tr>
<td>Technical glitches</td>
<td></td>
</tr>
<tr>
<td>Other (please list)</td>
<td></td>
</tr>
</tbody>
</table>

35. Is the teacher’s attitude important to the success of ICT in the classroom?

- Yes [ ]
- No [ ]
- Don’t know [ ]

Please explain __________________________________________________________
________________________________________________
________________________________________________

36. In your opinion, do teachers want to use ICT in the classroom?

- Yes [ ]
- No [ ]
- Don’t know [ ]

Please explain __________________________________________________________
________________________________________________
________________________________________________
Section 11 – Innovative use of ICT

37. List 4 ways that the Department of Education and Science can encourage the innovative use of ICT in the classroom?

1. ______________________________________________________________
2. ______________________________________________________________
3. ______________________________________________________________
4. ______________________________________________________________

38. Name 4 ways in which good practise and expertise is encouraged in the classroom?

1. ______________________________________________________________
2. ______________________________________________________________
3. ______________________________________________________________
4. ______________________________________________________________

Please include any other comments that you think are relevant
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

If you would like to be considered for a short interview, as a follow up to this questionnaire, please add your name, email address and telephone number. Thank you.

Name ____________________________________________
Email ____________________________________________
Telephone_________________________________________

Thank you for your time and your participation in this research.
5.1 Questionnaire Distributed to Post Leaving Certificate Students
The attached document is a questionnaire that forms part of the research for a Masters Degree in Digital Media in Education.

Your answers will help to build a picture of how Information and Communication Technology (ICT) is used in centres in Ireland.

Your participation in this study is strictly voluntary, confidential and non-traceable. Participants do not need to identify themselves or their school. Any data collected will not be passed on or sold to any other source.

Please complete all parts of the questionnaire

Thank you for your participation
Section 1 – Background Information

1. Please name the course that you are studying for

___________________________________________________________________

2. Please list the modules that you are doing that involve using Information and Communication Technology (ICT)

1.___________________  2.___________________  3.___________________
4.___________________  5.___________________  6.___________________
7.___________________  8.___________________  9.___________________

Please tick the appropriate box

3. Are you

Male ☐  Female ☐

4. Are you aged

17-30 years ☐  31-45 years ☐  46-60 years ☐  over 60 years ☐

5. Is the educational establishment that you attend

Post Primary with Adult Education ☐  Adult Education only ☐

6. Do you use ICT at home?

Yes ☐  No ☐  Don’t know ☐

Please explain ________________________________________________  
_________________________________________________________________

7. Did you use ICT prior to beginning your course?

Yes ☐  No ☐  Don’t know ☐

Please explain ________________________________________________ 
_________________________________________________________________
Section 2 – Technical Support

8. In your opinion, is the level of technical support for ICT satisfactory in your centre?
   Yes □  No □  Don’t know □

9. Do technical difficulties interrupt teaching and learning on your course?
   Yes □  No □  Don’t know □

   Please explain ______________________________________________________
   ______________________________________________________
   ______________________________________________________

10. List 4 factors that inhibit technical support for ICT in your centre?
    1. ______________________________________________________________
    2. ______________________________________________________________
    3. ______________________________________________________________
    4. ______________________________________________________________

Please tick the appropriate box(es)

11. Who is responsible for ICT technical support in your centre?

   Principal □  Deputy Principal □  Teacher with responsibility for ICT Support □
   Other □  Please specify__________________________________________
Section 3 – Leadership

Please circle the answer that you feel most closely represents your opinion

12. The level of a principal’s interest in ICT affects how it is used in a centre

Strongly disagree  Disagree  uncertain  agree  strongly agree

Section 4 – Classroom of the Future

Please tick the appropriate box

13. Should ICT be used in all modules?

Yes  No  Don’t know

Please explain

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

14. Can ICT act as an incentive for teaching and learning for students and tutors?

Yes  No  Don’t know

Please explain

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________

15. Is the educational experience enhanced by the inclusion of ICT in teaching and learning?

Yes  No  Don’t know

Please explain

________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Section 6 - Hardware and Broadband

Please tick the appropriate box

16. Is the broadband connection in your centre satisfactory?
   Yes ☐      No ☐      Don’t know ☐

Please explain ________________________________________________
   ____________________________________________________________
   ____________________________________________________________

