

Baseline Report:

Towards a Successor Digital Strategy for Schools to 2027

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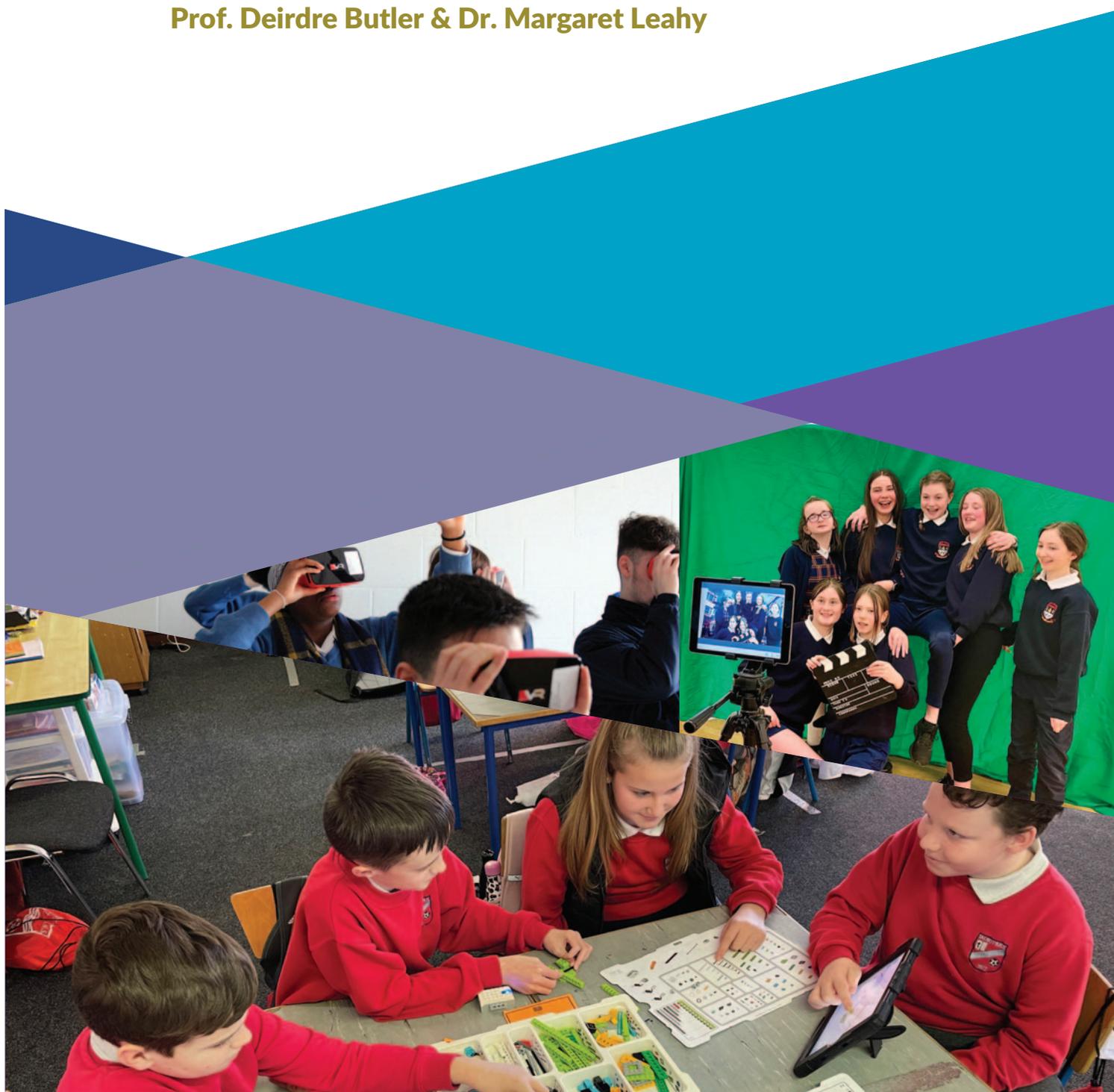


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1 Introduction

Over the past decades, digital transformations have continuously and rapidly reshaped society, the labour market and the future of work (EC, 2020). Most recently, developments in artificial intelligence, robotics, the Internet of Things, virtual reality and blockchain have brought further changes in how we live and work. Such transformations have not only increased demand for higher order skills, competences and knowledge but they have also led to uncertainty about the future, for example: the potential impact of artificial intelligence on some workplaces; how to keep up with an accelerating pace of change; or how to manage global competition for skills (OECD, 2019a). There is also increasing and considerable concern around issues such as unequal access to technology, disinformation, a growing culture of surveillance and the expropriation of the personal data we share on the internet with vast corporations. Within this global context, the use of digital technologies is increasingly pervasive in the lives of young people, who are using them for a multitude of activities both in and outside of schools (OECD, 2020). Accordingly, the education sector is expected not only to meet the demand for new, higher-order skills and competences but also to prepare all learners with the competences (knowledge, skills and attitudes) to live, work, learn and thrive (EC, 2020) - both now and in a future where the competences and knowledge they will need to succeed are constantly changing (Twining et al., 2020). This is not about learning about digital technology per se, it is about how our digital era impacts on all aspects of schooling. Enabling real change “requires policies and actions on several fronts, including infrastructure, strategy and leadership, teacher skills, learner skills, content, curricula, assessment and national legal frameworks” (EC, 2020, p.2). In short, the focus needs to be not “in terms of what the students should learn but in terms of what they should become” (Priestley & Biesta, 2013, p. 4)

The arrival of the COVID-19 pandemic caused unprecedented disruptions and massive changes to almost every education system in the world (UNESCO, 2020). Almost overnight, schools closed and many schools and education systems, Ireland included, began to offer education remotely. The sudden switch to emergency remote education saw extraordinary efforts by teachers and education systems to adapt and innovate (UN 2020). However, the changes to education that occurred during the pandemic were made very quickly to address the immediate and urgent need of continuing schooling. While laudable in the short term, they cannot be considered the changes education needs to make in the wake of COVID-19, in a rapidly changing global society (Zhao & Watterson, 2021).

Without doubt, the impact of the COVID-19 pandemic on education forces us to rethink how our education systems are designed to meet the demands of today’s world. Remote education not only brought the potential of digital learning to the fore but also exposed the shortcomings that need to be tackled in order to successfully embed digital technologies in education systems (EC, 2020). It revealed and amplified the weaknesses of current systems; highlighting existing and growing equity gaps as well as the enormous potential for innovation that is dormant in many education systems worldwide (OECD, 2020). It is not surprising that 95% of respondents to the EU Digital Education Action Plan 2021-2027 (DEAP) consultative process indicated that they believed the COVID-19 crisis is a ‘turning point’ for education, that the forced shift to distance and online learning would have a longer-term impact on education, requiring not only educators’ digital competence but a clear vision

and strategy on how all phases and stages of education can purposefully and strategically embed digital technologies into educational practices. (ECa, 2020).

However, before considering the question “where to from here” we need to stand back and examine the big picture. We need to carefully consider what was happening ‘Before COVID-19’, (BC) and ‘During COVID-19’ (DC) in order to prepare for ‘After COVID-19’ (AC). Although, the switch to digital education during the COVID-19-19 pandemic has confirmed the need both to boost the digital capacity of our education systems and to work together to support the development of a high performing digital education ecosystem (ECa, 2020), there is a need to be careful that we are not disproportionately influenced by our experiences during the COVID-19 pandemic (DC). There were problems and barriers that needed to be attended to before COVID-19 (BC). For example, long before the COVID-19 crisis, there was clear evidence on the need to support digital competence development of adults and young people in Europe (e.g. 44% of EU citizens have an insufficient level of digital skills). In addition, digital divides relating to gender, socio-economic background and urban/rural areas were prevalent (ECa, 2020). These are the realities that need to be taken into consideration along with our experiences and learnings from the COVID-19 crisis if we are develop a robust, agile system as we emerge from the pandemic.

As we plan and prepare for the successor Digital Strategy for Schools to 2027, the need to reflect on the changes that are taking place within schools and in the world outside school raises questions about what a quality curriculum in a technological era should look like, and the equally challenging issues about how to achieve the necessary changes in schooling in order for such a curriculum to be realised (Twining et al. 2020). In addressing these questions, we need to be careful of what is influencing the development of the strategy and as advocated in the EU Digital Education Action Plan (DEAP), 2021-2027, to focus on “long-term digital change in education ...which will require a combination of actions and policies to be effective” (EC, 2020, p.4). It is within this context that we need to consider how best to frame a Digital Strategy for Schools, so that the students in our schools continue to develop transformative competences to shape a better future working towards well-being for ourselves, for others and for our planet (OECD, 2019b).

Against this backdrop, there are two main parts to the paper. The first presents a review of the implementation and effectiveness of the Digital Strategy for Schools 2015-2020: Enhancing Teaching Learning and Assessment (Department of Education & Skills (DES) 2015). This review is then used to inform the second part of the paper in which we outline a range of issues as well as a number of recommendations as to what should be included in the next iteration of the Digital Strategy for Irish schools.

2 Review of Implementation and Effectiveness of the Digital Strategy for Schools (2015-2020)

Before deliberating the question “where to from here”? there is a need to assess the current situation in terms of the implementation and effectiveness of the current Digital Strategy. A number of documents, reports and data are available to inform this assessment. These include (i) Department of Education (DE) Digital Strategy Actions Plans (2017-2020) (ii) the research evidence which includes reports completed by the DE Inspectorate (DE, 2020) and the Educational Research Centre¹ as well as the extant literature which documents the experiences of schools in Ireland during the school closures brought about by the COVID-19 pandemic and (iii) findings from the public consultation carried out by the DE. This includes findings from the open call for submissions, the DE survey of principals, teachers and students, the DE focus group interviews with key stakeholders in education and the National Parents Council’s survey of parents. What follows is a summary of the main findings from each of these data sources before presenting a synopsis of the key learnings from the implementation phase of the Digital Strategy for Schools (2015-2021).

2.1 Digital Strategy Action Plans 2017-2020

An Implementation Advisory Group (IAG) was established in 2017 to guide the implementation of the Digital Strategy for Schools 2015-2020 and to drive forward reforms in how technology is used and taught in the classroom. Under the guidance of this Group, a Digital Strategy Action Plan was published annually from 2017 to 2020. Each plan outlined a number of actions and sub-actions to be implemented during the year by the Department, its agencies and others across government. Timelines and lead responsibility were assigned, and progress was measured against the plan. The completion rates for each year 2017-2019 are shown in Table 1.

Year	Number of Actions	Delivered	Carried over
2017	120	113	7
2018	80	75	5
2019	52	47	5
2020	64	55	9

Table 1. Completion rates of actions by year

Each of the Action Plans were based on the objectives outlined in the DSS and was organised around the four themes of the strategy: (1) Teaching, Learning and Assessment using ICT, (2) Teacher Professional Learning, (3) Leadership, Research and Policy and (4) ICT Infrastructure. The key achievements for 2017-2020 are summarised below according to these four themes. A more detailed discussion and overview of each of these themes is available in [Appendix A](#).

¹ www.erc.ie

2.1.1 Theme 1. Teaching, Learning and Assessment using ICT

The Digital Learning Framework (DES, 2017).

One of the most significant accomplishments of the Digital Strategy for Schools (2015-2020) was the publication of the *Digital Learning Framework* (DLF) for primary and post-primary schools (DES 2017a; 2017b). Designed as a support to the DSS (DES, 2015), the DLF is an instrument to help educators to reflect on their current understanding/use of digital technologies in their practice and also to guide them on how to use digital technologies effectively to transform their teaching, learning and assessment practices. The DLF was adapted from the UNESCO ICT Competency Framework for Teaching (2008a, 2008b, 2011), DigComp Org (Carretero, 2017) and DigComp Edu (Redecker, 2017) for the Irish context and is intended to be used in tandem with the *Looking at Our Schools* school self-evaluation framework (DES, 2016a; DES, 2016b).

The DLF is articulated as a set of domains and standard statements across two dimensions: Teaching and Learning, and Leadership and Management. Each standard is illustrated by at least one example of effective and highly effective practice (Butler, Hallissy & Hurley, 2018). In using the DLF, schools are encouraged to engage in a process of reflection as part of the School Self-Evaluation Process (DES, 2012) that culminates in action, i.e. the creation of a Digital Learning (DL) Plan that outlines how they will enhance their existing digital learning practices over a defined period of time. A DE Circular (CL0077/2020) notes that schools must have a Digital Learning Plan updated at least annually. The DLF was followed by *Digital Learning Planning Guidelines*² and a *Planning Template*³ in December 2017, to help guide schools on the implementation of the DLF including the development of a Digital Learning Plan.

The DLF was trialed in a cohort of 50 schools during the 2017/2018 school year. An evaluation of the Framework, conducted by the Educational Research Institute (ERI) (Cosgrove et al., 2018a, 2018b) ran parallel to the trial. A review of the DLF was subsequently conducted to incorporate findings from the ERI Evaluation. Dissemination of the DLF to all schools commenced in September 2018 and was led by the national support service for teachers, the Professional Development Services for Teachers (PDST), and in particular its Technology in Education Team (PDST-TiE). A range of other supports to support the development and implementation of Digital Learning Plans were developed by the PDST over 2018 and 2019 (i.e. face-to-face courses, workshops, online resources and courses including an interactive planning and support website⁴, a suite of webinars, exemplars of effective and highly effective practices, videos, direct school supports and Digital Communities of Practice).

The ERI was engaged by the Department to conduct a three-year longitudinal study of the implementation of the DLF. This commenced in early 2019 with a sample of 280 schools (150 primary, 100 post-primary and 30 special schools). The Baseline report was published in 2019 (Cosgrove et al., 2019) followed by the Wave 1 report in 2021 (Feerick et al., 2021). A summary of the key findings of these reports is provided [Appendix A](#).

² <https://www.pdsttechnologyineducation.ie/en/Planning/Digital-Learning-Planning-Guidelines.pdf>

³ <https://www.pdsttechnologyineducation.ie/en/Planning/Digital-Learning-Plan-Template.docx>

⁴ www.dlplanning.ie

The inclusion of clear statements and objectives on the use of digital technologies in new curriculum specifications.

Evidence demonstrates that, in order for digital technologies to be effectively used in teaching and learning at school level, its use has to be part of the school vision and must be supported by specific national policies and strategies (Law, 2013, Plomp et al., 2009; Shear et al., 2010; Shear et al., 2011). This is already occurring in Ireland where the use of digital technologies as an integral part of teaching, learning and assessment has been endorsed in all educational policies and plans for the past decade. Over the life span of the DSS, clear statements and objectives on the use of digital technologies have been included in all curricula development. The curriculum from early years to senior cycle offers multiple opportunities for the development of digital skills and digital literacy through integration into the curriculum and the classroom. Additional explicit curricular provision is provided through digital skills-based curricular components. A detailed outline of these developments is outlined in [Appendix A](#).

Assessment

The use of digital technologies for the purposes of assessment is also promoted in the DSS. Among the recommendations are the use of e-portfolios, which the DE had already begun to explore through the European funded EUfolio project (2013-2015) and the use of technology-supported assessment. Significant development in relation to ePortfolios has taken place mainly at post primary level (e.g. Junior Cycle, PDST/GAA Future Leaders Transition Year programme, Leaving Certificate Applied and Leaving Certificate Vocational Programme) and to a lesser extent at primary level (online digital portfolios course; digital portfolio initiative with 24 schools in Cork and Dublin).

Access to Open Educational Content: Digital Content & Scoilnet

The DSS continued the promotion of Scoilnet⁵ as the national reference point for schools for high-quality digital content. Since 2017, the range and quality of resources on Scoilnet has continued to grow. There are currently in excess of 23,000 curriculum tagged teaching and learning resources available through Scoilnet including subject resources, lesson plans, video/audio, quizzes, games and other multimedia. In addition to curating resources themselves, the Scoilnet team has partnered with a range of national and international agencies to make high quality, authentic and relevant resources available to teachers and students. A more detailed outline of these developments is outlined in [Appendix A](#).

Use of digital technologies to support inclusion

The National Council for Special Education (NCSE) and the PDST(TiE) collaboratively focus on the use of digital technologies for inclusion as part of their work with schools and teachers particularly in relation to the DLF. In addition, the NCSE fulfils a number of roles in relation to the use of digital technologies to support learners with SEN needs. These include professional learning, advice and guidance to teachers, Special School support visits, seminars and webinars. They have also created a 'Digital Strategy' page on the NCSE website detailing a range of supports and advice regarding assistive technologies. Finally, the NCSE/DFL team have developed five cases studies which

⁵ www.scoilnet.ie

demonstrate how the teacher/school used the DLF when planning to engage with a particular digital tool or a digital way of work.

As part of their role, the PDST (TiE) advisors regularly support teachers in the area of SEN within a variety of contexts to explore digital technologies for use with pupils with SEN. Inclusiveness and the provision of support for all learners is also an integral part of all summer courses provided by the TiE team and the Universal Design for Learning (UDL) principles of multiple means of engagement, representation and action/expression are embedded into the professional learning opportunities provided for teachers. A more detailed outline of these developments is outlined in [Appendix A](#).

2.1.2 Theme 2: Teacher Professional Learning

Acknowledging the need for teachers to have access to professional development on an ongoing basis throughout their career, the DSS aimed to provide all teachers with a range of opportunities and supports to assist them to embed digital technologies into their practice (DES, 2015, p.28). To ensure that all teachers are equipped with the necessary skills to effectively use digital technologies in their practice, a key priority of the DSS was to enhance access to and impact of professional learning for teachers through extending delivery formats to include online and blended learning programmes. It is also noted that the DLF is positioned as a key resource to enable school leaders and teachers to identify, and plan to address, their continuous professional learning needs in the area of digital technologies and enable them to take ownership of their own development and improvements in this area. The PDST (TiE) Team, together with its ICT Team of Advisors, continue to design, develop and facilitate a comprehensive range of blended learning CPD programmes using the following approaches:

- Direct school support (focus on sustained support)
- Seminars and workshops (national and regional based face-to face courses and workshops)
- Webinars/Good practice videos
- Online courses and supports
- Dedicated websites including the overarching www.pdsttechnologyinedcation.ie/en/ and its satellite websites such as www.dlplanning.ie, www.webwise.ie, www.teacherCPD.ie
- Clustering model of CPD including the Schools Excellence Fund (Digital)
- Teacher collaboration and Digital Communities of Practice (A more detailed outline of these developments is outlined in [Appendix A](#).)

Engagement with teacher professional learning has increased; there were over 150,000 interactions with teachers between 2017 and 2020 with an increase in the total number of interactions each year (see Table 2). Of note is the increase in the number of interactions in Teacher Summer courses. There was 32% increase in interaction between 2017 and 2018 with the highest increase in the number of interactions online. This increase was maintained in 2019, and not surprisingly, increased significantly in 2020. The range of interactions also increased as support for the implementation of the DLF and Schools Excellence Fund (SEF) cluster projects was provided in 2018 and 2019 and increased direct school support in 2019. The number of interactions reported appear to indicate a sustained and increasing interest by teachers in the area of professional learning in the educational uses of digital technologies.

Over the lifespan of the DSS, the DE engaged with both the Teaching Council and the Initial Teacher Education (ITE) providers to ensure that pre-service teachers acquire the skills, knowledge and confidence to use digital technologies to support teaching and learning (2018, Digital Strategy Awareness Raising Event for ITE Providers; 2019, Guiding Framework for Teacher Educators relating to the use of digital technologies in initial teacher education).

Embedding ICT in Teaching, Learning and Assessment					
Focus of Teacher Professional Learning (TPL)	No. of teacher interactions				
	2017	2018	2019	2020	Total
Local and national courses (offered through the Education Centre network)	4726	3,266	1,211	198	9,401
PDST TiE Funded Courses in Collaboration with ESCI				12028	12,028
Term Time Online Courses	,5023	2,352	2,650	6,433	1,6458
Online Summer Courses (5 Days)	2,868	14,565	13,220	13,965	44,618
Face to face summer course (5 Days)	14,625	11,260	12,300	0	38,185
Digital Learning Framework and Digital Strategy Awareness Raising Seminars		2,032	3,012	21	5,065
School Support	4,000	3,416	5,523	6,349	19,288
SEF Digital clusters and Digital CoP clusters			919	437	1,356
Total	31,242	36,891	38,835	39431	146,399
*the units provided are the number of interactions a teacher support service has with teachers. Interactions range from a two-hour session in a local education centre to a suite of sessions on a particular issue or in the case of college based events a full post graduate course. The actual number of teachers is not recorded in these figures.					

Table 2. Teacher professional Learning in the area of digital technologies for 2017-2020

2.1.3 Theme 3: Leadership, Research and Policy

The actions under this theme included the establishment of structures to provide oversight of and guidance on the implementation of the DSS, the development of proposals to encourage innovation in schools and initiatives to promote internet safety (i.e. Webwise⁶). The Educational Research Centre (ERC) was engaged by the Department to conduct a three-year longitudinal study (2019-2022) of the implementation of the DLF.

⁶ www.webwise.ie

In addition, it included the launch in 2018 of the Schools Excellence Fund (SEF) - Digital and STEM (3 year programme, 42 clusters, circa 230 schools, €1m funding, together with significant CPD support from the PDST), to develop creative and innovative ways of embedding digital technologies in learning, teaching and assessment, promote responsible and ethical use of the internet and related technologies and to enhance ICT capacity and awareness in the education system in partnership with industry. An evaluation of the SEF is still ongoing with a report expected in 2022. A more detailed account is outlined in [Appendix A](#).

2.1.4 Theme 4. ICT Infrastructure

Among the key priorities of the implementation phase of the DSS was

- to provide funding for School ICT Infrastructure through the development of an ICT Equipment grant (€210m issued to all recognised eligible primary, special and post-primary schools over the period of the Strategy),
- continue to improve broadband services to schools, (e.g. connectivity and associated costs, €13m annual cost to DE; including provision for high speed connectivity for post-primary schools with connectivity,
- explore and recommend technical support solutions for schools (advice available on PDST website and a dedicated email address⁷; working group established 2018, implementation plans delayed due to COVID-19), and,
- that advice be made available to schools in relation to procurement.

A more detailed account of these developments is outlined in [Appendix A](#).

2.1.5 Conclusion

The set of Actions Plans serve to document the wide range of work that has been completed over the lifespan of the DSS.

Notable achievements include:

- the development and rollout of the DLF, the planning guidelines and supporting resources along with the leadership of the PDST (TiE). Engagement of the ERC to conduct a three-year longitudinal study of the implementation of the DLF
- the inclusion of the development of Digital Skills as a core element of ITE programmes has signalled the development of Digital Skills as an essential element of all ITE programmes
- Computer science was introduced as a Leaving Certificate Subject in September 2020 with approximately, 140 schools currently offering it as Leaving certificate subject
- Schools Excellence Fund –Digital and STEM Cluster Schools has enabled creative and innovative ways of embedding digital technologies in learning, teaching and assessment
- ICT infrastructure grants totaling €210m were issued to all recognised eligible primary, special and post-primary schools, to support the implementation of the Digital Strategy over the five-year period beginning in the school year 2016/2017

⁷ <https://www.pdsttechnologyineducation.ie/en/Technology/>

- An upgrade programme for post-primary schools to provide baseline connectivity of 200 Mbp/s or greater. At present over half of all primary schools now on 100 Mbp/s or greater) with a project underway which aims to have all primary schools on minimum speeds of 100Mb/s by end 2023

Main issues from the reports to be considered in the next digital strategy for schools:

- While there is greater coherence/alignment across the system with the inclusion of clear statements and objectives on the use of digital technologies, consideration of how to embed development of digital competences in curricula specifications needs to be addressed
- Digitally supported assessment of and for learning needs development
- A coherent, flexible sustainable model of teacher professional learning across the continuum that meets individual teacher and school needs is urgently required
- School Leadership need to be supported to enable effective school planning combining school self-evaluation priorities and actions in tandem with the DLF
- Provision of equitable access to broadband particularly in primary schools in tandem with effective and timely technical support is a necessary to counteract existing equities.

2.2 Research evidence – implementation in schools

2.2.1. Published reports

In addition to the Action Plans compiled annually by the DE, there are a number of published reports which document digital learning in schools. These include reports completed by the DE Inspectorate (DE, 2020) and the Educational Research Centre⁸ as well as the literature which documents the experiences of schools in Ireland during the school closures brought about by the COVID-19 pandemic.

Digital Learning 2020: Reporting on practice in Early Learning and Care, Primary and Post-Primary Contexts (DES, 2020)

The Inspectorate report (DES,2020) examines how effectively digital technologies are integrated into teaching, learning and assessment and how well schools and Early Learning Centre (ELC) settings are planning for their use. It should be noted that although the report was issued in 2020 the data was collected in 2019. The number of learning sessions or lessons where the inspectors gathered information from are as follows, Early Learning Centres 39, Primary 212, Post-primary 194.

Discussions with school/setting personnel about planning for digital learning were as follows, ELC 33 Primary 33 Post-primary 24.

⁸ www.erc.ie

Key Findings	Primary	Post-Primary
School had developed a Digital Learning plan *knowledge of six-step School Self Evaluation process helping to improve digital learning in a manageable/incremental way *making meaningful links between digital learning and priority areas identified for school improvement using SSE process	73%	81%
Digital learning in part of lesson observed * used by teachers to creatively engage learners in most lessons but in some lessons only used by teachers and not learners	55%	62%
Lessons with learner collaboration using digital technologies	41%	68%
Use of digital technologies as part of the assessment process	60%	80%
Creation of new knowledge/digital artefacts	not well-established practice	
Experienced same applications/activities in different classes or year groups without adjustment (ages/development stage)	common practice	
Unaware of Digital Learning Framework & supporting resources	many teachers	
Unaware of supports such as Scoilnet/Webwise	some schools	
Unsure how to access external professional learning support	some schools	

Table 3. Key findings from Digital Learning 2020: Reporting on practice in Early Learning and Care, Primary and Post-Primary Contexts (DES, 2020)

Overall, while the findings are encouraging in some respects, it is significant that in 45% of primary schools and 38% of post-primary schools assessed, digital technologies were not a feature of teaching and learning. Where practice was well-developed, it was reported that having access to high-speed and dependable broadband was one of the key supporting factors, which is significant when the disparity between post-primary and primary access to broadband is considered. Key factors cited for underuse of digital technologies included knowledge, experience and confidence of teachers, connectivity issues and lack of resources. More detail is outlined in [Appendix B](#).

Key recommendations by the inspectorate focused on the need for:

- ensuring that learners use digital technologies actively and in collaboration with other learners to support the learning and assessment process and to create new content
- schools to plan for progression and development in the acquisition of digital competences
- specific actions for changes in teaching and learning linked to school self-evaluation (SSE) and use of digital technologies, and teacher professional learning should be linked to those actions
- planning to use digital technologies to support STEM goals and employ interdisciplinary approaches and project tasks to engage learners in real-world problem solving using digital technologies

Digital Learning Framework (DLF) national longitudinal evaluation (Feerick et al., 2021)

The objective of the longitudinal DLF evaluation is to evaluate the implementation of the DLF from the multiple perspectives of school principals, Digital Learning Team leaders, teachers and learners over a three-year period (2019-2022) using a nationally representative sample of 150 primary

schools, 100 post-primary schools and 32 special schools. A summary of the findings of the Wave 1 report is presented in [Appendix B](#) according to the themes used in the DSS (Teaching, Learning and Assessment, Teacher Professional Learning, Infrastructure & Leadership). Key findings are presented in Table 4.

Wave 1 Report findings	Primary	Post Primary
Completed their DLP or are in the process	90%+	90%+
Incorporated DLP into SSE activities	73%	93%
Digital Learning Team established in school	79%	81%
Focused on Teaching and Learning dimension of DLF	90%	90%
Teaching and Learning domains focused on (listed in order)	1.Learner outcomes 2.Learner experience 3.Teacher’s collective & collaborative practice	1.Teacher’s collective & collaborative practice 2. Learner experience
Teachers- not aware DLF domain school focused on	30%	38%
Teachers -never used PDST Digital Planning website	40%	52%
No change using DT in teacher assessment practices	65-77%	45%

Table 4. Key findings from DLF national longitudinal evaluation Wave 1 report

The majority of schools (90%) focused on the Teaching and Learning dimension of the DLF and about 60% of schools rated themselves as being mostly at levels of effective practice or higher on their chosen domain. Despite this, among the key findings of the report was a lack of understanding of what constitutes effective practice and that schools tended to use multiple and mainly informal approaches to assess the level of practice within a chosen domain. This points to a need for further guidance to promote a more uniform understanding of levels of effective and highly effective practice for monitoring purposes. The DL planning website, while widely praised as a useful resource, is under-utilised.

Significant challenges were reported in implementing the DLF in a few key areas, in particular, relating to time for staff to implement the DLP, issues concerning the fit between the aims of the DLF and the structure of the standardised assessments, and infrastructure.

A prominent use of digital technologies for teaching learning and assessment was by the teacher for lesson preparation, presenting information or giving class instruction to students. However, post-primary teachers used a greater variety of DTs and used them with greater frequency than primary respondents. In particular, post-primary respondents were more likely than primary respondents to use DTs to communicate with students, and to support peer-to-peer assessment. The majority of post-primary teachers indicated that due to their work on the DLF, there was increased sharing of documents or resources among teachers; collaborative practices among teachers; and students’ interest and engagement in learning activities. While less change was reported by primary teachers; many expressed positive sentiments about the potential of DTs to enable student-centred learning and creative collaboration between students. Overall, the pattern of results suggests a greater focus at primary on teaching and learning activities, and a greater focus at post-primary on whole school

approaches. Moderate levels of impact in teaching and learning practices and collaborative practices were found at both levels, with the latter being higher at post-primary level.

Results also indicate a need for schools to focus more on embedding DTs specifically in assessment going forward. In addition, the need for ongoing professional development, rather than sporadic workshops or in-service days was highlighted. In particular, supports that would enable successful continued implementation of the DLF (DLP), specific to subjects, class levels, and teacher knowledge level in DTs. Reliable broadband and equipment which teachers could rely on were other key enablers of positive attitudes towards the use of DTs, in contrast to technical support which was identified as a barrier. A particularly interesting fact when you consider that, the least effective technical support was reported in smaller primary schools with 120 or fewer pupils enrolled.

An interesting difference between primary and post-primary levels is the frequency with which the theme of *Purchasing help and funding* featured in the responses. At primary level, this was the third most common theme, and was present in about a quarter of all comments (24%). At post-primary level, however, this theme occurred in only 11% of comments. This suggests that some schools, particularly at primary level, may not be sufficiently aware of, or supported in, the purchase of DT resources.

2.2.2 The Impact of Covid-19 on schools

The arrival of the COVID-19 pandemic caused unprecedented disruptions and massive changes to almost every education system in the world, Ireland included. 100 million young people in the EU and over 1.3 billion round the world at all levels of education were impacted (ECa, 2020). In most cases, the transition to remote education happened in a rushed, unplanned manner and led to a sudden and large-scale use of digital learning practices (EC, 2020). This sudden switch saw incredible efforts by teachers and education systems to adapt and innovate (UN 2020). Many institutions and educators showed extraordinary levels of creativity and resilience, but equally, there were significant challenges for those educators lacking the competences and confidence to use digital technologies effectively (EC, 2020). In addition, many struggled to adapt to the needs and context of the learners, including a lack of access to devices and poor connectivity (EC, 2020; OECD, 2020). In many countries, there was a shortage of online content and other digital resources linked to national curricula. Consequently, and quite often, many “solutions” were often implemented as ‘quick fixes’ (Selwyn, 2021). The hasty adoption of commercial digital learning solutions generated many concerns around the design of many of these solutions; chiefly, that the design was driven by business models which leverage user data for profitmaking, rather than meaningful pedagogical practices (Teräs et al., 2020). Findings of public consultation by the European Commission (EC 2020) highlight that a wide range of solutions were put in place to ensure the continuity of education across Europe and that overall, the effectiveness of the response to the COVID-19 crises was linked to levels of *preparedness*. This included factors such as availability of infrastructure, access to online content aligned with national curricula and programmes; confidence and skills of educators to design and facilitate remote learning; and assessing learning outcomes (EC, 2020, p.30)

Without doubt, the impact of the COVID-19 pandemic on education forces us to rethink how our education systems are designed to meet the demands of today’s world. There are lessons to be learned from the experiences and before considering the question “where to from here”? we need

to stand back and critically reflect on the learnings from the remote learning experiences of schools, particularly in the Ireland context. (See [Appendix B](#) for greater detail)

COVID-19: the experiences of schools in Ireland

Between March 2020 and April 2021, there were two major closures of schools in Ireland resulting from the COVID-19 pandemic (March - late August/September 2020; January 2021 – phased reopening until mid-April⁹). On October 8 2020, the DE published a set of guidelines for primary schools and special schools designed to provide support in situations where a partial or full school closure is advised due to COVID-19¹⁰. Guidelines for Post Primary school were published in November 2020¹¹, with additional documents, in January 2021, in relation to provision for students with special educational needs¹². In addition, Circular 0074/2020¹³ requested that all schools and centres for education develop and implement a plan to support remote teaching and learning. The circular set out the comprehensive level of supports that are available to assist schools in this process. A funding grant totaling €50 million was provided to schools in December 2020, which was final tranche of funding under DSS (2015-2020). Equity of access to digital resources was also identified acknowledging that access to digital devices and to appropriate internet connection may be challenging for some. Schools were advised to establish the relevant supports needed by their teachers and pupils to engage in remote learning and recommendations were provided as to how schools could address any gaps or issues. In terms of professional learning, schools were asked to identify and develop the skills set of the teachers and support staff so as to support digital remote learning. In tandem, the PDST (TiE) Team developed a comprehensive range of blended learning professional development programmes for teachers and school leaders; these were made available at pdst.ie/blendedlearning. Direct support was provided to schools on application.

