ICTs for Learning
An International Perspective on the Irish Initiative

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Abstract

"Where the appropriate systems of support are in place, then ICT can be experienced as a 'transformative technology' both for staff and for students [Comber & Lawson 1999, p 51].

Around the world governments are investing heavily in promoting the use of ICTs within the school system. This research explores the Irish Policy Framework (IT 2000) and the National Action Strategies of two European countries, Finland and Sweden. The focus is on curriculum and assessment, and evaluation of the use of ICTs in the classroom, as these are key factors in forming policies to influence the use of ICTs as tools to reshape learning. An underlying aspect of the research is that, due the use of ICTs by governments for the dissemination of their national strategies, concerned individuals can be empowered to compare and contrast policies, identify best practice and make a contribution to the formation of the policies of their own nation by publishing in turn their research.

The Irish Initiative - An Overview

In 1997, the International Data Corporation (IDC), ranked Ireland in the third division (position 23) with respect to the country's preparedness for the Information Age [IDC 2000]. Recognising that Ireland was lagging significantly behind, the Irish Government's IT 2000 initiative was launched in November 1997 to redress the balance in the area of education [DES 1997]. IT 2000 has yet to be fully evaluated but the implementation of the programme allows for its comparison to similar initiatives in other countries so as to assess and expand the programme.

IT 2000 is a policy framework for the integration of ICTs in first and second-level schools. The core objective of the policy was to put in place an infrastructure to ensure that: *'pupils in every school should have opportunities to achieve computer literacy and to equip themselves for participation in the information society; support is given to teachers to develop and renew professional skills, which will enable them to utilise ICTs as part of the learning environment of the school'* [DES 1997, p. 2-3].

In order to achieve these aims, IT 2000 sought to target action on: classroom resources and infrastructure, teacher skills development and support, policy and research. A key objective was to 'bring about a national partnership involving schools, parents, local communities, and third-level institutions together with public and private sector organisations to meet the project's ambitious aims' [DES 1997, p.2]. In order to manage the implementation of IT 2000, the National Centre for Technology in Education (NCTE) was set up in March 1998. A key aspect of the plan was that a policy formulation unit was to be set up within the educational ministry to act as the focal point for the formulation of policy in all educational ICT related matters[1].

Since the launch of IT 2000 in 1997, the profile of ICTs within the country at large and the education system in particular has been raised significantly. Most schools are connected, by at least a dial-up line, to the Internet and over 40,000 teachers have participated in at least one course in computer literacy training. A national educational portal (Scoilnet[2]) has been set up and funding has been provided for selected schools that are engaged in ambitious ICT related projects[3].

How effective IT 2000 has been in improving the quality of learning, or to what extent ICT has been integrated into the teaching process, are important questions to ask at this stage but the lack of a large scale integrated approach to assessment should not preclude valid individual assessment of government

[1] The Educational ICTs Co-ordination Unit within the Department of Education and Science (DES).
[2] www.scoilnet.ie
[3] The Schools Integration Project (Support Infrastructure strand) of IT 2000 has produced the best examples of learning with technology. See www.sip.ie for details.

policy. The increasing use of ICTs to disseminate information provides a platform for a widening of the idea of action research so that teachers can learn from reflecting on and assessing their own practice, this should be further expanded to include the role that individuals within a system can have in reflecting on and evaluating their own environments.

We believed initially that ICTs within the classroom is still largely confined to the 'early adopter' category and that severe challenges are in store in any attempt to spread the use of ICTs into the 'late majority'. We decided to check our initial impressions and benchmark Ireland's progress on the treatment of the key issues of evaluation, and curriculum and assessment, compared with that of 'leading' countries in the area of ICTs and learning.

Scandinavian Initiatives

Finland and Sweden are, among two of the Scandinavian countries, regarded as having a progressive approach to Information Society issues in general and education in particular. They are also comparable to Ireland in terms of population and economic climate. Unlike Ireland these countries have had substantial investment in educational action strategies for ICT going back to the early 90's, moreover, they have had the time to learn from evaluations of their previous strategies. Their current strategies for Education are action strategies, which clearly articulate a vision for the reshaping of the curriculum and the organization of learning.

