

The Digital Learning Movement: How Should Irish Schools Respond?

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Abstract: There is a significant movement towards digital learning internationally. However, policymaking in Ireland regarding the use of ICT in education, specifically second-level education, has been lacking. Students' experience of technology at school varies hugely. The current debate has become device focussed rather than content focussed. This paper examines how the lack of clear policy by the Department of Education and Skills has led to resistance by many stakeholders in embedding the use of technology into schools, and particularly teaching and learning.

I INTRODUCTION

This paper assesses the state of play in relation to the place and efficacy of digital technologies in Irish second-level schools and classrooms. Recent times have seen a prominent focus in public discourse on digital technologies and their impact on children and young people's education and broader development. The debate has often been narrowly focused on whether to ban mobile phones and personal devices in schools, but commentators have argued that this misses the point and the merits or otherwise of digital technologies in schools and classrooms should be

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considered far more complex than the debate suggests. This paper looks at the role that technology can play in second-level schools, the digital divide and Ireland's digital strategy for schools. The international context is also discussed and some recommendations and suggestions for future policy are presented.

Much of the literature asserts that for effective ICT integration in classrooms to take place, a framework that recognises the role of the school-leader and teacher is needed (Vermeulen *et al.*, 2016; Tearle, 2003). The research from Ireland also shows the centrality of school leadership in technology adoption, particularly at the classroom level (McCoy *et al.*, 2016). However, there is a huge gap in the rhetoric of ICT in schools and the practice of ICT in schools (McGarr and Johnston, 2019). Under the current organisation of second-level schools, the evidence suggests there has been limited opportunity for the widespread integration of ICT into classrooms (Judge, 2013). As yet, there are no formal data or requirement on schools to report the main approaches they take; schools with little technology integration, those using blended learning and schools which describe themselves as 'tech-driven' – however that is defined – are free to operate without having to provide feedback to the Department. While schools are moving towards a culture of self-evaluation (Department of Education and Skills, School Self-Evaluation Guidelines, 2016), we still have an unclear understanding of the extent and nature of technology integration in schools and the role technology is seen to play in school improvement (Drossel and Eickelmann, 2017). Despite this, whole school and subject inspection places a strong emphasis on the integration of technology in teaching and learning, and features regularly in published school inspection reports.

Previous research has found that the existing school environment may not be conducive to integrating technological approaches into present classroom practice. International research has found that incorporating a school/classroom design that facilitates better exploitation of available ICT enables teachers to effectively meet the needs of a diverse student population, including special-needs students (Judge, 2013; Kariippanon *et al.*, 2018). There can also be a high level of difficulty associated with doing anything that is perceived as outside of the norm and schools and teachers vary widely in their readiness for innovation (McCoy *et al.*, 2016). This experience is not unique to Ireland (Klehr, 2012). These difficulties can prevent research from taking place. In an analysis of educational technology policy in Ireland from 1997 to 2017, McGarr and Johnston (2019) noted that there were three stages of policy during this twenty-year period; a drive to bring technology into schools followed by a stage which acknowledged how technology was transforming the lives of young people outside of school. The third phase recognises the need to change the education system to facilitate more independent and student-centred learning for technologies to be capitalised on effectively.

It is clear that policy in Ireland hitherto has not taken into account how the use of ICT has been both intensified and destabilised by the societal impact of technology on our everyday recreational activities (Selwyn, 2008). There is an