17. Do computer rooms represent the best use of ICT in centres?
   Yes ☐      No ☐      Don’t know ☐

Please explain ________________________________________________
   ____________________________________________________________
   ____________________________________________________________

18. Do (the risk of) technical difficulties deter tutors from using ICT?
   Yes ☐      No ☐      Don’t know ☐

Please explain ________________________________________________
   ____________________________________________________________
   ____________________________________________________________

19. Does the use of a data projector enhance teaching and learning for students and tutors?
   Yes ☐      No ☐      Don’t know ☐

Please explain ________________________________________________
   ____________________________________________________________
   ____________________________________________________________
Section 8 – Use of ICT in centres - Part 1

20. What, in your opinion, are the 4 main uses for ICT in centres?

1. ____________________________________________________________
2. ____________________________________________________________
3. ____________________________________________________________
4. ____________________________________________________________

21. Are computers used for administration more than teaching and learning in schools?

Yes ☐ No ☐ Don’t know ☐

Please explain ____________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________

22. How can schools best manage the following ICT issues that may arise?

<table>
<thead>
<tr>
<th>Timetabling ICT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical issues that may arise as one teacher hands over a classroom to another</td>
<td></td>
</tr>
<tr>
<td>Technical glitches</td>
<td></td>
</tr>
<tr>
<td>Other (please list)</td>
<td></td>
</tr>
</tbody>
</table>
23. Is the tutor’s attitude important to the success of ICT?

Yes ☐  No ☐  Don’t know ☐

Please explain ______________________________________
________________________________________________
________________________________________________

24. Do tutors want to use ICT in the classroom?

Yes ☐  No ☐  Don’t know ☐

Please explain ______________________________________
________________________________________________
________________________________________________

25. Do tutors feel confident using ICT in the classroom?

Yes ☐  No ☐  Don’t know ☐

Please explain ______________________________________
________________________________________________
________________________________________________
Section 9 – Funding for ICT in schools

26. What 4 areas should be prioritised when funding for ICT?

1. ______________________________________________________________
2. ______________________________________________________________
3. ______________________________________________________________
4. ______________________________________________________________

Section 11 – Innovative use of ICT

27. List 4 ways that the Department of Education and Science can encourage the innovative use of ICT in centres?

1. ______________________________________________________________
2. ______________________________________________________________
3. ______________________________________________________________
4. ______________________________________________________________

28. Name 4 ways in which good practise and expertise is encouraged in centres?

1. ______________________________________________________________
2. ______________________________________________________________
3. ______________________________________________________________
4. ______________________________________________________________
Please include any other comments that you think are relevant

__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________
__________________________________________________________________________________

If you would like to be considered for a short interview, as a follow up to this questionnaire, please add your name, email address and telephone number. Thank you.

Name ____________________________________________
Email ____________________________________________
Telephone_________________________________________

Thank you for your time and your participation in this research
6.1 Interview Questions for Principals
Interview Questions - Principals

Technical Support

1. Who is responsible for technical support in your school?
2. Is there a satisfactory standard of technical support in your school?
3. Who should be responsible for technical support in your school?
4. What are the barriers to satisfactory technical support in your school?

Leadership

1. Is a principals’ interest in ICT in education important to its promotion in a school?
2. Is ICT disruptive to the teaching and learning process? If so why?
3. Are ICT inservice courses valuable to teachers?
4. Is access to the computer lab an issue in your school?
5. Is there effective ICT planning, both long and short term, in your school?

Pedagogical use of ICT

1. Is teaching and learning enhanced by integrating ICT into classes? If so why?
2. Is ICT used for teaching languages in your school?
3. Is ICT used for teaching Gaeilge in your school?
4. How can the use of ICT be encouraged in your school?