Finland

Finland's most recent National Plan (2000-2004) is a concerted effort to implement a comprehensive action strategy aimed at reshaping the role of learning within, and outside, the school system. The focus of the strategy, "*Education, Training and Research in the Information Society. A National Strategy for 2000 – 2004"* [Finnish Ministry of Education 1999], is on education, training and research. While a strategy, of itself, does not create educational change, the commitment on the ground may be furthered with strong signals from the top that in turn support bottom up initiatives. In terms of equality of opportunity, the plan safeguards corresponding standards for both students and teachers. The Finnish strategy provides students and teachers with a detailed framework for the organisation of learning, in contrast with the Irish framework, which appears to lack this dimension in its planning. Furthermore the strategy is a learning and motivation campaign for the population as a whole. It focuses not just upon formal education, but also on all sectors and includes all citizens, from the very young to the elderly. One of the key aims of the Information Age is empowerment of the individual in terms of life-long learning. This is emphasised in the Irish Government's action plan for implementing the Information Society, where it is stated that, '…developing the concept of lifelong learning, of extending access to the formal educational infrastructure to those outside the formal education process and of identifying further options to introduce new learning possibilities for the population in general' [Government of Ireland 1999]. **'**Learning to learn' is one of key indicators in a recent EU report on the quality of school education [EU 2000] and the Finish strategy recognizes this importance and that students and teachers need to improve their skills in the area of communication and in the acquisition of, and management of, information.

Sweden

Support from the top has been recognized as one of the key factors in achieving innovation in the Information Age and the Swedish IT Commission has played a highly influential role in supporting governmental developments in this area. The present commission, appointed in May 1998, is chaired by the Minister of Industry and Commerce**.** An interesting aspect of the Swedish Information Age initiative has been the setting up of a Youth Council to encourage discussion on the future society from young people's perspectives and, in addition, to propose political actions to respond to the progression towards a future society based on the use of ICT.

In 1998, the Swedish Government submitted to Parliament the Report "Tools for Learning -A National Programme for ICT in Schools. [ITiS 1997]. The Delegation for ICT in Schools was given the task of planning and implementing the programme, which became know as the National Action Programme 1999-2001 [ITiS 1998]. The emphasis of the plan is on teaching with technology, rather than teaching about technology, emphasised by Wärnersson stating that: '*The new technology will not replace teachers, textbooks or the classroom. It will supplement them by creating new combinations of*

opportunities and help to put pupils' learning in the very centre.' [The Minister for Schools and Adult education 2000][4]. It is based upon a revised curriculum and subsequent changes in the learning environment. In scope it covers pre-school, compulsory school and the upper secondary school. The implementation plan was initially expected to involve 60,000 teachers (40% of teaching workforce) but has recently been increased to reach 73,000 teachers.

From Policy Framework to Action Strategy - Issues

As previously stated IT 2000 has, indisputably, had a major impact upon the Irish education system. From the strategic point of view, however, a number of aspects of IT 2000 bare reflecting upon and these are now discussed with reference to the Scandinavian initiatives.

Overall Scope and Aims

The original IT 2000 framework document stated that, *'among the most important outcomes of the framework will be a comprehensive national policy on the role of ICTs in Irish schools together with a strategic action plan specifying the activities and resources necessary to fully implement the policy'* [DES 1997 p.22]. A policy unit, however, was not formally set up until October 2000, which meant that an air of uncertainty surrounded much of the implementation work of the program.

One of the key aims of the Information Age is empowerment of the individual in terms of life-long learning. This view is echoed in much of the Information Society literature, for example [ISC 1999, 2000]. The focus of IT 2000 has however been upon first- and second-level schools within the formal education system with other areas receiving attention from parallel initiatives – if at all. This contrasts sharply with the Finnish strategy, which embraces all learners from the very young to elder citizens.

At the outset of planning in Ireland it was acknowledged that integrating ICTs in learning is a complex process. It was also accepted that revolutionary approaches and 'quick-fix' solutions involving extensive expenditure on hardware and software can carry the very high risk of large-scale waste and furthermore of outright failure [DES 1996]. With this awareness incorporated into the overall policy, IT 2000, nonetheless, allocated 60% of its total budget on equipment and infrastructure. One justification for this was the relatively low base from which schools were starting.

