

Introduction

The ASTI welcomes the Department's public consultation on digital strategy for schools. This consultation is timely from an educational perspective given that the last policy framework for ICT in schools was published in 2008. From a societal perspective, it is also timely: in the last five years, digital technologies have exponentially changed the way humans communicate, learn, work, play and do business. One of the most important emerging societal issues at the moment is the "disruptive" impact of some technologies on our lives. One recent study by academics at Oxford University suggests that 47% of today's jobs could be automated in the next two decades. Simultaneously, many new jobs will be created: indeed, it is a truism to say that we don't even know what type of work will exist into the future. (1) Policy makers and societies need to prepare for these changes: the education system will play a critical role in this regard. (2) At the same time, it is important that public discourse on education reflect the multi-dimensional goals of education. A discourse which focuses exclusively on the human capital dimension is falling short of society's need. A digital strategy for schools must also prepare young people for active citizenship in societies characterised by such exponential change and by new ethical challenges. The phenomenon of cyber bullying is but one example of new ethical and social challenges presented by technology.

ICT in Irish Second Level Education

The Consultative Paper provides a comprehensive exposition of the key issues to be addressed in future ICT policy. It's core statement of the need for a vision for ICT in education at school and system level is particularly important:

"Policy for ICT use in education serves the important function of providing a rationale, a set of goals and a vision for how and why ICTs should be used in schools. Such policy is critical to motivating change and co-ordinating a series of disparate efforts so as to meet the challenges of preparing young people to live, work and learn in the 21st century". (p.4)

Developing such a vision is an important task for policy makers, particularly in the light of developments already underway in the curriculum at both primary and second level - Aistear, the National Strategy for Literacy and Numeracy, the proposed Framework for Junior Cycle, the focus on STEM subjects in schools, a renewed focus on how schools can contribute to sustainable pathways to further learning and work, etc. The inclusion of students with special educational needs in schools is also of particular significance. However, at a more fundamental level, it is vitally important that education policy grasps the challenge of enabling young people to engage in a safe, ethical, critical and creative ways with the ubiquitous, "always-on" digital technologies within which they construct their private and social worlds. Both challenges are intertwined; schools must be empowered to engage with both now.

Strengths and weaknesses in our education system

Several reports referred to in the Consultative Paper provide solid evidence of a developed infrastructure for ICT in schools; of increasing usage of ICT by teachers in classrooms; of innovative practices around social media technology to enhance learning; of proactive approaches – most notably in the 2013 National Action Plan on Bullying – to the negative impact of certain uses of social media. (3) The 2008 "ICT in Schools" Report from the Inspectorate is particularly important in terms of providing the database on which frame future policy. A recurring and key finding from the Report is the need to move from using ICT as a tool to assist teachers in preparation and presentation of classes to a situation where ICT is used as a tool by students for learning – both inside and outside the classroom. Making this quantum leap is arguably the greatest challenge at this phase of policy development.

In fact, many of the recommendations of this Report such as the need for greater uptake of ICT training by teachers; a designated ICT co-ordinator in schools; a national structure for ICT technical support and maintenance in schools; more coherent school policies around ICT usage, remain central; their lack of implementation remain the key system barriers to better usage of ICT to support teaching and learning. (4) Another important aspect of the database is information on levels of ICT usage by students for learning outside school. Several studies had concurred that while Irish young people are probably greater users of social media technology, including the internet, their level of skills is quite low and appears to centre on entertainment/information and communication. The majority do not progress to higher "ladders of opportunity" to use technology for creating, manipulating and sharing of content, using video data, modelling scenarios, etc. In fact, at each level there were fewer Irish children compared to the European average. (5) The 2008 Inspectors' Report also found that, in general, students' skills tended to be basic.

This raises the question of whether all students entering second level school should be provided with an IT-skills course. This is an important question in terms of providing young people with the skill sets to use technology to support their learning; students must master these lower-order skills if they are to use technology to support higher-order skills such as independent learning, team work, problem solving, critical thinking. The question is important also in the broader social context of schools having a clear role in offsetting an acknowledged digital divide. (6) The three approaches in UNESCO Framework presented in the Consultative Paper – namely, technology literacy, technology deepening, knowledge creation – are very relevant in this regard.