As in other countries worldwide, a range of research has been carried out in Ireland which focuses on the experiences of schools during the COVID-19 pandemic. For the most part, this research was conducted during the first period of school closure in 2020 and little has been published on the experiences of 2021. This is unfortunate as schools had adapted considerably and developed their capacity to provide remote teaching and learning between the first and second periods of school closure (DE, 2021). This development was evident in relation to the use of digital technologies to engage with pupils/students, communication with parents and the provision of feedback by teachers to pupils/students on their work.

Infrastructure: connectivity and devices

The closure of schools exposed wide disparities in access to digital devices and high-speed broadband. Insufficient broadband speed and a lack of access to devices was well documented during the first period of school closure as preventing some students and teachers to fully engage in remote learning. This was more pronounced in areas with limited broadband connectivity and in

⁹ "COVID-19 Resilience and Recovery 2021 - The Path Ahead". *gov.ie*. [Department of the Taoiseach](#). 23 February 2021

¹⁰ <https://www.gov.ie/en/publication/183b2-guidance-on-remote-learning-in-a-covid-19-context-september-december-2020/>

¹¹ [gov.ie - Guidance on Remote Learning in a COVID-19 Context: September – December 2020 \(www.gov.ie\)](#)

¹² [gov.ie - Continuity of Schooling \(www.gov.ie\)](#)

¹³ [cl0074_2020.pdf \(into.ie\)](#)

areas of lower household income thus raising concerns over the potential longer-term impact on achievement and retention at DEIS schools (Burke & Dempsey, 2020; Darmody, Smyth, and Russell 2020; Devitt et al. 2020; Mohan et al., 2020, INTO, 2020; Scully et al., 2020). This continued to be an issue during the second period of school closure in 2021 (Bryce, 2021) particularly in rural areas which are less likely to have reliable sufficient broadband. The impact of school closure was also seen as detrimental for learners with special educational needs (SEN), depriving them of vital daily school-based supports (Burke & Dempsey, 2020; Fahey et al, 2020; Mohan et al., 2020) and fears that these students have experienced regression in their learning (Bray et al., 2020; INTO, 2020).

Teacher confidence and competence in designing and facilitating remote learning

There were some positive findings in that for many it was an opportunity to embrace digital learning, resulting in an increase in the level of collaboration, collegiality and teamwork among teachers as well as an increase in professional learning relating to the use of technology (Devitt et al., 2020; Burke & Dempsey, 2020). However, the shift to remote learning was a challenge for many teachers, particularly for those who felt they did not have the skills required, (e.g. 31% of primary teachers reported being apprehensive or very apprehensive in supporting student learning with digital technologies (INTO, 2020).

Access to online content aligned with national curricula and programmes

There is little available information on how teachers implemented curricula and programmes during the period of school closure. However, the studies do provide a picture of the approaches employed to remote teaching and learning (e.g. 20% of primary schools set up online platforms for the first time; INTO, 2020), the types of activities in which students engaged and the resources used. Some areas of the primary curriculum were found to be easier to adapt for remote learning such as Literacy, Social, Environmental and Scientific Education (SESE), Physical Education and Mathematics while Gaeilge was most difficult to accommodate (Burke and Dempsey, 2020).

Learner engagement

At post-primary level, a number of studies focus on student engagement during school closures. Mohan et al (2020) found the move to remote learning impacted students both positively and negatively. It was extremely difficult for students to engage with group work and practical work, but the development of independent learning skills was high (particularly where there was high-speed broadband available). The main determinant for low engagement was the disadvantaged status of the school, with teachers in DEIS schools significantly more likely to report low student engagement (Devitt et al., 2020 Mohan et al., 2020). However, Bray et al. (2021) found that students are less likely to disengage where they experienced student-centred, creative pedagogies, and when student-teacher connections were meaningful and positive. Emailed homework and pre-recorded lessons online were seen to be far less effective as a means of home schooling across all age groups (Bryce, 2021).

According to the CSO survey (CSO, 2021), almost two fifths of post-primary students spent four or more hours a day on school work during the first period of school closure but this had increased to four fifths of students during the second period of lockdown. Similarly, one third of primary school students spent three or more hours a day on school work during the first period of school closure and this had increased to over half in the second period (CSO, 2021). However, parents of children

attending special schools raised questions about the appropriateness of remote teaching and learning in meeting their child's very complex needs. Many also experienced resistance and often extreme behavioural reactions when they tried to engage their child in assigned learning activities on screen. Issues with transferring school activities to home appeared to be particularly pronounced in the case of children with autism spectrum disorder (DE, 2021).

Importance of School Leadership

Studies confirm the importance of school leadership and a whole-school approach in enabling the successful transition to online learning (Burke & Dempsey, 2020; Devitt et al., 2020; Fahey et al., 2020). The importance of distributed and collaborative leadership was also highlighted as an enabler of the effective use of digital technologies during the school closures (Burke & Dempsey, 2020).

In conclusion, findings across the studies highlight schools' preparedness for remote teaching and learning was strongly influenced by existing infrastructure, as well as effective planning and implementation of DLF coupled with teacher knowledge.

2.3 Open Public Consultation Process

A wide-ranging consultation process was undertaken to ensure that all voices are heard and were taken into consideration to inform development of the new Digital Strategy for Schools:

- Open call for submissions
- Survey of Principals, Teachers and Post-Primary Students
- Survey of Parents
- Focus Group Interviews

2.3.1 Open Call for Submissions

As part of the consultation, stakeholders were asked to comment on how the existing Digital Strategy for Schools 2015-2020 has supported the integration of digital technologies into teaching, learning and assessment practices in schools, the challenges that schools have faced and the key areas and priorities that should be addressed in the development of the successor strategy. The call for submissions opened on 14th April 2021 and closed on 18th June 2021. In total, over 100 submissions were received from a wide range of interested parties including management bodies, teachers' unions, industry, individual teachers and parents and agencies. A report on the open call has been prepared by the DE and is available on the gov.ie website¹⁴. For the purpose of this baseline report, the responses have been analysed and summarised into a set of themes which correspond to those presented in the DSS: teaching, learning and assessment; leadership, research and policy; teacher professional learning and infrastructure. Other themes to emerge included parents and learners, and the digital divide. The key points of this analysis are highlighted in the next section with more detail available in [Appendix C](#).

The current strategy was broadly welcomed and recognised as a success throughout the submissions. Some submissions referenced the fact that the success of the strategy lies in the fact that it was backed by significant investment. More specifically, the inclusion of guiding principles with a core pedagogical focus was seen as a positive, supporting both teachers and students in their

¹⁴ <https://www.gov.ie/en/publication/69fb88-digital-strategy-for-schools/>

use of digital technologies as well as supporting collaboration within schools. The integration of digital technologies has been a positive experience for most schools and the strategy has promoted self-awareness in both the teaching and student body.

Theme 1: Teaching, Learning and Assessment Using ICT

While the development of the DLF was broadly welcomed, there were conflicting views around the clarity of the framework (i.e. very clear – vague). Although schools have autonomy to develop a Digital Learning Plan to meet their particular context and needs, it was felt that this can lead to inconsistency across the system. It was recommended that reporting on schools Digital Learning Plans to ensure the impact of the DLF is monitored and measured would help inform future policy, and allow for best practice to be identified, shared and supported.

It was acknowledged that substantial progress has been made in the integration of technology in teaching and learning but stressed the need to continue to embed digital technologies with current/developing curricula. In particular, the need to prioritise development of digital literacy, digital citizenship and digital well-being with targeted early intervention to combat underrepresentation of women in STEM and ICT roles. The continued use of ePortfolios was recommended but the use of digital technologies to support assessment strategies for learning and more immediate and specific feedback to students was highlighted. However, it was noted that there is appears to be a mismatch between the interpretation of the DLF statements of effective/highly effective practice and the style of assessments put forward by the SEC for Junior Cycle and Senior Cycle.

Digital technology has the potential to promote equity, inclusion and overcome barriers to learning, so appropriate supports both administrative and pedagogical (e.g. streamlined application process, appropriate resources and technologies with the best accessibility features) should be offered to all schools to best meet the needs of their students as there is a clear digital divide when it comes to disability. It was also noted that learners in all Irish and Gaeltacht schools have the same opportunities as those in English speaking schools.

Online safety is seen as a critical component of digital literacy and should be embedded across the curriculum at an age-appropriate level and as a key part of the curriculum. Despite the work of Webwise, there can be a lack of awareness about these issues. Potential issues identified included: Cyberbullying; Awareness of appropriate use of social media; Privacy (including data privacy); Exposure to harmful content; Excessive use; Disinformation/fake news; How personal data is used and stored.

The strategy has provided a structure for schools' digital learning policy development and facilitated clarity around the concept of embedding digital technologies into teaching, learning and assessment. Further support and guidance was called for in relation to:

- the use of cloud-based platforms by teachers to plan and interact with each other as well as for administration purposes; or enhanced collaboration between schools
- development of metrics to enable evaluation/monitoring of progress of DLP/DLF
- supporting school leaders so that they can effectively plan/develop the process required to embed the use of digital technologies in their school.

Theme 2: Teacher Professional Learning

A large proportion of the submissions considered that supporting curriculum needs should be at the heart of the new Digital Strategy with a requirement for the new strategy to connect and link in with current and newly developing curriculum. This requires a national structured, standardised and sustained framework around TPL/CPD to ensure that the relevant supports and resources (e.g. focused learning opportunities, time, accreditation, incentives, substitution cover) are available to all school leaders and teachers. Across the submissions, there were calls for:

- blend of learning opportunities (face to face / online / peer to peer / CoP / whole school)
- increased cross-sectoral collaboration (primary, post-primary, higher education, industry)
- PDST to develop a series of seminars for school leaders to share and reflect on ideas of effective uses of digital technologies for teaching, learning & assessment

Strong repeated call for a digital competence framework required for teachers/students across each level of the system. The introduction of digital skills (i.e. digital literacy, use of digital technologies for teaching, learning and assessment, and opportunities for student-teachers to explore new and emerging technologies), as a core element of Initial Teacher Education was welcomed.

Theme 3: Leadership Research and Policy

It was recognised that leadership is critical to drive and embed change but must be supported (time, professional learning opportunities). School leaders (Principals/Digital Champions) can help create a vision, motivate staff in developing school digital plans on a collaborative basis, championing digital change and helping to create a school climate more favourable to innovation and experimentation.

Theme 4: ICT infrastructure

A large majority of the submissions welcomed the funding provided and that schools had autonomy and flexibility in how they invested it in supporting their implementation of their Digital Learning Plans. However, the topic of ICT infrastructure including, the provision of annual, targeted funding, addressing the imbalance between primary and post-primary, broadband access and the associated necessary technical support as well as development of a more effective public procurement model were raised consistently across the submissions as key issues that need to be addressed. In addition, it was indicated that the extended use of networks/cloud computing raises concerns as to both the security of personal data that schools may hold, as well as the appropriate use of personal data

Other areas for consideration in the new Digital Strategy for Schools

Remote teaching during the COVID-19 crisis saw the majority of schools/teachers engaging with digital technologies and while it highlighted some gaps, it also demonstrated what can be achieved. One of the main issues was the impact of the digital divide across the country (e.g. disparity between schools and households, poor broadband connectivity) and the importance of all learners having access to the necessary broadband infrastructure and digital technologies. There was a view that those students with special educational and additional needs were impacted disproportionately by school closures. The continued call for student voices to be central to the new strategy was made with use of technologies to support development of digital competence of parents/guardians and partnerships between home and schools

Key takeaway points

- the need to prioritise development of digital literacy, digital citizenship and digital well-being with targeted early intervention to combat underrepresentation of women in STEM and ICT roles
- digital competence framework required for teachers/students across each level of the system
- use of digital technologies to support assessment strategies for learning as well as more immediate and specific feedback to students
- students with special educational/additional needs were impacted disproportionately by school closures so supports need to be put in place to enable schools to best meet the needs of their students as there is a clear digital divide when it comes to disability, as digital technology has the potential to promote equity, inclusion and overcome barriers to learning
- supporting school leadership to effectively plan and develop the processes required to embed the use of digital technologies in their school
- develop a national structured, standardised and sustained framework around TPL to ensure that the relevant supports and resources (e.g. focused learning opportunities, time, accreditation, incentives, substitution cover) are available to all school leaders and teachers
- provision of annual, targeted funding, addressing the imbalance between primary and post-primary, broadband access and the associated necessary technical support, together with the development of a more effective public procurement model
- reporting on schools' Digital Learning Plans to ensure impact of the DLF is monitored and measured to help inform future policy, and allow for best practice to be identified, shared and supported
- support development of digital competence of parents guardians and partnerships between home and schools.

2.3.2. Findings from DE Survey of Principals, Teachers and Post-Primary Students

Surveys for principal teachers and teachers was made available on the DES website available from 10 May to 18 June. A report on the findings of the surveys has been prepared by the DE and is available on the gov.ie website¹⁵. For the purpose of this baseline report, the responses have been summarised as follows and are available in greater detail in [Appendix C](#):

DE Survey of Principals

There was a total of 168 responses submitted (104 primary principals, 37 post-primary principals, 27 unspecified). The response can be considered low and the results cannot therefore be considered nationally representative. The high difference between the number of primary and post-primary principals who responded also makes it difficult to draw definitive comparisons across the sectors. Nevertheless, the findings are of value and do make a useful contribution to the other layers of the consultation process undertaken to inform the overall development of the new Digital Strategy for Schools to 2027.

Over 90% of schools who responded to the survey had implemented the DLF and had a Digital Learning Plan (DLP) by June 2021, with most focusing on the Teaching and Learning domains of the

¹⁵ <https://www.gov.ie/en/publication/69fb88-digital-strategy-for-schools/>

DLF and fewer schools focusing on the domains relating to leadership: Leading Teaching and Learning (>25%), Managing the Organisation (>20%), Leading School Development (>20%) and Developing Leadership Capacity (>12%). The DLPs were predominantly developed by teachers with some input from learners and less from parents. Not surprisingly, almost all principals at both levels felt that digital technologies in teaching, learning and assessment were important and a range of similar approaches to the provision of teacher professional learning (TPL) were highlighted across the sectors, including:

- provision of time through Croke Park Hours
- in house/share best practice/collaborative practice/share relevant CPD/sharing expertise
- technology mentors/digital leaders/in house/digital learning team supporting the staff
- encouraging teachers to partake and engage with CPL
- investing in development of teachers to become digital leaders
- providing all teachers with a digital device.

Barriers to the provision of TPL were listed as the lack of: financial resources, equipment, time for CPL, substitution, technical support and finally, lack of interest in professional learning in the area. Particular areas of differentiated TPL on embedding the use of digital technologies for teaching, learning and assessment that principals felt should be focused on in the future included, augmented reality/virtual reality, assistive technology, coding, remote teaching and learning.

The digital infrastructure and related supports ranked by principals as required to embed technologies in teaching, learning and assessment showed an overwhelming need for sufficient devices, followed by better broadband, equipment maintenance, and professional technical support in almost equal measure.

The move to remote teaching during the COVID-19 crisis posed both challenges and opportunities for schools, and while acknowledged as necessary and useful in the circumstances, it was regarded as secondary to in person engagement. Concern was voiced about the suitability of remote teaching in Special Education Needs (SEN) settings. As a result of the COVID-19 pandemic, the main changes reported are increased engagement in the development of schools Digital Plans with a greater focus on embedding of digital technologies in schools and increased uptake of TPL.

Finally, the key areas identified that a new Digital Strategy should focus on to assist schools to continue to embed digital technologies in teaching, learning and assessment were:

- funding- grants for equipment purchase, ongoing maintenance and technical support.
- procurement support
- continuous professional learning
- improved broadband
- availability of subject resources through Irish.
- assessment technologies.

DE Survey of Teachers

A total of 658 responses were submitted (175 primary teachers, 365 post-primary teachers, 118 unspecified). As per the principals' survey, while not nationally representative it does form a useful

element of the overall consultation process in terms of informing the overall development of the new digital strategy.

In contrast to principals' survey results findings from the teacher survey indicate that over 76% of schools had implemented the DLF by June 2021 (85% of primary schools and 74% % of pos- primary schools). What is of concern is that 17% of teachers did not know if the DLF had been implemented in their school (10% at primary level and 18% at post-primary). However, 97 % of teachers described digital technology as an important part of teaching, learning and assessment, with most frequent uses ranked in the following order: engage learners, improve student learning, provide feedback, foster creativity, document student learning, assess competences and skills, facilitate collaboration, for cross curricular projects, enable learners' reflections.

In the previous two years, prior to completing the survey, the majority of teachers (i.e. approx. 95%) had engaged in some form of professional learning (e.g. PDST, JCT, NCSE, their local Education Centre or ETB). In addition, a lot of peer to peer learning and self-directed learning was reported.

Identified barriers to engaging in professional learning included, insufficient broadband, lack of time, access to devices, GDPR concerns. With regard to future TPL, the greatest need was identified in the use of digital technologies for assessment. Other areas listed included: creation of digital content, specific SEN focused professional learning, assistive technology, online safety, assessing accuracy of online information. It was also felt there should be a digital competence framework developed and supported for teachers and students.

Reflecting on their experiences of remote teaching during the COVID-19 pandemic, teachers reported that their IT and communication skills were much improved. In common with principals, teachers indicated that remote learning is no substitute for in-person classroom teaching, and expressed concerns about poor quality broadband, lack of devices which they believed lead to a gap in provision and student achievement, particularly those with specific needs.

Finally, key areas a new digital strategy should focus on in order assist them to continue to embed digital technologies in their practice were very similar to those reported by principals:

- Infrastructure - funding for devices; technical support, broadband, procurement advice
- Teacher Professional Learning - systematically and frequently provided during school time with a greater focus on the use of digital technologies for assessment and for use with students who have a SEN.

DE Survey of Post Primary Students

The survey was completed over the period 25th May to 18th June 2021, with a very low response rate of just 143 responses, but it does serve to provides some indication of issues related to the post-primary students' experiences of using digital technologies in schools. Overall, over 50% enjoy and are confident that using digital technologies helps them to learn. However, only 28% of students or their fellow students have been involved in the development of any policies on the use of digital technologies in their school. Just over 50% of students were confident that they knew how to protect themselves and their personal data online, and knew what to do if they saw or heard

something concerning online while almost 60% knew how to check if information is reliable. However, according to the responses, Webwise Youth Hub is not used by students (98%).

The majority (73%) reported that digital technologies are used in all or most subjects with the main uses cited as: submitting work (24%) getting feedback from your teacher or ask questions (19%), carrying out research (23%), create materials and projects (18%) or working with other students or for group projects (15%). ePortfolios (22%), project work (23%) and computer based tests (19%) were the main ways that digital technologies were used for assessment. The vast majority (80%) would like greater use of digital technologies for learning in school. Interestingly, coding (23%) and Excel (20%) were the most popular skills students wished to develop. Other skills listed included researching online, CAD, photo editing and movie making.

Finally, students had mixed feelings about remote learning online during COVID-19. 62% reported finding it beneficial with increased access to information and easier communication. 36% found it negatively impacted their learning preferring in-person teaching and feeling isolated/disconnected.

2.3.3 National Parents Council– Survey of Parents: Digital Strategy in Education

A survey was developed independently by both the NPC Primary and NPC Post-Primary in order to hear parents' opinions and feedback on theirs and their child's experience of digital learning under the current strategy and their views on important issues in the development of a new Strategy. The survey ran from 10th May 2021 to 18th June 2021 with links on DES website and the NPC social media platforms. At primary level, there were 2,795 responses while at post-primary, there were approximately 8,500 responses. Links to both reports are available on the gov.ie website¹⁶, the key findings are outlined in [Appendix C](#) with the main points summarised below.

National Parents Council Primary– Survey of Parents: Digital Strategy in Education

Based on the questionnaires submitted, almost 3/4 of 2,800 primary parents reported that their child uses technology in school yet the same amount feel they do not have enough information on how digital technology is used in their child's education. Just over 60% of the parents did not see their own digital skills as a barrier in supporting their child's use of technology for education with just under 40% feeling they need some support to help their child. Just over half (52%) of these parents do not feel they are involved enough in the development and implementation of policies about the use of digital technologies in education. Almost 90% of primary parents want the new strategy to include ways that technology can be used to support partnerships between home and school. Almost 100% indicated that the skills and knowledge to use digital technologies and the internet in a safe and appropriate way should be addressed in the new strategy.

National Parents Council. Post-Primary – Survey of Parents: Digital Strategy in Education

Approximately 90% felt their child's level of proficiency in use of digital technology for school work/research/study was satisfactory to excellent. Most parents felt well equipped to assist their child in the use of digital technologies but some (>15%) responded as being unfamiliar/having no understanding of digital technologies. To support families in the implementation of the digital

¹⁶ <https://www.gov.ie/en/publication/69fb88-digital-strategy-for-schools/>

strategy respondents felt there should be grants for devices/broadband cost, workshops for parents and students, teacher CPD and better coordination and communication between school and home.

Key takeaway points across the Principals, Teachers, Students and Parents surveys

- Majority of schools have implemented DLF and developed Digital Learning plans
- Most frequent uses of digital technologies in their classroom practice ranked in order by teachers were: engage learners, improve student learning, provide feedback, foster creativity, document student learning, assess competences and skills, facilitate collaboration, for cross curricular projects, enable learners' reflections
- Students were positive about the ways digital technologies helps them learn and vast majority would like greater use of digital technologies for learning and assessment in school
- The digital infrastructure and related supports ranked by principals required to embed technologies in teaching, learning and assessment showed an overwhelming need for sufficient devices, followed by better broadband (which was more of an issue at primary school), equipment maintenance and professional support in almost equal measure
- Remote teaching acknowledged as necessary and useful in the circumstances but was regarded as secondary to in-person engagement, concerns expressed about digital divide and equity
- Need for TPL to be ongoing and systematic, with barriers listed as the lack of: financial resources, equipment, time for TPL, substitution, technical support
- Need for greater focus on use of digital technologies for assessment
- Greater focus on use of digital technologies for assessment and for use with SEN students
- Digital competence framework for teachers and students to ensure a minimum standard
- Greater use of digital technologies to support partnerships between home and school.

2.3.4 Findings from DE Focus Group Interviews

A series of nine focus group discussions were held with a range of stakeholders via Zoom during October 2021. These included separate discussions with principals, teachers and pupils at primary and post-primary levels; representatives from the higher education institutes (HEIs), from Non-Government Organisations (NGOs) and other agencies and industry. The key messages arising from the interviews were summarised and organised around the four themes of the strategy: teaching, learning and assessment using ICT, teacher professional learning, leadership, research and policy and ICT infrastructure. The full report provided by H2 Learning can be accessed on the gov.ie website¹⁷. A summary of the main considerations is outlined below with some further detail in [Appendix C](#).

Teaching, Learning and Assessment

The key role digital technologies play in teaching, learning and assessment and the potential to create a more inclusive education system for all learners was acknowledged. However, many observed that digital technologies are not generally being embedded deeply across the curriculum, particularly when it is not explicitly clear in many of the curriculum and assessment guidelines.

Teachers and principals indicated that lack of time is the biggest obstacle for them to engage with further support needed on how and when to use digital technologies effectively in their context. In

¹⁷ <https://www.gov.ie/en/publication/69fb88-digital-strategy-for-schools/>

particular, those in Special Education, require a more holistic set of supports, including the provision of additional time, to procure and better utilise digital technologies. A more holistic approach that embeds digital into all aspects of school life is required to further align policies, support, content, funding, and TPL to truly embed the use of digital technologies.

Teacher Professional Learning

Professional learning is a key issue but the complexity of ensuring that ALL teachers and principals have access to a range of professional learning activities that best meet their needs has to be acknowledged. In addition, while significant supports are available to schools there is a need to explore how awareness can be raised as there seems to be a significant lack of awareness throughout the system of available supports.

At school level it was noted that what was required was greater autonomy, flexibility and choice to identify the types of professional learning to participate in and when, so that all are confident and competent to use digital technology to support teaching, learning and assessment activities.

The renewed emphasis on digital education in Céim (i.e. standards for Initial Teacher Education) was welcomed but many noted that school placement use of digital technology, will require further supports and attention.

Leadership, research and policy

Schools believe that the DLF has been effective in providing a focus for digital learning in schools and they believe they require additional time to consider it and to embed it into their school improvement plans. Leadership in school was highlighted as being vital to the successful and effective use of digital technologies in schools. Besides professional learning needs for school leaders, the role of the Digital Learning Coordinator (DLC), is an area that requires further consideration and clarification (time and recognition needed) with general agreement that teachers in this role should focus primarily on providing pedagogical support to their colleagues. It was noted that school-based research projects (e.g. Schools Excellence Fund Digital) are extremely valuable and that Initial Teacher Education (ITE) providers could play a more strategic role in future school-based digital research projects (i.e. involved in the design, implementation, and evaluation).

ICT infrastructure

The focus groups reiterated the need to provide schools with access to high-speed broadband, industry grade Wi-Fi and the ongoing funding to purchase and update appropriate digital technologies. Schools welcomed the funding provided by the Department of Education in recent years to procure digital technologies, but would prefer not to be engaged in procuring equipment and in obtaining quotes etc. as it is time consuming and often challenging. However, schools value the flexibility to decide what kinds of technology they wish to procure for their teachers and learners. To enable them to make well informed decisions locally they would need access to timely advice in relation to the specifications of a range of technologies and services that are typically deployed in schools.

Similarly, schools recognise the importance of technical support services to ensure their equipment and services are fully operational. Generally, such services are obtained from various commercial providers, usually at local level which can be costly and time consuming. However, there was limited

support for provision of regional technical support models. Schools realise that there is no easy solution and may need to implement several approaches to ensure staff and learners have constant access to reliable and effective digital technologies and services.

In parallel to the various elements of the consultation process undertaken by the Department of Education, it also set up a Consultative Group made up of representatives from management bodies, teacher unions, relevant areas within the Department and a representative from industry and the ISSU. This allowed the Department of Education to keep these stakeholders up to date on the progress of the development of the next iteration of the DSS, as well as to facilitate open discussions on key issues that were arising to ensure all voices were heard.

To conclude, the key themes crosscutting all the various elements of consultation process included the DLF, the need for a comprehensive and coherent model of teacher professional learning across the continuum, ongoing sustained support for school leadership, the necessity to ensure equal access and opportunity, particularly for students with special needs, the challenges of technical support and broadband provision as well as a focus on the necessity of developing digital skills and a digital competence framework for teachers and learners, improving home school communication as well as a need to further align policies, support, content, funding, and TPL to truly embed the use of digital technologies .

2.4 Conclusions

In the first part of the Baseline Report for the new digital strategy for schools, we have carried out an in-depth review of the implementation of the Digital Strategy for Schools (2015-2020) from multiple perspectives. It included reviews of (i) Department of Education (DE) Digital Strategy Actions Plans (2017-2020), (ii) research evidence from published reports including those which focused on the experiences of schools in Ireland during the school closures brought about by the COVID-19 pandemic and (iii) the findings from the public consultation carried out by the DE. This included reports from the open call for submissions, the DE survey of principals, teachers and students, the DE focus group interviews with key stakeholders in education and the National Parents Council's survey of parents. As part of the conclusion to each of these reviews, we summarised the key findings. Further analysis was subsequently carried out across the three sets of findings, leading to a final set of conclusions that serve both to highlight the progress that has been made across the four themes of the DSS (2015-2020) (Teaching, Learning and Assessment using ICT; Teacher Professional Learning; Leadership, Research and Policy and ICT Infrastructure) as well as to identify a number of aspects of each theme that require further attention and development.

Undoubtedly, significant progress has been made in each of the four themes over the lifespan of the DSS (2015-2020). There is now greater coherence and alignment across the system and what has been achieved to date will enable schools to move forward and deepen the developments across the system. Moreover, it is now evident that each of the four themes are not standalone and cannot be considered in isolation. Instead, they are inextricably interwoven; implying that actions across all four themes need to be planned and implemented in concert with one another while at the same time, taking into account how interactions are linked.

The ICT infrastructure grants totalling €210m issued to schools to support the implementation of the DSS was widely acknowledged and appreciated across the system. However, it was this funding

together with the development and rollout of the DLF, the planning guidelines and supporting resources along with the leadership of the PDST (TiE) team that has enabled the majority of schools develop a Digital Learning Plan (DLP). It is equally encouraging that many schools are making meaningful links between their digital learning plans and the priority areas they have identified for school improvement using the School Self Evaluation process. In addition, knowledge of the six-step School Self Evaluation process is helping to improve digital learning in a manageable and incremental ways. This is reflected in the Inspectorate report (DE, 2020) and the ERC's Wave 1 report (Feerick et al., 2021) in which it is reported that the vast majority of schools who had a DLP (90%+) indicated that they incorporated the DLP into SSE activities

To date, the majority of schools (90%) have focused on the Teaching and Learning dimension of the DLF, and overall, the pattern of results suggests a greater focus at primary level on teaching and learning activities; while at post-primary level, the focus was on whole school approaches. However, although, 60% of schools rated themselves as being mostly at levels of effective practice or higher on their chosen domain, there is a lack of understanding of what constitutes effective practice and schools tend to use multiple and mainly informal approaches to assess the level of practice within a chosen domain. This points to a need for further guidance to promote a more uniform understanding of levels of effective and highly effective practice for monitoring purposes. In fact, a key theme emanating from the consultative process is the need for reporting on schools DLPs to ensure impact of the DLF is monitored and measured to help inform future policy, and allow for best practice to be identified, shared and supported.

Overall, teachers are now using a wider range of digital technologies and using them more frequently (Feerick et al., 2021). Digital technologies are also found to be used by teachers in lessons to creatively engage learners although they are sometimes only used by teachers (DE, 2020). A prominent use is by the teacher for lesson preparation, presenting information or giving class instruction to students although post-primary teachers also use technologies to communicate with students, to support peer-to-peer assessment and learner collaboration (DE, 2020; Feerick et al., 2021). Across all levels however, digitally supported assessment remains underdeveloped; 45% of post-primary teachers report no change in assessment practices while the figure was between 65% and 77% at primary level (Feerick et al., 2021). These figures are not surprising given the focus on ePortfolios for assessment at post-primary level but overall, they indicate a need for a greater focus on digitally supported assessment.

Some progress has also been achieved as a result of the necessity to engage with the use of digital technologies during the two periods of school closure and remote teaching due to the COVID-19 pandemic. It has resulted in an increase in the level of collaboration, collegiality and teamwork among teachers as well as an increase in professional learning relating to the use of digital technologies for teaching and learning (Devitt et al., 2020; Burke & Dempsey, 2020). However, it has been a challenge for many teachers, particularly for those who felt they did not have the skills required.

The Schools Excellence Fund –Digital and STEM Cluster Schools has enabled creative and innovative ways of embedding digital technologies in learning, teaching and assessment with the evaluation report due in 2020. Results from this evaluation and the ERC's longitudinal study of the

implementation of the DLF should also inform ongoing planning for, and implementation of, the next DSS.

While these findings are encouraging in many respects, it is significant that in 45% of primary schools and 38% of post-primary schools, digital technologies were not a feature of teaching and learning (DE, 2020). In addition, many schools were and still are unaware of what (i) dimension of the DLF their school is focusing on; (ii) the supporting resources available e.g. Scoilnet/Webwise; (iii) unsure on how to access external professional learning support; and (iv) require help with procurement (DE, 2020; Feerick et al., 2021; Consultative Process, 2021). It is also the case that, although the DL planning website, while widely praised as a useful resource, is widely under-utilised (Feerick et al., 2021). The lack of awareness and underutilisation of the DL Planning website and other resources such as Webwise and Scoilnet needs to be explored in order to establish why that is the case. Nonetheless, it would appear that there is a need for all resources and supports relating to all things digital in teaching, learning and assessment, and associated issues, to be made more accessible and readily available.