unavoidable tension between these two spheres. On the one hand there is the chaotic amorphous world of social media and on the other we see the planned, differentiated and considered world of educational technology. That is not to say that the two spheres cannot co-exist. There are case studies reporting on the successful use of social media, particularly blogs and Twitter in a classroom environment (Menkhoff *et al.*, 2014; Chawinga, 2017). However, while there is some limited reporting of this type of activity taking place in schools it is very difficult to estimate the number of teachers engaging in this work. This kind of activity is under reported for a variety of reasons. For example, teachers may not share their classroom experience with a formal Community of Practice¹ and the number of teachers involved in writing and publishing their classroom practice in academic journals and presenting at academic conferences is also minimal. Therefore, a lot of innovative creative teaching practices are not captured and presented in the literature. We can agree that the majority of the online activities demanded of today's teenagers are contained in the same medium. This raises questions such as: "Is the medium becoming more challenging to exploit positively?" "How can schools, teachers and parents control this technology effectively in order to maximise learning opportunities?". Research from disciplines such as neuroscience and psychology has provided us with case studies on iPad use (Schilhab, 2017; Schilhab *et al.*, 2018) and the use of eReaders (Mangen and Kuiken, 2014). One of Schilhab's studies (2017) which looked at the effect of technology on social spaces in schools found that the desire to communicate with people nearby may reduce considerably if preferred information or entertainment is only a click (or swipe) away. Schilhab's study suggests that schools:

simultaneously with the distribution of iPads, take measures to help pupils adopt the kind of technological literacy that will still allow them to engage in socio-emotional learning during break-time (p.275).

While the devices have many benefits, Schilhab's work in particular asks us to consider if the amount of time children are spending in front of screen harms their understanding of the real world and their own physical mechanisms? Research in the area of embodied cognition reveals that we construct conceptual knowledge of real world phenomena from our sensory experiences. This may be of significant importance if schools are considering decisions around the replacement of traditional physical labs with virtual options (Nedic *et al.*, 2003; Faulconer and Gruss, 2018).

¹ In academic literature these Communities of Practice describe a group of members who engage in a joint enterprise (Lantz-Anderson, 2018). The past 30 years has seen growth in such communities, including formally organised 'teacher networks'.

Policy around ICT use in education now requires a fourth phase. This could be seen as a stage where “ownership” is the key word. We may physically own the technology but the technology is also claiming ownership over our lives. This poses another question: have digital natives morphed into digital hostages? There is an aspect of dramatic irony to this new context of use. This could be compared to the “boiling frog”, whereby technology ownership and use has become so embedded in every facet of our daily lives that is impossible to think of life without it. Such over-reliance and use of technology has led to a less focused use which has happened incrementally. It was never envisaged that when a parent or guardian handed over a smart device to their adolescent that they would be spending substantial amounts of time with the device.² The lines between educational and recreational use have been blurred; a distinction is needed. More direction is urgently needed to prevent entrapment by the technology and the further overuse of screen-based activities by children and young people. The evidence certainly suggests delaying access to ‘(smart)phones’ until late childhood (or entry into second-level) may be warranted, or closer monitoring/restrictions on their use advisable (Dempsey *et al.*, 2018).

II EVOLUTION OF THE DIGITAL DIVIDE

The recognition of a possible ‘digital divide’ (in terms of student access to ICT) towards the end of the 20th century drove many governments, including the Irish government, to address the problem through school-based interventions. In 1998, Ireland began to seriously invest in ICT infrastructure for schools (Marcus-Quinn and McGarr, 2013), followed by large-scale investment in broadband for schools (McCoy *et al.*, 2016). However, in more recent years the digital divide considers more than access to technology and is more focussed on the digital content that learners have access to and how they are using this content (Buckingham and Willet, 2013). The digital divide is no longer referring solely to matters around access to hardware/online connectivity, the new divide focusses on digital content and how it is being delivered and consumed.

