

THE EVOLUTION OF ICT POLICY IN IRELAND 1995-2012: PROGRESS, MISSED OPPORTUNITIES AND FUTURE TRENDS

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1.0 Introduction

For over 10 years between 1997 and 2007, Ireland's so-called Celtic Tiger economy was characterized by unprecedented economic development allied with significant social and cultural change.¹ For example, based on a globalization index, "Ireland was ranked number one in both 2002 and 2003 as the most globally integrated economy in the world" (Fitzpatrick & Conway, 2005).² The combined impact of enhanced economic times and Celtic Tiger Ireland's open-door immigration policy that allowed immediate work entitlements to citizens of the EU's 10 accession states on its 2005 enlargement (one of only three countries to do so) had led to a significant increase in inward migration between 2005 and 2008. In this context of social, cultural and demographic³ change, globalization and moves toward greater social inclusion (in terms of educational disadvantage, special educational needs, and multiculturalism), the increased integration of ICT in schooling has and is being seen by many (e.g.,

¹ For critical discussion of the model of social and economic development associated with success of the Celtic Tiger, see, for example, *The Celtic Tiger in Distress: Growth and inequality in Ireland* (Kirby, 2002) for a historical analyses see, for example, *Luck and the Irish: A brief history of change, 1970-2000* (Foster, 2007).

² "Ireland is by far the world's most globalised country, according to a study of 62 countries to be published in the US today. The Globalisation Index puts Ireland well ahead of countries seen as having open economies, such as Singapore, in third place, and New Zealand, in 19th. Ireland is also substantially more globalised than the world's big economies" (Brown, 2002). In recent years, Ireland has been consistently in the top half a dozen countries on the Globalization Index.

³ The number of students in full-time education is noteworthy in that Ireland continues to have the youngest population in the European Union.

Information Society Commission; ICT Ireland⁴/DES, 2009) as providing a powerful means of contributing significantly to the attainment of multiple social, economic, and educational goals. The government's commitment to invest €M254 million in its 2007–2013 NDP reflected this belief and can be seen in the wider context of Ireland's efforts to become a leading knowledge society with a particular emphasis on research and development in two priority areas: IT and biotechnology (Enterprise Strategy Group, 2004). At the time of writing, the economic buoyancy of the Celtic Tiger era seems a distant memory Ireland's economy in a recession from 2008-2013 with very significant decreases year after year in expenditure and staff cutbacks in all sectors of education including those impacting the integration of ICTs in teaching and learning at primary and post-primary levels.

Like other countries around the world, Ireland has invested in the development of ICT in schools over the last decade (Zhao, Lei, & Conway, 2006; Conway & Freeman, 2009). However, despite Ireland's considerable investment in terms of infrastructure (e.g., hardware, software, rollout of broadband for all schools) and lighthouse pilot projects and initiatives (e.g. FiS, Schools Integration Project, Laptops Initiative, Diageo Liberties Project among others), researchers and policymakers are concerned that the outcomes of ICT integration efforts have not met original expectations (Gleeson, O'Grady, McGarr, & Johnston, 2001; McGarr & O'Brien, 2007; Mulkeen, 2003; Shiel & O'Flaherty, 2006; Conway, 2005; Daly, 2006a; Conway and Freeman, 2009). These concerns are typically expressed in terms of commentators appraisal of the state of teacher professional development, the dissemination of lessons learned from pilot initiatives and projects, and the integration of ICT in the daily practice of teaching and learning in classrooms as relatively poor compared to that of other countries. Despite the limited success of ICT integration efforts to date, the government, in its National Development Plan (NDP) launched in February 2007, committed €M254 to enhance ICT use in schools between 2007 and 2013. This chapter examines ICT policy in Ireland under four headings: (i) education system features and their implications for ICT policy, (ii) Ireland's ICT policy in a comparative context focusing on recent IEA-

⁴ ICT Ireland comprises the Telecommunications and Internet Federation, the Irish Software Association, the Department of Education and Skills, the Department of Communications, Energy and Natural Resources, and the National Centre for Technology in Education.

led national ICT policy review (Plomp, et al. 2009) as data to compare Ireland with two other small countries Finland and New Zealand as both countries are similar to Ireland in size, economy and educational aspirations, (iii) phases in ICT policy development in Ireland, (iv) key policy issues and future directions. Our overall, conclusion focuses on the significant progress over the last fifteen years, some missed opportunities and likely future directions.