Hardware and Broadband

1. Is the broadband connection in your school satisfactory?
2. How could it be improved?
3. How are computers positioned for student use in your school? Does this work well?
4. Does the use of a data projector enhance teaching and learning? If so, how?

Software and Digital Content

1. Is sufficient educational software available for use with the Irish curricula?
2. Is educational software used in your school?
3. Do teachers want to use ICT as part of the teaching and learning process?
4. What are the main uses for ICT in your school?
**Funding for ICT**

1. Is there sufficient funding for ICT in your school?
2. What areas of ICT should be prioritised for funding?
3. Does your school avail of any Public Private Partnerships? If so, please outline?

**Professional Development**

1. Are inservice courses successful in increasing the use of ICT in the classroom? If so, how?
2. What areas should ICT focus on?
3. What are the barriers to professional development among school staff?
4. How can professional development be encouraged among school staff?
5. How would you like to see ICT improved in your school?
6. Would you like to add any other information about ICT in your school?
7.1 Interview Questions for Teachers
Interview Questions - Teachers

Technical Support

1. Who is responsible for technical support in your school?
2. Is there a satisfactory standard of technical support in your school?
3. Who should be responsible for technical support in your school?
4. What are the barriers to satisfactory technical support in your school?

Leadership

1. Is a principals’ interest in ICT in education important to its promotion in a school?
2. Is ICT disruptive to the teaching and learning process? If so why?
3. Are ICT inservice courses valuable to teachers?
4. Is access to the computer lab an issue in your school? If so how could it be resolved?
5. Is there effective ICT planning, both long and short term, in your school?

Pedagogical use of ICT

1. Is teaching and learning enhanced by integrating ICT into classes? If so why?
2. Is ICT used for teaching languages in your school?
3. Is ICT used for teaching Gaeilge in your school?
4. How can the use of ICT be encouraged in your school?

Hardware and Broadband

1. Is the broadband connection in your school satisfactory?
2. How could it be improved?
3. How are computers positioned for student use in your school? Does this work well?
4. Does the use of a data projector enhance teaching and learning? If so, how?

Software and Digital Content

1. Is sufficient educational software available for use with the Irish curricula?
2. Is educational software used in your school?
3. Do teachers want to use ICT as part of the teaching and learning process?
4. What are the main uses for ICT in your school?
Funding for ICT

1. Is there sufficient funding for ICT in your school?
2. What areas of ICT should be prioritised for funding?
3. Does your school avail of any Public Private Partnerships? If so, please outline?

Professional Development

1. Are inservice courses successful in increasing the use of ICT in the classroom? If so, how?
2. What areas should ICT focus on?
3. What are the barriers to professional development among school staff?
4. How can professional development be encouraged among school staff?
5. How would you like to see ICT improved in your school?
6. Would you like to add any other information about ICT in your school?
8.1 Interview Questions for Students
Interview Questions - Students

ICT in the classroom

1. How do you use ICT in your school?
2. Is there a computer lab in your school?
3. Do you use the computer lab often? If so, for what purpose?
4. How would you like to use ICT progress in your school?
5. Is teaching and learning enhanced by integrating ICT into classes? If so why?
6. Is ICT used for teaching languages in your school? If so how?
7. Is ICT used for teaching Gaeilge in your school? If so how?
8. How can the use of ICT be encouraged in your school?

Hardware and Broadband

1. Is the broadband connection in your school satisfactory?
2. How could it be improved?
3. How are computers positioned for student use in your school? Does this work well?
4. Does the use of a data projector enhance teaching and learning? If so, how?

Software and Digital Content

1. Is educational software used in your school?
2. Do teachers want to use ICT as part of the teaching and learning process?
3. What are the main uses for ICT in your school?
4. How would you like to see ICT improved in your school?
5. Would you like to add any other information about ICT in your school?
9.1 Interview Questions for Post Leaving Certificate Students
Interview Questions – Post Leaving Certificate (PLC) students

Technical Support

1. Is the standard of technical support satisfactory in your centre?
2. Could the level of technical support be improved? If so, how?