Going forward, what is very apparent is the need for a well-funded coherent, flexible and sustainable model of professional learning for teachers, that will enable successful continued implementation of the DLF (DLP), specific to subjects, class levels, and teacher knowledge of how to meaningfully use digital technologies in their practice (Feerick et al., 2021; Consultative process, 2021). In particular, teacher professional learning programmes need to focus on student-centred, creative pedagogies, employ interdisciplinary approaches and project tasks to engage learners in real-world problem solving and how to create meaningful student-teacher connections using digital technologies (DE, 2020) particularly if online, as students are less likely to disengage (Bray et al., 2021) in such learning environments.

The role of school leadership is similarly crucial towards the successful implementation of the DLF. School leadership is needed to enable staff to engage in a process to identify specific actions for changes in teaching, learning and assessment linked to SSE and use of digital technologies. Of critical importance is that teacher professional learning should then be linked to these actions. However, school leadership needs to be supported in doing this. Moving forward, it is vital that an emphasis on supporting school leadership is included in the new digital strategy. This will enable effective school planning which combines school self-evaluation priorities and actions in tandem with the DLF to develop the processes required to embed the use of digital technologies in schools. A key priority must therefore be development of a national structured, coherent, flexible sustainable model of professional learning; one that ensures the relevant supports and resources (e.g. focused learning opportunities, time, accreditation, incentives, substitution cover) are available to all school leaders and teachers and that meets individual teacher and school needs. Moreover, the inclusion of the development of digital skills as a core element of Initial Teacher Education programmes will contribute to this more holistic model of teacher professional learning.

In addition, consideration of how to develop teacher competences and how to embed development of digital competences in curricula specifications also needs to be addressed (DE, 2020). It has been suggested that digital competence frameworks for teachers/students across each level of the system should be developed (DE, 2020; Consultative process, 2021) and appropriate professional learning opportunities put in place to support such development. In addition, the need to prioritise

development of digital literacy, digital citizenship and digital well-being with targeted early intervention to combat underrepresentation of women in STEM and ICT roles, was also highlighted in the published reports and the consultative process.

Finally, challenges reported in implementing the DLF related to time for staff to implement the DLP, issues concerning the fit between the aims of the DLF and the structure of the standardised assessments, and infrastructure. (Feerick et al., 2021, Open Consultation, 2021). Where practice was well-developed (before and during school closures), it was reported that having access to high-speed and dependable broadband was one of the key enabling factors (Feerick et al., 2021). This is significant when the disparity between post-primary and primary access to broadband is considered. Moreover, reliable broadband and equipment which teachers could rely on were key enablers of positive attitudes towards the use of DTs, in contrast to technical support which was identified as a barrier. (e.g. Feerick et al., 2021; Consultative process). It therefore follows that provision of annual, targeted funding, addressing the imbalance between primary and post-primary broadband access and the associated necessary technical support, together with the development of a more effective public procurement model will go a long way towards helping school leaders and teachers engage with the process of professional learning to embed the use of DT in teaching, learning and assessment.

To conclude, while remote teaching was acknowledged as necessary and useful in circumstances it was regarded as secondary to in-person engagement, with huge concerns expressed about digital divide and equity. In particular, students with special educational and additional needs were impacted disproportionately by school closures so appropriate supports need to be put in place to enable schools to best meet the needs of these students in the future. The next iteration of the DSS needs more than ever to explore the potential of digital technologies to support inclusion across the system and build on the achievements to date of the National Council for Special Education (NCSE) and the PDST(TiE) to support teachers in the area of SEN within a variety of contexts and enhance the learning experience for students with SEN specifically. Inclusiveness and the provision of support for all learners needs to be an integral part of professional learning programmes for school leaders and teachers within the next DSS underpinned by the Universal Design for Learning (UDL) principles of multiple means of engagement, representation, action and expression.

3. Where to from here? Issues and Considerations for the new Digital Strategy for Schools

In the first part of this report, we carried out an in-depth review of the implementation of the Digital Strategy for Schools (2015-2020) from multiple perspectives. This review served to highlight both the progress that has been made across the four themes of the DSS (2015-2020) (Teaching, Learning and Assessment using ICT; Teacher Professional Learning; Leadership, Research and Policy; ICT Infrastructure) as well as to identify a number of aspects of each theme that requires further attention and development. In this final part of the Baseline Report, we expand our view to take account of what is happening at European level as well as the ongoing concerns and emerging trends that need to be addressed. In doing so, we are mindful of the impact of the COVID-19 pandemic and as we emerge from the pandemic and plan for a successor digital strategy for schools, it is paramount that we consider how to build digital capacity and preparedness to avoid replicating the experience of the remote teaching phase, which saw widening gaps, inequalities and learning losses (Doucet et al. 2020; OECD, 2020). We are also mindful of the need to ensure alignment between educational vision, practice and policy. As such, in keeping with the approach taken by the EU in their Digital Education Action Plan (DEAP), 2021-2027 we stress the need to focus on “long-term digital change in education which will require a combination of actions and policies to be effective” (EC, 2020, p.4). This is important as systemic results in education take time requiring sustained efforts at different levels (Conrads et. al, 2017).

There are five parts to this section. The first presents an overview of the EU Digital Education Action Plan (DEAP), 2021-2027, identifying the two key priority areas of DEAP i.e. (i) Fostering the development a high performing digital education ecosystem, and ii) Enhancing digital skills and competences for the digital transformation). Each of these key priority areas are then discussed in the context of the new Digital Strategy for Schools in Ireland and their implications for formulating the strategy. The fourth part addresses the range of emerging trends and existing challenges that require consideration by policymakers while the fifth and final section presents the set of recommendations for inclusion in the strategy.

3.1 EU Digital Education Action Plan (DEAP), 2021-2027

While the **EU 2018 Action Plan** focused on formal education (i.e. primary and secondary schools, VET, and higher education) and highlighted three priority areas (EC, 2018):

- Making better use of digital technology for teaching and learning;
- Developing digital competences and skills;
- Improving education through better data analysis and foresight.

The **EU Digital Education Action Plan (DEAP) 2021-2027** developed and merged the EU 2018 Action Plan into two priority areas i) Fostering the development a high performing digital education ecosystem, and (ii) Enhancing digital skills and competences for the digital transformation. Each of these priority areas are presented in Table 5 in which we have highlighted key phrases in bold in the table as we believe the ideas they embody have implications for formulating the new Irish Digital Strategy for Schools to 2027. It is necessary to unpack these statements if we are to get to the heart

of what needs to be planned at a policy level and to appreciate the range of comprehensive supports and interlinking components that need to be considered.

Priority Area	Short description	Objectives	Actions
Fostering the development a high performing digital education ecosystem	Effective use of digital technologies for quality and inclusive education and training needs to be planned in a sustainable way , with sufficient support, resources and guidance. Providing infrastructure and digital devices is fundamental, but a critical and purposeful use of digital technologies for teaching and learning needs to be underpinned by strong digital capacity . Actions under this priority promote closer collaboration and exchange in digital education among all parts of society.	Boosting peer learning and policy cooperation Investing in infrastructure and connectivity Fostering digital capacity building in educational institutions Supporting high-quality digital education	Enabling factors for successful digital education Online and Distance Learning for Primary and Secondary Education European Digital Education Content Framework and European Exchange Platform Support for connectivity and digital equipment for education Digital transformation plans and digital pedagogy and expertise Ethical guidelines on AI for educators
Enhancing digital skills and competences for the digital transformation	Today, the lack of digital competences is a societal challenge for adults and young people alike. The COVID-19 crisis has reinforced the need to promote a sound understanding of the digital world and support the development of digital competence of citizens and learners of all ages. Actions under this priority look at both basic and advanced digital skills with the aim of fostering digital citizenship and inclusion .	Fostering the development of digital competence Promoting digital literacy for informed choices as citizens Boosting the development of advanced digital skills	Tackling disinformation and promoting digital literacy through education and training Digital Competence Framework update European Digital Skills Certificate Improving the provision of digital skills in education and training Digital competence benchmark Digital Opportunity Traineeship Women’s participation in STEM;

Table 5. EU Digital Education Action Plan (EC, 2020)

Priority Area 1 – Fostering the development of a high performing digital education system acknowledges that effective use of digital technologies for quality and inclusive education and training needs to be planned in a sustainable way, with sufficient support, resources and guidance. Questions which immediately spring to mind that need consideration include:

- What is meant by effective use? What does quality and /or inclusive education look like?
- What does planning in a sustainable way require? What resources, supports are required? Who provides the guidance?

Interestingly, it is also acknowledged as part of Priority 1, that whilst the provision of infrastructure including digital devices is fundamental, this in and of itself is not enough. Instead, a critical and purposeful use of digital technologies for teaching and learning must be underpinned by strong digital capacity. But what does it mean to have a strong digital capacity? In addition, what is understood by critical and purposeful uses of digital technologies for teaching and learning ?

Alongside this, **Priority Area 2** – Enhancing digital skills and competences for digital transformation, that promotes a sound understanding of the digital world and supports the development of digital competence of citizens and learners of all ages is recognised as a cornerstone of DEAP 2021-2027 (EC, 2020). However, what is meant by a “sound understanding”? How is “digital competence” defined and how can it be developed? In addition, what is considered “basic” or “advanced” digital skills? There is also a need to understand what is meant by “digital citizenship and inclusion” before trying to work out how it can be fostered. A possible starting point is to examine the indicators used by the Digital Economy and Society Index (DESI)¹⁸ and the European Digital Competence Framework (DigComp)¹⁹ to define digital skills. Answers to these questions will highlight the areas which need to be considered when developing the next iteration of the Digital Strategy for Schools in Ireland to 2027.

3.2 Fostering the development of a high performing digital education ecosystem

Sustainable planning towards the development of a high performing digital education ecosystem demands that we first adopt a critical lens towards the current system. In order to develop the next iteration of the DSS, we need to understand how the vision for “ICT integration into Irish schools” as articulated in the DSS (2015-2020) is currently understood, shared and enacted at school and classroom levels. What has been achieved in relation to school practices? (i.e. How are digital technologies currently used in teaching, learning and assessment? What professional learning framework is in place for teachers and school leaders to enable the development of learning cultures?), and what needs to be done in terms of policy, to ensure there is system alignment to enable sustainable planning and development?

3.2.1 Current use of digital technologies in teaching, learning and assessment

The vision for the integration of digital technologies into Irish school in the DSS (2015-2020) was:

to realise the potential of digital technologies to enhance teaching, learning and assessment so that Ireland’s young people become engaged thinkers, active learners, knowledge constructors and global citizens to participate fully in society and the economy. (DES, 2015, p. 5)

¹⁸ <https://digital-agenda-data.eu/datasets/desi/indicators>

¹⁹ <https://ec.europa.eu/jrc/en/digcomp>

While this vision continues to be relevant, there need to be an assessment of the current use of digital technologies in classrooms and schools in Ireland in order to be able to plan in a sustainable way for the next iteration of the DSS, and to ensure that digital technologies are being used in more effective ways for quality, equitable and inclusive education. As documented in the previous section and Appendix A of this report, much progress has been made over the lifespan of the DSS (2015-2020) and while there is 'more to be done', it is to be acknowledged that much of this progress occurred in a three year timeframe –the Digital Learning Framework was not published until 2017 and we entered a two year pandemic in Spring 2020. In summary, we know that:

- the majority of schools have developed a Digital Learning Plan (DLP) which they have incorporated into the School Self Evaluation process (DE, 2020; Feerick et al., 2021). To date, the majority of primary schools have focused on the Teaching and Learning dimension of the DLF (DES, 2017), while at post-primary level, the focus was on whole school approaches. It is acknowledged that the ICT infrastructure grants to support the implementation of the DSS (2015-2020) together with the development and rollout of the DLF, the planning guidelines and supporting resources along with the leadership of the PDST (TiE) team enabled the majority of schools develop a Digital Learning Plan (DLP).
- a majority of teachers are using a wider range of digital technologies and using them more frequently as part of their classroom practice to creatively engage learners (Feerick et al., 2021). In addition, the level of collaboration with other learners in the use of digital technologies has increased particularly at post-primary while the use of digital technologies as part of the assessment process was found to be more widespread at post-primary than at primary level. Some schools were also making meaningful links between digital learning and the priority areas that they had identified for school improvement using the SSE process.
- school closures brought about by the COVID-19 pandemic led to wide scale use of digital technologies as part of remote teaching and learning practices. There has been an increase in the level of collaboration, collegiality and teamwork among teachers as well as an increase in professional learning relating to the use of digital technologies for teaching and learning (Devitt et al., 2020; Burke & Dempsey, 2020).

While these findings are encouraging in many respects, the 2020 Inspectorate report found that digital technologies were not a feature of teaching and learning in 45% of primary schools and 38% of post-primary schools (DE, 2020). In addition, across all levels, digitally supported assessment remains underdeveloped (Feerick et al., 2021). It is also the case that schools often have difficulty in unpacking the DLF and translating it into practice (Cosgrove et al., 2018). For example, although, 60% of schools rated themselves as being mostly at levels of effective practice or higher on their chosen domain, there is a lack of understanding of what constitutes effective practice and schools tend to use multiple and mainly informal approaches to assess the level of practice within a chosen domain (Feerick et al., 2021). Large scale international surveys such as PIRLS and TIMSS also highlight the lack of digital activities that require learners to draw on their capacity for higher-order activities such as analysis, synthesis and evaluation. Similarly, teaching children to be critical when reading on the internet was a less common activity in Irish classrooms than across most PIRLS participating countries (Eivers, 2019).

Overall, usage patterns indicate that some schools have begun to move towards knowledge deepening approaches, where technologies are used as intellectual tools that empower and challenge learners to think critically and more deeply about ideas and concepts. However, for the most part, and despite teachers using wider and more frequent uses of digital technologies, usage in many schools is still at the knowledge acquisition level (UNESCO 2008a; 2008b; 2011, 2018), with digital technology used to strengthen existing teaching and learning practices. This suggests that while substantial progress has been made, there is still quite some way to go to enable all schools move towards the knowledge deepening stage. We need to consider what more needs to be done so that there are the appropriate supports, resources and guidance in place to enable schools across the system plan in a sustainable manner to transition towards knowledge deepening and the development of self-determined learners who can thrive in a digitally complex world.

A range of appropriate policies are already in place to support schools to transition towards knowledge deepening. The DLF (DES, 2017) has been developed as a tool to help teachers and school leaders plan for the effective use of digital technologies in teaching, learning and assessment. In addition, clear statements and objectives on the use of digital technologies have been included in all curricula development (c.f. Section 2 and Appendix A). For example, the development of digital skills is an integral element of each of the Key Skills included in Junior Cycle and Senior Cycle Frameworks while at primary level, “Being a Digital Learner”, is included as one of seven key competences in the Draft Primary Curriculum Framework (NCCA, 2020). These policy developments are in line with the Competences Framework (European Commission, 2019) and the OECD Learning Framework 2030 (OECD, 2018) which see the purposes of education in terms of capacities, competences or capabilities, so articulation is not ‘in terms of what the children should learn but in terms of what they should become’ (Priestley & Biesta, 2013, p. 4). However, while considerable effort has been made in policy development, the evidence presented in this report highlights a gap in many instances between policy and practice, indicating a need to provide stronger support and scaffolding to promote enactment in practice. This is essential if schools are to realise the vision underpinning the various policies, how they connect and are ultimately realised within the school context. In summary, system wide alignment is necessary to realising the vision in action.

3.2.2 System Alignment for Sustainable Planning

The publication of the DSS (DES, 2015) was perceived as the glue that would not only leverage existing educational policies but would also be the catalyst for enabling the move towards systemic transformation of Irish schools (Butler et al., 2018). Building on government policy to equip all learners with the “knowledge and skills they need to participate fully in society and the economy, ... [enabling] all learners to learn how to learn” (Department of Public Expenditure and Reform, 2014, p. 43), the DSS (DES, 2015) and the subsequent DLF (DES, 2017) promoted the embedding of digital technologies into a wide range of teaching and learning activities. In addition, the DES mandated that the use of digital technologies was to be embedded in all future education policy and curriculum reform initiatives (DES, 2015). It is also planned to ensure linkage across and between emerging policies such as the new Literacy & Numeracy & Digital Strategy, and the Senior Cycle review (particularly assessment and examination reforms). However, while this progress to achieve alignment across policy initiatives is lauded, there is a need to ensure this vision is understood, shared and enacted at school and classroom levels in a coordinated and coherent way. All components of the system must work together and reinforce each other as part of an interrelated

and interdependent learning ecosystem if change can be successfully implemented and sustained (Butler et al., 2018) (See Figure 1).

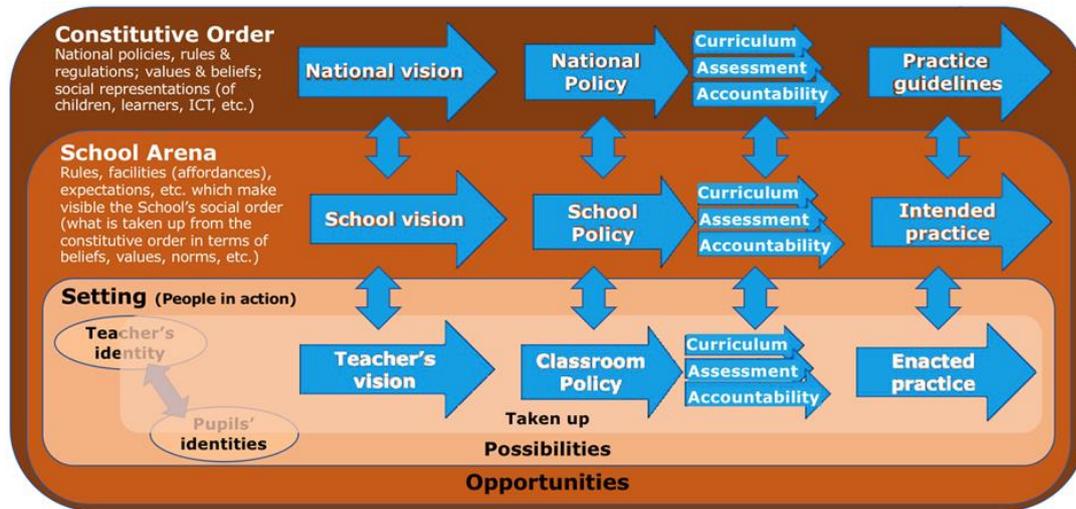


Figure 1: System Alignment

Against this backdrop, it is essential to acknowledge that digital technologies do not have an independent existence and cannot be considered separately from the values that people bestow on them. Indeed, the ways digital technologies may or may not be used reflect these understandings. Research has consistently demonstrated that digital technology per se is not necessarily a driver or catalyst for change and that the introduction of digital technology into schools does not in and of itself lead to the development of innovative teaching practices or the transformation of education (e.g., European Schoolnet and University of Liège, 2013; Kozma, 2003; Law et al., 2008; OECD, 2015; Shear et al., 2010; 2011; Twining, 2018). In order for digital technologies to be effectively used in teaching and learning at school level, their use has to be part of the school vision and must be supported by specific national policies (Plomp et al., 2009; Shear et al., 2011). So while there are national policies advocating embedding the use of digital technologies in teaching, learning and assessment, we need to consider if they are enshrined in school visions. For example, is there consistency across the learning principles underpinning Primary and Post-Primary levels? Is there consistency in how digital technologies are used across Primary and Post-Primary schools?

- **Primary level** - The view of learning as presented in the Draft Primary Curriculum Framework (NCCA, 2020) is one where learning is viewed as an active process of enquiry, reflection and dialogue, and children are considered co-constructors of knowledge in collaboration with their peers, teachers and the wider community. This view of learning is mirrored in the DSS (2015-2020) and the DLF (DES, 2017).

- **Post-Primary level** – Eight Key Skills set out in the Framework for Junior Cycle focus on the four ‘C’s of communication, collaboration, creativity and critical thinking. These key skills are embedded into all subject specifications and are developed on an ongoing basis throughout the Junior Cycle. Students have opportunities to use these skills in their engagement with classroom-based assessments (CBAs) through conducting and analysing research, collaborating with others and presenting their work. CBAs in junior cycle also offer opportunities for the use of digital technologies for collaboration, presentations and so on as well as providing the basis for the development of digital media literacy skills particularly in relation to the safe, critical and ethical use of information found online. In addition, ePortfolios can form part of the student assessment process.

A framework of key skills has also been developed at senior cycle. These five key skills, (information processing, being personally effective, communicating, critical and creative thinking and working with others), are integrated across the current senior cycle curriculum supporting the development of digital skills in a variety of ways. Since the launch of the DSS (2015-2020) significant emphasis has been placed on the use of ePortfolios in Transition Year. Moreover, recently developed subject specifications and those in development for Leaving Certificate, place an increased emphasis on the development of digital skills. As an example, Economics students have an opportunity to explore how technology impacts on the economy and also use technology to discuss, explain and communicate research findings and analyse data. Digital technology also forms part of assessment in a number of new subject specifications with 50% of the assessment component in the new Leaving Certificate PE specification involving the use of digital technologies to record student progress. Computer Science has also been introduced as an optional subject since 2020 with the subject being made available to all interested schools. Despite this, the primary mode of assessment at Senior Cycle is the high stakes Leaving Certificate examination.

Within these contexts, we need to ask the following questions: is there an inconsistency with what is advocated at Primary level and what is considered as effective or highly effective practice as outlined in the DLF? Do the uses of digital technologies identified at Junior and Senior cycle align with the development of the key skills that are identified at Junior and Senior cycle? Can they be considered effective or highly effective practice? Are the key skills that are identified at Junior and Senior cycle valued and assessed in any way in the current Leaving Certificate examination process. These are the questions that must be addressed if we are to achieve greater consistency of vision across and between the various levels in the learning eco-system. However, this cannot happen in isolation but will need to be supported with robust contextually and culturally relevant models of professional learning for teachers and school leaders.

3.2.3 Teacher professional learning

As outlined previously in this report (Section 2/Appendix A), the professional learning opportunities for teachers provided by the PDST (TiE) has expanded to include a comprehensive range of blended learning programmes, including :

- Direct school support (focus on sustained support)

- Seminars and workshops (national and regional based face-to face courses and workshops)
- Webinars/Good practice videos
- Online courses and supports
- Dedicated websites including the overarching www.pdsttechnologyineducation.ie/en/ and its satellite websites such as www.dlplanning.ie, www.webwise.ie, www.teacherCPD.ie
- Clustering model of CPD including the Schools Excellence Fund (Digital)
- Teacher collaboration and Digital Communities of Practice

Engagement with teacher professional learning has increased year on year indicating a sustained and increasing interest by teachers in the area of professional learning in the educational uses of digital technologies. However, despite this many teachers were (i) unaware of what dimension of the DLF their school is focusing on; (ii) unaware of the supporting resources available e.g. Scoilnet / Webwise; (iii) unsure of how to access external professional learning support; and (iv) require help with procurement (DE, 2020; Feerick et al., 2021; Consultative Process, 2021). It is also the case that, although praised as a useful resource, the DL planning website, is widely under-utilised. (Feerick et al., 2021).

What all of this demands is thoughtful consideration of how professional learning opportunities can be provided for teachers. Enabling teachers to move from the knowledge acquisition towards the knowledge deepening stage requires a broader approach to professional learning than simply ‘retooling’ teachers for specific tasks or enabling them to ‘fit’ digital technologies into their existing practices. Instead, it requires investment and substantial effort and resources into creating, and co-creating with teachers, a sufficiently detailed understanding of the “critical and purposeful use” of digital technologies for teaching, learning and assessment. This will allow teachers know and understand ‘what it looks like’ in their classrooms but equally, by involving teachers in the process of defining and understanding what “critical and purposeful use” is, it will enable them become invested in and develop ownership of the reform.

However, this needs to be coupled with developing teachers’ own ‘digital competence’. This is because as argued in DEAP 2021-2027, “boosting the level of digital competences and capabilities to support the effective and pedagogical use of digital technologies is a key enabling factor in improving the quality, inclusivity and effectiveness of education and training” (EC, 2020a, p.5). In addition and alongside the development of teachers’ digital competence, what also needs to be addressed is the issue of how to embed development of digital competences into curricula specifications (DE, 2020). To support such development, it has been suggested that digital competence frameworks for teachers and students across each level of the system should be developed (DE, 2020; Consultative process, 2021) and that appropriate professional learning opportunities be put in place to support such development. Only by adopting this approach will teachers begin to develop the “strong digital capacity” to make effective use of digital technologies in learning, teaching and assessment, and move towards educational transformation.

In short, what is needed, is a well-funded coherent, flexible and sustainable model of professional learning for teachers, that will enable continued and progressive implementation of the DLF (DLP),

specific to subjects, class levels, and teacher knowledge (Feerick et al., 2021; Consultative process, 2021). In addition, as advocated by the DSS 2015-2020, teacher professional learning programmes need to focus on student-centred, creative pedagogies, employ interdisciplinary approaches and project tasks to engage learners in real-world problem solving as well as how to create meaningful student-teacher connections using digital technologies (DE, 2020). In order for this to happen, teachers will need to be supported within a learning culture that encourages them to work with others to critically and purposefully use a range of digital technologies for teaching, learning and assessment.

3.2.4 Developing and Leading learning cultures – importance of school leader

The key role of school leadership in promoting successful and effective use of digital technologies in schools is well documented (CoSN, 2020). Specifically, leadership is central towards the successful implementation of the DLF if we are to build capacity to develop, lead and support a learning culture which leverages critical and purposeful uses of digital technologies for teaching, learning and assessment in school communities. However, the DLF research indicates that the focus in schools has generally been on dimensions of Teaching and Learning rather than Leadership and Management and that to date, the focus has generally been on providing awareness sessions for school leaders rather than on the provision of focused professional learning programmes for leaders (Feerick et al., 2021; Cosgrove et al., 2019). Such programmes are required if we are to build capacity to develop, lead and support a learning culture which leverages critical and purposeful uses of digital technologies for teaching, learning and assessment in school communities.

There are tools such as the EU developed SELFIE²⁰ (Self-reflection on Effective Learning by Fostering the use of Innovative Educational technologies) available to help schools reflect on how they use digital technologies to support learning. SELFIE enables schools to assess how digital technologies are used in the school and to develop an action plan in order to enhance their digital capacity. It has a strong basis in research and was developed based on DigCompOrg, the European Commission framework on promoting digital-age learning in educational organisations (Kampylis et al., 2015). However, SELFIE, cannot be perceived as a panacea. The school leader will need to be able to contextualise and interpret the report and data that SELFIE provides and working with the school community, use this as part of the evidence base to work through the planning cycle, outlined in the DLF, in order to decide how best to support their school community to embed the use of digital technologies in teaching, learning and assessment.

In particular, effective school leadership is needed to enable staff to engage in a process to identify specific actions for changes in teaching, learning and assessment linked to the School Self Evaluation process and the DLF. Moving forward, it is vital that an emphasis on supporting school leadership to engage in developing this type of learning culture is included in the new digital strategy. This will enable effective school planning which combines school self-evaluation priorities and actions in tandem with the DLF to develop the processes required to embed the use of digital technologies in schools.

Finally, it is imperative that effective professional learning for school leaders acknowledges that schools are at different levels in embedding digital technologies into their learning eco-systems. A one size fits all approach will not suffice and a range of appropriate supports must be put in place to enable them build this learning culture. Depending on the context, school leaders may be able to

²⁰ <https://education.ec.europa.eu/self-reflection-tools/schools-go-digital>

develop and leverage expertise within the school community. However this may not always be the case and school leaders need to be empowered to recognise when help is needed and should subsequently be supported to draw on a range of external and in-school supports as required. For example, in Estonia the state has invested in the development of the digital infrastructure of schools, providing funds for a high speed Internet access, modern equipment and digital learning tools to support educational establishments. However, Estonia has also maintained a parallel focus on building digital literacy skills among educators and students. They have school-based educational technologists — experienced teachers and technology integration specialists who support teachers in schools when and as required.

A key priority must therefore be development of a national structured, coherent, flexible sustainable model of professional learning, that ensures the relevant supports and resources (e.g. focused learning opportunities, time, accreditation, incentives, substitution cover) are available to all school leaders and teachers that meets individual teacher and school needs.

3.2.5 Infrastructure

As indicated in the DEAP 2021-2027 priorities, providing infrastructure and digital devices is fundamental but cannot be the sole focus in fostering the development of a high performing digital education ecosystem. However, as documented in Feerick et al (2021), where practice was well-developed (before and during school closures), access to high-speed and dependable broadband was one of the key enabling factors. Moreover, reliable broadband and equipment were identified as key enablers of positive attitudes towards the use of digital technologies whereas issues around technical support were identified as barriers. The need for access to high-speed broadband, industry grade Wi-Fi, access to technical support and ongoing funding as well as advice, to purchase and update appropriate digital technologies was also a strong theme across the public consultation.

Undoubtedly, further investment in infrastructure and digital devices will need to be provided as part of the new DSS but it needs to be underpinned by a shared educational purpose and vision. As a starting point, the provision of i) annual, targeted funding to schools, ii) equitable access to broadband particularly in primary schools iii) effective and timely technical support and iv) the development of a more effective public procurement model will go a long way towards helping schools further embed the use of DT in teaching, learning and assessment. It is also possible that different levels of funding are required depending on a school's context and/or a demonstrated rationale for why funding / resources is required for effective learning and assessment.

3.3 Enhancing digital skills and competences for the digital transformation

One of the most important challenges within our education systems worldwide is that of empowering learners with the intellectual tools of our culture (Vygotsky as cited in Wertsch, 1985); an empowerment that starts when they are very young and continues throughout their lives (Davis, 2018). Digital technologies are the “cultural tools” of today's society. Consequently, they need to be more than add-ons; it needs to be more than acquiring the know-how to use the tools, as they will change thinking, the ways that individuals see the world and indeed define cultures. So developing digital competence is more than just using another tool: it is concerned with knowledge, skills, values, beliefs, disposition and attitudes. This is the focus of the second priority in DEAP 2021-2027 (EC, 2020). While the COVID-19 crisis tends to be portrayed as a ‘turning point’, the development of

digital competence had received increased attention long before COVID-19 and was already regarded as a necessary competence to successfully participate in education, work, and society (Griffin, McGaw, & Care, 2012). New specialist digital skills were already emerging and it was recognised that greater efforts were needed to address the current shortage of ICT professionals in Europe. If it is to thrive in a global, technology-driven economy, Europe needs a digitally competent workforce and a large pool of digital talent with basic and advanced digital skills, including those related to emerging technologies such as Artificial Intelligence (EC, 2020a). However, as outlined in the EU Commission Working document (EC, 2020a):

- digital skills levels across Europe remain unsatisfactorily low, with 44% of EU citizens having an insufficient level of digital skills. Although more than half of the Irish population has at least basic digital skills (53%) and at least basic software skills (55%), Ireland performs below the EU average (56% and 58% respectively) for indicators that measure those skills. On the other hand, 34% of people have above basic digital skills, which is above the EU average (31%) (DESI, 2021)
- digital divides related to gender, socio-economic background and urban/rural areas persist
- more than a third of the EU labour force lacks the basic digital skills required in most jobs across sectors
- over half of EU companies report difficulties in filling vacancies for ICT specialists. This is especially worrying when we consider that the availability of computing and informatics, as either compulsory or elective subjects, is not uniform across Europe. Less than 5% of graduates and students at higher education level are studying or have completed ICT-related programmes. Despite this, the Digital Economy and Society Index (DESI) 2021 reported that Ireland performs above EU average for advanced digital skills (e.g. ICT Specialists, female ICT specialist and ICT graduates).

Undoubtedly, the digital economy is likely to play a leading role in Europe's and Ireland's recovery as we emerge from the global pandemic and demand for digital skills will grow. Today more than ever, being digitally competent is both a necessity and a right. Participating actively, continuously and responsibly in society at all levels (political, economic, social, cultural and intercultural) means being able to harness the benefits and opportunities of the online world, while building resilience to the potential risks. The pervasive use of digital technologies for social and democratic participation requires the ability to engage positively, critically and competently in the digital environment. Skills are needed to access, select and interpret information, to communicate effectively and create content in a way, which is respectful of human rights and dignity and uses technology in a responsible way. (ECa, 2020, p.39)

Considering that being digitally competent is both a necessity and a right, coupled with the rapid development of technologies such as Artificial Intelligence and the growing rise of false information, disinformation and cybersecurity threats, it is essential that young people develop increasingly sophisticated digital skills over the course of their lifetime. All phases and stages of education and training need to play a key role in enabling learners to acquire and develop the digital competences they need to live, work and learn. The DSS (2021-27) therefore needs to take cognisance of the urgent need to plan for the development of digital competence not only in our young people but

also in our teachers and school leaders as it is they who will have responsibility for developing their students' digital competence.