Responsibility for ICT policy has been characterized by an emphasis on key stakeholders participation in policy strategy development committees with distinct policy phases (detailed later in this chapter) evident over the last fifteen years. While the day-to-day promotion of ICT in education rests with the National Centre for Technology Education (NCTE), nevertheless a range of other stakeholders, including both public agencies and private bodies, have played significant roles in ICT policy formulation with the Minister for Education and Skills having ultimate decision-making power. It is in this context that the NCTE provides information, support, and advice to schools, other education bodies, parents, and other education partners. The NCTE has focused on a number of key initiatives since its inception in the context of *Schools IT 2000* in 1997 (DES, 1997), which launched the contemporary drive to integrate ICT in schools. These *IT 2000*-based initiatives are technology integration, teaching skills initiative, and schools integration project. In addition to these three overarching initiatives, the NCTE has also identified other core initiatives. These included the development and dissemination of digital content, ScoilNet (an online resource for students, teachers, and parents), ICT and special education, and a range of innovative projects over the last decade (see www.ncte.ie). While the NCTE, when it was set up in 1998, was initially charged with managing *Schools IT 2000*, its role has expanded considerably since then and now encompasses the original *IT 2000* initiatives, other initiatives, innovative projects, and cross-national collaborations (especially European) on ICT and schooling.

1.1 Education system features and ICT policy

In an international context, a number of features of the education system in Ireland are noteworthy as a context for understanding ICT policy and practice over the last fifteen years:

- *Size of system:* The school system is small, with just over 4,000 schools (3,300 primary schools and 770 post-primary) serving a national population of 4.24 million in 2006, up from 3.62 million in 1996.
- *Number of small schools:* In the primary sector over half of the schools have four teachers or fewer.
- *Expenditure trends:* In Ireland, between 1995 and 2002⁵, the proportion of GDP expenditure on education dropped by more than 0.4 percentage points (OECD, 2005).
- *Policy development trends:* The period since the early 1990s has been characterized by extensive analysis and review of almost all aspects of the education system (primary, secondary, and tertiary), the publication of Green and White Papers on education, the enactment of a number of major pieces of education legislation⁶, and the creation and/or reorganization of a wide range of education bodies, agencies, and initiatives aimed at streamlining and decentralizing the workings of the education system.
- *Education reform policy logic:* Indicative of the increased emphasis on accountability in Irish education are the Whole School Evaluation reports, based on inspectors' evaluations of individual schools, which have been published on the DES website since 2006.
- *Curriculum and assessment emphases:* The 1999 learning-centered Revised Primary School Curriculum built upon the 1971 child-centered, progressive-education-inspired curriculum for primary schools. Significantly, there is no formal national examination taken by students in sixth class, that is, the final year of primary education. In relation to ICTs, the Revised Primary School Curriculum (1999) hardly mentions ICTs. This is understandable as it was developed in the mid 1990s before *Schools IT 2000*. Nevertheless it points to the rapid advance of ICTs on the educational policy horizon over the last fifteen

⁵ The gross public expenditure on education in Ireland as a percentage of GDP was just below 5% in 1994, 4.6% in 1999, and 4.4% in 2002, and has continued to drop slowly due to the very high increase in GDP over the last decade. OECD countries spend 6.1% of their collective GDPs on educational institutions (2002 figures; OECD, 2005).

⁶ Of these developments, the most significant was the enactment of a range of legislation that included the landmark Education Act (1998), the Education (Welfare) Act (2000), the National Qualifications Authority Act (2001), the Teaching Council Act (2001), and the Education for Persons with Special Education Needs Act (2005).

years. At post-primary level, both Junior and Senior Cycles are centrally and nationally assessed by final examinations⁷. The last decade has been characterized by a notable emphasis on reviewing and reforming both Junior and Senior Cycle education (see NCCA documents, e.g. in 2009 the Minister called for a review of Junior Cycle), with a focus on the development of overarching policy directions for reform of the Senior Cycle phase of post-primary education.

Table 1 System features and ICT policy

System feature	Observation	Implications for ICT policy and practice
Size of system	Small	Fewer economies of scale in relation to ICT infrastructure
Number of small schools	Over half at primary level have four or fewer teachers	Costly in terms of investment in ICT per teacher Potential of ICTs to bridge limited access to peers for some teachers
Expenditure trends	Increase in absolute terms but decrease in terms of GDP	Cutbacks on investment in ICT
Policy development trends	Significant increase in education policy review since mid 1990s	Advent of ICT policies since mid 1990s and increasing importance of ICT in curriculum/syllabi documents
Education reform policy logic ⁸	Focus on broad curriculum (especially primary) and moderate levels of accountability.	Focus on broad curriculum and generally benign accountability mechanisms conducive to ICT integration
Curriculum and assessment emphases	Primary: Learning-centred curriculum Post-primary: Subject-centred syllabi with high stakes terminal examination	The curriculum and assessment context of primary schools may make it easier for teachers to integrate ICTs than the examination-driven culture of post-primary schools.