Irish schools are required to engage in extensive ongoing self-evaluation (Nayir and McNamara, 2014; DES, 2016, School Improvement Plan). Schools in Ireland have a high level of autonomy in terms of how they govern themselves. Indeed, in 2016, the Ombudsman for Children stated “The autonomy afforded to Irish schools means the Government has been unable to exercise necessary oversight.” This autonomy covers all aspects of school business including how technology is

² While a third of children between eight and 13 years old spend less than one hour online every day, 29 per cent spend more than two hours a day, with 12 per cent spending more than four hours online per day (Cybersafe Ireland, 2019).

embedded, if at all. Anecdotally, we are seeing different types of cultures emerging across schools. Some schools, often more newly established, describe themselves as “tech-driven” and align themselves with tech-driven pedagogies. In contrast to this, some schools offer a more blended-learning approach whereby technology is exploited at the discretion of the individual teacher, and may take place in a formal setting such as a traditional PC lab or a Wi-Fi enabled space. Such autonomy is not necessarily a negative. It can offer an opportunity to schools to open a dialogue involving all stakeholders on the added value of technology within the school and how this affects the school-home life balance. It may also offer a school/teacher the opportunity to tailor their approach to the needs of the students in front of them. Anecdotally, these new cultures may be influencing parental choice of school, as schools market themselves as ‘iPad schools’. Crucially, there is a dearth of research on how schools decide on, and market, their ethos in relation to technology integration. Perhaps more importantly, there is very little information available to parents as to the impact of a school’s tech culture on the educational experiences of their son/daughter and the impact on their broader home life.

III DIGITAL STRATEGY FOR SCHOOLS: 2015 – 2020

Within the aforementioned context of educational reform, the Department of Education and Skills subsequently published the Digital Strategy for Schools with the primary focus of ‘enhancing teaching, learning and assessment’ (DES, 2015). This strategy was launched by the then Minister for Education, Jan O’Sullivan, promising a €210 million investment in the provision of digital technology to schools in Ireland. This initiative was committed to multi-annual funding to schools in order to enhance digital learning opportunities for students. At this point, high-speed broadband was in the process of being rolled out to schools across the country (DCENR, 2015). In order to continue upgrading digital facilities, this investment also allowed for the establishment of Wi-Fi networks within schools. These investments were shown to achieve some of the promise of improving teaching and learning experiences (McCoy *et al.*, 2016), and improved technology infrastructure has whet the appetite for school principals and teachers for deeper technology use (McCoy and Lyons, 2018). In addition, the strategy also had a core pedagogical focus, with emphasis placed on introducing ICT as a standalone course as part of the Leaving Certificate³ (Ireland’s terminal upper second-level examination). Furthermore, the strategy would also promote the integration of e-portfolios at both primary and second level in addition to the development of useful digital content and resources to schools. The initiative also emphasised the promotion of safe and responsible internet use, alongside the provision of resources dealing with the issue

³ Computer Science was introduced as a subject in 2018.

of cyberbullying. More importantly, the strategy had as a core commitment the inclusion of ICT skill development as embedded components in Initial Teacher Education Programmes and Continuing Professional Development for established teachers. This is particularly important given that teacher skills and confidence in the effective pedagogical use of technology have been identified as key barriers in embedding technology in teaching and learning (McCoy *et al.*, 2016).

In March 2019 the Minister for Education and Skills announced the third year of funding under Project Ireland 2040. This funding brought the total spent on the Digital Strategy for Schools ICT Infrastructure Fund to €110 million. All schools received grants to purchase key technology including tablets, cloud systems and projectors. Minister McHugh stated:

Critical, creative thinking, problem solving skills and adaptability will be key to ensuring young people flourish in this environment and we need to make sure they are well prepared. Our Digital Strategy for Schools sets out a clear vision that is focussed on realising the potential of digital technologies to transform the learning experiences of students.

These grants reflect the priority on investment in effective ICT infrastructure in schools to support curriculum development and enhance teaching and learning. The funding is expected to complement the objectives of a school's Digital Learning Plan to which the Department of Education and Skills has provided considerable resources and supports under the Digital Strategy. However, it should be pointed out that, even with these funding announcements, in 2016 Ireland invested just 1.2 per cent of its GDP on second-level education compared to the OECD average of 2 per cent (OECD, 2019).