Digital competence is defined in a multiplicity of ways ranging from skills-focused definitions, models, and frameworks to broader competence models that recognise the more diverse knowledge, capabilities and dispositions of children. Terms such as ICT literacy, digital skills, digital literacy, computer literacy, ICT fluency, technological literacy, internet skills, information literacy, and media literacy have all been used to describe the knowledge, skills, and attitudes relating to the use of digital technologies (Ala-Mutka, 2011; Law, Lee, & Yuen, 2010). In fact, it is difficult to clarify what are the similarities and differences between these concepts (Lankshear & Knobel, 2008) and they are often used interchangeably and largely reflect the same content (Law et al., 2010). However, the most recent literature favours broader competence models that encompass the diverse knowledge, capabilities, dispositions and values needed by individuals to learn, work and participate in society. As noted by Mc Guinness (2018), competence is a 'broad concept and encompasses skills, dispositions, attitudes and values, as well as knowledge about the context in which the competency is learned and demonstrated. ...[it] is a learner's capacity to act in response to the demands of a more complex situation or task' (p. 39).

Digital competence is regarded as a core concept in many international policy documents (Ilomäki et al., 2016) and has been a priority for the European Commission for some time in policies, actions, and communications (e.g., European Commission, 2010; 2013). There has also been an increasing interest in the development and use of digital competence frameworks in education settings; some of which have been developed as international or national initiatives and others in the context of national curriculum development. Among the most well-known are the ISTE Standards Framework (ISTE, 2017) in the USA and the European Framework for the Digital Competence of Educators (DigCompEdu) (Redecker, 2017). The main purpose of both of these frameworks is to detail a conceptual understanding of competence for education at school level.

The DIGCOMP 1.0 Framework and its subsequent developments (Ferrari, 2013; Vuorikari, Punie, Carretero & Van den Brande, 2016; Carretero et. al., 2017) is a useful competence framework to discuss as it has become a reference for the development and strategic planning of digital competence initiatives across Europe including DigCompEdu (Redecker, 2017) and the Digital Learning Framework in Ireland (see Butler, Hallissey & Hurley, 2018). Defining digital competence as "the confident, critical and creative use of ICT to achieve goals related to work, employability, learning, leisure, inclusion and/or participation in society" (Ferrari, 2013, p. 2), DIGCOMP addresses the knowledge, skills and attitudes that enables the confident, creative, critical and responsible uses of digital technologies for learning, work, leisure and active participation in society. The term 'digital technologies' in the framework is used as an umbrella term for digital resources and devices, thus comprising any kind of digital input: software (including apps and games), hardware (e.g., classroom technologies or mobile devices) or digital content/data (i.e. any files, including images, audio and video). The framework identifies five areas of competence with eight levels of proficiency in each area. The areas are: (i) information and data literacy; (ii) communication and collaboration; (iii) digital content creation (including programming); (iv) safety (including digital wellbeing and competences related to cybersecurity); and (v) problem solving (see Figure 2).

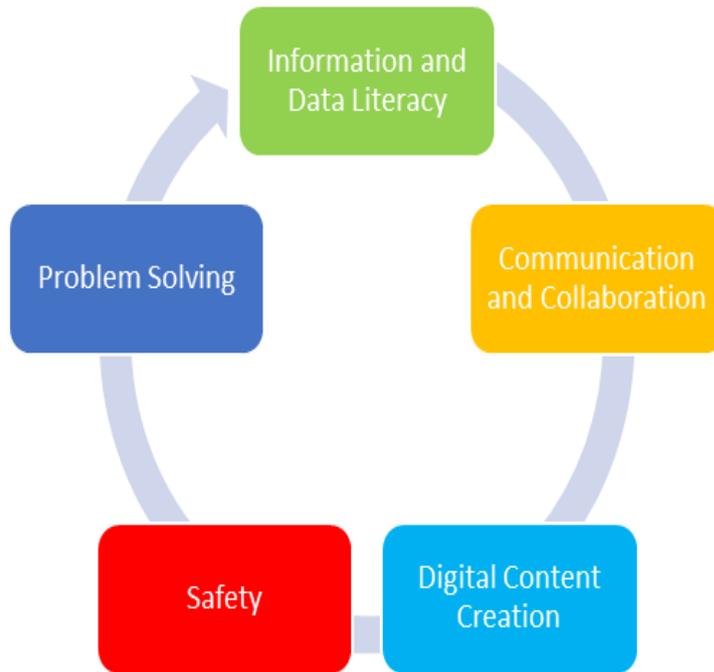


Figure 2. DigComp 2.1 (Carretero, 2017).

Comparing DigComp 2.1 (Carretero, 2017) to other digital competence frameworks that have been developed for schools highlights a similarity in approach and areas of competence identified. Most present competence as a broad concept that encompasses skills, dispositions, and values; and while they differ in the terminology using terms such as 'ICT capabilities', 'digital literacy' and 'ICT standards', these terms reflect similar content and there are strong similarities in the areas of competence identified across countries (See Table 6, Comparison of how digital competence is framed in a range of national curricula).

Country/Region	Framework		Areas of competence
Australia	ICT Capability learning continuum ²¹	ICT capabilities	<ul style="list-style-type: none"> ● Applying social and ethical protocols/practices using ICT ● Investigating with ICT ● Creating with ICT ● Communicating with ICT ● Managing/operating with ICT
Toronto, Canada	Toronto District School Board ICT Standards ²²	ICT standards	<ul style="list-style-type: none"> ● Technology operations & concepts ● Research & information fluency ● Critical thinking & problem solving ● Communication & collaboration ● Digital citizenship ● Creativity & innovation
Wales, UK	Digital Competence Framework ²³	Strands	<ul style="list-style-type: none"> ● Citizenship ● Interacting and collaborating ● Producing ● Data/computational thinking
New Zealand	Technology-Curriculum ²⁴	Strands	<ul style="list-style-type: none"> ● Technological practice, ● Technological knowledge ● Nature of technology
Netherlands	National Curriculum	Digital literacy: Big ideas	<ul style="list-style-type: none"> ● Data and information ● Safety and privacy ● Communication/cooperation ● Digital citizenship ● Digital economy ● Applying and designing ● Sustainability
Finland	National Curriculum	Transversal Competence ²⁵	<ul style="list-style-type: none"> ● Working with data, information ● Programming
Estonia	National Curriculum	Digital Competence models	<ul style="list-style-type: none"> ● Information/Data Literacy ● Problem-Solving ● Digital Content Creation ● Communication & Collaboration ● Safety
Denmark	Technology comprehension	Trial programme (2018-2021)	<ul style="list-style-type: none"> ● Digital Empowerment ● Digital Design/Design process ● Computational Thinking ● Technological Knowledge & Skills

Table 6: Comparison of how digital competence is framed in a range of national curricula/frameworks.

²¹ <https://www.australiancurriculum.edu.au/media/1074/general-capabilities-information-and-communication-ict-capability-learning-continuum.pdf>

²² <https://schoolweb.tdsb.on.ca/elearning/Resources/ICT-Standards>
<https://schoolweb.tdsb.on.ca/portals/elearning/docs/ict%20standards.pdf>

²³ <https://hwb.gov.wales/storage/85f69bca-0134-426d-bff1-c46b4c1d067b/digital-competence-framework-your>

²⁴ <https://technology.tki.org.nz/Technology-in-the-NZC>

²⁵ Sjøby, M. (2015). Finnish education system. *Nordic Journal of Digital Literacy*, 10(02), 64-68.
<https://www.idunn.no/doi/10.18261/ISSN1891-943X-2015-02-01>

3.3.1 Digital Competence in the Irish Context

The DLF (DES, 2017) was adapted from the UNESCO ICT Competency Framework for Teaching (2008a, 2008b, 2011), DigComp Org (Carretero, 2017) and DigComp Edu (Redecker, 2017) for the Irish context. It is directly aligned with the domains and standards of Looking at Our School (DES, 2016a; DES, 2016b). and is intended to support and complement the School Self Evaluation (SSE) process. It was designed to help schools to plan and develop a clear rationale for the embedding of digital technologies in teaching, learning and assessment as well as to inform their subsequent decisions as to the type of infrastructure the school should develop and professional learning opportunities needed to support changes identified. However, as discussed previously in this report, teachers and school leaders have difficulty in interpreting what is meant by the DLF statements; there is a lack of understanding of what constitutes effective and highly effective practice and schools tend to use multiple and mainly informal approaches to indicate evidence the level of practice within a chosen domain. Moreover, while there have been some inroads in developing some aspects of digital competence within the Irish education system, it has been a disconnected series of initiatives rather than systematically addressing the development of digital competence and what this should encompass. What has become increasingly apparent is the lack of a clear and consistent understanding of digital competence and how its development can be supported for school leaders, teachers and students. This is a complex issues that requires serious debate in order to tease out what is understood by “being digitally competent” and if there are particular components (e.g. digital literacy, computational thinking, data literacy) that need to be addressed separately to ensure competence is developed.

3.3.2 Digital Literacy

The more knowledge technology allows us to search and access, the more important the capacity to filter and better understand information becomes. The evolution of digital technologies and ubiquitous access to the internet has radically changed the way information and news are produced, consumed and communicated. For this reason, everyone needs to have a critical understanding of and interaction with the media and digital environments (finding, checking accuracy and quality, filtering, and managing information), to become resilient to *disinformation*. This is of increasing importance as the ability of young people to access and critically evaluate information and its sources in digital environments remains low. Digital literacy is often presented as embedded in or as a subset of digital competence models. For example, information and data literacy is included as one of five key competences included in DigComp 2.1 (Carratero, 2017).

At primary level, digital literacy is positioned as an essential element of literacy and literacy development in the Draft Primary Language Curriculum (NCCA, 2019). The Primary Language Curriculum (PLC) (NCCA, 2019) notes the importance of digital literacy as an important aspect of children’s learning in school and supports children’s abilities to engage with technology in meaningful ways for literacy development and learning. Drawing on the conceptualisation of digital literacy in the PLC, the NCCA support materials for developing Internet Research and Inquiry Cycle skills, and proposes a definition of digital literacy as the child’s ability to:

leverage technology to access, acquire, comprehend, analyse, evaluate, create and communicate knowledge in multiple modes and through multiple representations to and

with a variety of audiences and in a variety of contexts for a range of purposes (Dwyer 2020 drawing on NCCA, 2019).

At post-primary level, Statements of Learning are outlined in A Framework for the Junior Cycle²⁶ with statement 24 focusing explicitly on students using “technology and digital media tools to learn, communicate, work and think collaboratively and creatively in a responsible and ethical matter”. The Digital Media Literacy²⁷ short course was developed to support students to use “digital technology, communication tools and the internet creatively, critically and safely in support of their development, learning and capacity to participate effectively in social and community life.”

A successor strategy to the National Strategy Literacy and Numeracy for Learning and Life 2011 – 2020 & Interim Review of the Strategy and New Targets (2017-2020) is currently being developed by the DE in which digital literacy has already been signalled as a central element for inclusion. The importance of having alignment between the understanding of digital literacy in the new Literacy, Digital Literacy and Numeracy Strategy and the new DSS is of paramount importance if we are to ensure consistency across the system. In addition, we need to decide if it is the responsibility of all teachers to support the development of digital literacy in the students that they teach? And if so, how do we ensure that all teachers have the competence to do so? Teachers may in fact not be digitally literate themselves and so, how is the issue of teacher competence to be tackled? In addition, a decision has to be made as to whether being “digitally competent” encompasses being “digitally literate” and how will these skills be developed across the continuum of the school system. It is this type of clarity that will help support schools in their planning and enable them to decide what changes need to be made with effective supports put in place.

3.3.3 Computational Thinking

Computational thinking represents a way of thinking about solving complex, open-ended problems and is considered a fundamental skill for everyone, not just for computer scientists (Wing, 2006). Central components of computational thinking, include algorithmic thinking, abstraction, decomposition and automation, all of which can be found in many contexts and disciplines and which assist learners in how to approach and solve problems in a systematic way (See Table 7). Some research indicates that if taught from the early stages, it can complement digital literacy interventions and can also be a vehicle for learning not just technical skills but key skills such as critical thinking, problem solving, collaboration and creativity (Vahrenhold et al., 2017).

While computational thinking and related concepts (e.g. coding, programming, algorithmic thinking) have a long history in education, they have received growing consideration for almost two decades. By 2019, approximately half of European education systems were engaged in the reform of curricula related to digital competence and, computational thinking was introduced, or made more prominent (EC, 2020). In Ireland, the NCCA has been investigating possible approaches to the introduction and development of computational thinking in primary schools (NCCA, 2016; 2017; Millwood et al., 2018), and it is currently presented in the math/science/technology curriculum areas in the Draft

²⁶ <https://ncca.ie/media/3249/framework-for-junior-cycle-2015-en.pdf>

²⁷ <https://www.curriculumonline.ie/Junior-cycle/Short-Courses/Digital-Media-Literacy>

Primary Curriculum Framework (NCCA, 2020). At post primary level, short courses have been developed at Junior Cycle and Computer Science is now included as a Leaving Certificate subject.

Element	Definition
Abstraction	Entails reducing unnecessary details, highlighting the relevant details to make the process simpler and easier to understand. Leads towards creation of a model/representation to solve a problem.
Algorithmic thinking	Devising a step-by-step solution to a problem. Includes: algorithm design: planning an algorithm, sequencing actions correctly; parallelism; efficiency; and automation.
Decomposition	Breaking down complex problems into manageable smaller problems or into their component parts so that each part can be understood and solved separately. Overall solution is reached by assembling collections of smaller parts (Csizmadia et al., 2015).
Generalisation	Looking for a general approach to a class of problems. Ability to identify common patterns between older and newer problem-solving tasks and use sequences of instructions previously employed, to solve a new problem (reusing and remixing). Is a way of solving new problems based on previous solutions to problems, and building on prior experience Csizmadia et al., 2015).
Debugging	Skill to identify, remove, and fix errors.
Iteration	Iteration refers to repeating the problem-solving process to refine the solution toward an optimal solution.

Table 7: Core Elements of Computational Thinking (Taken from Angeli et al.,2016 and Shute, Sun & Asbell-Clarke, 2017).

Drawing all of this together, if as the evidence is demonstrating that computational thinking activities help learners develop critical transversal skills (e.g. creativity or critical thinking) and, that combined with digital literacy, this can enable students to become active, critical and creative users of digital technologies, then the DSS to 2027 must consider how and when these critical skills are to be introduced and developed for all, within the school system, to ensure a quality and inclusive education. Are these critical skills to be considered as discrete components for the purposes of ensuring teachers and school leaders develop understandings of digital literacy and computational thinking, so that these skills do not get swallowed up in the every growing number of skills that are required to be digitally competent (e.g. Data and information, Safety and privacy, Using and controlling, Communication/cooperation, Digital citizenship, etc.)? (See Figure 2)

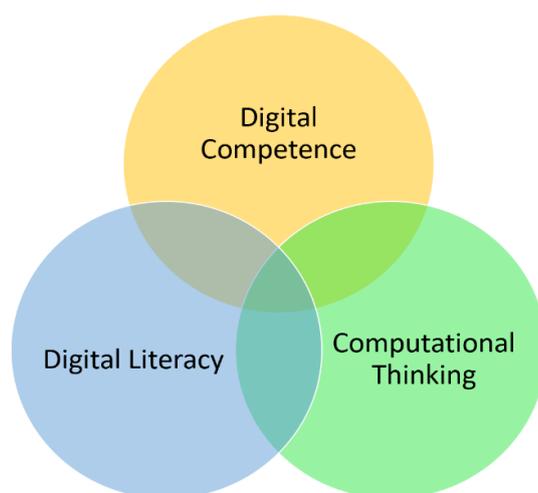


Figure 2: Being Digitally Competent

A significant development which may help frame discussions around what digital competence entails will be how the draft Primary Curriculum is understood and enacted in practice, as ***Being a digital learner*** is included as a key competence in the *Draft Primary Curriculum Framework* (NCCA, 2020). This could be a key opportunity for the DSS to 2027 to research and explore what is required to embed the development of digital competence across the school system. Although ‘digital competence’ is implied in the key competence of *Being a digital learner*, it is not yet defined in this context. It follows that the understanding of digital competence adopted is vital as it has implications as to how being a digital learner is interpreted in the framework. What is significant in how this competence, *being a digital learner* is framed in the *Draft Primary Curriculum Framework* (NCCA, 2020) is that the emphasis is on ‘being’, which is not static: it implies change and development and embodies the process of learning. The central tenet is that the focus is on the person, not on particular digital technologies. Consequently, the notion of digital competence should be considered as constantly evolving but what does need consistency is that there is alignment across the primary and post-primary sectors as to what is understood as “being digitally competent”.

3.4 Emerging technologies and education futures – key questions and challenges

Looking to the ‘near future’, that is the next five to ten years, there is a range of emerging and existing challenges that require consideration by policymakers as they prepare for the potential trajectories of emerging technologies and education futures. Challenges include those related to (i) disinformation, (ii) big data & artificial intelligence, (iii) inclusion, (iv) digital well-being, (v) gender gap in digital skills and (vi) the European Green Agenda.

3.4.1 Disinformation

Disinformation is an ongoing and growing concern in organised societies and an increasing problem across the EU (EC, 2020). Social media and new technologies have increased the scale and speed with which false or misleading information can reach its audiences, whether intended or unintended. As highlighted by the European Commission’s High-Level Expert Group on fake news and online disinformation (EC, 2018a), promoting digital literacy in initial teacher education, curricula reforms and with targeted educational interventions can help users navigate the digital

environment. Although the EU action plan against disinformation (EC, 2018a) is broadly on track, it continues to be outpaced by emerging threats (the hack of the HSE system in 2021 is one example). A special report by the European Court of Auditors (ECA, 2021) recommends greater coordination and accountability at EU level against disinformation, with a need for Member States to step up their involvement, for instance in the rapid alert system. It also recommends a need to improve the monitoring and accountability of online platforms as well as the need for a coherent EU media literacy strategy that includes combatting disinformation and taking steps to enable the European Digital Media Monitoring Observatory achieve its ambitious objectives. Currently, there is an EU group set up to examine the area of Disinformation²⁸ and its recommendations will prove useful for the next iterations of the DSS and the new national literacy, digital literacy, and numeracy strategy. It is imperative that digital literacy programmes that are developed for Irish schools should encompass the area of disinformation and how to tackle it.

3.4.2 Big Data and Artificial Intelligence

The continued adoption of artificial intelligence (AI) into mainstream education throughout the 2020s will initiate datafication on an unprecedented scale (Selwyn, 2019). Tackling the myriad of complex issues surrounding the use of data and artificial intelligence and how it relates to schools is accordingly becoming increasingly urgent. In doing so, there are many “moving parts” requiring attention and which will need the attention of the Department of Education alongside a concerted national effort at government level. There is also a need to be cognisant of what is happening in other jurisdictions across Europe and internationally. This report cannot address in detail the breadth of issues and concerns that need to be attended to; this will require a much more in-depth examination (similar to what is currently in progress for example in Finland). What is outlined here is a brief overview of some of the key issues that will need to be addressed at school level by teachers and school leaders.

It is claimed that digitally-enabled automation and AI are set to become the primary drivers of the next technological revolution (Smit et al., 2020). Indeed, the use of data and AI has filtered often unknowingly into many facets of our daily lives leading to many benefits for how we live including increased productivity. However, we do need to take stock and, adopting a socially responsible ethically informed perspective, carefully consider what are the socio-economic, legal and ethical impacts of transitioning (Annoni et al., 2018) to a society that leverages and is shaped by the use of AI. Besides the issues related to cybersecurity, safety, and data protection risks (Vuorikari et. al., 2020), the opaque decision making underpinning some of the AI processes and risks of gender-biased or other kinds of discrimination need to be tackled. Therefore,

As AI systems rapidly evolve, with applications in many different areas, there is a growing and pressing need not only for professionals but also for citizens to have basic understanding of AI to engage positively, critically and ethically with this increasingly pervasive technology. (ECA, 2020, p.56).

Well before the COVID-19-crisis, there had growing interest in developing resources to enable ordinary citizens engage with understanding some of the ideas in AI. For example, the online

²⁸ <https://ec.europa.eu/transparency/expert-groups-register/screen/expert-groups/consult?lang=en&groupID=3781>

course²⁹ published in 2018 by Reaktor and the University of Helsinki, enables citizens acquire basic understanding of AI. To date in excess of 750,000 have engaged with this course. Since the onset of the COVID-19 crisis and the unprecedented shift to online interactions, there has been a growing awareness of AI. However, given the data needed by AI systems to operate, it also comes with major risks connected to fundamental rights such as “the right to non-discrimination, including gender equality, as well as ethical, data protection and privacy concerns” (ECa, 2020, p56). The EU has been actively grappling with the potential and challenges these technologies have to offer. As part of the Digital Agenda for Europe³⁰, it is particularly proactive in advancing both policy and legislative proposals related to AI and the data flows that unpin this technology. The EU approach to artificial intelligence centres on excellence and trust, aiming to boost research and industrial capacity and ensure fundamental rights³¹. The Irish Government National AI Strategy ‘AI-Here for Good’ (GOI, 2021), echoes these sentiments and sets out how Ireland can be an international leader in using AI to benefit our economy and society. It aims to do so through a “people-centred, ethical approach to its development, adoption and use” (GOI, 2021, p.4).

Potentially, the impact of AI for education could be transformative. Currently, the most often AI in Education applications are in adaptive systems and personalisation, assessment and evaluation, intelligent tutoring systems and profiling and prediction (European Schoolnet, 2021). However, in general, education providers and policy-makers lack an overall vision and strategies on how to use technologies with regard to data (Nouri et al, 2019). For example, increasingly generating more data could be used to improve educational performance, personalised learning, reduce dropouts and increase the efficiency of teaching and learning provision (Williamson, 2017). However, when one considers that the educational technology sector is developing an ever-increasing number of products and tools that make use of data-driven solutions (Renz et al, 2020), which in many cases does not take into account data use and protection, ethics and privacy (Vuorikari et al., 2020), the entire situation in educational settings could become very murky.

Without having a wide range of pilot studies to inform decision making, it is difficult to make a judgement on how best to make use of predictive or learning analytics in education (Hilbig et al., 2019). This is further complicated by the lack of guidelines governing the ethical use of data in research or education. Therefore, it is imperative that the educational sector engage in the debate as to how data and AI can and is to be used. Moreover, in order to make informed decisions in relation to emerging technologies for teaching and learning, efforts are needed for more future-oriented, data-driven research and development in education. Such an approach “will help ensure that in the future digital technologies enhance teaching and learning in an effective and sustainable way, while addressing concerns related to data use and protection, privacy and ethics” (ECa, p.21).

There are a few key principles that should inform how data and AI can and should be used in educational contexts:

²⁹ Elements of AI - <https://www.elementsofai.com>

³⁰ <https://www.europarl.europa.eu/factsheets/en/sheet/64/digital-agenda-for-europe>

³¹ <https://digital-strategy.ec.europa.eu/en/policies/european-approach-artificial-intelligence>

- AI-driven education technology needs to be informed by pedagogy, with a focus on user-centred design, ensuring that teachers and students are empowered rather than marginalised by technology (Selwyn, 2019).
- Any educational application of AI needs careful consideration as to how, where and when human intervention and interpretation is needed (Vuorikari et al., 2020).

These principles have implications for how the AI education technology industry develop their solutions. They will need to work closely with educators to develop and test AI tools thus ensuring they are appropriate for use in educational contexts and are underpinned by appropriate learning principles along with solid pedagogical approaches and strategies. In addition, serious attention must be given to who collects, controls, selects, interprets and uses the data. This is of primary importance in the school context as the majority of young people may not have control over the data (Bradbury & Holmes, 2017). Of even more concern is that schools and teachers, or students and parents, may be providing such data without properly understanding the ramifications of disclosure (Manolev et al., 2019). This signals an urgent need to ensure an “increased awareness and understanding of AI at all levels of education in order to prepare citizens for informed decisions that will be increasingly affected by AI” (ECa, 2020, p.57). Developing these new skills for educators and learners is critical if they are to understand and question the applications and implications of AI and related data, particularly with the lens of a lifelong perspective.

The EU is currently attempting to address this specific skill gap in relation to AI and data, by developing guiding frameworks on knowledge, skills and attitudes related to AI for different ages and stages of education. For example, DigComp 2.2 revision started in January 2021 and is due to be finalised by the EU’s Joint Research Centre (JRC) in a new publication in early 2022. It will include a range of knowledge and skills relating to data literacy and AI³². In addition, the EU has set up an expert group to assist the Commission in preparing ethical guidelines in the field of AI and data in education and training³³.

To conclude, in addition to a bigger national legislative and governance piece in relation to the use of data and AI, the new DSS will need to plan for a two-pronged approach that will be needed to develop teachers understanding of:

1. the potential and challenges of the use of data and AI for teaching, learning and assessment.
2. the “big ideas” in AI so they can enable their students understand the key ideas underpinning AI so that they too in turn can make decisions and raise issues in relation to the use of data and AI.

Such an approach will ensure that education is not driven or determined by what may be described as “Efficiencies” – in other words, the data will not drive what is done in classrooms. The key

³² <https://ec.europa.eu/jrc/en/digcomp>

³³ https://ec.europa.eu/education/news/first-meeting-expert-group-on-artificial-intelligence-and-data-in-education-and-training_en

question that should be front and foremost in all educators' minds needs to be, "Do we really understand what is being measured and more importantly, why?"

3.4.3 Inclusion

While remote teaching was acknowledged as necessary and useful in circumstances it was regarded as secondary to in-person engagement, with huge concerns expressed about digital divide and equity. In particular, students with special educational and additional needs were impacted disproportionately by school closures so appropriate supports need to be put in place to enable schools to best meet the needs of these students in the future. The next iteration of the DSS needs more than ever to explore the potential of digital technologies to support inclusion across the system and build on the achievements to date of the National Council for Special Education (NCSE) and the PDST(TiE) to support teachers in the area of SEN within a variety of contexts and enhance the learning experience for students with SEN specifically. Inclusiveness and the provision of support for all learners needs to be an integral part of professional learning programmes for school leaders and teachers within the next DSS underpinned by the Universal Design for Learning (UDL) principles of multiple means of engagement, representation, action and expression.

3.4.4 Well-Being & digital technologies

As technology mediates more interactions, addressing well-being in digitally-enhanced environments has become increasingly more important (Roschelle 2020 as cited in CoSN). The prevalence of digital technologies has the potential both to assist with and to exacerbate student well-being. Many educators are seeing a greater need for consideration of student well-being given the learning and societal changes that occurred under the stress of the COVID-19 pandemic and remote learning (CoSN, 2020). In addition, concerns continue to be voiced in relation to the effects of technology on young people's well-being and the potential impact of 'screen time' on children's socio-emotional, cognitive and physical development. International trends are pointing to increased access to and use of technology by younger age groups, and, despite evidence on the topic being relatively sparse, attention is required on the possible links between technology use and children's development (EC, 2020)

To make informed decisions as to how we can encourage healthy, meaningful and relevant uses of digital technologies from an early age, systematic research that investigates a range of factors, including the type of technology used, usage times, and of course, its purpose, is required. This can then be used to inform evidence-based guidelines and effective practices for the use of digital technologies across a lifetime.

3.4.5 Gender gap in digital skills

There is a significant gender gap in digital skills. There are proportionally more men than women with at least basic digital skills and the difference increases with age and level of digital skills. At a young age, girls outperform boys in Information and Computer Literacy and in Science, Technology, Engineering and Mathematics (STEM), but the context changes as they progress through their educational and professional lives (EC, 2020).

Women constitute just over half of tertiary students (54%) and they are particularly underrepresented in the digital fields where men still account for more than 80% of the workforce. Despite large differences between countries, women on average hold only 17% of tech sector jobs, a

participation rate that occurs at all levels of the digital economy. The pace of change is not promising and the low share of women in AI (22%) indicates that, without intervention, the gap in Europe will widen (EC, 2020).

According to the OECD's Programme for International Student Assessment (PISA), boys and girls are almost equally likely to expect to work in a science-related field. However, data from Eurostat indicates that only one in three STEM graduates is female. In addition, it would appear that young women are more likely to choose careers in the biological sciences, social sciences, environmental sciences and medicine over the mathematically based sciences because they perceive the latter to be less people-oriented and to have less value to society. This gender pattern of career options really needs attention in order to understand what it is that is causing this stark difference in gender career options.

It seems that by the age of approximately of five or six , children have already begun to make decisions about what they do not want to do in terms of their career. Some of the factors that influence these decisions include the perceived gender-appropriateness of careers, social level of careers and accessibility (Davenport et al., 2020). These opinions relating to the suitability of a career based on one's gender, do have a significant impact on uptake of STEM subjects and subsequently pursuit of STEM careers later in life. Some other factors that seem to impact on female engagement with STEM throughout childhood and teenage years include:

- **Lack of Knowledge:** 59% of Irish female students feel they do not know enough about STEM (Mc Guire et al., 2020)
- **Parental Influence:** Females are 14% more likely to be influenced by parents than males (Accenture, 2017) which could lead to the perpetuation of negative stereotypes. This is further compounded when you consider that 68% of Irish parents feel poorly or moderately informed about the breadth of STEM careers available to their daughters (Accenture, 2014)
- **Lack of Role Models:** Parents and teachers (82% and 89%, respectively) agree that the science and technology sector lacks high profile female role models (Accenture, 2017)
- **Gender Stereotypes:** 29% of young people believe that STEM disciplines are more suited to boys' personalities and hobbies. This is further compounded when you consider that 50% of teachers believe that STEM subjects are geared towards males (Accenture, 2017)

Inherent biases and sociocultural norms appear to be limiting women's and girls' ability to benefit from the opportunities offered by the digital era. In addition, girls' lower enrolment in disciplines linked to the digital sector could lead to widening gaps and greater inequality. Addressing the underlying causes of gender disparities in the digital and STEM fields requires targeted interventions as early as possible in a child's life, to raise awareness and interest, tackle gender stereotypes, provide role models and, more generally, enable enhanced, safer and more affordable access to digital tools (EC, 2020).

3.4.6 European Green Agenda

A key goal of the European Green Deal³⁴ is to make Europe climate-neutral by 2050, 26 EU countries along with Norway and Iceland have committed to accelerate the use of green digital technologies

³⁴ https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en

for the benefit of the environment³⁵. Digital technologies are powerful enablers for the green economic transition, including moving to a circular economy and decarbonising energy, transport, construction, agriculture and all other industries and sectors. In parallel, it is important to reduce the climate and environmental footprint of digital products and facilitate a move towards sustainable behaviour in both development and use of digital products (EC, 2020). The new DSS should be committed to these aspirations.

3.5 Conclusion and Recommendations

To conclude, we draw together both parts of the report to make a set of recommendations to be considered for inclusion in the next iteration of the DSS. In doing so, we have reflected on the set of conclusions presented at the end of the first part of the report that served both to highlight the progress that has been made across the four themes of the DSS (2015-2020) (Teaching, Learning and Assessment using ICT; Teacher Professional Learning; Leadership, Research and Policy and ICT Infrastructure) as well as to identify a number of aspects of each theme that requires further attention and development. We have also considered the account of what is happening at European level and the ongoing concerns and emerging trends that was presented in the previous section of this report. In making our recommendations, we remain mindful of the need to focus on “long-term digital change in education which will require a combination of actions and policies to be effective” (EC, 2020, p.4). The importance of the effective translation of policy into practice and how the new strategy can support this is paramount.

3.5.1 System Alignment for Sustainable Planning

Any supports, and professional learning programmes for school leaders and teachers need to work towards understanding what everyone values and what their beliefs about learning are, as this directly impacts what technologies are valued and how they are used. Taking this approach will be the starting point to moving towards a consistency of vision across and between the various levels in the learning eco-system but will need to be supported with robust contextually and culturally relevant models of professional learning for teachers and school leaders.

3.5.2 Embedding the use of digital technologies in teaching, learning and assessment

The Schools Excellence Fund –Digital and STEM Cluster Schools has enabled creative and innovative ways of embedding digital technologies in learning, teaching and assessment with the evaluation report due in 2023. Results from this evaluation and the ERC’s longitudinal study of the implementation of the DLF should inform ongoing planning for the next DSS.