The most recent data available from the NCTE states that the total number of computers in schools has increased by 65% since 1998, with the current student to computer ratio at Primary level being 18:1 and Post Primary 13:1. All schools are now connected to the Internet by at least a dial-up line. 69% of Post Primary schools have an ISDN line and 62% of all schools have Internet access on more than one machine.

According to an international survey carried out by Angus Reid, 78% of Swedish students, between 12-24 years, are using the Internet from school (nearly three-in-four students in Sweden say they use the Internet from school, a proportion roughly equivalent to the level of home Internet access). More than nine-in-ten students who have Internet access report using the World Wide Web to complete their school assignments. [Angus Reid 2000].

Evaluation

Evaluation of the effectiveness of the use of ICTs for learning is a fundamental concern at present, particularly as there is a remarkable absence of reliable data on the use and effects of ICTs in European countries. One of the key recommendations of a European report, focussed on how learning with ICTs is changing (13 countries), was that EU 'central ministries and regional authorities should co-operate in gathering, analysing and disseminating data, not only on inputs into the system such as pupil: computer ratios, but also on process variables such as deployment and pupil/teacher access time and actual outcomes' [Becta 1998, p17]. Government supported initiatives in Finland and Sweden are to the

[4] ***Ms Wärnersson, Minister for Schools and Adult education***, in a foreword on ITiS website: http://www.itis.gov.se/english/back.html#A National Action programme for ICT - why?/

forefront in this regard, while to date most of the studies of IT 2000 have been quantitative rather than qualitative in nature.

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 training. 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.

'…. the investigation is not limited to schools, for studying is breaking down school walls more forcefully than ever before, extending itself to be a lifelong learning and open activity of many forms without being limited to place or time. We follow it to homes, old people's homes, libraries and businesses.'. [Sitra 1999]

The Swedish National Agency of Education (Skolverket) plays a strong role in ensuring the collection and analysis of data from ongoing learning projects in the schools. Follow up research activities are undertaken by a special research unit within the agency. Skolverket also sponsors the research programme ELOIS (Students, Teachers and Organisations around Information Technology in School), which is an extremely important participant in the evaluation of ongoing activities [ELOIS 2000]. The work it produces includes annual reports on the influence of ICTs on the role of student, teacher and organization of work. The agency is supported in this work by eleven centres across Sweden. In addition to four quantitative studies (supply and resources of computers), extensive qualitative reports with information on international experiences are also available, [Skolverket 2000]. Further information is available from the Foundation for Knowledge and Competence Development (KK-Foundation), established in 1994, which has put in place a web-based database of projects. The projects are used to evaluate and test innovative activities using ICT as a pedagogical tool. The wide and varied experience of involvement in over 250 projects, ranging from Teaching Materials to Disability and ICT, are disseminated to aid in influencing future developments [KK 2000].

Thus it can be seen that substantial qualitative studies are central to the two Scandinavian initiatives. Ireland could benefit from following such examples.

Curriculum, Assessment and Learning Environment

Curriculum and assessment are at the heart of any educational system and to a large extent shape the nature of the learning environment. A key objective of IT 2000 was the introduction of curriculum innovations to enhance learning through the use of ICTs in the classroom [DES 1997 p. 26]. This development was to be achieved through co-operation with the National Council for Curriculum and Assessment[5] (NCCA). While one of the principles of NCCA policy is that all learners should use ICTs in relevant curriculum contexts, [NCCA 1998], there is only limited mention of ICTs in many of the revised curricula. This holds particularly true for the new Primary Curriculum[6], Junior Certificate and Leaving Certificate[7] curricula. This has very serious implications for the organisation and reshaping of learning in Irish classrooms. The syllabi afford great freedom to innovate, the process, however, is not credited in national assessments. While there is much talk about the benefits of life long learning, Little (1991) referring to the Irish educational system notes that 'For many learners at second and third levels the most important thing is not that they should learn, but that that they should get good qualifications' [Little 1991, p. 47].

Teachers understandably see the curriculum, and particularly assessment requirements, at second level, as not yet strong enough to make the integration of ICTs an imperative for schools. Evidence of this is found in a recent survey of Irish post-primary teachers, where it is reported that just 29% of the

[5]The National Council for Curriculum and Assessment (NCCA) is the body responsible for advising the Minister for Education on matters related to the curriculum and assessment procedures for primary and second level education.

[6] A new Primary School Curriculum was introduced in 2000.