It remains to be seen whether the additional funding will be sufficient to bring about the systemic change required to embed digital technologies in teaching and learning across all schools, as envisaged in the policy statements. Currently where schools decide to purchase more ICT (infrastructure, hardware and software) the funding is often raised through local funding initiatives involving teachers, parents and students. In other cases, schools request that parents supply tablets for their children, creating financial hardship for some families (Coyné and McCoy, forthcoming).

IV EDUCATIONAL CONTEXT: IRELAND AND CURRICULUM REFORM

Over the past number of years, Ireland has witnessed a great deal of educational reform, most notably in the area of Junior Cycle Assessment, which focuses on the experiences of students from first to third year in lower second-level school.

Whilst the established Junior Certificate programme was previously criticised as being overly reliant on rote learning and memorisation techniques, the Framework for New Junior Cycle (DES, 2015) underlines the integration of innovative approaches to teaching and assessment in Ireland with the chief aim of enhancing students' overall experiences within the typical school environment. As part of this emerging teaching and learning culture, schools now have the ability to plan inclusive educational programmes for their students which would in turn deliver on improved learning experiences and outcomes for all Irish students. In addition, this new framework allows schools to develop autonomy in areas such as planning, content design and evaluation of their individual educational programmes. As such, schools can now devise their own specific plans which focus on combining elements of the new curriculum with other learning experiences as part of each individual student's learning path (NCCA, 2019). Seminal policy publications such as *Looking at our School: A Quality Framework for Post-Primary Schools* and *School Self Evaluation Guidelines*, both published by the Department of Education and Skills in 2016, further highlight the emergence of a critically reflective school culture which in turn would support such curricular reform.

It should be noted that individual subject reform was introduced on a phased basis with students undertaking a mixture of both old and new curricula until eventually all subjects will be sufficiently reformed according to the tenets of the New Junior Cycle. Therefore, English was the first subject introduced as part of this specific approach to curriculum reform. It is also worth noting that the Junior Cycle English course is focused on improving students' communication skills as well as developing creative thinking. This reformed course underlines the importance of broadening students' ability to express themselves firstly through written expression and secondly, through oral communication. This in turn would lead to the emergence of more critical thinkers amongst the student body as the course would 'empower them to contribute to society as thoughtful, active citizens' (NCCA, 2019). Their appreciation of texts in various formats is also an important component within this form of assessment. The typical formats used in New Junior Cycle English included visual, written and spoken textual structures. In addition, student creativity is actively encouraged through the guise of drafting and redrafting of their own original texts (NCCA, 2019; Curriculum Online 2019).

While the reform programme is now close to completion at lower second-level, the upper second-level Leaving Certificate programme has remained largely unchanged. This means that students now progress from a junior cycle with a balance of summative and formative assessment, to the largely written examination-based nature of Leaving Certificate assessment, coupled with its high-stakes character. This system has been found to profoundly influence the nature of learning and skills development experienced by young people (McCoy *et al.*, 2019). O'Leary and Scully (2018) similarly highlight that the Leaving Certificate focus on rote learning as opposed to more sophisticated cognitive processes, its structured and

prescribed nature, and its emphasis on final written examinations, which detracts from the development of certain transferable skills, all curtail the opportunities for creativity now central to junior cycle education. The senior cycle review process now underway presents an opportunity to improve the pedagogical goals of senior cycle education, aligning it with creativity now embedding in the junior cycle.

V TECHNOLOGY IN EDUCATION

Technology has facilitated greater educational opportunity for many second-level students but particularly for those with learning disabilities (Messinger-Willman and Marino, 2010; Cullen *et al.*, 2012). The last decade has seen a surge in the uptake of technology in interventions and teaching strategies for students with autism spectrum disorder (Odom *et al.*, 2015). The availability of digital devices has also allowed learners with accessibility issues such as visual impairment to achieve academic success (Mulloy *et al.*, 2014; Maor *et al.*, 2011; Kamali Arslantas *et al.*, 2019), and ICT can support a greater connection between home and school learning practices (Radović *et al.*, 2019). However, the potential benefits of technology in learning can only be realised if students are protected and supported in using it safely and effectively (McCoy and Lyons, 2018). Technology should be used as a tool for learning rather than a requirement. Students themselves recognise that active engagement is most beneficial for learning, and technology *can* provide a means for achieving this, provided teachers have the desire and resources to do so (Coyne and McCoy, forthcoming).