Challenges for ICT integration in schools

As noted above, the 2008 Inspectors' Report, via its recommendations, has identified many of the barriers to better ICT implementation in our schools; upgrading the ICT infrastructure; need for designated ICT co-ordinator; CPD for teachers; technical support; school policies for e-learning; . These are elaborated on below. However, it must be stated that since 2008 and after more than five years of austerity policies additional, more challenging barriers have emerged. These include:

- Increase in pupil-teacher ratio has reduced the number of teachers in schools which has resulted in larger classes and concomitantly reduced the scope for innovation in classrooms, including increased or more diverse use of ICT.
- Reduction in the number of teachers in schools has impaired the capacity of schools to create supportive environments for ICT integration. It is of note that the recent ACCS research on the use of tablet devices found that schools with tablet programmes were still in the initial stages of implementation: “ All reported that they had under-estimated the significant amount of extra work such programmes entailed. ...issues such as the provisioning of e-books and Apps, along with extension of robust wireless services around the school proved more challenging”. (7)
- Requirements for additional supervision and substitution duties under the Haddington Road Agreement has not only reduced the time available for teachers to engage in collaborative planning for e-learning, it has also eroded the “goodwill” factor which is so vital to a vibrant learning community.
- Moratorium on appointment to posts-of-responsibility has resulted in severely undermined middle-management structures. The latter are essential to the development and implementation of whole-school policies such as the 2009 E-learning Plan envisaged under the Departmental strategy for ICT 2008 – 2013.
- Reductions in capitation to schools have influenced budgets for supplementing the ICT infrastructure; this is of particular significance as research indicates that for integration of ICT into teaching and learning to take place, reliance on stand-alone computer rooms must change in favour of ICT devices in the classroom.
- Moratorium has also eliminated the opportunity for school management to create space in the timetable for a designated ICT co-ordinator. The latter is absolutely essential to lead the implementation of the E-learning plan. The 2008 Inspectors' Report is unequivocal on the importance of this role:

“It was clear from the case-study school evaluations that the use of ICT was more efficient if someone in the school had direct responsibility for its management and co-ordination. Furthermore, efficiency was found to be optimal in those schools where the role of the co-ordinator was clearly defined and the relevant tasks were discharged accordingly.” (p.75)

ICT infrastructure: Investment in the ICT infrastructure must be put on a solid footing: the budget for educational expenditure must contain a dedicated section for expenditure on ICT. Schools are continually critical of the fact that both hardware and software are time-bound: the latter in particular needs to be regularly upgraded to ensure that it can support new programmes and constant usage by young people. The teachers of technological subjects – arguably the most ICT-literate teachers in many schools – have for some time now been frustrated that the T4 computers and software now need upgrading. Future ICT policy must have a medium to long-term Departmental budgetary allocation for its successful implementation in schools.

Connectivity is a vital dimension of ICT infrastructure. Again, Ireland is to the forefront in this regard. However, what schools now want is high-speed wireless connectivity throughout the school building. The latter is critical for student use of tablet devices and mobile phones to support their learning. The next phase of investment in schools must focus on wireless connectivity; the DES should provide a timeframe for this phase as many schools are already implementing tablet policies. It would be grossly irresponsible to allow another digital divide to emerge between schools which have the funding or other advantages such as a new school building to use tablet and mobile devices and those which are in different situations. There is already an unacceptable funding gap between schools which has negative implications for students and for equity in society more generally. (8)

Need for designated school ICT co-ordinator: The 2008 Inspectors' Report provides important empirical data on what works well in schools as regard ICT implementation. The role of the ICT co-ordinator is absolutely pivotal. What is particularly pertinent from the Report is the need to designate the role as one of educational leadership:

“Most of the interviews with ICT co-ordinating teachers revealed that they would like to see their role having a greater emphasis on pedagogy than on the area of systems administration and maintenance. In the main it was found that opportunities did not present themselves regularly for ICT co-ordinators to work with colleagues on relevant pedagogical ICT issues. Instead co-ordinators found a lot of their time was taken up with technical or troubleshooting issues”