To date, the majority of schools (90%) have focused on the Teaching and Learning dimension of the DLF. Overall, the pattern of results suggests a greater focus at primary level on teaching and learning activities; while at post-primary level, the focus was on whole school approaches. Going forward, there also needs to be a greater focus on the Leadership and Management dimension supported by the development of professional learning programmes for school leaders.

With regard to the DLF there is a lack of understanding of what constitutes effective or highly effective practice and schools tend to use multiple and mainly informal approaches to assess the level of practice within a chosen domain. This points to a need for further guidance to promote a

³⁵ <https://digital-strategy.ec.europa.eu/en/news/eu-countries-commit-leading-green-digital-transformation>

more uniform understanding of levels of effective and highly effective practice for monitoring purposes.

There is also need for reporting on schools' DLPs to ensure the impact of the DLF is monitored and measured both to help inform future policy, and to allow for best practice to be identified, shared and supported.

Arising from the consultation, it is apparent that there is a lack of awareness among teachers and school leaders of the range of resources currently available. This needs to be addressed to ensure everyone can access all supports available for all things digital in respect of teaching, learning and assessment.

3.5.3 Teacher professional learning

One of the main recommendations is to invest substantial effort and resources into creating, and co-creating with teachers, a sufficiently detailed understanding of the meaning of “critical and purposeful use” of digital technologies for teaching, learning and assessment. This implies a broader approach to professional learning rather than simply ‘retooling’ teachers for specific tasks or enabling them to ‘fit’ digital technologies into their existing practices. Instead, it requires changing beliefs about digital technologies and challenging assumptions around the effective use of digital technologies in learning by articulating clearly what effective classroom practice looks like. Part of this ambition must ensure that the requirements of Céim relating to the development of digital skills as a core element of Initial Teacher Education programmes are fully adopted by all initial teacher education providers.

A well-funded coherent, flexible and sustainable model of professional learning for teachers, that will enable successful continued implementation of the DLF, specific to subjects, class levels, and teacher knowledge of how to meaningfully use digital technologies in their practice must be designed and developed. In particular, teacher professional learning programmes need to focus on student-centred, creative pedagogies, employ interdisciplinary approaches and project tasks to engage learners in real-world problem solving and how to create meaningful student-teacher connections using digital technologies.

3.5.4 Developing and Leading learning cultures – importance of school leader

Another key priority must be the development of a national structured, coherent, flexible sustainable model of professional learning; that ensures the relevant supports and resources (e.g. focused learning opportunities, time, accreditation, incentives, substitution cover) are available to all school leaders and teachers and that meets individual teacher and school needs. This will work towards the development of a learning culture that supports teachers and encourages them to work with others to critically and purposefully use a range of digital technologies for teaching, learning and assessment.

School leaders and teachers must be supported as they implement the DLF to leverage tools such as SELFIE³⁶, enabling them to contextualise and interpret the report and data that SELFIE will provide; then working with the school community, use this as some of the evidence base to work through the

³⁶ <https://education.ec.europa.eu/self-reflection-tools/schools-go-digital>

planning cycle outlined in the DLF in order to decide how best to embed the use of digital technologies in teaching, learning and assessment.

A support structure for school leaders must also be developed to empower them to design the process required for planning, developing and supporting the learning culture that is necessary to leverage the DLF to make effective use of digital technologies in learning, teaching and assessment. In addition, this support should enable staff to engage in a process to identify specific actions for changes in teaching, learning and assessment linked to School Self Evaluation and purposeful uses of digital technologies. It should also enable the identification of appropriate teacher professional learning to support these actions.

In addition to supporting the development of the digital infrastructure of schools there needs to be a parallel focus maintained on building digital literacy skills among educators and students.

Finally, the provision of a greater level of in-school support e.g. school-based educational technologists (experienced teachers and technology integration specialists) who support school leaders and teachers in school or a cluster of schools, is required. Different levels of support would be required depending on a school's size and context.

3.5.5 Infrastructure

As reliable broadband and equipment which teachers could rely on were identified as key enablers of positive attitudes towards the use of DTs, and technical support was identified as a barrier, further annual, targeted investment in infrastructure and connectivity, a more effective public procurement model, and a solution to the technical support issue needs to be identified and provided. In addition, consideration to the provision of different levels of funding to schools should be considered. This could depend on a school's context and also, how they can demonstrate the rationale for why funding/resources needs to be deployed for effective learning and assessment.

3.5.6 Digital Competence

The development of teachers' "digital competence" is a thorny issue that must be tackled. The development of teacher competence is vital to support the effective and pedagogical use of digital technologies in ways that ensure quality, equitable, inclusive education for all students. As part of this work, there is need to debate and define what is understood by "being digitally competent" and if there are particular components (e.g. digital literacy, computational thinking, data literacy) that need to be addressed separately to ensure competence is developed. Alongside this, digital competence frameworks for teachers and students across each level of the system with appropriate professional learning opportunities must be put in place to support such development. The development of digital competences should be embedded in curricula specifications and teachers' competence and understanding should also be developed so that they in turn can develop these competences in students.

3.5.7 Disinformation

The development of a coherent digital literacy strategy that includes combatting disinformation is a strong recommendation.

3.5.8 Big data/AI

The urgency of all educators understanding the “Big ideas in AI” and the importance of data literacy cannot be overstated. These crucial understandings need to be developed by all so they can “shape the world” they live in rather than being “controlled”, often unknowingly, as this could mark the downfall of democracy, as we know and value it, in our society. As AI systems rapidly evolve, there is a growing and pressing need for everyone to have basic understanding of AI to engage positively, critically and ethically with this increasingly pervasive technology, with major risks connected to fundamental rights such as the right to non-discrimination, including gender equality, as well as ethical, data protection and privacy concerns. To this end, there is need to develop teachers’ understanding of the potential and challenges of the use of data and AI for teaching, learning and assessment. They also need to develop their understanding of the “big ideas” in AI so they can enable their students understand the key ideas underpinning AI so that they too in turn can make decisions and raise issues in relation to the use of data and AI.

3.5.9 Inclusion

There is a critical need to explore the potential of digital technologies to support inclusion across the system and build on the achievements to date of the National Council for Special Education (NCSE) and the PDST(TiE) to support teachers in the area of SEN within a variety of contexts and enhance the learning experience for students with SEN specifically.

Inclusiveness and the provision of support for all learners needs to be an integral part of professional learning programmes for school leaders and teachers within the next DSS underpinned by the Universal Design for Learning (UDL) principles of multiple means of engagement, representation, action and expression.

3.5.10 Well-Being & digital technologies

To make informed decisions as to how we can encourage healthy, meaningful and relevant uses of digital technologies from an early age, there needs to be systematic research to investigate a range of factors, including the type of technology being used, usage times, and of course, its purpose. This can then be used to inform evidence-based guidelines and effective practices for the use of digital technologies across a lifetime.

3.5.11 Gender gap in digital skills

Addressing the underlying causes of gender disparities in the digital and STEM fields requires targeted interventions as early as possible in a child’s life, to raise awareness and interest, tackle gender stereotypes, provide role models to combat underrepresentation of women in STEM and particularly digital technology roles.

3.5.12 European Green Agenda

The DSS should take cognisance of the European Green agenda and strive to promote the reduction of the climate and environmental footprint of digital products as well as facilitate a move towards sustainable behaviour in both development and use of digital products

APPENDIX A

Digital Strategy Action Plans 2017-2020

An Implementation Advisory Group (IAG) was established in 2017 to guide the implementation of the Digital Strategy for Schools 2015-2020 and to drive forward reforms in how technology is used and taught in the classroom. Under the guidance of this Group, a Digital Strategy Action Plan was published annually from 2017 to 2020. Each plan outlined a number of actions and sub-actions to be implemented during the year by the Department, its agencies and others across government.

Timelines and lead responsibility were assigned, and progress was measured against the plan. The completion rates for each year 2017-2020 are shown in Table 1.

Year	Number of Actions	Delivered	Carried over
2017	120	113	7
2018	80	75	5
2019	52	47	5
2020	64	55	9

Table 1. Completion rates of actions by year

Each of the Action Plans were based on the objectives outlined in the DSS and was organised around the four themes of the strategy: (1) Teaching, Learning and Assessment using ICT, (2) Teacher Professional Learning, (3) Leadership, Research and Policy and (4) ICT Infrastructure. The key achievements for 2017-2020 are summarised below according to these four themes. Where appropriate, reference is made to other data sources to add further detail.

2.1.1. Theme 1. Teaching, Learning and Assessment using ICT

The Digital Learning Framework (DES, 2017)

One of the most significant accomplishments of the Digital Strategy for Schools (2015-2020) was the publication of the *Digital Learning Framework (DLF)* for primary and post-primary schools (DES 2017a; 2017b). Designed as a support to the DSS (DES, 2015), the DLF is an instrument to help educators to reflect on their current understanding/use of digital technologies in their practice and also to guide them on how to use digital technologies effectively to transform their teaching, learning and assessment practices. The DLF was adapted from the UNESCO ICT Competency Framework for Teaching (2008a, 2008b, 2011), DigComp Org (Carretero, 2017) and DigComp Edu (Redecker, 2017) for the Irish context and is intended to be used in tandem with the *Looking at Our Schools* school self-evaluation framework (DES, 2016a; DES, 2016b).

The DLF is articulated as a set of domains and standard statements across two dimensions: Teaching and Learning, and Leadership and Management. Each standard is illustrated by at least one example of effective and highly effective practice (Butler, Hallissy & Hurley, 2018). In using the DLF, schools are encouraged to engage in a process of reflection as part of the School Self-Evaluation Process (DES, 2012) that culminates in action, i.e. the creation of a Digital Learning (DL) Plan that outlines how they will enhance their existing digital learning practices over a defined period of time. A DE Circular (CL0077/2020) notes that schools must have a Digital Learning Plan updated at least annually.

The DLF was followed by *Digital Learning Planning Guidelines*³⁷ and a *Planning Template*³⁸ in December 2017, to help guide schools on the implementation of the DLF including the development of a Digital Learning Plan. This resource provides comprehensive guidance on how the DLF can support schools in developing a Digital Learning Plan. The guidelines can also be used to support whole school, subject department and individual teacher planning for embedding digital technologies in teaching and learning and in the day-to-day life of schools.

The DLF was trialed in a cohort of 50 schools during the 2017/2018 school year. An evaluation of the Framework, conducted by the Educational Research Institute (ERI) (Cosgrove et al., 2018a, 2018b) ran parallel to the trial. A review of the DL Framework was subsequently conducted to incorporate findings from the ERI Evaluation. Dissemination of the DLF to all schools commenced in September 2018. The dissemination was led by the national support service for teachers, the Professional Development Services for Teachers (PDST), and in particular its Technology in Education Team (PDST-TiE). In 2018/2019, 50% of primary and post primary schools attended the national seminars (i.e. 245 primary school seminars and 71 post primary school seminars, attended by 4,500 teachers). The seminars were for school leaders and coordinating teachers. An additional 39 primary and 15 post-primary seminars were provided in the latter half of 2019.

A range of other supports to support the development and implementation of Digital Learning Plans was developed by the PDST over 2018 and 2019. These included national face-to-face courses, workshops, online resources and courses including an interactive planning and support website³⁹, a suite of webinars, exemplars of effective and highly effective practices, videos, and direct school supports. In November 2019, Digital Communities of Practice (CoPs) were organised by the PDST to facilitate the sharing of practice and promote collaboration between schools on the use of the DLF.

The ERI was engaged by the Department to conduct a three-year longitudinal study of the implementation of the DLF. This commenced in early 2019 with a sample of 280 schools (150 primary, 100 post primary and 30 special schools). The Baseline report was published in 2019 (Cosgrove et al., 2019) followed by the Wave 1 report in 2021 (Feerick et al., 2021). A summary of the key findings of these reports is provided in Section 2.4.2

The inclusion of clear statements and objectives on the use of digital technologies in new curriculum specifications

Evidence demonstrates that, in order for digital technologies to be effectively used in teaching and learning at school level, its use has to be part of the school vision and must be supported by specific national policies and strategies (Law, 2013, Plomp et al., 2009; Shear et al., 2010; Shear et al., 2011). This is already occurring in Ireland where the use of digital technologies as an integral part of teaching, learning and assessment has been endorsed in all educational policies and plans for the past decade. Over the life span of the DSS, clear statements and objectives on the use of digital technologies have been included in all curricula development. The curriculum from early years to senior cycle offers multiple opportunities for the development of digital skills and digital literacy

³⁷ <https://www.pdsttechnologyineducation.ie/en/Planning/Digital-Learning-Planning-Guidelines.pdf>

³⁸ <https://www.pdsttechnologyineducation.ie/en/Planning/Digital-Learning-Plan-Template.docx>

³⁹ www.dlplanning.ie

through integration into the curriculum and the classroom. Additional explicit curricular provision is provided through digital skills-based curricular components.

Junior Cycle. The Framework for Junior Cycle (2015) includes a set of twenty-four Statements of Learning which are central to the student experience in junior cycle and schools must ensure that all Statements of Learning are offered to their junior cycle students. Statement 24 focuses explicitly on digital technology with the student using *‘technology and digital media tools to learn, communicate, work and think collaboratively and creatively in a responsible and ethical matter’*. This framework has framed curricular provision in schools during the lifetime of the Digital Strategy for Schools 2015-2020.

The Framework for Junior Cycle 2015⁴⁰ also sets out eight Key Skills which support student learning across the curriculum and for learning beyond school, similar to the key competences within the proposed primary curriculum⁴¹. These Key Skills are embedded in the learning outcomes within each junior cycle subject and short course and include a focus on the four ‘C’s of communication, collaboration, creativity and critical thinking. Each key skill includes a number of elements, with the development of digital skills featuring in each key skill. The Key Skills are developed on an ongoing basis through teaching, assessment and learning and students have opportunities to use these skills in their engagement with classroom-based assessments (CBAs) through conducting and analysing research, collaborating with others and presenting their work. These key skills are embedded into all subject specifications developed for junior cycle. Those developed over the lifetime of the DSS include Music, Home Economics, Geography, History, the four technology subjects (applied technology, engineering, graphics, wood technology) Religious Education, Classics and Jewish Studies.

CBAs in junior cycle offer opportunities for the use of digital technologies for collaboration, presentations and so on and also provide the basis for the development of digital media literacy skills in particular in relation to the safe, critical and ethical use of information found online. In addition, ePortfolios can form part of the student assessment process, further promoting the development of digital skills while the development of digital skills and digital literacy is also an aspect of the Level 1 and Level 2 Learning Programmes.

Finally, junior cycle provides students with opportunities to undertake specific digital short courses in both Digital Media Literacy and Coding. The Digital Media Literacy⁴² short course was developed to support students to use *‘digital technology, communication tools and the internet creatively, critically and safely in support of their development, learning and capacity to participate effectively in social and community life’* while the Coding⁴³ short course aims to *‘develop the student’s ability to formulate problems logically; to design, write and test code through the development of programs, apps, games, animations or websites; and, through their chosen learning activities, to learn about computer science’*.

⁴⁰ <https://ncca.ie/media/3249/framework-for-junior-cycle-2015-en.pdf>

⁴¹ <https://ncca.ie/media/4456/ncca-primary-curriculum-framework-2020.pdf>

⁴² <https://www.curriculumonline.ie/Junior-cycle/Short-Courses/Digital-Media-Literacy/>

⁴³ <https://www.curriculumonline.ie/Junior-cycle/Short-Courses/Coding/>

Senior Cycle. Post-junior cycle, students have an option to undertake different programmes. The current senior cycle curriculum supports the development of digital skills in a variety of ways across the four programmes offered.

Within Transition Year⁴⁴, schools have autonomy in the development of the yearly programme; however the development of digital skills should ‘*permeate the entire curriculum*’ with a focus on the development of a range of digital skills for work, study and social purposes. Since the launch of the Digital Strategy 2015-2020 significant emphasis has been placed on the use of ePortfolios for Transition Year supported by the PDST. The Leaving Cert Vocational Programme (LCVP)⁴⁵ has a strong vocational orientation and places a particular focus on developing digital skills relevant to the work of work and enterprise while within the Leaving Certificate Applied⁴⁶ programme (LCA) students develop digital skills through completing the different key assignments in their modules. More specifically, a module entitled ‘Introduction to Information and Communication Technology’ is part of the core curriculum. This module is intended to develop the students’ skills, knowledge, attitudes and understanding of Information and Communication Technology to enable them to use digital technology in both their current and future lives, in particular in the world of work. LCA students may also undertake an optional Information and Communication Technology Specialism which builds and expands on the skills, knowledge and attitudes developed in the mandatory module on the Introduction to Information and Communication Technology - again with a strong focus on the development of digital skills for the workplace. Both the introduction to ICT and the ICT vocational specialism were revised and redeveloped within the lifetime of the Digital Strategy 2015-2020 and introduced into schools in September 2021⁴⁷

Finally, recently developed subject specifications and those in development in the Leaving Certificate place an increased emphasis on the development of digital skills. As an example, Economics students have an opportunity to explore how technology impacts on the economy and also use technology to discuss, explain and communicate research findings and analyse data. Digital technology also forms part of assessment in a number of new subject specifications with 50% of the assessment component in the new Leaving Certificate PE specification involving the use of digital technologies to record student progress. Other subject specifications developed with increased emphasis on digital skills include: Art; Economics, Applied Mathematics, Physics, Chemistry and Biology, Classical Studies, Leaving Certificate languages (Chinese, Polish, Lithuanian and Portuguese). Finally, Computer Science was introduced as an optional subject in 2018. Forty schools participated in Phase 1, offering computer science to their fifth year students in September 2018 and again in September 2019. National rollout of the subject occurred in September 2020 with the subject being made available as an optional subject to all interested schools. While 65 schools indicated their interest to make the subject available in September 2020, approximately 140 schools are offering this subject for the school year 2021/22. Students studying Computer Science learn the fundamental principles

⁴⁴ https://ncca.ie/media/2512/ty_transition_year_school_guidelines.pdf

⁴⁵ https://curriculumonline.ie/getmedia/babdd7c7-96fb-443b-b2b9-bb21d7da63a4/SCSEC_Leaving_Cert_Vocational_programme.pdf

⁴⁶ https://ncca.ie/media/2554/lca_programme.pdf

⁴⁷ <https://www.curriculumonline.ie/Senior-cycle/LCA/Introduction-to-Information-and-Communications-Tec/>
[https://www.curriculumonline.ie/Senior-cycle/LCA/Information-and-Communications-Technology-\(Voc-Spe/](https://www.curriculumonline.ie/Senior-cycle/LCA/Information-and-Communications-Technology-(Voc-Spe/)

of algorithmic thinking and the creative design of computational artefacts. As part of this course the students must also understand the ethical and social role of computing technology in society.

Primary Developments. The revised primary language curriculum⁴⁸ (PLC) promotes digital literacy as an important aspect of children’s learning and aims to support children’s abilities to engage with technology to acquire, comprehend and communicate knowledge in a variety of contexts. A key aspect of the revised curriculum is the development of digital literacy and the child’s ability to locate, select and critically analyse relevant information in multiple modes to include text, visual and audio. It also promotes the capacity of children to engage with digital technology in creative and imaginative ways and to source, critique and manage information as engaged thinkers and active learners. The PLC is supported by an online teacher toolkit which provides examples of children’s learning involving digital technology, as well as support materials for teachers supporting digital literacy.

Research commissioned⁴⁹ (Dooley et al., 2014; Dunphy et al., 2014) to support the development of the new primary mathematics curriculum highlights the increasing role technology can play in expressing mathematics understanding and thinking and enhancing learning opportunities for children. Specifically, it points to the potential technology affords in bringing real-world applications to life in the classroom, helping to deepen mathematical understanding and connect mathematical learning to the real world. Such findings will be reflected in the new curriculum, accompanying support materials and examples of children’s learning. Furthermore, the approaches associated with computational thinking will be implicitly embedded in the curriculum, with strong synergy evident between them and the mathematical processes, which are integral components to the curriculum.

The *Primary School Curriculum* (DES, 1999) is currently being reviewed and redeveloped and, most recently, a set of proposals related to digital technology have been incorporated in the *draft Primary Curriculum Framework*⁵⁰. The draft framework presents the vision, principles and key competences of the primary curriculum including areas and subjects. The framework includes ‘being a digital learner’ as one of seven key competences to be embedded across all curriculum areas and subjects from junior infants to sixth class. The competence of being a digital learner seeks to support children to become curious, creative, confident, and critical users of digital technology while also fostering children’s ability to collaborate and thrive in a world increasingly immersed in technology. The intention is to empower children to be active digital citizens and to develop their responsible, safe and ethical use of technology thus enabling children to critically engage and contribute to a digitally connected and interdependent world.

While the framework outlines ‘being a digital learner’ as one of seven key competences, it also includes digital technology as an integrated subject within the curriculum area of Science, Technology and Mathematics. Further research and development of digital technology as a curriculum area is ongoing and subject to the findings of the draft primary curriculum consultation process ending in February 2022. Future curriculum developments in this area will also be informed

⁴⁸ <https://www.curriculumonline.ie/Primary/Curriculum-Areas/Primary-Language/>

⁴⁹ https://ncca.ie/media/1494/maths_in_ecp_education_theories_progression_researchreport_17.pdf
https://ncca.ie/media/2147/ncca_research_report_18.pdf

⁵⁰ <https://ncca.ie/en/primary/primary-developments/consultation-on-the-draft-primary-curriculum-framework/>

by an investigation of coding which was carried out by NCCA in 2017-2019⁵¹. The draft framework also proposes a set of principles, one of which is ‘transitions and continuity’ recognising that children have experiences with digital technology in early childhood education as part of *Aistear: the Early Childhood Curriculum Framework* and in the *Framework for Junior Cycle*.

Assessment

The use of digital technologies for the purposes of assessment is also promoted in the DSS. Among the recommendations are the use of technology-supported assessment and the use of e-portfolios.

ePortfolios. Prior to the publication of the DSS, the DES had already begun to explore the use of ePortfolios through the European funded EUfolio project (2013-2015). The implementation phase of the DSS sought to further extend their use as a way that teachers and students can gather and record evidence, and reflect on ongoing learning throughout their career by collating this evidence in an ePortfolio (DES, 2015). This has taken place mainly at post-primary level and to a lesser extent at primary level. Examples include:

- 2015-2019. PDST’s ePortfolio evaluation project “Formative Assessment using ePortfolios”. The initiative focuses on students taking the Leaving Certificate Applied (LCA) and Leaving Certificate Vocational Programme (LCVP). 165 schools have taken part in the initiative since 2015 (120 in Phase 1-3 and it was extended to further cohort of 45 schools in 2019)
- The “PDST/GAA Future Leaders Transition Year (TY) Programme”. A partnership between the GAA and the PDST, it was designed to harness the use of ePortfolios as a tool to enhance teachers’ formative assessment practices. 330 schools registered in the 2019/2020 school year to participate in this programme which involved approximately 25,000 students and 1,300 teachers. 12,089 Transition Years registered in 2020-21 across 360 schools
- An online post-primary digital portfolio course was developed in 2019 by the PDST and was made available in the latter part of 2019 to all schools. 248 participants have enrolled to date; with 42 schools registering for the 2020-21 Programme
- A supporting webinar for post-primary schools on how teachers can engage in formative assessment through the use of digital portfolios was developed in 2019 for broadcast in 2020. 183 teachers attended the live webinar
- At Junior Cycle, ePortfolios can form part of the student assessment process

At primary level, an online digital portfolios course for primary level was developed by the PDST and is available on www.TeacherCPD.ie. The course was made available in the latter part of 2019 to teachers and there are currently 362 registrations. In addition, a digital portfolio initiative, also supported by the PDST commenced in 2019 and involves 24 schools (12 in Dublin and 12 in Cork).

Access to Open Educational Content: Digital Content & Scoilnet

The DSS continued the promotion of Scoilnet⁵² as the national reference point for schools for high-quality digital content. Since 2017, the range and quality of resources on Scoilnet has continued to grow. There are currently in excess 23,000 curriculum tagged teaching and learning resources available through Scoilnet including subject resources, lesson plans, video/audio, quizzes, games and

⁵¹ <https://www.ncca.ie/en/primary/primary-developments/coding-in-primary-schools>.

⁵² www.scoilnet.ie

other multimedia. In addition to curating resources themselves, the Scoilnet team has partnered with a range of national and international agencies to make high quality, authentic and relevant resources available to teachers and students.

- To support the delivery of the STEM Education Policy Statement and Implementation Plan, a dedicated STEM section was created within Scoilnet⁵³. At the end of 2020, there were 3,510 post-primary and 3,420 primary STEM resources tagged on Scoilnet. Scoilnet also ‘promotes’ STEM-related competitions through a fortnightly e-newsletter and through social media.
- At primary level, Scoilnet collaborated with a number of science researchers in UCD to create Jelly Labs⁵⁴. Its aim is to bring real world science from Irish universities into Irish classrooms and to help pupils engage with the process of understanding the world through the scientific process.
- A dedicated section of resources made available during Science Week 2019 to explore the areas of climate change⁵⁵.
- SEAI, Eureka UCC, UCD Maths Support Centre, UCD medicine, NUIG microbiology, Science on Stage and CÚRAM are actively sharing resources on Scoilnet. Most of these resources are tagged for post-primary for the Junior Cycle (JC) and Senior Cycle (SC) curriculums but some may also be used for TY at the teacher’s discretion.
- A dedicated satellite website⁵⁵ to support the roll out of the new Computer Science subject for Leaving Certificate has also been developed. This website was further enhanced to cover Junior Cycle coding and contains 509 curriculum tagged resources.
- During 2019 there was a complete re-vamp of resources offered for Agricultural Science and Economics to bring them in line with the revised specifications offered to students in September. Both subjects have specific ‘collections’ available on the site⁵⁶
- Scoilnet provides support for the eHub Physics pilot initiative which sees LC Physics through Irish being offered to students in schools where Physics is not taught. Scoilnet has licensed specific animations to support the subject and has translated all into Irish⁵⁷.
- The PDST-Technology in Education Team collaborated with Quinnipiac University in the USA to create curriculum-tagged digital resources to support the acclaimed art collection that exhibited in Dublin, Skibbereen and Derry. The exhibition, curated and owned by the American university, featured over 40 pieces of art associated with the Great Famine
- Other material is also made available through the Scoilnet portal and includes:
 - World Book Online
 - OSi Maps
 - EduMedia Interactive Simulations (a series of Physics simulations)
 - Irish Newspaper Archive – an archive of over 70 national and regional newspapers
 - Irish Times Archive

⁵³ <https://www.scoilnet.ie/stem/>

⁵⁴ [scoilnet.ie/go-to-primary/theme-pages/science/jellylab/](https://www.scoilnet.ie/go-to-primary/theme-pages/science/jellylab/)

⁵⁵ www.compsci.ie

⁵⁶ [scoilnet.ie/pdst/economics/](https://www.scoilnet.ie/pdst/economics/) and [scoilnet.ie/pdst/agscience/](https://www.scoilnet.ie/pdst/agscience/) .

⁵⁷ <https://www.scoilnet.ie/ga/iar-bhunscoil/collections/senior-cycle/physics/egage/light/>.

- Dictionary of Irish Biography

Statistics between 2017 and 2021 show a significant increase across measurable data. The number of resources added remains constant at between 2,100 and 2,200 until 2019. Not surprisingly, this has increased in 2020 and 2021 when there were two periods of school closure and remote learning.

Scoilnet	2017	2018	2019	2020
Page views	1.5m	2.03m	2.67m	3.72m
Resources clicked	366,365	580,700	731,464	1,010,903
Resources added	2,166	2,119	2,217	3,301
Sessions (a period of time user is engaged with the website)	396,295	587,661	82,2931	1,147,910

Table 2. Scoilnet key statistics

Use of digital technologies to support inclusion

The DSS stresses the potential of digital technologies to support inclusion across the system. The National Council for Special Education (NCSE) and the PDST(TiE) focus on the use of digital technologies for inclusion as part of their work with schools and teachers.

National Council for Special Education (NCSE): The NCSE fulfils a number of roles in relation to the use of digital technologies to support learners with SEN needs:

- Digital Technology in Teaching, Learning and Assessment – provide professional learning, advice and guidance to teachers on digital technologies relevant to teaching, learning and assessment in the context of students with special educational needs. Special School support visits are provided by members of the Digital Learning Team – these relate specifically to supporting schools with embedding *Digital Learning* in their school and on average there are two applications per month for support from special schools. There were 18 applications for school support visits relating to digital technology & special education needs in the 2019/2020 academic year (Primary -15 applications, Post-Primary - 2 applications, Special School -1 application). In addition, the NCSE provided four different seminars related to Digital Technology from September to December in the 2019/2020 academic year.

Title	Number of seminars	Number of Teachers
Dyslexia and iPad (Primary)	8	106
Autism and Apps (P + PP)	4	66
Assistive Technology – Read & Write Gold	5	59
Dyslexia – Freeware for Windows	4	43
Total	21	274

Table 3. Seminars provided by the NCSE in 2019/2020. These are hands on practical seminars and cater for 12 teachers at the time.

In addition, five webinars were made available:

- Assistive Technology for Students with Dyslexia - TextHELP 'ReadWriteGold', Primary & Post-Primary
- Assistive Technology: Using Dragon Voice Recognition to Support Students with Specific Learning Disabilities, Primary & Post-Primary
- Assistive Technology (AT) for Students with Dyslexia - Freeware for Windows
- Supporting Students with Dyslexia through the use of APPS (iPad only), Primary
- Supporting Students with Autism through the use of Apps (iPad only), Primary & Post-Primary

Finally the NCSE, have created a 'Digital Strategy'⁵⁸ page on the NCSE website at

- Assistive Technology (AT) – The NCSE also provides advice and guidance on use of assistive technologies (AT). This includes AT for Deaf/HH, Blind/VI, augmentative and alternative communication (ACC) as well as AT for students with dyslexia or with physical disability. The NCSE links SENOs and the VTs re applications for AT, and also liaises with the Special Education Section at the DE as well as with external bodies including NCBI, CHIME, CI Unit Beaumont Hospital, Childvision, Enable Ireland etc. Visiting Teachers (Deaf/HH and Blind/VI) continue to provide advice and support in relation to AT to students, teachers and parents. Visiting Teachers (Deaf/HH and Blind/VI) provide advice and support in relation to AT to students, teachers and parents. Demonstration AT workshops have been facilitated by Visiting Teachers VI and Humanware to students, parents and teachers online since Feb 2020
- Case Studies - The NCSE / DFL team are incorporating into their five cases studies 'how the teacher/school used the Digital Learning Framework when planning or confirming their rationale to engage with a particular digital tool or a digital way of working.'
 - Using Technology for better Communication within the School Community
 - Using technology for communication with home for students who are either non-verbal or have significant communication difficulties
 - Using AT with students who are Deaf / Hard of Hearing
 - Using AT with students who are Blind / Visually Impaired students
 - Using AT with students who have Severe to Profound General Learning Disability GLD

PDST (TIE) advisors regularly support teachers in the area of SEN within a variety of contexts (e.g. in special schools, mainstream schools, units within schools and hospital schools) to explore digital technologies to support and enhance the learning experience for pupils with SEN specifically. Inclusiveness and the provision of support for all learners is also an integral part of all summer courses provided by the TiE team. Here accessibility features are commonly explored, as well as digital content creation tools and ways to engage and challenge pupils from the perspective of all levels of achievement. The Universal Design for Learning (UDL) principles of multiple means of engagement, representation and action/ expression are embedded into the professional learning opportunities provided for teachers. This is to enable teachers understand how digital technologies

⁵⁸ <https://www.sess.ie/resources/digital-strategy-schools-2015-2020>

enable an inclusive approach to teaching and learning. Since March 2020, a series of short instructional videos have been created to support teachers in using various different digital tools which can be used to engage in multimodal approaches to teaching, learning and assessment. The free courses provided for teachers on TeacherCPD.ie also highlight the variety of ways in which digital technologies can be used to support all learners. These courses are accessed by teachers who support SEN in mainstream settings and teachers from special schools alike.

The PDST (TiE) collaborated with colleagues in the NCSE in the design of DLF seminars for special schools and have continued to collaborate in order to support schools (especially special schools) in embedding the DLF in leadership, whole-school planning and school self-evaluation, and provide support visits on request. It is planned to collaboratively design a summer course on the use of digital technologies to support inclusive education.