Internationally, there has been a move in the last fifteen years toward a dominant global policy reform logic (Sahlberg, 2007) characterised by an emphasis on standardisation through centrally prescribed performance standards, curriculum narrowing in the context of high stakes external assessments and consequential accountability (Sahlberg, 2007; Conway, Murphy, Rath and Hall, 2009). Educational reform in Ireland, like Finland and some other countries, has emphasized somewhat greater flexibility in

⁷ Currently, 82% of second-level students complete the Leaving Certificate (O'Connor, 2007).

specification of standards, emphasis on broad curriculum (especially at primary level), and low-moderate rather than high stakes accountability mechanisms. As such, in our view, this presents a teaching and learning context conducive to the integration of ICTs. However, this may be more true in primary rather than post-primary as the examination-drive culture post-primary schooling may mitigate against integrating ICTs. Recognising the particular difficulties as well as the need to integrate ICTs at post-primary level, the importance of doing so in the innovative Project Maths syllabus the then Minister for Education and Science Batt O’Keefe, speaking in December 2009 noted that:

Funding for post-primary schools will be made available early in the new year and I'll be asking them to prioritise the purchase of equipment for classrooms used for the teaching of maths to support the rollout of the curricular reform plan Project Maths. This funding is complemented by specific investment in the school building programme for all new classrooms to be fully equipped with ICT equipment. Investment in schools' ICT infrastructure is an essential component of our strategy to integrate ICT in teaching and learning.

This renewed policy emphasis on integrating ICT in teaching and learning is borne out of convincing evidence that the uptake of ICT in primary and post-primary schools, at best, is mixed at the levels of both school planning and classroom integration (Conway & Freeman, 2009). On the one hand, there has been extensive development of the infrastructure (e.g., €M30 investment in broadband), notable success in terms of student and school engagement in a variety of well-resourced and supported innovative projects (e.g., Schools Integration Project [Galvin, 2002], Empowering Minds, FíS, Laptops Initiative, Digital Schools Project), and examples of considerable school-wide integration of ICT in some of the NCTE-led innovative projects. Furthermore, the Diageo Liberties Learning Initiative (DLLI), based in Dublin’s Digital Hub, provided considerable evidence that a digital learning project in 16 schools (involving six core schools projects: Digital Storytelling, FÍS a Dó, Digital Control Technology, Claymation, Podcasting, and Microsoft Story) that spanned both the school and surrounding community could enhance students’ digital literacy, and also bring non-ICT benefits such as teamwork, communication, and presentation skills. Given that the project was undertaken in a disadvantaged area of inner-city Dublin, the significant potential of ICT-based learning to increase motivation and educational aspirations, as

well as foster creativity and innovation, was noted in the DLLI evaluation report (FGS Consulting & Galvin, 2007). On the other hand, results of large-scale nationally representative samples or census surveys of ICT use in schools provide substantive evidence that only a minority of teachers and schools makes considerable or extensive use of ICT in their daily teaching and learning (Gleeson et al., 2001; Mulkeen, 2003; Shiel & O’Flaherty, 2006). Furthermore, the Inspectorate’s recently published report notes how school planning focuses more on the infrastructural rather than teaching and learning integration aspects of ICTs in schools.

Mulkeen’s findings were based on census surveys in 1998 and 2000 of practice in the context of *Schools IT 2000*’s 1997 rollout. Although now dated, this information provided a useful benchmark and pointed to key factors supporting and impeding ICT integration. First, the presence of ICT equipment was not enough in itself to ensure its use in subject teaching. Second, basic IT skills courses for teachers did not align with greater use of ICT in classroom teaching, despite the enhancement of teachers’ IT skills. Third, schools involved in ICT projects scored higher than average use of ICT in subject teaching. And fourth, the study identified four school-level variables that predicted higher ICT use in primary and post-primary schools. These were the principal’s use of email, the presence of a frequently updated ICT plan, the presence and status of an ICT coordinator, and the holding of ICT training in the school (pp. 290–291).

The conclusions of the most recent and fourth census of schools’ ICT infrastructure, based on 2005 data, also provide an international comparative within which to evaluate integration in Irish schools. Here, Shiel and Flaherty (2006) noted that Ireland was still lagging behind the OECD country average on student to computer ratios (nine students per computer in Ireland versus six on average across OECD countries), percentage of computers with an internet connection (67% versus 78%), and percentage of networked computers (36% versus 68%). Furthermore, the authors noted that, compared to an OECD average of 44%, only 24% of students could be described as frequent computer users at school.

It is apparent from the studies and evaluations of ICT initiatives in schools conducted by Gleeson et al. (2001), Mulkeen (2003), Daly (2008) and Shiel and O’Flaherty (2006), as well as by others too numerous to mention in this chapter, that a

school's culture and organizational structures have more often than not mediated the integration of ICT into the daily fabric of teaching and learning (e.g. lack of focus in schools' ICT plans on ICT integration into teaching and learning). The role of school culture in mediating ICT integration, however, differs at primary and post-primary levels. At primary level, even with less equipment available, teachers often find it easier to integrate ICT due to greater teacher autonomy in timetabling the school day and in making decisions about the pacing and content of lessons. Post-primary schools' efforts to integrate ICT, however, are circumscribed by a very different "grammar of schooling," which involves immutable lesson timetables, a strong subject culture among teachers, and pressure to cover the subject syllabus due to the backwash effect of high-stakes examinations.