Throughout the literature on ICT in education, there is overwhelming evidence that ICT will best influence teaching and learning when it is driven by a vision for education, by shared pedagogical beliefs and a commitment to student learning. The DES must consider the establishment of appropriate leadership posts in schools focused on co-ordinating e-learning as distinct from co-ordinating ICT. The terminology in this regard is highly significant: in many schools, because of the lack of technical support, the ICT co-ordinator role is largely about making sure that the ICT equipment works on any given day. Distributed educational leadership must become an essential dimension of the support structures for educational innovation. The current discussions on implementing the new Junior Cycle Framework should serve to underline the fact that schools cannot engage in complex innovation practices in the absence of adequate and focused leadership structures in schools.

CPD for teachers: Again, the ASTI must refer to the cogent and insightful analysis of the complexity of integrating ICT into teaching and learning presented in the Consultative Paper. Its observations that *“the introduction of ICT into a learning environment does not in and of itself bring about change in pedagogical practice.”* Rather, its use in education is inextricably linked with understandings of the nature of knowledge and the nature of knowing” must be at the core of future policy. (8) Teachers' beliefs about education, about their own pedagogical practices, about what “works in their classrooms” have a profound and enduring impact on their attitudes to innovation in education. The report of the ASTI consultation on the Framework for Junior Cycle, *“Teachers' Voice”*, provides an important insight into the complex relationship between teachers' sense of professional identity, sources of self-efficacy and curriculum practice.”(9) Teachers' resulting pedagogical orientation influences their attitudes to the use of ICT in their classroom. The conclusion from the 2012 NESTA Report, *“Decoding Learning: The Proof, Promise and Potential of Digital Education”* is apt in this regard:

“Over recent decades, many efforts to realise the potential of digital technology in education have made two key errors. Collectively, they have put the technology above teaching and excitement above evidence. This means they have spent more time, effort and money looking to find the digital silver bullet that will transform learning than they have into evolving teaching practice to make the most of technology.” (10)

The challenge therefore is to engage with teachers' around their pedagogical beliefs and orientations. This challenge can only be approached in a spirit of partnership with the profession at many levels: initial teacher education; induction and early career experiences; continuing professional development; whole-school planning; leadership structures in schools.

Looking at CPD, the future development by the Teaching Council of a Framework for Continuing Professional Development provides an unprecedented opportunity to engage with the profession on aspects of pedagogy and reflective practice. Again, the conclusion in the Consultative Paper that concerns exist that "*models of professional development which focus on technical competence without pedagogical context is "retooling" teachers for specific tasks, rather than engaging in a pedagogy of a substantive nature*", (p.9) is extremely valid. Teachers' are reluctant to engage with further learning which does not enhance their sense of professional autonomy or meet the instructional challenges in the classroom. There is now there is a solid data base on what kind of CPD is most effective for teachers. (11) It is worth summarising some of the key findings:

- Increasing recognition that one-day "in-service" model of CPD is limited in terms of impact on pedagogy.
- Most useful CPD focuses on active teaching, assessment, observation and reflection rather than information delivery: design is important – must allow modelling; peer observation; self-reflection
- CPD more effective if it is part of a school agenda as distinct from an individual teachers' interest; in other words, CPD is "job-embedded", meets school needs
- Length of CPD is important: fourteen hours is regarded as the minimum length to sustain teacher learning
- Personal "benefits" from CPD are important: teachers' sense of self-efficacy is integral to their skills and competences
- In-school models of peer learning must be facilitated to develop school as a learning community
- On-going research into teachers' practice and how their learning re-shapes their pedagogy

An emerging and powerful dimension of teachers' learning is the growing number of teachers who are forming online learning communities or personal learning networks around Twitter at #edchatie hashtag. This model of teacher learning is extremely powerful for many reasons: it is self-directed; it relates to everyday pedagogical interest; it is about sharing ideas and resources. Future CPD policy for teachers must factor in such online communities of practice as part of the infrastructure of supports for teacher learning. A good model in this regard is that of the State Library of Victoria. - <http://www.slv.vic.gov.au/learn/professional-development/personal-learning-network>