2.1.2. Theme 2: Teacher Professional Learning

Acknowledging the need for teachers to have access to professional development on an ongoing basis throughout their career, the DSS aimed to provide all teachers with a range of opportunities and supports to assist them to embed digital technologies into their practice (DSS, p.28). To ensure that all teachers are equipped with the necessary skills to effectively use digital technologies in their practice, a key priority of the DSS was to enhance access to and impact of TPL for teachers through extending TPL delivery formats to include online and blended learning programmes. It is also noted that the DLF is positioned as a key resource to enable school leaders and teachers to identify, and plan to address, their continuous professional learning needs in the area of digital technologies and enable them to take ownership of their own development and improvements in this area.

The PDST (TiE) Team, together with its ICT Team of Advisors, continue to design, develop and deliver a comprehensive range of online, blended and face to face learning programmes using the following approaches:

- Direct school support (focus on sustained support)
- Seminars and workshops (national and regional based face-to face courses and workshops)
- Webinars/Good practice videos (5 delivered in 2020)
- Online courses and supports (20,398 teacher interactions in 2020)
- Dedicated websites including the overarching www.pdsttechnologyinedcation.ie/en/ and its satellite websites such as www.dlplanning.ie, www.webwise.ie, www.teacherCPD.ie
- Clustering model of CPD including the Schools Excellence Fund (Digital) (39 clusters supported, primary, post-primary and cross-sectoral)
- Teacher collaboration and Digital Communities of Practice (DigCOP)- 22 Primary, 13 Post-Primary supported)

Engagement with teacher professional learning has increased; there were over 100,000 interactions with teachers between 2017 and 2019 with an increase in the total number of interactions each year (Table 4). Of note is the increase in the number of interactions in Teacher Summer courses. There was a 32% increase in interaction between 2017 and 2018 with the highest increase in the number of interactions online. This increase was maintained in 2019. and not surprisingly, increased significantly in 2020. The range of interactions also increased as support for the implementation of the DL Framework and Schools Excellence Fund (SEF) cluster projects was provided in 2018 and 2019

and increased direct school support in 2019. The number of interactions reported appear to indicate a sustained and increasing interest by teachers in the area of professional learning in the educational uses of digital technologies (c.f. Table 4 and 5).

Embedding ICT in Teaching, Learning and Assessment					
Focus of TPL	No. of teacher interactions				
	2017	2018	2019	2020	Total
Local and national courses (offered through the Education Centre network)	4,726	3,266	1,211	198	9,401
PDST TiE Funded Courses in Collaboration with ESCI				12,028	12,028
Term Time Online Courses	5,023	2,352	2,650	6,433	16,458
Online Summer Courses (5 Days)	2,868	14,565	13,220	13,965	44,618
Face to face summer course (5 Days)	14,625	11,260	12,300	0	38,185
Digital Learning Framework and Digital Strategy Awareness Raising Seminars		2,032	3,012	21	5,065
School Support	4,000	3,416	5,523	6,349	19,288
SEF Digital clusters and Digital CoP clusters			919	437	1,356
Total	31,242	36,891	38,835	39,431	146,399
	<p>* the units provided are the number of interactions a teacher support service has with teachers. Interactions range from a two hour session in a local education centre to a suite of sessions on a particular issue or in the case of college based events a full post graduate course. The actual number of teachers is not recorded in these figures.</p>				

Table 4. Teacher professional Learning in the area of digital technologies for 2017-2020

Embedding Digital Technologies in Teaching, Learning and Assessment (August 2020 – June 2021)				
Focus of CPD		Term	No. of teacher CPD interactions	No of Online Events
Term Time online courses	Primary	Term 1, 2 & 3	595	12
	Post-Primary	Term 1, 2 & 3	931	12
	Cross-Sectoral	Term 1, 2 & 3	379	7
E-tutor training online	Primary	Term 2 & 3	211	12
Tutor training online capacity building	Primary	Term 2 & 3	132	3
	Post-Primary	Term 2	68	2
Primary Drop-in clinics during school closures	Primary	Term 2	101	22
	Post-Primary	Term 2	54	10
Online Digital Technology Summer Courses (2,622 participants x 5 days)	Primary	Term 3	13,110	3 online courses
Term-Time Online Courses	Term 1,2 & 3	73	379	7
Face-to-Face Support for SEF clusters and Dig Cop Clusters	Cross-Sectoral			15
PDST Hosted Webinars in conjunction with ESCI	Cross-Sectoral	Term 2 & 3	862	8
TIE funded webinars with ESCI to embed digital technologies	Cross-Sectoral	Term 2 & 3	2,862	176

Table 5. Teacher professional Learning in the area of digital technologies from Aug. 2020-to June 2021

Over the lifespan of the DSS, the DE engaged with both the Teaching Council and the ITE providers to ensure that pre-service teachers acquire the skills, knowledge and confidence to use digital technologies to support teaching and learning. In 2018, the DES together with the Teaching Council, hosted a Digital Strategy Awareness Raising Event for ITE Providers. Following this event, a consultative group, comprising of representatives from the ITEs and from the IAG was established and in 2019, the group produced a Guiding Framework for Teacher Educators relating to the use of digital technologies in initial teacher education. This Framework was circulated to the Teaching Council and to the ITE Providers. *Céim: Standards for Initial Teacher Education*, published by the Teaching Council in 2020 has signalled the development of Digital Skills as a core element of ITE programmes. It states that all programmes should include “the use of digital technologies to support teaching, learning and assessment for all learners; the integration of digital skills across the

programme including opportunities for student teachers to explore new and emerging technologies” (TC, 2020, p.14) and that by the end of a programme, all student teachers will be able to: “employ relevant technical knowledge and skills of a range of digital technologies including multi-media resources, effectively to facilitate teaching and assessment practices and to aid pupil learning” (TC, 2020, p.23).

The National Induction Programme (Droichead) continues to provide guidance on the effective use of digital technologies in teaching, learning and assessment although there is no further detail available on the nature of this advice.

In other areas of Higher Education, the National Forum for the Enhancement of Teaching and Learning published a guide to Developing Enabling Policies for Digital Teaching and Learning in Higher Education in June 2018. Compact agreements between the HEIs and Higher Education Authority (HEA) to give effect to the 2018-2020 Systems Performance Framework (SPF) were finalised in 2018/2019. Objective 5 of the SPF relates to consistent improvement in the quality of the learning environment which includes policies on digital teaching and learning. (Objective 2.1)

2.1.3 Theme 3: Leadership Research and Policy

The actions under this theme included the establishment of structures to provide oversight of and guidance on the implementation of the DSS, the development of proposals to encourage innovation in schools and initiatives to promote internet safety. It included the development of the Schools Excellence Fund Digital, to further promote responsible and ethical use of the internet and related technologies and to enhance ICT capacity and awareness in the education system in partnership with industry.

- An implementation group was established to oversee and regularly review the Strategy
- There was regular engagement between the implementation group and project leaders of complementary digital learning initiatives in Further Education and Higher Education
- Engagement with Industry and Education Stakeholders. This Action has been subsumed in to the STEM Education Policy Statement and Implementation Plan. A Department of Education and Skills, Department of Business, Enterprise and Innovation, and Industry sub-group has been established to guide implementation of this action. A Framework has been developed to provide the basis for schools, both primary and post-primary, to form quality, inclusive and relevant educational linkages with business and Industry improving the STEM and digital learning experience for all students⁵⁹. In addition, the Leaving Certificate Computer Science (LCCS) Support Framework⁶⁰ has been established to support the national rollout computer science to post-primary schools. The framework brings together a collaboration of representatives from all of the key stakeholders with the intention of developing and implementing a range of measures designed to allow the subject to develop and prosper.

⁵⁹ <https://www.gov.ie/en/publication/756dd-stem-partnerships/>

⁶⁰ <https://www.gov.ie/en/publication/5986e-leaving-certificate-computer-science-framework-2020/>

- Schools Excellence Fund –Digital and STEM. A three-year School Excellence Fund (Digital and STEM) Programme was specifically developed to promote a culture of innovation in schools was launched in 2018. Some 42 clusters, comprising circa 230 schools were selected to implement projects developed by themselves and supported by €1m funding, together with significant CPD support from the PDST. The range of activities in these projects include, robotics, coding, the use of digital portfolios, STEM projects and involve primary and post-primary schools working together in collaboration. Some third level colleges and industry are also involved in some of the projects. A show case event of the work of the cluster groups took place in Athlone Institute of Technology in May 2019. The event was attended by representatives from 32 of the 41 clusters with some 140 teachers and a 110 children present.
- The work of Webwise61 , the Irish Internet Safety Awareness Centre, has expanded significantly since 2017. There were 1.2m visits to webwise.ie during 2020 representing almost a 60% increase in traffic since 2017 (Table 6). Webwise expanded its range of activities over the period, including the development of online hubs for young people, parents and teachers (Webwise Youth Hub, Webwise Parents Online Hub, Webwise Teachers Online Hub). Targeted to the specific audience, each of the hubs provides details of ongoing youth work and campaigns as well as practical information, advice and support on a range of topics including cyberbullying, sexting, social media, screen time, online pornography. distributing just over 28,000 resources to schools and organisations around Ireland over the past year. Online, the primary programme; HTML Heroes received over 32,000 visits during this period.
- In addition, the Webwise team has continued to promote Safer Internet Day (SID) amongst schools, parents and children and young people. Over 140,000 young people signed up for safer internet day 2019 and over 180,000 in 2020 (representing a 37% increase in participation in 2019 and a further 28% increase in 2020).
- In 2020 over 100 second-level students participated in the SID Ambassador programme promoting online safety in their schools, clubs and communities. The first SID Awards Scheme was launched in 2019 and continued in 2020 celebrating the varied, and creative ways, that young people take positive action to address internet safety topics. Over 1,200 entries were received for the 2019 Awards.

WEBWISE	2017	2018	2019	2020	% difference (2017-2020)
Total Web Visits	695,401	905,606	1,157,285	1,253,021	+80%
Total Users	618,529	904,249	1,163,962	1,244,166	+101%
Total Page Views	921,632	1,395,726	1,889,928	1,946,052	+111%

Table 6. Traffic to Webwise by year

- DES issued a circular in May 2018 requiring schools to consult with parents, students and teachers on if and how smart phones and other digital devices should be used in schools

⁶¹ <https://www.webwise.ie/welcome-to-webwise/us/>

- The Educational Research Centre (ERC) was engaged by the Department to conduct a three-year longitudinal study of the implementation of the DLF. This commenced in early 2019 with a sample of 280 schools (150 primary, 100 post primary and 30 special schools). The Baseline report was published in (Cosgrove et al., 2019) followed by the Wave 1 report in 2021 (Feerick et al., 2021).

2.1.4 Theme 4. ICT Infrastructure

Among the key priorities of the implementation phase of the DSS was to provide funding for School ICT Infrastructure through the development of an ICT Equipment grant, to continue to improve broadband services to schools, especially at primary level, to explore and recommend technical support solutions for schools and that advice was made available to schools in relation to procurement.

ICT Infrastructure Grants. ICT infrastructure grants totalling €210m were issued to 3,381 schools to support the implementation of the Digital Strategy over the five-year period of the DSS beginning in the school year 2016/2017. Under the scheme, schools were expected to draw up a Digital Learning Plan using a whole school approach, which was guided by the DLF. In addition, the DE continued to work with the Office of Government Procurement (OGP), the Schools Procurement Unit, and relevant stakeholders including Education and Training Boards Ireland (ETBI) to ensure that appropriate frameworks were in place to facilitate schools in the procurement and purchase of ICT equipment.

Schools Broadband Programme. Through the Schools Broadband Programme, connectivity and associated services, are provided to recognised primary and post-primary schools at an annual cost of some €13m to the Department of Education. Between 2012 and 2015 in collaboration with the Department of Environment, Climate and Communications, post-primary schools were provided with 100 Mbp/s connectivity as standard. During the implementation phase of the DSS, an upgrade programme was undertaken for post-primary schools in the Schools Broadband Programme. Schools with a demonstrated requirement for higher speed connections, evidenced through usage reports, were provided with connectivity in excess of 200 Mbp/s up to 500Mbp/s. In addition, the DE has been upgrading services as commercial provision becomes available, with over half of all primary schools now on 100 Mbp/s or greater connectivity. The DE continues to work with the Department of Environment, Climate and Communications on the implementation of the National Broadband Intervention Area plan and this will see 679 primary schools provided with high speed connectivity by early 2023. For schools outside the intervention area and where commercial provision is not sufficient, funding has been secured through Ireland’s National Recovery and Resilience Plan (supported by NextGenerationEU which is the European Union’s response to the global pandemic) for an upgrade project to provide them with high speed connectivity. This project is now underway.

Technical Support. In 2018, a working group was set up to review options for the provision of ICT technical support in schools and to make recommendations on how best to provide technical support. The Group identified solutions with the intention of carrying out consultation with relevant stakeholders. However, this plan was stalled due to the disruptions caused by the COVID-19 pandemic and it was determined that the consultation process for the new Digital Strategy would provide information in relation to technical support requirements. In the interim, a range of

technical advice, material and guidance on a range of issues such as Cloud based Tools/Applications; Webhosting/Blogs; Computing Devices/Tablets/BOYD; Network/Wireless Networking; IT security and Technical Support has been made available to schools on the PDST website. Schools can also refer specific IT related queries to the PDST through a dedicated email address⁶².

Conclusion

The set of Actions Plans serve to document the wide range of work that has been completed over the lifespan of the DSS.

Notable achievements include:

- the development and rollout of the DLF, the planning guidelines and supporting resources along with the leadership of the PDST (TiE). Engagement of the ERC to conduct a three-year longitudinal study of the implementation of the DLF
- the inclusion of the development of Digital Skills as a core element of ITE programmes has signalled the development of Digital Skills as an essential element of all ITE programmes.
- Computer science was introduced as a Leaving Certificate Subject in September 2020 with approximately, 140 schools currently offering it as a Leaving certificate subject
- Schools Excellence Fund – Digital and STEM Cluster Schools has enabled creative and innovative ways of embedding digital technologies in learning, teaching and assessment
- ICT infrastructure grants totaling €210m were issued to 3,381 schools to support the implementation of the Digital Strategy over the five-year period of the DSS beginning in the school year 2016/2017.

Main issues from the reports to be considered in the next Digital Strategy for Schools:

- While there is greater coherence/alignment across the system the inclusion of clear statements and objectives on the use of digital technologies, consideration of how to embed the development of digital learning competences in curricula specifications must now be addressed
- Digitally supported assessment of and for learning needs development
- A coherent, flexible sustainable model of teacher professional learning across the continuum that meets individual teacher and school needs is urgently required
- School Leadership need to be supported to enable effective school planning combining school self-evaluation priorities and actions in tandem with the DLF
- Provision of equitable access to broadband particularly in primary schools in tandem with effective and timely technical support is a necessary to counteract existing inequities.

⁶² <https://www.pdsttechnologyineducation.ie/en/Technology/>

APPENDIX B

2.2 Research Evidence – Implementation in Schools

In addition to the Action Plans compiled annually by the DE, there are a number of research reports which document digital learning in schools. These include reports completed by the DE Inspectorate (DE, 2020) and the Educational Research Centre⁶³ as well as the literature which documents the experiences of schools in Ireland during the school closures brought about by the COVID-19 pandemic.

Digital Learning 2020: Reporting on practice in Early Learning and Care, Primary and Post-Primary Contexts (DE, 2020)

The 2020 Inspectorate report “Digital Learning 2020: Reporting on practice in Early Learning and Care, Primary and Post-Primary Contexts” provides a snapshot of digital learning in Irish early learning and care (ELC) settings, primary and post-primary schools. The report presents the findings of an evaluation of digital learning, conducted by the Inspectorate of the Department of Education and Skills, during the period January to December 2019. Specifically, it examines how effectively digital technologies are integrated into teaching, learning and assessment and how well schools and ELC settings are planning for the use of digital technologies. Data was gathered through observations of lessons taught and through discussion with school leaders. Inspectors assigned quality ratings to the data using the Inspectorate’s quality continuum for primary and post-primary schools. These ratings were then aggregated into two ratings: Satisfactory or better, and Less than satisfactory.

The inspectors found that digital learning was part of the lesson in 55% of lessons observed in primary schools and in 62% in post-primary schools and that in most of these lessons, they were used by teachers to creatively engage learners. However, it was observed that in some lessons, digital technologies were only used by teachers and not by learners. The level of collaboration with other learners in the use of digital technologies was encouraging in post-primary schools with almost 68% of lessons having learner collaboration. However, in primary schools, the level of collaboration with other learners was significantly lower, with just 41% of lessons having learner collaboration. The creation of new knowledge and digital artefacts was not a well-established practice in either primary or post-primary schools. In discussions with teachers and leaders, inspectors learned that this is an aspect of digital learning that many schools are finding challenging. Moreover, inspectors reported that where digital technologies were in use in schools, learners sometimes experienced the same applications and activities in different classes and year groups without obvious adjustment for their ages or stages of development.

The use of digital technologies as part of the assessment process was found to be more widespread at post-primary than at primary level. Use was rated satisfactory or better in just under 60% of lessons in primary schools but at just under 80% of lessons in post-primary schools.

In terms of planning, inspectors found that 73% of primary schools and 81% of post-primary schools had developed a Digital Learning Plan at the time of the evaluation. Of those schools that had developed a plan, the quality of the plan was rated as satisfactory or better in most cases (83% - 100%). Many primary and post-primary schools reported that their knowledge of the six-step School

⁶³ <https://www.erc.ie/publications-reports/archive/>

Self Evaluation process was helping them to improve digital learning in a manageable and incremental way. Some schools were making meaningful links between digital learning and the priority areas that they had identified for school improvement using the SSE process. Moreover, those schools which reported success in their efforts to implement the DLF reported that the professional learning they participated in was focused on their particular needs. Despite this, many teachers across both sectors were not aware of the DLF or of the good practice videos available through PDST. In addition, some schools reported that they were unaware of supports such as Scoilnet and that they were unsure how to access external professional learning support.

Finally, the inspectors found that while almost all post-primary schools had access to good quality broadband, many primary schools did not. Where practice was well-developed, it was reported to inspectors that having access to high-speed and dependable broadband was one of the key supporting factors. Where connectivity problems existed, leaders and teachers reported a reluctance to use digital technologies as it often frustrated learners' experience and diminished teachers' confidence with the technologies.

Overall, while the findings are encouraging in some respects, it is significant that in 45% of primary schools and 38% of post-primary schools assessed, digital technologies were not a feature of teaching and learning. This finding indicates that digital technologies are still underutilised in many schools and classrooms. According to the report, the reasons for this underuse and under-realisation of the potential of digital technologies vary from context to context. Some schools have not thought sufficiently about how they will integrate digital technologies and have not planned adequately for their use. They stress that knowledge, experience and confidence of teachers in terms of digital technologies are all key factors. Some schools have difficulties with connectivity to high-speed broadband, while others cite a lack of resources.

Among the recommendations made by the inspectors is the need for:

- schools and teachers to continue to make digital technologies an integrated feature of teaching, learning and assessment in all classrooms, ensuring that learners use digital technologies actively and in collaboration with other learners to support the assessment process and to create new content using digital technologies
- schools to plan for progression and development in the acquisition of digital competences (i.e. Teachers' practice, at each class level, and across all disciplines, should build on learners' knowledge, skills and understanding in areas related to digital learning)
- specific actions for changes in teaching and learning should be identified in schools where engagement with digital technologies has been limited, and teacher professional learning should be linked to those actions
- schools, as they engage with SSE, regardless of the area of focus, to consider the opportunities that exist to include actions that involve digital technologies.

Digital Learning Framework (DLF) national longitudinal evaluation (Feerick et al., 2021)

The objective of the DLF evaluation is to evaluate the implementation of the DLF from the multiple perspectives of school principals, Digital Learning Team leaders, teachers and learners over a three-year period (2019-2022). The design of the evaluation is longitudinal and mixed-method, involving a baseline phase and two longitudinal data collection phases. Prior to the full national evaluation, a

trial was conducted in 20 post-primary and 28 primary and special schools in 2017-2018 (Cosgrove et al., 2018a, b). The summary report presented in this section primarily draws on findings of the Wave 1 report on the DLF (Feerick et al., 2021); this report follows from the baseline report published in late 2019 (Cosgrove et al., 2019).

The same sample is used in both the Baseline and Wave 1 reports and is designed to be nationally representative of both schools and teachers. The sample consisted of 150 primary schools, 100 post-primary schools and 32 special schools. As part of the study, the Digital Learning Team Leader (DLT) or Principal was invited to complete a school survey, and each teacher was invited to complete a teacher survey. Response rates deem the DLT leader survey nationally representative. However, a low response rates from teachers meant that the DLF Wave 1 teacher survey data is not nationally representative.

As in previous sections, a summary of the findings of the Wave 1 report is presented broadly in line with the themes used in the Digital Strategy for Schools (2015-2020). They are: Teaching, Learning and Assessment, Teacher Professional Learning, and Infrastructure. Leadership is included as an emergent theme.

Theme 1: Teaching, Learning and assessment using ICT

Use of Digital Learning Framework and the development of digital plans: Over 90% of schools have completed their DLP or are in the process of doing so, with extensive consultation with teachers, parents and school management. School management boards were consulted more frequently at post-primary than at primary level while students were not consulted in most schools. Most schools have established a Digital Learning Team (79% at primary; 81% at post-primary) which tended to consist of interested staff members who volunteer (65% at primary, 80% at post-primary level. The majority of schools' DLTs met less often than once per month (62% of primary schools and 65% of post-primary schools).

Around nine in ten schools focused on the Teaching and Learning dimension of the DLF. This was not unexpected given the focus for school self-evaluation (SSE) from 2016 to 2022 is the dimension of Teaching and Learning. At primary level, the most frequently chosen domains were Learner outcomes and Learner experiences followed by Teachers' collective and collaborative practice. The most frequently chosen domains at post-primary were Teachers' collective and collaborative practice followed by Learner experiences. The reasons cited for choosing this dimension at post-primary level focused the promotion of teacher collaboration and shared practice, while at primary level, improving learner outcomes was seen as a key priority. It is of note that a large minority of respondents (30% primary; 38% post-primary) were not aware of which domain(s) their school was focusing on. 93% of post-primary schools and 73% of primary schools were found to have incorporated their Digital Learning Plan (DLP) into SSE activities.

About three-fifths of schools rated themselves as being mostly at levels of effective practice or higher on their chosen domain and dimension(s) of the DLF. However, post-primary teachers tend to rate their schools as being at a higher level of embedding DTs for teaching, learning and assessment (TLA). This difference is significant and according to Feerick et al. (2021), may be due in part to different understandings between primary and post-primary teachers as to what constitutes a high level use of digital technologies in TLA. Responses from post primary teachers tended to reflect a

more functional understanding whereby embedding digital technologies in practice simply meant *using* digital technologies. As stated by Feerick et al., they tend to “focus more on ICT integration (into the curriculum and teaching practices), rather than seamless and deep use of new methodologies made possible by DTs” (p.154). It is also significant that findings from the report indicate that schools are using *largely informal approaches* to assess the level of embedding of DTs for TLA and standards of effective practice.

Schools also reported experiencing significant challenges in implementing the DLF in a few key areas. These related to time for staff to implement the DLP, issues concerning the fit between the aims of the DLF and the structure of the standardised assessments, and infrastructure.

The DL Planning website was developed by the PDST (TiE) to support planning and implementation of the DLF. Although school leaders expressed very positive views of the website, and most had visited the website, they did not do so very often. Similarly, low usage of the website was reported by teachers; 40% of primary teachers and 52% of post-primary teachers reported to never having used the website. Those teachers who did use the website tended to use many parts of it and reported to finding the videos, planning guidelines and planning templates useful. A number of DLT leaders at post-primary level expressed a desire for an online interactive DLP document, since it was felt that the ability to change and interact with the DLP plan document online would enable schools to continuously improve and adapt their DLP to their needs as they progressed with their DLP implementation.

Use of DTs for Teaching Learning and Assessment. Overall, teachers reported largely positive views about the use of DTs for TLA. A large majority of respondents at both levels believed that using DTs enables students to better engage in collaborative learning; helps students work at a level appropriate to their needs and enables students to access better sources of information. Despite this, a prominent use of DTs for TLA was by the teacher for lesson preparation, presenting information or giving class instruction to students. However, post-primary teachers used a greater variety of DTs in their TLA, and used them with greater frequency than primary respondents. In particular, post-primary respondents were more likely than primary respondents to use DTs to communicate with students, and to support peer-to-peer assessment.

The majority of post-primary teachers indicated that due to their work on the DLF, there was increased sharing of documents or resources among teachers; collaborative practices among teachers; and students’ interest and engagement in learning activities. While less change was reported by primary teachers; many expressed positive sentiments about the potential of DTs to enable student-centred learning and creative collaboration between students. This, they said, would allow them:

to reach their “full potential”, whilst facilitating “active learning and collaboration”, and promoting digital literacy. It was also commented that DTs inspire pupils to “learn through inquiry” and serve as an aid to pupils developing their abilities to participate in society. (Feerick et al., 2021, p.140)

There was also a significant increase at primary level in the mean level of engagement with digital technologies by teachers and pupils from baseline to Wave 1; while at post-primary, the levels of engagement remained almost the same.

At both primary and post-primary levels, teachers had higher scores on the student and teacher engagement scale than DLT leaders. In contrast, DLT leaders at both levels were more likely to have a higher score on the DLF impact scale than teachers, indicating a higher perceived impact of DLF implementation among DLT leaders than among teachers.

Overall, on a scale measuring the impact of having implemented the DLF since baseline, the pattern of results suggests a greater focus at primary on teaching and learning activities, and a greater focus at post-primary on whole school approaches. Moderate levels of impact in teaching and learning practices and collaborative practices were found at both levels, with the latter being higher at post-primary level.

Results also indicate a need for schools to focus more on embedding DTs specifically in assessment going forward. At primary level, between 65% and 77% of respondents reported no change in teachers' assessment practices while the figure was 45% at post-primary level.

Theme 2. Teacher Professional Learning

Respondents' participation in professional learning relevant to DLF implementation was high. For example, in the two years prior to the survey, at primary level, 78% of DLT leaders had attended a relevant summer course and at post-primary level, 83% had participated in relevant workshops. Two in five (40%) primary respondents and 69% of respondents at post-primary reported availing of in-school PDST support. Summer courses (39%) and in-school PDST support (27%) were attended most frequently by primary school teachers while in-school PDST support (49%) and workshops (38%) were the most frequently attended professional learning activities at post-primary level. By far the most popular method of sharing knowledge about digital learning reported by teachers at both levels was informal, occurring throughout the school day. Post-primary teachers were more likely than primary teachers to use formal peer mentoring (46% vs 31%), and email, messaging, or social media to share knowledge (80% vs 62%).

In terms of needs, DLT leaders and teachers alike expressed a desire to have access to ongoing professional learning to support the embedding of DTs in TLA, with in-school training and supports were preferred over other modes. At both levels, DLT leaders and teachers expressed a desire for teacher professional learning that is sustained and tailored to the specific needs of the school, subject, class level, and teacher competence. Learning opportunities in particular apps or software, technical support, and assessment approaches are also frequently mentioned as useful. The most desired supports to implement the DLF/DLP at both levels were in-school support or in-service days, continued TPL and PDST support. Many respondents stressed the need for ongoing professional learning opportunities, rather than sporadic workshops or in-service days. Some respondents attributed this lack of a consistent approach to poor planning and leadership at the school level or a lack of buy-in among some staff, whereas others noted that progress in the DLF was not possible until issues around unreliable Wi-Fi or insufficient access to enough up-to-date devices were remedied.

Theme 3. ICT Infrastructure

Perceived levels of infrastructure, connectivity, and technical support were the same in Wave 1 as they were at baseline, at both primary and post-primary. Levels across all three areas were on average in the moderate range, with a lot of variation between schools on these in relation to connectivity and technical support in particular. Mean scores on the DT infrastructure and connectivity scale were almost identical across primary and post-primary levels. However, there were some differences between primary and post-primary schools. For example, one-quarter of primary schools rated the availability of digital devices as Excellent, compared to 13% of post-primary schools. Conversely, while broadband speed was rated as Excellent by one quarter (24%) of post-primary respondents, just one-tenth of primary respondents gave it this rating. The age and condition of computing devices ranked prominently as an infrastructural issue for respondents at both levels: 36% of respondents at primary and 34% at post-primary rated this as Fair or Poor.

Respondents reported high rates (90% or more) of staff with regular access to school owned devices in schools although the reported rates of student-level access were lower. A little over half of DLT leaders (55% at both primary and post-primary) indicated that all pupils in the school had regular access to a school-owned computing device. The type of devices available for students differed across primary (with more common use of iPads) and post-primary (with more common use of desktops). Rates of home access for pupils to their own computing device were lower, particularly at primary level.

Overall, reliable broadband and equipment which teachers could rely on was identified as one of the key enablers of positive attitudes towards the use of DTs, with some teachers commenting that morale was impacted in schools where staff had learned not to rely on faulty or unreliable equipment.

The mean score on the technical support effectiveness scale at post-primary was higher than at primary across both leaders and teachers. At primary level, schools with a very small enrolment (≤ 60) scored significantly lower on this scale than schools with medium and large enrolment sizes. Technical support and maintenance was most commonly provided by a mixture of internal and external sources. At primary level, smaller schools reported internal technical support and maintenance more frequently than larger schools. Although not statistically significant, the least effective technical support was reported in smaller primary schools (with 120 or fewer pupils enrolled). Many respondents signaled the importance of technical support, with about three in ten agreeing or strongly agreeing with the statement "Availability of technical support is a key barrier to my school's implementation of the DLF" (Feerick et al., 2021, p.16).

A difference between primary and post-primary levels is the frequency with which the theme of *Purchasing help and funding* featured in the teacher responses. At primary level, this was the third most common theme, and was present in about a quarter of all comments (24%). At post-primary level, however, this theme occurred in only 11% of comments. Many of these respondents wanted support when deciding which tools and resources to purchase to best facilitate DLF implementation, noting in some cases that they received little guidance in this regard. Although, Circular 0076/2020 provides guidance to schools on the purchase of DT resources, the comments, particularly from primary schools, suggest that schools may not be sufficiently aware of, or supported in, the purchase

of DT resources and a low level of awareness of existing supports and resources was found among some school staff.

Theme 4. The Importance of Leadership

At primary level, indications are that more successful implementation of the DLF is associated with, consultative leadership (consultation on the DLP), and the extent to which the DLT leader felt that the professional learning required to implement the DLF was targeted to the goals of the DLF. At post-primary level indications are that the attitudes and beliefs of the DLT leader have a significant and substantive bearing on successful implementation of the DLF, along with a consultative approach to the development of the DLP. The identification of “digital champions” within schools, was seen as very helpful in advancing the schools’ use of DTs.

Conclusions

Most schools have established a Digital Learning Team and over 90% of schools have completed their DLP or are in the process of doing so. 93% of post-primary schools and 73% of primary schools have incorporated their Digital Learning Plan (DLP) into SSE activities. The majority (90%) of schools focused on the Teaching and Learning dimension of the DLF and about 60% of schools rated themselves as being mostly at levels of effective practice or higher on their chosen domain. Despite this, among the key findings of the report was a lack of understanding of what constitutes effective practice and that schools tended to use multiple and mainly informal approaches to assess the level of practice within a chosen domain. This points to a need for further guidance to promote a more uniform understanding of levels of effective and highly effective practice and monitoring purposes. The DL planning website, while widely praised as a useful resource, is under-utilised.

Significant challenges were reported in implementing the DLF in a few key areas, in particular, relating to time for staff to implement the DLP, issues concerning the fit between the aims of the DLF and the structure of the standardised assessments, and infrastructure.

A prominent use of DTs for TLA was by the teacher for lesson preparation, presenting information or giving class instruction to students. However, post-primary teachers used a greater variety of DTs in their TLA, and used them with greater frequency than primary respondents. In particular, post-primary respondents were more likely than primary respondents to use DTs to communicate with students, and to support peer-to-peer assessment. The majority of post-primary teachers indicated that due to their work on the DLF, there was increased sharing of documents or resources among teachers; collaborative practices among teachers; and students’ interest and engagement in learning activities. While less change was reported by primary teachers; many expressed positive sentiments about the potential of DTs to enable student-centred learning and creative collaboration between students. Overall, the pattern of results suggests a greater focus at primary on teaching and learning activities, and a greater focus at post-primary on whole school approaches. Moderate levels of impact in teaching and learning practices and collaborative practices were found at both levels, with the latter being higher at post-primary level.

Results also indicate a need for schools to focus more on embedding DTs specifically in assessment going forward. In addition, the need for ongoing professional development, rather than sporadic workshops or in-service days, was highlighted. In particular, supports that would enable successful continued implementation of the DLF (DLP), specific to subjects, class levels, and teacher knowledge

level in DTs. Reliable broadband and equipment which teachers could rely on were other key enablers of positive attitudes towards the use of DTs, in contrast to technical support which was identified as a barrier. A particularly interesting fact when you consider that, the least effective technical support was reported in smaller primary schools with 120 or fewer pupils enrolled.