2.0 ICT policy in a comparative context: Ireland, Finland and New Zealand

Zhao, Lei and Conway (2006) identified three waves in ICT policies in a 13-country study of ICT policy developments in education: "...the first wave of educational ICT planning focused on getting technology hardware into schools and up-skilling teachers, the second wave concentrated on the integration of ICTs in the daily fabric of teaching and learning, the third wave, typically, emphasizes a more contextual understanding of ICT integration within the confines and supports of particular school cultures (Conway & Zhao, 2003)" (Zhao, Lei & Conway, 2006, p. 673-674). In this section we briefly address how Finland and New Zealand have approached ICT policy during the period 1995-2010. In doing so we draw upon the country chapters completed for the IEA-cross national study of ICT policy (Plomp et al, 2009; Finland see Kankaanranta, 2009; for New Zealand see Brown & Chamberlain, 2009).

2.0.1 Finland: ICTs and education 1995-2010

1995: Prior to and during the period of the *Finnish National Strategy 1995-1999*, significant funding was made available to schools, universities and vocational institutions in order to purchase ICT equipment to network schools and to fund teacher education. The Finnish Parliament's Committee for the Future adopted *ICTs in Teaching and Learning* as one of its evaluation projects and asked the Finnish National Fund for Research and Development (Sitra) to administer it. Hundreds of pupils,

teachers, decision makers, researchers and officials participated in the project. Various reports focused upon: universities, kindergartens and institutions of general and vocational education, lifelong learning and digital learning materials. In addition to eight reports published in Finnish, a final report was published in English entitled 'The Challenges of ICT' (Sitra, 1999). The important value of these reports is the extent to which they were able to inform subsequent policy formation.

1996: *Towards a culture-orientated Information Society*, launched in 1996, aimed to guarantee all citizens equal access to cultural services. It, furthermore, addressed the need to develop user-centred technology and to encourage girls and women to use information technology (One of the results of findings from 1995-1999 strategy was that school-going males were more active users of computers). Girls were encouraged to participate through the awards of scholarships, fees and involvement in competitions arranged with appropriate business sectors.

Finland's National Plan "*Education, Training and Research in the Information Society. A National Strategy for 2000 – 2004*" (Finnish Ministry of Education 1999) was a concerted effort to take onboard the recommendations of the evaluation of the 1995-1999 strategy and to implement a comprehensive action strategy aimed at reshaping the role of learning within, and outside, the school system. The Finnish strategy provided students and teachers with a detailed framework for the organization of learning. Furthermore the strategy was a learning and motivation campaign for the population as a whole. It focused not just upon formal education, but also on all sectors and included all citizens, from the very young to the elderly. One of the expectations of all institutions was to have assessed their curricula and written and written an information strategy for the educational use of ICT by 2002. The strategy placed strong emphasis on the participation of students, acknowledged students' information technology skills, encouraged their participation in the practical operation of educational establishments and encouraged their involvement in the preparation of teaching materials. The policy emphasized a move from the classroom to the development of an open learning environment with a specific action in the plan devoted to the planning of education and educational establishments and their influence on the teaching and the learning

environment.

The Information Society Programme for Education, Training, and Research 2004-2006 was launched in 2004. Among the aims set to be achieved by 2007, were the following: (i) ICT be appropriately used in teaching and learning, (ii) Finland to be an open and secure networked society able to generate high level society knowledge, (iii) all citizens to have the opportunity to use electronic services and content, (iv) electronic materials to be of high quality, pedagogically justified, able to serve user groups, and openly available.

Finland: Special issues

Apart from a number of innovative projects, which have been highlighted internationally, it appears that, in general, there is a contradiction between the high levels of access and the lower levels of integration. With regard to access to computers and networks, according to the results of the 2006 Second Information Technology in Education Study (SITES 2006), the level of access to computers and Internet in Lower Secondary Schools was 100%. However, while 97% of computers, in those schools are located in laboratories, just over 40% are located in classrooms or libraries. While nearly 100% of mathematics and science teachers said they used their computers for purposes related to teaching, only 15% of science teachers and 9% of mathematics teachers reported using ICT in their instruction once a week or more often (Kankaanranta, 2009).

Trends and future development

The Ministry of Education's aim for 2015 is that all teachers will have outstanding information society skills and that ICT will be part of a multiform teaching at all levels of education. In order to support and facilitate the realisation of these aims, a number of initiatives have been launched including FInnSight 2015 (2006) and Five Steps for Finland's Future.

2.0.2 New Zealand: ICTs and education 1993-2010

1993-1998: focus of government support was in the area of professional development with the view to facilitate teachers to integrate ICT in the curriculum. At this time there was, in general, no national policy on acquisition of hardware and software. That was the responsibility of individual schools.

1998: *Interactive Education: An Information and Communication Technologies Strategy for Schools* (Ministry of Education, 1998) was the first national strategy to provide a coordinated approach to support the use of ICT in schools. The focus was: to increase schools' access to infrastructure and to improve capability through development opportunities for principals and teachers. Key findings from the evaluation report (Ham, 2002, Ham & Wentworth, 2002) showed: (i) significant gains in teacher's competence and confidence, (ii) clustering as very successful professional development model from improving ICT capability (iii) improved planning and management as a result of professional development for Principals and (iv) online portal seen as a reliable and up-to-date for teachers.