Engaging students in new learning communities

The goal of ICT integration in education is improved quality of learning for students. Students- the learners - must be at the heart of the renewed focus on ICT policy for Irish schools. Just as technology is shaping profound changes in society and economy, schools cannot – and must not be let – fall behind. Investment in the education infrastructure – school buildings, wireless connectivity, tablet devices, adequate pupil:teacher ratios, etc. – is absolutely critical. Essential questions such as the role of ICT in assessment to support and report on students' learning also require to be addressed: adequate ICT infrastructure in schools plus time for teachers to use ICT for assessment purposes are core factors in this regard.

At a more cultural level, however, there is a need for education policy to engage directly with young people as learners who are "at home" with digital technologies. Technology is arguably one of the most influential socialising forces in young people's lives outside their families. It is their "habitus" - if we define the latter as the lifestyle, the values, the dispositions and expectation of particular social groups that are acquired through the activities and experiences of everyday life (12). At present, there is a huge gap between that habitus and opportunities to use their digital native skills in their learning in school. For young people, social media/digital technology represents self-expression, autonomy, creativity, connectedness.

For adults, it more generally represents risks and negative behaviour. Schools are required to address the negative dimensions of technology – internet safety, cyber-bullying, protection of privacy, not to mention cyber-bullying of teachers - and their Codes of Behaviour are appropriately designed to deal with such negative activities.

At the same time, schools must also be empowered to engage with the positive dimensions of technology as experienced by students. The 21st century learning skills – critical thinking, problem solving, collaboration, team work, communication, learner autonomy – which are underpinning curriculum change will increasingly be mediated by the creative use of technology inside and outside the classroom. The Consultative Paper presents some of these issues in the section on Organisation of Learning. But there is an added dimension to this discussion which moves from the pedagogical to the normative structure or ethos of the school. How will schools change in response to these new learning environments? How will they resolve tensions between the positive uses of technology by students and the need to maintain a respectful and caring community? How will the increasing availability of open learning resources impact on how schools structure the timetable and provide the curriculum? (13) Underpinning these questions are more systemic questions of empowering schools and teachers to lead learning in this rapidly changing educational landscape. The current review, while it must address practical investment challenges such as developing the ICT infrastructure, providing continuing learning opportunities to teachers, creating school leadership structures in schools, use of ICT in assessment – formative and summative, must present recommendations for on-going dialogue on the less visible challenges outlined above.

References

1. *"The onrushing wave"*, The Economist, January 18th, 2014
2. *"Disruptive technologies: advances that will transform life, business and the global economy"*, McKinsey, 2013
3. *"Key data on learning and innovation through ICT at school in Europe"*, Eurydice, 2011
"Survey of schools: ICT in education - Benchmarking access, use and attitudes to technology in Europe's schools", European Schoolnet and University of Liege 2013
4. *"ICT in Schools: Inspectorate Evaluation Studies"*, DES 2008
5. *"EU Kids Online Ireland; Digital Literacy, Digital Opportunities"*, www.eukidsonline.net 2012
6. *"Gradations in digital inclusion: children, young people and the digital divide"*, referenced in *"EU Kids Online Ireland"*, op cit
7. *"The use of tablet devices in ACCS schools"*, ACCS 2013
8. *"Governance and Funding of Voluntary Secondary Schools in Ireland"*, ESRI 2013
9. *"Teachers' Voice; Report of ASTI Consultation with Teachers on the Junior Cycle Reform Document, "A Framework for Junior Cycle" "*, ASTI 2013
10. *"Decoding Learning: The Proof, Promise and Potential of Digital Education"*, NESTA 2012
11. *"Teaching as the Learning Profession: Handbook of Policy and Practice"*, Linda Darling-Hammond et al 1999
12. *"Distinction: A Social Critique of the Judgement of Taste"*, Pierre Bourdieu 1984.

13. *“Opening up Education: Innovative teaching and learning for all through new Technologies and Open Educational Resources”*, EU Commission Communication to the European Parliament 2013