An interesting difference between primary and post-primary levels is the frequency with which the theme of *Purchasing help and funding* featured in the responses. At primary level, this was the third most common theme, and was present in about a quarter of all comments (24%). At post-primary level, however, this theme occurred in only 11% of comments. This suggests that some schools, particularly at primary level, may not be sufficiently aware of, or supported in, the purchase of DT resources.

The Impact of COVID-19 on schools and lessons learned

As stated in the introduction to this document, the arrival of the COVID-19 pandemic caused unprecedented disruptions and massive changes to almost every education system in the world, Ireland included. Almost overnight in March 2020, schools closed and many began to offer education remotely. In most cases, the transition to remote education happened in a rushed, unplanned manner and led to a sudden and large-scale use of digital learning practices (EC, 2020). This sudden switch saw incredible efforts by teachers and education systems to adapt and innovate (UN 2020). Many institutions and educators showed extraordinary levels of creativity and resilience, but equally, there were significant challenges for those educators lacking the competence and confidence to use digital technologies effectively (EC, 2020). In addition, many struggled to adapt to the needs and context of the learners, including a lack of access to devices and poor connectivity (EC, 2020; OECD, 2020). This meant that for many learners, learning was passive and lacking in any real engagement (OECD, 2020). It also excluded many and often entire groups of learners, including those from remote areas, migrant and refugee children and other learners from disadvantaged backgrounds (Beaunoyer, Dupééré & Guitton, 2020)

Without doubt, the impact of the COVID-19 pandemic on education forces us to rethink how our education systems are designed to meet the demands of today's world. While laudable in the short term, the changes to education that occurred during the pandemic were made very quickly to address the immediate and urgent need of continuing schooling, they cannot be considered the changes education needs to make in the wake of COVID-19. However, there are lessons to be learned from the experiences and before considering the question "where to from here" we need to stand back and critically reflect on the learnings from the remote learning experiences of schools, particularly in the Ireland context.

COVID-19 experiences and lessons learned

As the world ground to a halt due to the COVID-19 pandemic, most global education systems shut their doors. 100 million young people in the EU and over 1.3 billion round the world at pre-primary, primary, secondary, and tertiary education levels were impacted (ECa, 2020). The range of solutions put in place to ensure some form of continuity of education were wide and varied. For example,

- for younger pupils, education relied heavily on parents and carers' collaboration
- public-private partnerships were established to expand national and local capacities in deploying distance and online learning solutions

- publishers and technology providers opened up their resources and platforms
- educational television and radio programmes were rapidly developed
- educators shared resources and practices to help colleagues, particularly those less experienced with online teaching.
- online seminars / courses for teachers both on how to use particular technologies and how to design remote learning opportunities were made available by a range of providers (EC, 2020)

In many countries, there was a shortage of online content and other digital resources linked to national curricula. Consequently, and quite often, many “solutions” were often implemented as ‘quick fixes’ (Selwyn, 2021). The hasty adoption of commercial digital learning solutions generated many concerns around the design of many of these solutions; chiefly, that the design was driven by business models which leverage user data for profitmaking, rather than meaningful pedagogical practices (Teräs et al., 2020).

During the COVID-19 crisis, many educators experienced how digital technologies could be used for teaching, learning and assessment for the first time. The findings of public consultation by the European Commission (EC 2020) that took place around experiences and educational implications of the COVID-19 crisis and which received 2,716 replies and more than 130 position papers are useful to consider in this regard. The findings highlight that a wide range of solutions were put in place to ensure the continuity of education across Europe. These included high and low-tech practices, with marked differences within and between countries. Differences between the levels of education were also evident; in most cases, higher education institutions continued teaching virtually, while many schools lacked expertise and struggled to offer digital (distance and online) learning opportunities to all of their students. Of particular interest is the finding that higher levels of digital capacity and previous experience with alternative and flexible forms of learning led to faster and better responses. Conversely, educators who were lacking the confidence and competence to use digital technologies effectively faced immense challenges to adapt to learners’ social, learning and technological needs. Overall and drawing on a series of national studies, the Commission’s report concludes that the effectiveness of the response to the COVID-19 crises was linked to levels of *preparedness*. This included factors such as

availability of infrastructure, connectivity and devices; access to online content aligned with national curricula and programmes; confidence and skills of educators to design and facilitate distance and online learning; levels of interaction and support for learners; capacity to monitor access; track the learning process and assess learning outcomes. (EC, 2020, p.30)

COVID-19: the experiences of schools in Ireland

Between March 2020 and April 2021, there were two major closures of schools in Ireland resulting from the COVID-19 pandemic. Schools first closed on March 12 2020 and did not re-open until late August/early September 2020. The second closure occurred in early 2021 when schools did not re-open after the Christmas holidays. In accordance with the Government of Ireland’s ‘Living with COVID-19 plan’, a phased return to school commenced in late February 2021. Special schools and special classes in mainstream primary and secondary schools reopened with 50% capacity on February 22 while junior and senior infants, 1st and 2nd classes, along with Leaving Certificate

students returned to school on March 1. The rest of primary school classes and 5th Year students returned from 15 March, and 1st to 4th years returned on April 12.⁶⁴

On October 8 2020, the DE published a set of guidelines for primary schools and special schools that were designed to provide support in situations where a partial or full school closure is advised by Public Health HSE due to COVID-19⁶⁵. Guidelines for post-primary schools were later published in November 2020⁶⁶ while additional guidance documents, published in January 2021, further advised schools in relation to provision for students with special educational needs⁶⁷. Key messages in the guidelines related to planning and organisation considerations as well as the required features of provision. Circular 0074/2020⁶⁸ requested that all schools and centres for education develop and implement a plan to support remote teaching and learning

As part of planning and organisation, the guidelines recommended that schools should research various digital platforms for facilitating communication between teachers and pupils and supporting pupils learning remotely. Schools were advised that pupils should have frequent age and stage appropriate opportunities to access and navigate the selected digital platform(s), engage with teaching and learning materials online and upload their own work independently. A funding grant totaling €50 million was provided to schools in December 2020 to ensure they had digital technology in place to provide remote learning.

In terms of professional learning, schools were asked to identify and develop the skills set of the teachers and support staff so as to support digital remote learning:

On selecting a digital platform or platforms for the school, the school should ascertain the level of digital competence required to use the platform(s) and any gaps in the skills set of the teachers should be identified. Arrangements should be put in place to ensure that any necessary professional development be provided to enable teachers to use the platform(s). (DES, 2020, p.4).

To support remote learning, the PDST (TiE) Team developed a comprehensive range of blended learning professional development programmes for teachers and school leaders; these were made available at pdst.ie/blendedlearning. Direct support was provided to schools on application.

Equity of access to digital resources is also identified in the guidelines which acknowledge that access to digital devices and to appropriate internet connection may be challenging for some. Schools were advised to establish the relevant supports needed by their teachers and pupils to engage in remote learning and recommendations were provided as to how schools could address

⁶⁴ "[COVID-19 Resilience and Recovery 2021 - The Path Ahead](#)". *gov.ie*. [Department of the Taoiseach](#). 23 February 2021

⁶⁵ <https://www.gov.ie/en/publication/183b2-guidance-on-remote-learning-in-a-covid-19-context-september-december-2020/>

⁶⁶ [gov.ie - Guidance on Remote Learning in a COVID-19 Context: September – December 2020 \(www.gov.ie\)](#)

⁶⁷ [gov.ie - Continuity of Schooling \(www.gov.ie\)](#)

⁶⁸ [cl0074_2020.pdf \(into.ie\)](#)

any gaps or issues. For example, the school could allocate digital devices, if available, from the school's supply to families for the duration of the pupils' absence from school for COVID-19 reasons.

Schools' Experiences of Remote Learning. As in other countries worldwide, a range of research has been carried out in Ireland which focuses on the experiences of schools during the COVID-19. For the most part, this research was conducted during the first period of school closure in 2020 and little has been published on the experiences of 2021. This is unfortunate as in contrast to the first period of closure, where the response, as in most other education systems worldwide was 'rushed and unplanned' (EC, 2020), the likelihood is that schools and parents were better prepared for the second period of school closure. Reports from the DE (2021), for example, note that schools had adapted considerably and developed their capacity to provide remote teaching and learning between the first and second periods of school closure. Comparison of the findings of parent surveys carried out in February 2021 with those carried out in April 2020 indicate that schools adapted considerably and developed their capacity to provide remote teaching and learning since the initial period of school closure. This development was evident in relation to the use of digital technologies to engage with pupils/students, communication with parents and the provision of feedback by teachers to pupils/students on their work. The improvement was particularly evident at primary level where provision for remote teaching and learning had been less positive relative to provision at post-primary level during the previous period of school closure.

It is also noted that there are few available studies which provide an in-depth picture of what exactly was happening in relation to digital learning i.e. how did schools plan for remote education, how did they use the learning platforms, what kinds of tasks did they give their students, how did they assess student learning, how did teachers support and interact with their students etc.? Referring to the EC (2020) concept of 'preparedness', this section draws mainly on the following reports to document how schools in Ireland experienced COVID-19. Findings from across these reports may help shape the development of the next Digital Strategy for Schools

- Bray et al. (2020) reported the perspective of post-primary students. 1,004 post-primary students were surveyed, mainly from schools in areas of socio-economic disadvantage
- Devitt et al. (2020) reported on teachers of post-primary schools; the sample covered 3% of the post-primary teacher population with over-representation of teachers in DEIS schools
- Bray et al. (2021), drawing on data from Bray et al (2020) and Devitt et al (2020), this study examines student engagement among post-primary students during the first school closure
- Mohan et al. (2020), this ERSI study documents the impact on post primary education; a mixed methods study, an online survey achieved a 33% response rate among post-primary school principals; 10 principals who were representative of the national population of schools in terms of school sector and size were subsequently interviewed.
- Scully et al's. (2021) survey of secondary school leaders in Ireland was conducted three months after the school closures.
- Burke and Dempsey (2020) reported on the findings of a survey of about 2,800 primary and special school leaders
- Fahy et al. (2020) investigated the response of primary school leadership during COVID-19. An online survey was sent to 3,240 principals nationally achieving a 20% response rate.

- INTO (2020) undertook a survey of its members; there were approximately 950 respondents, of which one in six were principals, and five in six were teachers. This represents a response rate of about 24% of INTO's members.

A series of ten reports completed by the inspectorate in the DE was the only research found based on the second period of school closure; the reports are based on a series of surveys carried out with school principals, co-ordinators of Youthreach centres, parents and pupils/students. The tenth report (DE 2021)⁶⁹ which is a summary of all the surveys is reported here.

Infrastructure: connectivity and devices

The closure of schools served to expose wide disparities in access to digital devices and high-speed broadband. Insufficient broadband speed and a lack of access to devices was well documented during the first period of school closure as preventing some students and teachers to fully engage in remote learning. This was more pronounced in areas with limited broadband connectivity and in areas of lower household income (Burke & Dempsey, 2020; Darmody, Smyth, and Russell 2020; Devitt et al. 2020; Mohan et al., 2020, INTO, 2020; Scully et al., 2020). This continued to be an issue during the second period of school closure in 2021; rural areas were less likely to have sufficient broadband (Bryce, 2021)⁷⁰

Mohan et al (2020) report issues with access to both high speed broadband and digital devices for nearly half of post-primary schools. While students in rural areas were shown to be disproportionately affected, the impact on student engagement was found to be greatest in schools in areas that had both poor broadband and DEIS status - thus raising concerns over the potential longer-term impact on achievement and retention at DEIS schools. Poor broadband connectivity impacted on approaches adopted to remote learning as teachers had to adjust their approaches. The authors argue that this paucity of broadband connectivity had the potential to disadvantage students with better broadband than their teachers. In contrast, Mohan et al. report that the transition to remote learning was found to be less challenging for schools who were using online platforms and tablet devices prior to the period of school closure. For example, 'iPad schools' and schools who had been using Virtual Learning Environments (VLEs) prior to the closure reported a smooth transition to remote learning.

At primary level, Burke and Dempsey (2000) found that 58% of schools considered broadband connectivity a priority when making strategic decisions for the closure period, with concerns raised about disparities in access and the "digital divide"

The survey results highlighted a clear digital divide (hardware, software, and technological skills) that exists across schools in Ireland, reinforcing the social inequalities of our society. This may add to the already gaping social divide between the better-resourced schools/families and the schools/families who just make ends meet. (p. 12)

There was also widespread acknowledgement in the INTO (2020) survey that access to devices was a barrier to engagement; two thirds of teachers indicated that some pupils did not have access to devices and that in many families, there was often competing demands for access to devices from

⁶⁹ <https://www.gov.ie/en/collection/de987-remote-teaching-and-learning-reports/>

⁷⁰ <https://www.mentalhealthireland.ie/home-schooling-poll/>

parents and other siblings. 36% of schools provided devices for students to use throughout the closure. There were also access difficulties among teachers with almost one quarter of teachers stating that they had sporadic or poor broadband connectivity and one quarter frequently experiencing technical issues. Three-fifths of teachers used their personal device during the closures, while two-fifths used a school-owned device.

Several key groups in the school population were particularly impacted by the move to remote learning, including students with special educational needs (SEN), students from low-income backgrounds and students studying English as a foreign language. The impact of school closure was seen as detrimental for this group of learners, depriving them of vital daily school-based supports (Burke & Dempsey, 2020; Fahy et al., 2020; Mohan et al., 2020). 89% of post-primary principals in Mohan et al. (2020) describe how learning for students with additional needs was seriously impacted by school closures while 52% of respondents in the INTO survey similarly feared that these students have experienced regression in their learning. Bray et al. (2020) found that parents of children with a disability and those in the older primary classes were more likely to report their child was no longer learning. At the same time, Burke & Dempsey (2020) and Fahy et al. (2020) document the tension between the pressure felt by schools to provide the added individual support required for SEN pupils and the deep concern that many were not receiving the support they need.

Teacher confidence and competence in designing and facilitating remote learning There were some positive findings across the studies listed in that many survey respondents viewed the sudden closure of schools as an opportunity to embrace digital learning. For example, in Devitt et al.'s (2020) survey of post primary teachers, there was an increase in the level of collaboration among teachers in their schools and approximately one in three participants had availed of teacher professional learning in relating to the use of technology since the schools had closed in March 2020. Some of these teachers noted significant increases in their digital skills while many emphasised a need for further training in this area, particularly in relation to the meaningful integration of technology in teaching and learning; promotion of student autonomy; and promotion of student reflection and peer feedback. Calls for appropriate training and ongoing support were also made by the ASTI (2020).

However, the shift to remote learning was a challenge for many teachers, particularly for those who felt they did not have the skills required. The INTO survey (2020) reported wide variation in the level of confidence among primary teachers in supporting pupils' learning through digital learning; ranging from being apprehensive or very apprehensive (31%) to reasonably or very confident (38%). This is not entirely surprising when one considers that while 25% of the same teachers reported to using digital technologies in their classroom practice 'quite regularly', over 20% rarely or never use digital technologies in their practice. Like their post-primary counterparts, increased collegiality and teamwork and the opportunity to learn new skills were seen as positive outcomes of the schools' closure but there was a strong demand for "guidance, guidelines and clarity" on the organisation of remote learning (Burke & Dempsey, 2020 p.16). Professional learning priorities identified by respondents in the INTO (2020) survey included training in: preparing content for use on a digital platform (25%); assessment strategies for digital teaching and learning (23%); pedagogical approaches for digital teaching and learning (20%); and guidance on selecting a suitable digital platform or operating a digital platform (31%).

Access to online content aligned with national curricula and programmes

There is little available information on how teachers implemented curricula and programmes during the period of school closure. However, the studies do provide a picture of the approaches employed to remote teaching and learning, the types of activities in which students engaged and the resources used. At primary level, 49% of respondents in the INTO (2020) survey indicated that technology was the primary means of teaching and learning with 48% using a combination of technology based and hard copy resources. Hard copies of resources were delivered to students' homes or collected by parents/guardians while for many, textbooks and workbooks were sent home on the day of the school closure (March 12 2020). Burke & Dempsey (2020) report that 25% of primary schools used online platforms to interact with pupils; and the INTO survey found that one in five schools set up these online platforms for the first time during the first closure, with just 11% using existing platforms. While detailed breakdown of the platforms used by schools is not available, informal surveys conducted by staff with student teachers in DCU found SeeSaw, Google Classroom and to a lesser extent, Class Dojo to be the most frequently used platforms in primary schools while Google Classroom and MS Teams were the most commonly used platforms in post-primary schools.

Burke and Dempsey's (2020) survey provides additional information on the kinds of digital resources being used by primary schools. The main digital resources reported were Twinkl (90%), Scoilnet (71%), PowerPoint (49%) and Seomra Ranga (48.5%). Textbook publisher websites and PDST resources were also used by about two-thirds of schools. All schools used a variety of methods to engage with their pupils, which included (1) alternative offline activities, such as reading, baking or writing (84%), (2) the completion of classroom workbooks/textbooks (84%), (3) online-based activities (76%), (4) project-based activities (76%), (5) play-based activities (69%), and (6) inquiry-based learning (43%). Some areas of the curriculum were found to be easier to adapt for remote learning such as Literacy, Social, Environmental and Scientific Education (SESE), Physical Education and Mathematics while Gaeilge was most difficult to accommodate.

Learner Engagement

At post-primary level, a number of studies focus on student engagement during school closures. Mohan et al found the move to remote learning impacted students both positively and negatively. It was extremely difficult for students to engage with group work and practical work, but the development of independent learning skills was high (particularly where there was high-speed broadband available). According to the authors, there was greater impact on students' extrinsic motivation than on intrinsic motivation. Some schools reported an increase in self-regulated learning among students with high intrinsic motivation. In contrast, as many extrinsic motivators disappeared with the closure of schools, there was a decrease among students who rely on extrinsic motivation. The main determinant for low engagement however, was the disadvantaged status of the school, with teachers in DEIS schools significantly more likely to report low student engagement (Devit et al., 2020 Mohan et al., 2020). However, Bray et al. (2021) found that students are less likely to disengage where they experienced student-centred, creative pedagogies, and when student-teacher connections were meaningful and positive.

Large-scale schooling at home data were also collected in Ireland in early April 2020 and again in February 2021 (CSO, 2021⁷¹; Doyle, 2020, Bryce, 2021). Findings in Doyle (2020) indicated that parents typically spent one-to-two hours on their children's formal learning during the first period of school closure (Doyle, 2020) whereas the majority of parents in a poll carried out by Red C for Mental Health Ireland (Bryce, 2021) report to spending up to four hours a day home-schooling. The amount of time spent by students at schoolwork also appears to have increased during the second period of school closure. According to the CSO survey (CSO, 2021), almost two fifths of post-primary students spent four or more hours a day on school work during the first period of school closure but this had increased to four fifths of students during the second period of lockdown. Similarly, one third of primary school students spent three or more hours a day on school work during the first period of school closure and this had increased to over half in the second period. Bryce (2021) also provides information relating to the mode of provision that parents perceived as most effective for their child's learning. While interactive platforms were deemed most effective by parents, Seesaw was perceived as being most effective for primary school children whereas live online lessons were most effective for post-primary students. Emailed homework and pre-recorded lessons online were seen to be far less effective as a means of home schooling across all age groups. In particular, parents with lower educational attainment were less likely to use resources from teachers or educational apps (Doyle, 2020). Finally, the incorporation of time by teachers for social development was seen as important; the older the child and particular for those at post-primary, the less likely this was reported to happen.

Parents indicated that the mediation of learning in online settings was challenging for many learners particularly those with special educational needs. Parents of primary pupils noted that their children were easily distracted when online and were unable to concentrate for periods of time. Parents of post-primary students raised concerns about the exhaustion and screen fatigue experienced by their children's sustained engagement with school work in the online learning context. Parents whose children were in the junior classes also reported that it was particularly challenging for younger children to participate successfully in online or recorded lessons.

Parents of children attending special schools raised questions about the appropriateness of remote teaching and learning in meeting their child's very complex needs. A number of these parents reported that their child was not able to engage and was not able to sit at a computer for any period of time for structured learning activities. These parents also experienced resistance and often extreme behavioural reactions when they tried to engage their child in assigned learning activities on screen. Issues with transferring school activities to home appeared to be particularly pronounced in the case of children with autism spectrum disorder (ASD).

Importance of School Leadership. Studies confirm the importance of school leadership and a whole-school approach in enabling the successful transition to online learning (Burke & Dempsey, 2020; Faney et al., 2020; Devitt et al., 2020). While principals expressed dedication to engaging with parents and students to ensure that online learning was carried out to the best of their ability during school closures (Fahy et al., 2020), the complexity and importance of distributed and collaborative

⁷¹<https://www.cso.ie/en/releasesandpublications/ep/p-sic19isc/socialimpactofcovid-19surveyfebruary2021impactofschoolclosures/>

leadership as an enabler of the effective use of digital technologies during the school closures was equally highlighted (Burke & Dempsey, 2020).

In conclusion, findings across the studies highlight schools' preparedness for remote teaching and learning was strongly influenced by existing infrastructure as well as effective planning and implementation of the DLF coupled with teacher knowledge.

A very positive finding from the INTO survey is that 75% of respondents confirmed that an effective Digital Learning Plan (DLP) was in place in their schools; almost half reported that the DLP had been amended in light of the pandemic.

Main points from DE (2021)

Teachers adapted their approaches to teaching and learning with an unprecedented increase in the use of digital technologies. In the main, teaching during the January-February 2021 period was undertaken remotely and on digital platforms. Across all schools surveyed, almost all reported that a digital platform was in place to facilitate communication and to support remote teaching and learning. This was a significant increase on 2020 when just three-fifths of parents of pupils in primary school indicated that their child used digital technology to engage with their school (DES, 2020). Parents of primary pupils noted that online platforms were mainly used to provide lists of activities to pupils. In contrast, a range of modes was used to engage with learners in special schools, with assignment of work by email or postal service, assignment of work by online school platform and pre-recorded lessons used most frequently. The most commonly used approach at post-primary level was the facilitation of live online lessons.

APPENDIX C

Public Consultation Process

A wide-ranging consultation process was undertaken to ensure that all voices are heard and were taken into consideration to inform development of the new Digital Strategy for Schools:

- Open call for submissions
- Survey of Principals, Teachers and Post-Primary Students
- Survey of Parents
- Focus Group Interviews

2.3.1 Open call for submissions

As part of the development of the new Digital Strategy for Schools, a wide-ranging consultation process was undertaken to ensure that all voices were heard and were taken into consideration to inform the successor strategy. As part of the consultation, stakeholders were asked to comment on how the existing Digital Strategy for Schools 2015-2020 has supported the integration of digital technologies into teaching, learning and assessment practices in schools, the challenges that schools have faced and the key areas and priorities that should be addressed in the development of the successor strategy. The call for submissions opened on 14th April 2021 and closed on 18th June 2021. In total, over 100 submissions were received from a wide range of interested parties including management bodies, teachers' unions, industry, individual teachers and parents and agencies. The responses have been analysed and summarised into a set of themes which correspond to those presented in the DSS: teaching, learning and assessment; leadership, research and policy; teacher professional learning and infrastructure. Other themes to emerge included parents and teachers, and the digital divide.

The current strategy was broadly welcomed and recognised as a success throughout the submissions. More specifically, the inclusion of guiding principles with a core pedagogical focus was seen as a positive, supporting both teachers and students in their use of digital technologies as well as supporting collaboration within schools. The integration of digital technologies has been a positive experience for most schools and the strategy has promoted self-awareness in both the teaching and student body. Some submissions referenced the fact that the success of the strategy lies in the fact that it was backed by significant investment. This allowed the schools boost their digital capability by investing in core infrastructure including Wi-Fi, digital devices etc.; many reported to having invested with long term objectives in mind. A summary report on the open call has been prepared by the DE and is available on the gov.ie website⁷². For the purpose of this baseline report, the responses have been analysed and summarised into a set of themes which correspond to those presented in the DSS: teaching, learning and assessment; leadership, research and policy; teacher professional learning and infrastructure. Other themes to emerge included parents and teachers, and the digital divide.

Theme 1: Teaching, Learning and Assessment Using ICT

Digital Learning Framework. As described in Section 2.1, the Digital Learning Framework (DLF) was one of the key supports realised under the Digital Strategy for Schools 2015-2020. It was designed to

⁷² <https://www.gov.ie/en/publication/69fb88-digital-strategy-for-schools/>

provide schools and educators with a structure to support them in embedding digital technologies in teaching, learning and assessment and also towards developing a Digital Learning Plan to best serve their schools' needs. While the development of the DLF was broadly welcomed, there were conflicting views around the clarity of the framework; some submissions noted that it provides clear guidance but other raised concerns around its current form suggesting that it was too vague. Additionally, although schools are given autonomy to develop a Digital Learning Plan to meet their particular context and needs, it was felt that this can lead to inconsistency across the school system with varying degrees of integration and implementation and can result in some teachers and school leaders not knowing what to prioritise. It was also reported that the implementation of a schools Digital Learning Plan can be dependent on particular interested members of staff, which is not ideal. Some recommendations around the further development of the DLF include:

- reorganisation of DLF to make it more accessible.
- accompanied by a clear, tangible set of actions and approaches schools could take once they have identified targets around statements of effective and highly effective practice
- reporting on schools Digital Learning Plans to ensure the impact of the DLF and the Digital Strategy are monitored and measured to help inform future policy, while allowing for best practice to be identified, shared and supported
- a baseline example of the application of digital technologies in a school setting could be illustrated by creating a set of rubrics using the Inspectorate's quality continuum, with examples of what "satisfactory", "good" and "very good" look like. Schools would then see a step by step pathway towards improvement.

Curriculum. A high number of submissions emphasised that supporting curriculum needs should be at the heart of the successor Digital Strategy and that digital learning should be embedded throughout the entire curriculum. While it was pointed out that there has been substantial progress in the integration of technology in teaching and learning throughout the lifetime of the Digital Strategy for Schools 2015-2020, the majority of submissions stressed the need for the successor to the DSS to continue to link with current and newly developing curricula. There is a belief that the current school curricula and timetables treat the development of digital literacy as an 'add-on' and do not give it the priority that is requires. Other emergent issues included:

- greater attention to be paid to policy alignment; in particular, the inclusion of clear digital learning objectives throughout the curricula
- while the introduction of Computer Science as a Leaving Cert Subject was welcomed, it was suggested that in order to encourage uptake of Computer Science at senior cycle, there should be clear pathways from upper primary and junior cycle with the introduction of coding and computational thinking at both levels along with further digital media short courses. Other suggestions included the introduction of a buddy system between industry and teachers to provide addition guidance on technical aspects of Leaving Cert Computer Science
- further consideration be given to the "digital transition" from primary to post-primary as well as to the inclusion of additional digital-based programmes for the forthcoming Senior Cycle review

- consideration of early intervention to combat underrepresentation of women in STEM and ICT roles and for greater attention to be accorded to digital citizenship and managing digital well-being
- production and dissemination of high-quality interactive digital content for all age groups and in every curriculum area, especially those areas unique to the Irish curriculum. The creation of a central repository of learning content and resources was suggested; for example, within the National Digital Learning Repository and more connections with quality Irish materials online and links to cultural institutions and publishers.

Assessment. There was a general view that schools need to move beyond the traditional modes of assessment and progress to multi modal forms of learning and assessment as outlined in the new Junior Cycle. It was also recommended that a greater focus needed to be placed on the use of digital technologies to support assessment strategies for learning and to provide the opportunity for more immediate and specific feedback to students. It was suggested that current modes of assessment dictate approaches to teaching and learning. In particular, it was noted that there is a mismatch between the DLF statements of effective / highly effective practice and the style of assessments put forward by the SEC for Junior Cycle and Senior Cycle and emphasis should be placed on aligning approaches to assessment with senior cycle review; the inclusion of assessment of digital content created by learners for final exams should also be considered. The continued use of ePortfolios was also highlighted.

Inclusion. Digital technology has the potential to promote inclusion and overcome barriers to learning and appropriate supports should be offered to all schools to best meet the needs of their pupils as there is a clear digital divide when it comes to disability. Issues that emerged included:

- need to focus on the potential of digital technologies to support those with different learning needs and to ensure equity of opportunity in digital learning.
- support personalised learning and enable learning that is tailored to different learning needs and styles of individual pupils through the use of digital technologies
- guidance needed on selecting the most appropriate technology with the best accessibility features to meet students' needs as students with a disability cannot be treated as a homogenous group
- more streamlined application process required for accessing and providing assistive technology.
- further development of resources on Scoilnet and Webwise for these learners with special educational needs.

Irish and Gaeltacht Schools. Digital technology has the potential to support all learners to create a more inclusive education system and this should be built on so that learners in all Irish and Gaeltacht schools have the same opportunities as those in English speaking schools. Issues that emerged included:

- educational materials to be available in Irish
- establish hub or e-schools with virtual classrooms and build on the pilot project of the Gaeltacht e-Hub in Physics
- extend Schools Excellence Fund to establish Gaeltacht digital clusters.

Online Safety and Ethics. Despite the work of Webwise, there is lack of awareness as there is a consistent call throughout the submissions was for a greater focus on online safety in the new strategy. The view was expressed that it is not sufficient to teach children how to use these technologies without having parallel conversations on how they ought to keep themselves safe online. Online safety is seen as a critical component of digital literacy generally and should be embedded across the curriculum at an age-appropriate level and as a key part of the curriculum. Potential issues identified included:

- Cyberbullying; Awareness of appropriate use of social media; Privacy (including data privacy); Exposure to harmful content; Excessive use; Disinformation/ fake news; How personal data is used and stored (for example targeted advertising).
- Parents / guardians to be supported and regularly educated on online safety.
- Department of Education to develop official templates on some key areas such as Acceptable Use Policies and compliance with GDPR in terms of safeguarding of data storage and data processing as well as more detailed guidance on the appropriate use of educational platforms. It was noted that the current strategy predates GDPR and that the new strategy will need to reflect this development.
- Support for teachers in recognising signs of impact of harmful online behavior.
- Both Webwise and Internet Safety Week were praised for the work they do. However, there were requests for the further development and promotion of Webwise and its youth advisory panel.

School planning / communications. The existing Digital Strategy for Schools is believed to promote and support effective action planning at a whole school level with the aim of embedding it into practice across the school. The strategy has provided a structure for schools' digital learning policy development and facilitated clarity around the concept of embedding digital technologies into teaching, learning and assessment. However, there were calls for further support and guidance in relation to:

- the use of cloud-based platforms by teachers to plan and interact with each other as well as for administration purposes; or enhanced collaboration between schools
- giving school leaders and teachers the necessary supports and time to examine and evaluate what technologies would best suit their school which would allow for more effective planning and optimum use of digital technologies in education
- Development of clear metrics for measuring progress to enable the DLF to be monitored
- development of simple self-assessment tools to enable schools self-evaluate their progress in implementing their DLP, with recommendations on areas that need strengthening (e.g. EU SELFIE)
- development of simple self-assessment tools to enable schools self-evaluate their progress in implementing their DLP, with recommendations on areas that need strengthening (e.g. EU SELFIE)
- putting in place the necessary supports required by school leaders so that they can effectively support the planning process required to embed the use of digital technologies in their school.

Theme 2: Teacher Professional Learning

A large proportion of the submissions considered that supporting curriculum needs should be at the heart of the new Digital Strategy with a requirement for the new strategy to connect and link in with current and newly developing curriculum. This requires a national structured, standardised and sustained framework around TPL/CPD to ensure that the relevant supports and resources are available to all school leaders and teachers and that they are given the time and support to undertake the required professional learning in the constantly evolving area of digital technologies. The input provided by PDST and their Technology in Education team was called out to be of a very high standard and was specifically praised for their swift response to support schools and teachers throughout school closures and remote learning. Across the submissions, there were calls for:

- blend of learning opportunities (face to face / online / peer to peer / CoP / whole school)
- increased Cross-sectoral collaboration between primary, post-primary, higher education and industry should also be encouraged more, (as already happens in the School Excellence Fund- Digital/STEM)
- PDST to develop a series of seminars for school leaders to share and reflect on ideas of effective uses of digital technologies for teaching, learning & assessment
- a mentoring programme for teachers to support other teachers within / across schools
- an incentivised / subsidised Digital Learning programme that teachers and school leaders could complete to enable them to lead digital learning programmes to support others
- accreditation or recognition for engaging in professional learning, e.g. micro credentialing
- allocation of time for collaboration / scheduled professional learning days including paid substitute cover
- some means to measure progress of schools as this would assist in identifying gaps in terms of provision of professional learning opportunities and other appropriate supports.