2002: *Digital Horizons: Learning through ICT* was the continuation of the 1998 strategy, still focussed on capability and support for teaching and learning. This time, the focus of the action areas were learners, teachers, leaders, Māori , families and communities, curriculum and learning resources, and infrastructure. The evaluation of this initiative found further evidence of an increase in teachers' confidence and confidence in using ICT.

2005: A Schooling Strategy in New Zealand was launched which received widespread support from the education sector. Subsequently in **2006**, *Enabling the 21st Century Learner: An E-Learning Action Plan for schools 2006-2010* (Ministry of Education, 2006a) was launched to contribute to the goals and outcomes of the schooling strategy.

New Zealand: Special issues

The quality and cost of maintenance of school networks is emerging as a major constraint to fully realizing the the potential of ICT investments. Initiatives are underway to increase schools' access to high-speed broadband. A special project was

set up in 2007 to review the costs of ICT in schools and as a result a resourcing framework was developed and in the Budget of 2008/2009 schools were provided with an increase in operational funding. Secondly another challenge is to develop teacher capability using ICT because, like in other countries, the teaching profession is an aging one with limited experience of using ICT. Thirdly New Zealand's cultural context includes the recognition of the needs of the both the Māori and non-Māori communities. While the national online portal *Te Kete Ipurangi* has been designed to facilitate this, there is an additional need to ascertain the requirements and needs for Māori language materials in electronic form. Fourthly, the Education Review Office (ERO) having completed a number of evaluations with regard to Teacher Professional Development found, for example, in a study of 121 primary schools and 48 secondary schools (ERO, 2005), found that while most schools had developed policies and plans for e-learning, cross-curricular integration of e-learning was still at an early stage.

Trends, expectations and recent initiatives

There is an increasing demand for cross-government and cross-sector provision with regard to integration and infrastructure for schools. While decision making, in the past, has largely been made at a local level, the current challenge for policy makers is to retain this approach, while balancing that with top-level decision making so as to ensure an interoperable and sustainable infrastructure. One of the key challenges for policy is to develop a framework for funding and supporting ICT infrastructure in schools. The current model for funding, which evolved from the 1998 reforms are under strain and not sustainable in the long term. Apart from the focus on infrastructure, a number of recent initiatives have placed considerable emphasis on developing effective schools and effective teaching. *Personalising Learning* (Ministry of Education, New Zealand, 2006b) focuses on ways to meet the needs of individual students. *Schools Plus*, a cross-government agency, was launched to reform the senior secondary school education. Another key strategy is *Ka Hikitia: Managing for Success*, aimed at improving education for the Māori.

2.1 Learning by comparing: Ireland, Finland and New Zealand

We make a number of observations in relation to how Ireland compares with Finland and New Zealand in terms of ICT policy emphases, timing and challenges. First, not

surprisingly all three countries share broadly similar timing in terms of the development of ICT policy in education (mid 1990s onwards) although both seemed to make a somewhat earlier start than Ireland in terms of investment in ICTs in education. Second, despite considerable policy steering and significant investment over fifteen years all three countries have concluded that despite moderate to high levels of ICT access there are relatively low levels of ICT integration into teaching and learning. Third, wider developments in educational policy vis-à-vis curriculum are impacting directions in ICT integration (e.g. in New Zealand the strong emphasis on Maori culture points to the need for appropriate digital content; in a related manner there is a significant need to digital content in teaching through and in the Irish language). Fourth, all countries recognise the significant challenge in terms of the costs of ICT infrastructure due to initial installment, maintenance and then installation of the latest ICTs.

3.0 Phases in ICT policy 1995-2010

3.1 Five policy phases

Five phases are discernible in relation to ICT policy in Irish education at primary and post-primary levels over the last 15 years:

1. Policy formulation phase in the mid-90s leading to the *Schools IT 2000* document in 1997;
2. Policy rollout period between 1997 and 2000;
3. Policy update phase with publication of *Blueprint* document from 2000 to 2002;
4. Policy lull plus initiative-driven ICT phase from 2003 to 2007; and
5. Policy reformulation and broadening phase in the context of the National Development Plan from 2007 to 2013.

Phase 1: Initial policy formulation phase (1995-2000)

The initial policy phase encompassed various reports during the early and mid 1990s, culminating in *Schools IT 2000* (1997–2000): During the mid-1990s, numerous policy documents in Ireland did a very good job convincing education policymakers that ICT ought to be integrated into schools (Conway, 2000). The central message of these policy documents was quite clear. They claimed that technology had done great things for education and that the new information and communication technologies would become even more powerful. However, they but lamented the fact that schools and

students were not using new technologies to improve learning because they neither had computers nor were adequately prepared to use the various technologies (Conway, 2000). In this context, *Schools IT 2000* was published in November 1997 by the Department of Education. The 39-page document detailed a three-pronged approach to ICT integration in the form of interlinked initiatives: the Technology Integration Initiative (TII), the Teaching Skills Initiative (TSI), and the Schools Support Initiative (SSI, of which the aforementioned SIP was a part). The interdependent nature of these initiatives was stressed throughout the document in the hope that *Schools IT 2000* would be undertaken as a national partnership involving education, business, and other partners in the educational process, facilitated by the National Centre for Technology in Education (NCTE). *Schools IT 2000* offered five reasons for integrating ICTs into schools. These were identified as social, economic, vocational, pedagogic, and catalytic.