Screen time has long been present in our conversations regarding child and adolescent health and well-being (Martin, 2011; Ernest *et al.*, 2014; Hale and Guan, 2015; Renard and Leid, 2016). However, until recent years, screen time predominantly related to television viewing. Bucksch *et al.* (2016) undertook a cross-national study of 30 countries and found that between 2002 and 2010, television viewing decreased slightly in most of the 30 countries among both boys and girls. This decrease was more than offset by a sharp increase in computer use, which was consistent across all countries. In Ireland “smart” devices have become more prevalent amongst adolescents since the launch of the iPhone in 2007. In total, 40 per cent of 9- to 16-year-olds own a smartphone and an additional 27 per cent own phones that do not have smartphone capabilities (O’Neill and Dinh, 2015). In many ways, engagement with screen media and interactive technology can be classified as dominant childhood activities for many children around the world (Wartella *et al.*, 2016). However, across Europe there is no unified approach as to how such technology should be embedded at second level. In September 2018 France issued a ban on mobile phones in all schools. Other countries have followed suit, and individual schools (in Ireland and elsewhere) have issued similar directives on the use of smart/personal devices during the school day. These actions are

reactionary at best and draconian at worst. A more developed approach is required. Before decisions of this nature are made, a more evidence-based approach is needed with more consultation with all stakeholders including the student voice.

Globally, the issue of screen time has been a contentious issue in media commentary. Stakeholders have expressed concerns about the over exposure of children to screens, and researchers in this area have called for more studies examining the impact on the visual and ocular health (Jaiswal *et al.*, 2019; Köpper *et al.*, 2016). Some research suggests that eReaders facilitate a more comfortable reading experience (Kuforiji and Williams, 2017). However, as recently as April 2018, the World Health Organisation (WHO) issued guidelines around screen time for very young children (up to five years of age). Given that the last year has seen many more studies published on the effect of excessive screen time on ocular health we can expect that the WHO will issue guidelines on screen time for the rest of the population. Excessive screen time has been linked to detrimental effects on psychosocial health (Mutz *et al.*, 2019), a decrease in the levels of physical activity and an increase in sedentary behaviour in teenagers (Lee *et al.*, 2019). A 2019 study published by Bourchtein *et al.* (2019) advised that technology use, although more predominant in teenagers with ADHD, is linked with more sleep problems and reduced school-night sleep duration regardless of ADHD status. Bourchtein *et al.* advise that clinicians should consider the level of technology use when assessing and treating sleep problems. There is also huge growth in the number of studies around phone and technology addiction, with younger teenagers at higher risk (Dempsey *et al.*, 2018).

Bucksch *et al.* (2016) argue that cross-national increases in screen time behaviours “should be a call to action” for policymakers, and that “interventions specifically focused on reducing screen time are sorely needed” (p.147). In this context, the amount of time spent on smart devices for educational purposes is important, but perhaps the more important issue is what exactly adolescents are looking at. The considerable recent focus in the Irish media has been on devices – whether to ban or not – serving to divert attention away from the core issue; the content. There are two aspects to consider when it comes to content. The actual text or graphic material and how this is presented (e.g. colour, typographic choices, navigation and access devices) (Shriver, 1997; Mayer, 2001; Marcus-Quinn and McGarr, 2015). One of the recommendations of the Stavanger Declaration (2019), the culmination of a four-year Action by 200 scientists across Europe, stated that when introducing digital technology into teaching and learning, teachers should be made aware that a rapid and indiscriminate move away from paper is not without negative consequences. Digital materials can offer excellent opportunities to cater to an individual’s preferences and needs but such benefits for comprehension and motivation are only demonstrated where the digital reading environment was carefully designed with the reader in mind (Gu *et al.*, 2015). There have also been concerns raised around memory and recall where digital materials have replaced the traditional hardcopy. Schilhab *et al.* (2018) state:

whereas printed text affords numerous stable material anchors in the moment for memorizing, digital texts are much reduced in this respect.