Use of ICT in the classroom

1. Do you use ICT during PLC classes? If so, for what purpose?
2. Do you use ICT outside of PLC classes? If so, for what purpose?
3. Is teaching and learning enhanced by integrating ICT into PLC classes? If so why?
4. How can the use of ICT be encouraged in your centre?
5. Is ICT used sufficiently in PLC classes?
6. Do teachers want to use ICT as part of the teaching and learning process?
7. What are the main uses for ICT in your centre?

Hardware and Broadband

1. Is the broadband connection in your centre satisfactory?
2. How could it be improved?
3. How are computers positioned for PLC student use in your centre? Does this work well?
4. Does the use of a data projector enhance teaching and learning? If so, how?
5. In your opinion, what areas of ICT should be prioritised for funding?

Professional Development

1. How would you like to see ICT improved in your centre?
2. Would you like to add any other information about ICT in your centre?
10.1 Glossary of Terms
## Glossary of Terms

<table>
<thead>
<tr>
<th>Term</th>
<th>Explanation of Term</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Computer Lab / Computer Laboratory</strong></td>
<td>A classroom that contains a number of networked computers for student use</td>
</tr>
<tr>
<td><strong>Gaeilge</strong></td>
<td>The Irish language subject, including poetry, prose and the spoken language</td>
</tr>
<tr>
<td><strong>Ireland, Department of Education and Science</strong></td>
<td>The Department of Education and Science (An Roinn Oideachais agus Eolaiochta) is a department of the Government of Ireland. It is led by the Minister for Education and Science.</td>
</tr>
<tr>
<td><strong>Inservice</strong></td>
<td>Also known as ‘Teacher Professional Development’ - Inservice training is education for school management and teachers to help them to develop their skills in a specific discipline or area</td>
</tr>
<tr>
<td><strong>Teacher Professional Development (TPD)</strong></td>
<td>Skills and knowledge achieved by school management and teachers for both personal development and career advancement. It may include all types of learning, from college degrees spanning several years to conferences and informal learning opportunities situated in practice.</td>
</tr>
<tr>
<td><strong>FETAC</strong></td>
<td>Further Education and Training Awards Council - the statutory awarding body for further education in Ireland</td>
</tr>
<tr>
<td><strong>General Subject Classrooms</strong></td>
<td>Classrooms that are used for a variety of subjects</td>
</tr>
<tr>
<td><strong>Gaeilge</strong></td>
<td></td>
</tr>
<tr>
<td><strong>IT2000</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Junior Cycle Curriculum</strong></td>
<td>Junior cycle (lower secondary education) lies within the compulsory period of education in Ireland and is usually taken by students between the ages of 12 and 15.</td>
</tr>
<tr>
<td><strong>PLC</strong></td>
<td>Post Leaving Certificate or Adult Education</td>
</tr>
<tr>
<td><strong>Schools Broadband Network</strong></td>
<td>The Schools Broadband Network operates a Web Filtering Service from Fortinet. Websites accessed on the Schools</td>
</tr>
<tr>
<td><strong>– Web Filtering</strong></td>
<td>Broadband Network go through a level of filtering to ensure that inappropriate sites are excluded and a &quot;Web Page Blocked&quot; message is displayed.</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Senior Cycle Curriculum</strong></td>
<td>Senior cycle education in Ireland may be of two or of three year's duration. The difference is accounted for by students choosing to take an optional Transition Year in the first year of senior cycle, before they follow the two-year Leaving Certificate programme.</td>
</tr>
<tr>
<td><strong>Telecom Éireann</strong></td>
<td>Telecom Éireann, or formally Bord Telecom Éireann - The Irish Telecommunications Board.</td>
</tr>
<tr>
<td><strong>Transition Year</strong></td>
<td>This is an optional one-year programme that can be taken in the year after the Junior Certificate in the Republic of Ireland and is intended to make the senior cycle a three year programme encompassing both Transition Year and Leaving Certificate</td>
</tr>
<tr>
<td><strong>Year Head</strong></td>
<td>The Year Head has responsibility for overseeing the welfare of a year group and may monitor student development and behaviour within that group</td>
</tr>
</tbody>
</table>