Phase 2: Review and evaluation of the impact of Schools IT 2000 (1998–2001)

Schools IT 2000 is the key policy and practice context within which to understand and appraise the impact of ICT in Irish schools over the last decade. In November 1998, the Minister for Education and Science launched a National Policy Advisory and Development Committee (NPADC) in order to provide a vision and strategy for the development of a national ICT policy for schools. The NPADC undertook a national representative survey of the impact of some aspects of the *Schools IT 2000* on both primary and post-primary education. In many respects, the NPADC report presented a positive picture of ICT developments since the initiation of the *Schools IT 2000* agenda in 1997. The survey findings showed:

- A significant increase in the number of multimedia computers in schools
- All schools and the majority of students with access to internet
- A dramatic increase in ICT and software use by teachers and principals
- An increase in the number of teacher-training places beyond the number initially proposed
- The establishment of many ICT support mechanisms
- Public/private partnerships having worked to the benefit of schools.

In addition to these overarching findings, a number of other issues and concerns were covered by the NPADC report: infrastructure, use of ICT and software, ICT training, support mechanisms, School Integration Project, ScoilNet, factors discouraging the use of ICT, and recommendations to the Minister for Education and Science, Boards of Management and education centers. The report noted that Ireland was on a par with EU countries both in terms of increasing the number of computers in our schools and in significantly increasing access to the Internet for teachers and students. Post-primary schools had an average of 44 computers per school, and the majority of schools had a combination of network and stand-alone computers. At post-primary level, the student-to-computer ratio was 10:1. This latter figure represents an improvement from the 60:1 ratio identified in the 1998 DES/Telecom Eireann survey. Ninety-eight per cent of schools were connected to the Internet and 97% of post-primary students had access to the Internet.

Phase 3: Policy revision and publication of Blueprint (2001-2003)

The publication of the *Blueprint for the Future of ICTs (2001–2003)* in 2001 (DES, 2001) reflected continuity with the ambitious agenda set out in 1997 by *Schools IT 2000*. As such, the earlier document remained the dominant policy driver in relation to ICT in schools. <<more here>>

Phase 4: Policy lull and project- or initiative-driven ICT integration (2003–2007)

While the 2001 *Blueprint* document largely extended the 1997 document for another few years, the end of the *Blueprint* document's timeline did not result in a follow-on policy document. Rather, ICT policy in schools was driven largely by *Schools IT 2000*'s core initiatives, noted earlier. In addition, a wide range of innovative projects and the rollout of broadband to all schools by September 2006 formed the central ICT developments over this period. Among the innovative projects were the following:

- Empowering Minds (based on Lego Mindstorms)
- FÍS Project: Film Appreciation and Production for Primary Schools
- Laptops Initiative for Students with Dyslexia and other Reading and Writing Difficulties (Conway, 2005; Daly, 2006b)
- Webwise (in collaboration with the European Commission's Insafe Network)

- SAFT Project (Internet Safety project involving Ireland and four Nordic countries)
- Digital Schools Award Initiative', www.digitalschools.ie.
- Cultural Ireland
- ICT and Literacy in Primary Schools
- IBM KidSmart Early Learning Programme.

The rollout of affordable broadband for all schools was a highly significant initiative during this period. It involved collaboration between industry, the NCTE, and two government departments—Education and Science and Communications, Marine, and Natural Resources. The NCCA, given its wide statutory remit in relation to curriculum policy, played a vital role during this period in promoting discussion about the challenges of ICT integration (NCCA, 2004; NCCA, 2005) and developed a framework for ICT integration (NCCA, 2006).

Phase 5: Policy reformulation and broadening (2007-2013)

Three key reports published by the Ministry/Department of Education and Skills in 2008 and 2009 are providing a renewed policy focus on the inter-related systemic challenges of integrating ICTs in schools including encompassing investment in infrastructure, teacher learning, technical support, innovation and implementation support structures as well as provision of digital content. The two reports are: (i) *Investing Effectively in Information and Communications Technology in Schools, 2008-2013: The Report of Ministers' Strategy Group* and (ii) *ICT in Schools: Inspectorate Evaluation Studies*, and (iii) *Smart Schools = Smart Economy: Report of the ICT in Schools Joint Advisory Group to the Minister for Education and Science (2009)*. Prior to the publication of these reports, during 2006 and 2007, leaders of IT companies and some educational researchers and policymakers made frequent mention of the need to develop a new or updated ICT policy for schools. In response to this perceived need, the Minister for Education and Science created a policy strategy group with the specific remit of advising the DES on options and preferred directions for a new ICT policy for schools. The announcement that €254 million had been allocated under the NDP for ICT integration in schools, while welcomed, was seen by, for example, the managerial bodies for voluntary secondary and community schools, as insufficient to meet the