[7] The Leaving Certificate is the nation-wide state examination taken at the end of second-level education. For most students the results of this exam is the sole criteria taken into account for entry to 3rd level education.

teachers surveyed had used ICTs in teaching [Mulkeen 2000]. Conway, argues that 'IT 2000 underestimates the curricular scope of computer literacy and although it is not a curriculum document, the inattention to the curricular scope of ICT integration is problematic' [Conway 2000]. Austin et al [NCTE 2000, p. 88] argue that if the intention is that ICTs will have a catalytic effect on classroom practice, policy must play a critical role in ensuring that curriculum and assessment systems accommodate this change.

In Sweden, since 1992, there has been a major shift in focus from teachers teaching to pupils learning. The new curricula and syllabi state that all subjects should integrate the use of computers as a tool where appropriate [ITiS 1998]. In line with this, assessment structures and the organisation of learning and the leaning environment have also been modified. ICTs are seen as powerful tools to promote the transition from one teacher in one classroom to teams of teachers working together with larger groups of students.

> *"Evaluations of ICT projects in schools provide strong evidence that only when the organization of work has been changed can the introduction of ICT fully support the learning of children."* [ITiS 1997]

An outstanding example of a collaborative and integrated learning environment is the Swedish Färila[8] Project, where classrooms have been replaced with open areas and the traditional teaching style replaced by a more collaborative learning focus. All students have access to a personal portable computer. Just 16% percent of time is spent studying with a teacher, reduced from 42% in 1995 [Knut 2000]. This radical overhaul has contributed to the raising of grades in one particular school from one of the lowest in the country in 1993, to being a school boasting with one of the highest grades in 2000.

Across Sweden inter-disciplinary, problem-based and pupil-oriented development projects are planned and carried out together by pupils and teachers working in teams. The aim is to promote and develop the learning approaches of students and teachers. A pedagogic facilitator appointed by the municipality supports the teams, but using each other's knowledge is prioritised. Furthermore, each one of the teachers was supplied with a multimedia computer for the home. The idea behind this is that teachers who use computers at home will use it as a professional and pedagogical tool. Local conditions and the individual desires and needs of participants are taken into consideration in the planning of training for students and teachers. Active involvement of Head Teachers is strongly encouraged and supported. The work of schools involved must be organised in such a way for the team to be able to work effectively on a joint development project. The school must ensure that it has is place technology of appropriate capacity and of sufficient quality to support the work of the team. Organized technical assistance for the participants is at hand to ensure that ICT functions as a working tool in the classroom, [ITiS 1998].

Similar characteristics can be found in the Finnish strategy, which places strong emphasis on the participation of students. The plan acknowledges students' information technology skills and encourages their participation in the practical operation of educational establishments. Even more importantly the involvement of students in the preparation of teaching materials is encouraged. Students, especially female ones, are encouraged to participate through the awards of scholarships, fees and involvement in competitions arranged with appropriate business sectors. In keeping with the emphasis of the role of the learner, the curriculum has been changed. The Finnish policy, moreover, emphasises a move from the classroom to the development of an open learning environment. There is 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.

Conclusion

Bearing in mind that the two most important outcomes of the IT 2000 framework are the development of a comprehensive national policy on the role of ICTs in Irish schools and a strategic action plan to support the implementation of the policy, Ireland has much to learn from developments in Finland and Sweden. IT 2000 noted the high ranking of small countries and, in particular, the fact that all these countries had national strategies for integrating ICTs [DES 1997, p.14]. In Finland and Sweden, the National Strategies have played their role, but even more importantly comprehensive action plans have

[8] The Färila school website is at: http://www.farila.ljusdal.se/farila_skola/default.html
(Information available in Swedish only).

been developed arising from in-depth evaluation of learning with ICTs in both countries. Finally, evidence of the recommendations of the evaluation of ICTs for learning is evident in the incorporation of an adjusted rethinking of curriculum, assessment and learning environment in the action plans of both countries. In summary, both action strategies have evidently prioritised the pedagogic and catalytic goals for integrating ICTs alongside, but not above the social, vocational and economic benefits of their use.

> *"...many countries are just at the start of a very long and challenging road ahead, but it is intended to make that path somewhat easier by distilling the wisdom from what others have learned and sharing the results."* [Becta 1998]

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