A study by Mangen *et al.* (2015) compared and contrasted the use of technology (standard keyboard entry and iPad Touch keyboard entry) with the use of traditional handwriting to recall a word list. In this study, handwriting was associated with:

better free recall of written material as compared to material written using conventional keyboards on PCs and virtual keyboards such as those on iPads.

While the researchers acknowledged that the outcome may have been influenced by the participants having grown up learning to read and write using pen and paper rather than keyboards, it is a significant finding and more research is clearly needed.

VI INTERNATIONAL CONTEXT

Governments have commissioned numerous studies and reports on ICT provision and access to technology in schools. Digital literacy, in particular, is recognised as crucial for today's students across the world. In a relatively short period of time, ICT skills have become as essential to living a full life as being able to read and write. There is a growing body of evidence on the positive impact that ICT can have on the learning of pupils with special educational needs and other students, whether through adaptive or assistive technologies specially designed to support pupils with specific disabilities, or through the use of mainstream technologies such as digital video and photography. Globally, there has been much activity in the area of ICT in schools at all levels and sectors of education. Weller (2018) identifies some of the contributions of educational technologies. Technology, of various types, has become embedded in the everyday practices of many schools, with the net effect of supporting teaching and learning. Internationally, teachers are often the agents of change (Håkansson Lindqvist, 2019) but there are examples of government-driven change; Gu *et al.* (2015) report that at least 20 countries have initiated e-Textbook projects.

There are also cases where countries have taken an approach which puts ICT at the very core of the education system; one such example is in the Netherlands. In early 2009 the Dutch Minister of Education launched the Wikiwijs project <https://www.wikiwijs.nl>, an open, internet-based platform, where teachers could find, download, (further) develop and share educational resources. While the Wikiwijs Project was primarily concerned with creating an infrastructure for Open Educational Resources (OER), it also clearly demonstrated the commitment of the Dutch government to realising a clearly defined and realistic approach to

incorporating ICT into schools. However, even with all of the provision and support put in place not all teachers availed of the resources (Schuwer *et al.*, 2014). One of the lessons learned from the project was that:

more communication would have been helpful ... to be persuasive in nature to convince various parties (school management, teachers, and so on) about the benefits and role that Open Educational Resources can have regarding educational reform and in acquiring 21st century skills.

Another outcome of the Wikiwijs project was that it was recognised that the project by itself was not enough to realise the objectives set by the government. “More prescriptive policies and regulations were also needed to avoid the current state of permissiveness on adopting an OER policy by educational organizations.” In 2015 Schuwer and Wild declared that the pioneering phase of such projects “has come to an end” and that the impact of such projects can now be analysed in order to identify the impediments to large-scale adoption of open education.

VII WHERE DO WE GO FROM HERE?

Policy and practice at the national and school levels need to be evidence informed. Such evidence requires classroom observation and feedback from teachers in order to be able to ascertain a fuller picture of what works, in what circumstances and for which students. There isn't a typical example. Looking at ICT culture from the perspectives of ICT co-ordinators, students and teachers, how might technology support teaching and learning from what we know so far? Technology may be integrated across the school in many ways. Blanket bans on technology, such as personal smartphones, may not be helpful as they are reactionary and do not consider the benefits of supervised classroom use according to a typical blended learning approach. Students themselves may use books (traditional or eBooks) as their main content sources for classroom tasks and homework. However, with permission from their teacher they could use their phones/personal devices for specific research tasks in supervised contexts. The school digital infrastructure often includes two or more computer labs, comprising 30 PCs each as well as classrooms equipped with a PC and a projector. Wi-Fi is sometimes not provided within the school environs of older schools but many teachers may use a virtual learning environment to provide additional digital resources which students could access at home (assuming broadband availability, which will vary regionally). Students may have access to eBook versions of their textbooks for home use. Students are often familiar with popular educational apps such as Kahoot, Quizlet and See Saw which are frequently used by second-level students to complement their learning. Digital literacy skills are often formally taught to students taking the Transition Year