needs of the education system. They noted an OECD report which documented that Ireland was 20th in a ranking of 30 OECD countries on provision of computers for schools, that 89% of schools did not have technical support for ICT, and that 20% of computers in schools were more than six years old. They accordingly called for coherent planning and support in efforts to bring about greater integration of ICT in schools. In February 2007, the then Minister for Education and Science Batt O’Keefe, responding to a call for a renewal of focus on ICT policy for schools made by the Director of HP Ireland, said an ICT policy document for the period 2007–2013 would be produced “sometime in 2007” (Skelly, 2007). *Investing Effectively in Information and Communications Technology in Schools, 2008-2013*, the report of Ministers’ Strategy Group highlighted seven investment objectives and related recommendations: (i) Continuing professional development, (ii) Software and digital content for learning and teaching, (iii) ICT equipment – additional and replacement, (iv) Schools broadband and services, (v) Technical support and maintenance, (vi) Implementation structures and supports and (vii) Innovative practice and research. Framing the challenges facing ICT integration in an international context, the Inspectorate’s report noted that, “The student-computer ratio (SCR) in Irish schools is 9.1:1 at primary level and 7:1 at post-primary level. Information available from the OECD suggests that countries that have taken the lead in the provision of ICT in schools are aiming for or achieving a SCR of 5:1” (p. 15). In relation to ICT planning in schools, the Inspectorate highlighted the need for systematic planning given that while a majority (i.e. 71%) of primary schools had an ICT plan a minority (i.e. 46%) did so at post-primary levels. Of particular significance, they noted was the fact that school plans typically focused on ICT infrastructural issues, rather than on policies and practices to enhance ICT integration into teaching and learning. Responding to this to this perceived inattention to the critical dimensions of ICT integration into teaching and learning, the 2009 report *Smart Schools=Smart Economy*’s key actions included extending the schools’ broadband programme, optimizing use of the ICT framework developed by the National Council for Curriculum and Assessment, enhancing access to relevant digital content and promoting more integrated professional development focusing on helping schools to integrate e-learning.

4.0 Key policy issues and future directions

4.1 ICT competences framework

In publishing the *Smart Schools=Smart Economy* policy document in 2009, the DES/ICT Ireland emphasized optimising use of NCCA's ICT competence framework (created in 2006/07). The NCCA undertook a developmental initiative with a number of schools to ascertain how teachers utilized the framework to support ICT integration. As the value of teachers' focus on learning outcomes enters more clearly onto the educational agenda, the incorporation of the discussion of ICT into debates on learning outcomes is essential.

4.2 Digital content

The development of digital content that is congruent with curricular aspirations as well as with assessment formats represents a significant challenge for a relatively small education system such as Ireland's (Shiel & O'Flaherty, 2006; NCTE, 2007). For example, contemporary efforts to teach the other subjects through the Irish language using ICTs have been thwarted by insufficient Irish language digital resources, which reflects a longer term dearth of suitable Irish language teaching resources over the last few decades. Because ICT is likely to become more central in classrooms, even if it does not displace textbooks, there will continue to be significant challenges in designing, producing, disseminating, and reviewing high-quality digital content. For example, while the NCTE's Digital Content initiative focuses on the provision of digital resources for students and teachers, now that funding is going directly to the schools, there is much discussion of "free" versus "paid for" content and the role of Digital Repositories.

4.3 Moving beyond pilots

One of the distinctive features of ICT innovation in Ireland has been the proliferation of pilot projects over the last decade. Anecdotal and survey evidence (see, for example, Mulkeen, 2003) suggests that pilot schools are generally unable to sustain ICT integration in substantive ways after the pilot ends. Moreover, while pilots may provide an existence proof, they often do not provide sustainability proof of ICT innovation. An even more important question to pose in relation to lessons from pilot projects is the

extent to which they can or cannot help us understand how the wider education system can be supported in efforts to integrate ICT.

4.4 Teacher professional development

The issue of teaching and teacher quality has become a policy priority around the world based on the fact that the single biggest school-level influence on student learning is the quality of teaching (OECD, 2005; Hargreaves, 2005; Conway, Murphy, Rath and Hall, 2009). There is an increasingly strong emphasis on teacher professional development in current ICT policy in Ireland (and elsewhere as we noted vis-à-vis Finland and New Zealand). Crucially, this is now being seen not only in terms of individual teachers but how teachers can collaborate within schools and network (Zhao & Frank, 2003; Huberman, 1995) between schools to use ICTs in teaching and learning.

4.5 Trends and expectations for the future

Key trends and expectations for the future, in our view (Conway & Freeman, 2009), can be summarized under the following headings:

4.5.1 Renewed focus on policy directions

The 2007-2010 period has been characterized by a renewed focus on ICT policy (see *Smart Schools=Smart Economy*) with the prioritization of a number of perceived enabling factors: broadband, development digital content, specification of ICT competences for teachers and professional development for teachers that supports ICT integration in teaching and learning. The “policy lull” between 2003 and 2007 did not mean inaction in relation to ICT, as a number of important lessons were learned from innovative projects. In addition, the rollout of broadband to all schools over recent years has created a new context for richer engagement by schools with ICTs. Significantly, the seven investment strategies and their related recommendations, as outlined in the Minister’s Strategy Group, combined with the National Council for Curriculum and Assessment’s framework for ICT integration, provide a new context for supporting technology-enhanced learning at primary and post-primary levels. However, the onset of an economic downturn in the Irish economy in late Spring 2008 had an almost immediate impact on ICTs with the disbandment of the nationwide ICT

advisor network. Given the ICT advisors support role in relation to provision of both CPD and *just-in-time* support for innovative projects, their demise has had a significant impact on the system's capacity to support ICT-based innovation. In addition, over the next five years the renewed policy impetus provided by the two key reports published in 2008 and another in 2009, is likely to be dampened somewhat given the initiation of cutbacks in public sector finances.

4.5.2 Addressing the low uptake of ICTs at school and curricular levels

Consistent with emerging findings about the nature of technology integration internationally, one of the key lessons learned from various projects at primary and post-primary levels is that *context matters* (Zhao, Pugh, Sheldon, & Byers, 2002; Lei, Conway & Zhao, 2007). In particular, both the subject-matter context and the wider assessment context shape in very significant ways the manner in which teachers experiment with ICT in the classroom.

4.5.3 Coordination of the roles and responsibilities of ICT/Education stakeholders

One of the consequences of devolving decision-making over the last decade is the need, especially when new practices are emerging, to develop protocols to ensure the various agencies involved in ICT initiatives can provide their expertise and support in ways that are feasible and sustainable for school- and classroom-level innovation in teaching and learning. Over the last few years, for example, the NCTE and the NCCA have undertaken a number of collaborative projects (Digital Schools Project; Literacy and ICTs in Primary School), as each has a stake and potential role in the provision of technology-enhanced teaching and learning. In the future, enhanced ICT integration in schools is likely to involve considerable collaboration between the NCTE (technology focus) and NCCA (curriculum focus) given their joint interest and responsibility in actively supporting and guiding ICT uptake to support teaching and learning in schools.

4.5.4 Integrating ICT in Initial Teacher Education

One of the anomalies of the *Schools IT 2000* policy was the absence of any substantive focus on the integration of ICT into initial teacher education (Austin & Conway, 2005). Reflecting a recognition of the role initial teacher education (ITE), the 2008 report of

the Minister's Strategy Group, however, provides a strong emphasis on ITE as part of a number of key recommendations to enhance ICT integration in schools.

4.5.5 Digital citizenship

One of the challenges in the coming years, as technology increasingly permeates children's in- and out-of-school lives, is how ICT can best be used to serve wider educational goals such as democratic citizenship and social equity (Austin, Abbott, Mulkeen, & Metcalfe, 2003; Austin & Anderson, 2007; Lei, Conway & Zhao, 2008). Indeed, some of the lessons learned from out-of-school use of ICT in, for example, online social networking sites such as Bebo may prove to be increasingly important in shaping how students consider in-school uses of ICT. Social networking sites are appealing because of their communicative potential, which may differ substantially from the way ICT usually delivers information in schools.

5.0 Conclusion

The year 1997 was a watershed period for ICT policy on the island of Ireland—both North and South—in that education policymakers in both jurisdictions launched ICT policy documents that have set the direction of policy since then (Austin & Conway, 2005; Marshall & Anderson, 2008; Austin & Anderson, 2007; Conway & Freeman, 2009). Like Finland and New Zealand, Ireland sought to recognize the potential of ICTs by advancing a highly ambitious ICT policy document. Like Finland and New Zealand, the lessons learned are classic education reform lessons: there are unintended consequences (see Daly & Conway, this volume; Lei, Conway & Zhao, 2008); curriculum reform is slower than expected due to the power of existing practices; and schools matter profoundly in integrating any innovation (Zhao & Frank, 2003). Over the intervening decade, much has been learned about the potential of (as well as the potential impediments to) ICT integration in Irish schools (Fitzpatrick and Conway, 2005; Marshall and Anderson, 2008). These lessons point to new challenges, new forms of support needed, and new forms of innovation possible, as new types of technology-enhanced learning opportunities are created with cheaper, more efficient, more mobile, and more learner-friendly technologies.

This is the central question addressed by researchers

involved in the series of surveys comprising the Second Information Technology in Education Study (SITES). The question is a multifaceted one, with each facet raising additional questions relating to both theory and practice. These include the following:

- What traditional and new pedagogies are evident in the 21st century?
- What is the role of ICT in the teaching and learning process?
- What ICT-infrastructure is available in schools?
- How can teachers and their administrators be prepared for effective practice?
- How have these conditions and considerations changed since the first SITES survey in 1998?
- What are the trends within and between national education systems?
- What do the differences and similarities between these systems suggest?
- How should change be promoted in education in order to support teachers in their work?
- Is there evidence that key strategic factors commonly found in ICT-related educational policies do influence teachers' pedagogical use of ICT?

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