programme, as part of a year-round certification module on developing MS Office skills.

The need for evidence also extends to the development of teaching resources. There is an emerging expectation that teachers will not only incorporate more digital resources into their teaching practice but that they will also become producers of such digital content (Ganapathy *et al.*, 2015). Indeed, wide variations across subject areas in the availability of online content largely stems from the reliance on leaders undertaking ground-breaking work on the development and collation of relevant online content (McCoy *et al.*, 2016). However many teachers do not have training in the design and development of digital resources (Akpınar and Simsek, 2007; Baytak and Hirca, 2013). As a result, many design features can be overlooked and classroom resources may not be as effective as anticipated. Many of today's learners have prior exposure to a wealth of media-rich educational resources and social media experiences, and this can have a profound impact on their interaction and engagement with digital material. Many students have become accustomed to more audio-visually rich "edutainment" type resources and social media sites such as YouTube, Snapchat and Instagram. These experiences can prejudice their use of teacher-created digital resources. We need to resource the development of evidence-based knowledge of resource development, and provide guidance for practitioners, policymakers, publishers and designers, as well as for other researchers developing materials for investigating changes in visual presentation. The rise in the adoption of tablets may be more about the additional technical support that comes as part of the package rather than the affordances of the device itself.

Research consistently highlights how effective leadership is crucial to the smooth and effective integration of digital technologies in schools (McCoy *et al.*, 2016). Since 2018, there has been some flexibility on the moratorium on posts of responsibility which was a direct result of the recession. Schools now have the opportunity to appoint and potentially build on the role of the ICT co-ordinator. This could be achieved in tandem with the School Self Evaluation Process. Now is the time for clear leadership by schools in terms of how they can provide an enriched learning experience, be that through exclusive or targeted use of technology across the whole school, tailored to suit the needs of their students and teachers. Such leadership, facilitated through middle-management roles, would promote open and healthy dialogue to create a policy which could be reflected upon cyclically and adjusted accordingly to the needs of the school community. As such this does not need to be a top-down process coming from the Department of Education and Skills but instead can develop in tandem with, and organically from, the bottom-up, bringing together the various levels of expertise in an autonomous school community. This bi-directional process could have a significant impact on both the opportunity and challenges that technology poses to education.

We urgently need systematic research on the provision of digital content in Irish schools. In the absence of such studies there can be no concerted effort towards an

appropriate and beneficial digital experience for all. Where schools declare that they are “tech-driven” or iPad/tablet only we need to identify what content teachers are using. Such research will provide insights on the design, development, and learning experience with digital learning materials. It is only by reviewing studies, project reports, and cases on the use of technology that will enable a solid policy to be formed.

The best way forward is to embrace a bottom-up approach which would see schools harness the potential of digital technologies to support learning, to tailor teaching approaches and provide students with the skills they will need for the 21st century. In order for this to happen, the Department of Education and Skills needs to support schools in their decision-making, perhaps through providing a roadmap showing what successful technology use looks like. As a society we need to move away from the ongoing contestation around personal devices, which is missing the point. We need to facilitate schools learning from each other’s experiences (the successes and the failures) and from their best practice. If the benefits of ICT are to be maximised, the potential of ICT and other developments will require a willingness and enthusiasm to share and learn expertise, insight and vision within and across school contexts; supporting leaders within schools.

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