Digital Competence. There was a strong repeated call throughout various submissions for a digital competence framework setting out defined key digital competences required for both teachers as well as for students across each level of the system. Recommendations included:

- definition of digital competence and/or digital literacy to be included in the DSS
- digital literacy and digital skills should be given the same priority as literacy and numeracy with a digital competences framework from primary, through post-primary and into Further/Higher Education required with clear achievable milestones for teachers and students
- digital competences should be addressed in national curriculum and blended throughout the school curriculum
- structured professional learning strategy for teachers to develop digital competence essential while also promoting collaborative practices across schools

- according to the OECD, prior to COVID-19 less than half of students in Ireland attended a school where teachers have a sufficient level of digital skill⁷³. This illustrates a clear need to ensure the necessary professional learning and supports are available to teachers to prepare them for the future of learning in schools. The SELFIE tool which is being further developed for teachers was referred to as having potential for use in the Irish system.
- development of digital competence framework for students as well as a structured digital literacy programme
- addressing the inconsistency of digital skills across school leaders / teachers.

Initial Teacher Education. Céim: Standards for Initial Teacher Education (Teaching Council 2020) specifically identifies ‘digital skills’ as one of the seven core elements for all Initial Teacher Education programmes (‘digital skills’ is proposed to include digital literacy, the use of digital technologies for teaching, learning and assessment, and the integration of digital skills across the ITE programme, including opportunities for student-teachers to explore new and emerging technologies). The introduction of digital skills as a core element of Initial Teacher Education was welcomed throughout the submissions. Further collaboration between the Department of Education and ITE providers to ensure teachers are prepared to use digital technologies effectively in teaching, learning and assessment (e.g. digital competence framework) was a strong recommendation. It was also suggested that consultation with school leaders on the pre-service digital learning course would help ensure it is relevant, current and practical.

Theme 3: Leadership Research and Policy

Leadership. For all changes at school level, it was recognised that leadership is critical to drive and embed change. Principals have a vital role in creating a vision, setting objectives, developing Digital Learning Plans and providing guidance and motivation for the school community. The continued embedding of digital technologies into schools requires both leadership and teacher commitment, which includes knowledge, understanding and willingness. Hesitancy towards using digital technologies, while much improved, needs to be further addressed. The successor digital strategy will require sustained school leadership to build on what has already been achieved. Leaders can help motivate staff as well as developing school digital plans on a collaborative basis, championing digital change and helping to create a school climate more favourable to innovation and experimentation. Emergent issues included:

- Insufficient leadership posts viewed as a barrier and challenge to the effective embedding of digital technologies throughout the school system.
- Designated staff members / Digital Leader (pedagogy not technical support) who is given sufficient time, specific professional learning and appropriate supports to lead the embedding of digital technologies in learning, teaching and assessment in schools and build capacity of other teachers to allow for a sustainable development of skills is required.

73 OECD (2020) ‘PISA 2018 Results: Effective Policies, Successful Schools’ <https://www.oecd-ilibrary.org/docserver/ca768d40-en.pdf?expires=1621612931&id=id&accname=guest&checksum=AE96AFD39E6FE858B20E3EB9FF6829EE>

- Given the current strategy supports a school-led approach, principals need to be able to lead on the embedding of digital technologies. In order to carry this out effectively, principals require the necessary information, resources, supports and training.
- Learnings from the Schools Excellence Fund Digital/Stem should be disseminated.
- Reactivate Digital Schools of Distinction Programme.

Industry and skills for future. The development of a knowledge-driven and digitally-enabled society is central to Ireland’s economic and social progress and is an integral component to key national strategies such as Future Jobs Ireland⁷⁴. The importance of digital skills not only for future employment and careers but also for general life skills was raised in multiple submissions with both digital skills and digital literacy being an integral part and essential for dealing with all aspects of everyday life. Emergent issues included:

- Being able to just use technology will not be sufficient with many roles being cross-functional, e.g. requiring data analysis skills
- A holistic approach to the inclusion of digital technologies in how students engage with learning materials will support the development of these critical skills. Engaging and interactive learning environments that lead to collaborative approaches is crucial in this
- Closer collaboration between schools, the Department and industry and that public/private partnerships needs to be explored
- Additional supports for specialist roles (e.g. Career guidance counsellors gain a greater understanding of digital related career paths; teachers to develop advanced digital skills in Computer Science
- Better understanding in linking digital learning to future industry roles/Increased integration in TY and senior cycle with industry partners
- There should be a focus on inclusion policies to encourage more girls, those with a disability, and other under-represented groups to consider a career in technology.

Theme 4: ICT infrastructure

Funding. A large majority of the submissions welcomed the funding provided under the current DSS and the fact that schools had autonomy and flexibility in how they invested this was seen as key in supporting their implementation of their Digital Learning Plans. However, they also felt that the funding provided was insufficient with many schools still required to fundraise to bridge the gap to realise the full potential and expectations as set out in the existing Digital Strategy for School. Suggestions included:

- an annual budget would ensure all schools have a minimum level of ICT infrastructure that can be maintained and also enable schools to plan more effectively and continue to implement their Digital Learning Plans
- more targeted funding would help address the digital divide especially in DEIS schools and in schools below a certain size
- address the imbalance of per capita funding between primary and post-primary schools

74 Government of Ireland (2019) ‘Future Jobs Ireland 2019’ <https://www.gov.ie/en/publication/85a440-future-jobs-ireland-2019/>

- development of a more effective public procurement model.

ICT Infrastructure. The topic of ICT infrastructure including broadband access and the provision of sufficient devices and the associated necessary technical support was raised consistently across the submissions as key issues that need to be addressed.

Broadband. This was set out as a key concern in many of the submissions, with calls in particular for high speed connectivity as standard for primary schools, and continuing provision or further upgrading for post-primary schools. The variance in quality of connectivity and speed of broadband across schools, led to many calls for a consistent level of connectivity across all geographical areas. There was also a suggestion that those schools with inadequate broadband provision should be identified and targeted as a matter of urgency. In addition, an Enterprise-level Service Level Agreement (SLA) is needed so that if connectivity gets interrupted, it can be fixed quickly.

Procurement and Frameworks. A large number of submissions indicated that the procurement and maintenance of digital technologies can lead to unnecessary challenges due to a lack of knowledge and experience. Some submissions refer to the fact that sometimes digital technologies can be purchased without the requisite planning or knowledge and with little consideration for the cost of ongoing maintenance and technical support. This can ultimately result in the digital resources and equipment purchased not being used effectively or in some cases, not being used at all. Accordingly, there was calls for further external support and guidance for schools on managing procurement, tenders, installation etc. Among the proposed solutions proposed were:

- frameworks to cover more than hardware and software (e.g. Cloud services / technical support) and should include training as a requirement, and also maintenance and support
- frameworks to be more user-friendly and simpler for schools to access and use
- hardware and software guidelines with minimum specification and areas to consider
- single provider arrangements with standard specifications to be made available
- pre-approved list of suppliers for each type of technology
- national purchasing framework, offering schools the freedom to choose different technology platforms, while taking advantage of larger scale purchasing and support options
- critical need for good advice for schools at the initial stages of selecting infrastructure and hardware when installing Wi-Fi.

Technical Support. A lack of technical support was highlighted throughout submissions as key and multi-faceted issue. Across the submissions, a common theme was that technical support is both time consuming and costly at school level to deal with and is not dealt with on a consistent basis. The fact that teachers are having to spend their time dealing with technical support issues and are not trained IT technicians was raised consistently. In terms of what type of technical support would be provided, the following were the key messages submitted:

- should be responsive and timely
- access to appropriate experts and specialists
- blend of on-line and face-to-face support
- additional funding made available to schools to meet technical support costs

Submissions called for a centralised high quality technical support and maintenance resource to deal with school technical problems. Suggestions included:

- consideration should be given to the deployment of a digital technician to support clusters of small schools
- the creation of an apprenticeship programme to provide technical support capacity for schools -an in-school or shared technical support person could be recruited through an apprenticeship scheme to support schools, which would provide local level technical support as required
- a standard operational mechanism for technical support needs to be developed.

Data Protection. This was mentioned by management bodies, industry, and parents as being a concern. The expanded use of digital technologies raises concerns as to both the security of personal data that schools may hold, as well as the appropriate use of personal data. Increasing security awareness in schools is needed especially around network security. Schools must be in a position to detect network traffic concerns and malicious behaviour from encrypted transmissions without compromising security. When using cloud computing, personal data may be held by commercial entities and as such consideration is needed to ensure appropriate data protection provisions are in place. There were calls to include a suite of template policies and resources for schools to assist in the safeguarding of data storage and processing and in responding to data breaches, all of which would be compliant with current Data Protection legislation.

Other areas for consideration in the new Digital Strategy for Schools

Learnings from COVID-19/Remote Teaching Experience. Remote teaching during the COVID-19 crisis saw the majority of schools /teachers engaging with digital technologies and while it highlighted some gaps, it also demonstrated what can be achieved. The role of the PDST was complemented in supporting schools and teachers. One of the main issues that COVID-19 and the impact of school closures drew attention to was the impact of the digital divide across the country and the importance of all learners having access to the necessary broadband infrastructure and digital technologies. Many students struggled with no access to appropriate digital devices or having to share access with other family members or use mobile phone. There was a view that those students with special educational and additional needs were impacted disproportionately by school closures. There was a lack of availability of portable technology and difficulties for some learners in accessing teaching resources through learning platforms. Finally, the response to COVID-19 also demonstrated the disparity between schools with some struggling to get online and putting the necessary processes and infrastructure in place. For example, schools in areas with low broadband connectivity and lower than average household incomes as well as DEIS schools were more negatively impacted by the move to remote learning than their counterparts. Conversely, schools that had well-established practices and had developed whole-school approaches to digital technologies found the transition to be comparatively easier. Recommendations were to:

- ensure opportunities in leveraging a Blended Learning model is provided (supplement / extend learning)
- ensure that use of online is not replicating classroom teaching; there is need to explore new pedagogical approaches and to

- consider possibilities for use of new ways of communicating with each other and parents.

Learners and Parents. The continued call for student voices to be central to the new strategy was made. Inclusive education with different learning styles being supported and students facilitated in developing their skills for their future were deemed as key. Emergent issues that needed to be attended to included:

- the growing digital needs of students be assessed and that an encouraging and inclusive learning environment developed to allow them develop their knowledge and skills
- students to be encouraged to understand how they learn so that they can take control of their own learning
- use of technologies to support partnerships between home and schools
- the role parents play in supporting the learning and educational attainment of their children must be recognised and the development of their digital competence needs to be supported with appropriate resources.

Digital Divide. The belief is that all students and teachers must have access to the necessary devices and it was felt by many that measures to address the digital divide and equality of access need to be central to the development of the new strategy with the overall objective of no one being left behind. Among the suggestions were:

- all schools should have a minimum level of ICT infrastructure
- a call for DEIS schools to continue to be prioritised in relation to allocation of funding with some calling for a greater differentiation than that which already exists
- planned solutions needed to allow students with additional learning needs and/or disabilities become independent learners
- data packages to be made available for low income households, people in direct provision and other marginalised people to avail of broadband (it is acknowledged that this provision is not within the remit of the DE but could be communicated to the relevant government department)
- supports required for those parents who need it for e.g. lower literacy or digital literacy skills, non-English speaking
- diversity and inclusion should be key to all elements of digital developments in schools.

2.3.2 Findings from DE Survey of Principals, Teachers and Post-Primary Students and the National Parents Council– Survey of Parents: Digital Strategy in Education

Surveys for principal teachers and teachers were made available on the Department of Education website available from 10th May to 18th June 2021. A report on the findings of the surveys has been prepared by the DE and is available on the gov.ie website⁷⁵. For the purpose of this baseline report, the responses have been summarised as follows:

DE Survey of Principals. There was a total of 168 responses submitted:

- 104 primary principals

⁷⁵ <https://www.gov.ie/en/publication/69fb88-digital-strategy-for-schools/>

- 37 post-primary principals
- 27 unspecified.

The survey comprised of 25 questions and the response levels varied for some of the questions. The response can be considered low and the results cannot therefore be considered nationally representative. The high difference between the number of primary and post-primary principals who responded also makes it difficult to draw definitive comparisons across the sectors. It must also be questioned whether the very high number of positive responses by the post-primary principals suggest that those who completed the survey were highly committed to the implementation of the DSS. However, it was not intended that this would be considered as a nationally representative questionnaire but nevertheless, the findings do make a useful contribution to the overall Consultation Framework and will be of value to the overall development of the new Digital Strategy for Schools (2021-2027).

Findings indicate that over 90% of schools who responded to the survey had implemented the DLF by June 2021 (90% of primary schools and 97.3% of post-primary schools). Taken together, most of these schools appear to have focused on the following domains of the DLF: Learning Outcomes (40%), Learning Experiences (>40%), Teacher Individual Practice (<40%) and Teacher Collaborative Practice (>40%). Much fewer schools focused on the domains relating to leadership: Leading Teaching and Learning (>25%), Managing the Organisation (>20%), Leading School Development (>20%) and Developing Leadership Capacity (>12%). Over 90% of these schools have also developed a Digital Learning Plan. The plans were predominantly developed by teachers with some input from learners and less from parents. Learners and parents had a much greater involvement in developing the plan at post-primary level than at primary level. Almost 70% had a digital learning team in place but again this was more evident at post-primary level (96.6%) than at primary level (60.4%).

Not surprisingly, almost all principals who responded at both levels felt that digital technologies in teaching, learning and assessment were important and a wide range of strategies were used to align planning and progress in the use of digital technologies across teaching, learning and assessment as part of the SSE process. These included project work, peer support, continuous professional learning (CPL), action planning at staff meetings, and looking at the “SSE crossover with Digital Learning Plan and work of the schools Digital Learning Team”.

A range of approaches to the provision of teacher professional learning (TPL) were highlighted and there was similarity across the sectors, including:

- provision of time through Croke Park Hours
- in house/share best practice/collaborative practice/share relevant CPD/sharing expertise
- technology mentors/digital leaders/in-house/digital learning team supporting the staff
- encouraging teachers to partake and engage with CPL
- investing in development of teachers to become digital leaders
- providing all teachers with a digital device

Barriers to the provision of TPL were listed as the lack of: financial resources, equipment, time for CPL, substitution, technical support and finally, lack of interest in professional learning in the area.

At both primary and post-primary, the supports and resources used by schools ranged in order from the PDST, Webwise, Scoilnet and Computers in Education Society of Ireland (CESI). Other resources were also used but more so at post-primary level (>70%) than at primary level (>50%). These resources included: Wriggle, Zoom, Class Dojo, Camara Ireland, Twitter, COGG, Kahn Academy, Google Trainer and YouTube. There was a lot of praise for the work of the PDST in providing support. Particular areas of TPL on the use of digital technologies for teaching and learning that principals felt should be focused on in the future included:

- use of Augmented Reality/Virtual Reality
- differentiated CPD from basic skills on up to coding and subject specific on use of digital technology
- assistive technology
- assessment
- embedding digital technologies in the curriculum
- content creation
- remote teaching and learning
- support for Special Education Teachers (SET)/team teaching (only referenced at primary level)

Schools have received a total of €210 million in infrastructure funding grants over the lifespan of the DSS. When asked about the approximate percentage of expenditure from the ICT Grant in a typical school year, there was little difference between primary and post-primary with over 40% of the grant being spent on devices and 10% on technical support on average. There was wide variation in terms of the percentage spent on technical support (which could not be quantified), 85% of schools using an external provider for this purpose. Listed below is the percentage of expenditure from the ICT Grant:

- Devices: 42%
- Networking Equipment: 11%
- Cloud based applications: 7%
- Learning Platforms: 6%
- ICT equipment: 12%
- Technical support: 10%

Computing devices were provided for teacher use in almost all schools with devices provided for learners in 90% of schools. School devices were available for home use by teachers in 95% of schools and for 40% of learners. There was some variation across primary (94%) and post-primary (78%) in terms of learner use.

The digital infrastructure and related supports ranked by principals as required to embed technologies in teaching, learning and assessment showed an overwhelming need for sufficient devices, followed by better broadband, equipment maintenance and professional support in almost equal measure.

The move to remote teaching during the COVID-19 crisis posed both challenges and opportunities for schools. Overall, principals felt that staff on the whole rose to the challenge and huge strides

were made in the provision of remote teaching, however the physical connection was missing. The use of remote teaching, while acknowledged as necessary and useful in circumstances was regarded as secondary to in-person engagement. From the responses given, schools that had already engaged with the embedding of digital technologies and CPL found it easier to cope with the shift to remote teaching. The necessity of continued professional learning in digital technologies was apparent, although there were concerns about the time needed for upskilling. Other important factors raised were the availability of devices, sufficient broadband and the impact of parental engagement on outcomes for remote teaching. Concern was also voiced about the suitability of remote teaching in Special Education Needs (SEN) settings.

Schools Digital Plans and the approaches taken towards embedding digital technologies in practice have changed somewhat as a result of the COVID-19 pandemic. The main changes reported are increased engagement in the development of schools' Digital Plans with a greater focus on embedding of digital technologies in schools. Principals reported increased uptake of TPL along with increased investment in ICT with a general feeling that in their response to COVID-19, schools had advanced 'years ahead of where they would have been'. However, a small number of respondents reported to feeling overwhelmed by the workload brought about by the COVID-19 crisis and have not attended to their Digital Learning Plan as it was not deemed to be a priority.

Finally, respondents were asked to list the key areas a new Digital Strategy for Schools should focus on to assist schools to continue to embed digital technologies throughout teaching, learning and assessment. The key areas that emerged were:

- Funding- grants for equipment purchase, ongoing maintenance and technical support.
- procurement support
- continuous professional learning
- locally available technical support
- improved broadband
- availability of subject resources through Irish.
- assessment technologies.

DE Survey of Teachers. A total of 658 responses were submitted:

- 175 primary teachers
- 365 post-primary teachers
- 118 unspecified.

The survey comprised of 17 questions and the response levels varied for some of the questions. The response can be considered low and the results cannot therefore be considered nationally representative. As per the principals' survey, while not nationally representative it does form a useful element of the overall consultation process in terms of informing the overall development of the new digital strategy.

Findings from the teacher survey indicate that over 76% of schools had implemented the DLF by June 2021 (85% of primary schools and 74% of post-primary schools). However, 17% of teachers did not know if the DLF had been implemented in their school (10% at primary level and 18% at post-

primary). Almost 70% had a digital learning team in place but again this was more evident at post-primary level (96.6%) than at primary level (60.4%). However, the plans were predominantly developed by teachers rather than involving students and parents as advised in the DLF planning guidelines.

97 % of teachers described digital technology as an important part of teaching and learning and assessment. The most frequent uses of digital technologies in their practice were ranked by the teacher in the following order: Engage learners, improve student learning, provide feedback, foster creativity, document student learning, assess competences and skills, facilitate collaboration, for cross curricular projects, enable learners' reflections. At primary level, the most frequent uses were to improve student learning whereas the least frequent use by far was the use of digital technologies to enable learners. At post-primary level, the most frequent use was to engage learners, improve student learning and provide feedback.

Across both levels, teachers asserted that all or most students:

- have a positive attitude to the use of digital technologies
- have awareness of online safety
- know how to source and exchange information online
- know how to communicate online
- know how to improve their learning using digital technologies
- know how to develop their knowledge using digital technologies.

Conversely, as reported by these teachers none or some students did not know how to cite work or how to check the reliability of information found online. Most or some students were able to create their own digital content. There was little variation across primary and post-primary.

In the previous two years, prior to completing the survey, the majority of teachers had engaged in some form of professional learning (less than 5% reported no engagement with professional learning). Typically, respondents had engaged with the PDST, JCT, NCSE, their local Education Centre or ETB. There was also a lot of peer to peer learning and self-directed learning in the form of webinars and training from organisations such as, Camara Ireland and Wriggle. The foci of these webinars included training on the use of G-Suite, MS Teams, Zoom and Seesaw. Barriers to engaging in professional learning included:

- insufficient broadband
- lack of time
- access to devices
- GDPR concerns.

The teachers also identified a number of areas in which they felt there was a need for TPL. While the greatest need was identified in the use of digital technologies for assessment, the following were also listed:

- creation of digital content
- integration of digital technology in the curriculum

- whole school CPD in ICT
- specific SEN focused professional learning
- assistive technology
- online safety
- how to credit/assess accuracy of online information
- basic IT skills.

It was also felt there should be a digital competence framework for teachers to ensure a minimum standard and that students should get training in basic IT skills also. The PDST was the support most frequently used by teachers (90%). Scoilnet was used by 76% of teachers and Webwise by 62% although greater use was made of both by primary than post-primary teachers- particularly of Webwise (75% vs 48%). Teachers listed a wide range of other supports used including, Apple education, Microsoft education, Google education, Computers in Education Society Ireland (CESI), An Chomhairle um Oideachas Gaeltachta & Gaelscolaíochta (COGG) and Etwinning European Schoolnet academy among others.

Most teachers felt the supports offered met their needs with approximately 70% saying they met their needs either fully or mostly. Those teachers whose needs were not met attributed it to a lack of SEN supports, a lack of resources in Irish or that the supports offered were at the wrong level, being either too basic or too advanced.

The majority of teachers (99%) reported to sharing resources and doing so using cloud storage (e.g. Dropbox, OneDrive), social media (You Tube, What's App), web conferencing (Zoom, MS Teams) and email.

Teachers were asked about their infrastructure needs going forward. Across both levels, the key priorities identified were devices for teachers (53%) and student devices (35%). This was followed by peripheral devices (32%) and equipment maintenance (31%) while 13% of primary teachers cited a need for higher quality broadband.

Reflecting on their experiences of remote teaching during the COVID-19 pandemic, teachers reported that their IT and communication skills were much improved, although many cited a steep learning curve initially. Concerns were expressed in relation to poor quality broadband in some areas which teachers felt had impacted the effectiveness of remote teaching and led to a gap opening up between students who had reliable internet access and those who had not. Teachers also reported that some students coped less well than others; in particular, concerns were expressed in relation to less able students or those with specific needs. A lack of appropriate devices for some students was also noted. Overall while most respondents indicated positives about their experiences, the take away message was very much that remote learning is no substitute for in person classroom teaching.

Finally, teachers were asked to signal the key areas a new digital strategy for schools should focus on in order assist them to continue to embed digital technologies in their practice. The key issues reported related to infrastructure, teacher professional learning and teaching and learning.

- Infrastructure: funding for devices; provision of technical support, broadband, procurement advice

- Teacher Professional learning: provision of a range of professional supports ranging from basic IT skills to coding as well as subject specific. Opportunities for professional learning should be systematically and frequently provided; they should also be available during school time
- Teaching learning & Assessment: a greater focus on the use of digital technologies for assessment and for use with students who have a SEN. Simplified frameworks and guidelines in relation to using digital technologies in teaching, learning and assessment

DE Survey of Post-Primary Students

The survey comprised of 30 questions and the response levels varied for some of the questions. As the survey was completed over the period 25th May to 18th June 2021, the likelihood is that the response to some questions were influenced by student experience of remote learning. 143 responses were submitted. The low level of responses while not representative of this population provides some indication of issues that are related to the post-primary students' experiences of using digital technologies in schools.

Overall, over 50% of students who responded enjoy using digital technologies to help them to learn and are confident that using digital technologies helps them to learn. However, only, 28% of students or their fellow students have been involved in the development of any policies on the use of digital technologies in their school.

Over three quarters of these students who responded have reliable access to the internet for working on digital devices during class and 86% have access to a digital device to use in school during class when needed. These devices tend to be laptops (28%), iPad (24%), Smartphone (22%), Chromebook (18%) desktop PC (4%) and tablets (1.5%), with 53% of devices provided by the school and 47% by the student. 94% of students say that they frequently or often need access to a device to help them study and do their homework, and 94% have access to a device at home for schoolwork. This device is a laptop for 41% of students followed by iPad (26%), Smartphone (22%) and desktop PC (7%). Tablets and Chromebooks are used by fewer than 2% of students. Devices are mainly provided by the student (83%) rather than by the school. Microsoft Teams (49%) and Google Classrooms (59%) are the online platforms most frequently used for accessing or submitting homework.

73% of students reported that digital technologies are used in all or most subjects and 27% said that they are used in some subjects. The main uses cited are to:

- submit work to your teacher (24%)
- carry out research (23%)
- get feedback from your teacher or ask questions (19%)
- create materials and projects (18%)
- work with other students or for group projects (15%)
- other (1%)

Others included activities such as: accessing teacher notes and presentations, accessing past examination papers, sourcing additional information and storing notes. Eportfolios (22%), project work (23%) and computer based tests (19%) were the main ways that digital technologies were used

for assessment. Coding or programming assignments (11%) and projects that show proficiency in the use of digital technology (9%) were also used. Some students noted that work was not assessed through technology but rather was only used to access and submit only homework.

Students were generally positive about the ways digital technologies helps them learn. While responses tended to mirror the ways in which they had reported using technologies i.e. very useful for research, sourcing additional material and finding alternative explanations, storage and submission of work, good revision aid (past papers and solutions), it was stressed that digital technologies were accessible at any time thus allowing students to work at their own pace. In contrast, some students claimed that digital technologies could be a distracting, that it too easy to navigate away from school work. Other disadvantages included sore eyes from all the screen time and not having clear separation between school-time and home-time. Poor broadband made work slow to impossible for some.

80% of students would like greater use of digital technologies for learning in school.

Just less than 30% of students described themselves as comfortable using Email, MS Word and PowerPoint and 14% comfortable using Excel. Coding (23%) and Excel (20%) were the most popular skills students wished to develop. Other skills listed included email, typing, researching online, CAD, photo editing and movie making.

Just over 50% of students were confident that they knew how to protect themselves and their personal data online, knew what to do if they saw or heard something concerning online while almost 60% knew how to check if information is reliable. Webwise Youth Hub is not used by students (98%).

Finally, students had mixed feelings about remote learning online during COVID-19. 62% reported finding it beneficial with increased access to information and easier communication. 36% found it negatively impacted their learning preferring in person teaching and feeling isolated/disconnected.

2.3.3 National Parents Council– Survey of Parents: Digital Strategy in Education

To inform the National Parents Council Primary (NPCP) submission on the Digital Strategy for Schools a survey was developed in order to hear parents' opinions and feedback on theirs and their child's experience of digital learning under the current strategy and their views on important issues in the development of a new Strategy. A link to the survey was displayed on the Department of Education website and on the NPC social media platforms. The survey ran from 10th May 2021 to 18th June 2021. At primary level, there was a total of 2,795 responses while at pos- primary, there were approximately 500 responses. Both reports are available on the gov.ie website⁷⁶ and are summarised below.

National Parents Council Primary – Survey of Parents: Digital Strategy in Education

The following is a summary of the key findings as presented in NPCP survey of parents of primary school children:

⁷⁶ <https://www.gov.ie/en/publication/69fb88-digital-strategy-for-schools/>

- 71% of parents reported that their child uses technology in school. 83% stated that their child's teachers used a variety of devices, apps and websites to support their teaching. However, almost half of parents (48%) were unsure if their child's teacher used technology to assess their child's learning and a further 13% stated that their child's teacher did not use any digital assessment. 10% of parents stated that their child had been allocated Assistive Technology with 39% of these parents reporting that they are happy with the way their child's teacher integrates the use of the assistive technology in their teaching. 37% of parents said that ensuring that all students and teachers had access to a device was the biggest challenge faced by their child's school.
- A large majority (73%) of parents do not believe they have enough information about how digital technology is used in their child's education, and just over half (52%) of parents do not feel they are involved enough in the development and implementation of policies about the use of digital technologies in education.
- A large majority of 72% of parents are aware of the Safe Internet Use policy in their child's school.
- When asked what would stop them using digital technology as part of their child's education, an increase in screen time (38%), and a resultant increase of time spent on social media or gaming sites (26%) were the biggest concerns parents had. Lack of access to a digital device such as computer, laptop, or tablet (4%) and unreliable broadband access (7%) were less common concerns.
- When asked about what would support their family to use technology in their child's education, 55% of parents said that a grant or tax relief to purchase devices would help, and 24% of parents said that improved digital infrastructure in their area would help. Parental confidence in supporting their child's technology use for education did not seem to be a barrier for the majority of parents, with 63% of parents stating that they would be quite (39.06%), or extremely (24.11%) confident in supporting their child to use technology, however that does leave 37% of parents feeling they need some support to support their child's technology use.

National Parents Council. Post-Primary – Survey of Parents: Digital Strategy in Education

The main findings from the survey of parents with children attending post-primary school include:

- Around 31% expressed having no understanding of the digital strategy while 10% claimed they knew what is involved. The remainder expressed varying levels of understanding regarding it.
- The teaching methods employed at their child's school relied heavily on the use of digital technologies both at home (>80%) and at school (>70%). It was also used across subjects to varying degrees.
- Access to devices is satisfactory to excellent in schools in >60% of responses and at home that rises to >90% with satisfactory to excellent access. Broadband is similar with approximately 60% satisfactory/excellent in schools rising to >80% at home although a significant number (>20%) were unsure of the school broadband quality.
- Approximately 90% of parents felt their child's level of proficiency in use of digital technology for school work/research/study and project was satisfactory to excellent while 10% reported it as poor.

- Most parents felt well equipped to assist their child in the use of digital technologies although training was requested. Some (>15%) responded as being unfamiliar/having no understanding of digital technologies.
- On the experience of blended learning during COVID-19, access to devices, broadband and overall support from schools was positive but Department supports were felt to be lacking.
- On the prospect of blended learning in the future, more training for parents, students and teachers was the main takeaway although some felt teaching should only be in school.
- The positives arising from the blended approach were cited as flexibility, more exposure to digital technology, time saved not travelling. Isolation, difficulty accessing internet and lack of support were some of the negatives.
- To support families in the implementation of the digital strategy respondents felt there should be grants for devices/BB cost, workshops for parents and students, teacher CPD and better coordination and working between school and home.
- Most families had multiple digital devices, phones/laptops/tablets most commonly with the parent purchasing the device in about 90% of the cases.
- Almost all schools offered some level of advice on internet safety/privacy, >60% good to excellent but a small number (<10%) offered none.
- Over 50% of parents checked their children's internet use regularly or more frequently with <10% not checking at all.

Key takeaway points across all the surveys

- Majority of schools have implemented the DLF and developed Digital Learning Plans, some schools are looking for a more simplified framework
- Most frequent uses of digital technologies in their classroom practice ranked in order by teachers were: Engage learners, improve student learning, provide feedback, foster creativity, document student learning, assess competences and skills, facilitate collaboration, for cross curricular projects, enable learners' reflections
- Need for greater focus on the use of digital technologies for assessment and for use with students who have a SEN
- Students were positive about the ways digital technologies help them learn and the vast majority would like greater use of digital technologies for learning and assessment in school
- The digital infrastructure and related supports ranked by principals required to embed technologies in teaching, learning and assessment showed an overwhelming need for sufficient devices, followed by better broadband, equipment maintenance and professional support in almost equal measure
- Need for TPL to be ongoing and systematic. Barriers to the provision of TPL were listed as the lack of: financial resources, equipment, time for professional learning, substitution, technical support and finally, lack of interest in professional learning in the area
- Digital competence framework for teachers to ensure a minimum standard
- Students should get training in basic IT skills
- Remote teaching acknowledged as necessary and useful in circumstances but was regarded as secondary to in-person engagement, concerns expressed about digital divide and equity
- Greater use of digital technologies to support partnerships between home and school.

2.3.4 Findings from DE Focus Group Interviews

A series of nine focus group interviews were held with a range of stakeholders took place in via Zoom during October 2021. These included interviews with principals, teachers and pupils at primary and post-primary levels, the higher education institutes (HEIs), representatives from Non-Government Organisations (NGOs) and other agencies and finally, a group from industry. The Focus Group questions were informed by earlier stakeholder feedback provided through the Digital Strategy consultation. A series of prompt questions was designed for each of the Focus Groups and provided to participants in advance. These formed the basis for discussion during the Focus Group sessions. H2 Learning facilitated the technical design and facilitation of the focus group sessions online and subsequently analysed the discussion transcripts and compiled the Digital Strategy for Schools Focus Group Consultation Report. This report is available on the gov.ie website⁷⁷. The key messages arising from the interviews were summarised and organised around the four themes of the strategy: teaching, learning and assessment using ICT, teacher professional learning, leadership, research and policy and ICT infrastructure. Further analysis revealed a number of commonalities across the views of principals and teachers and so, these are presented together.

Teaching, Learning & Assessment

The key role digital technologies play in teaching, learning and assessment and the potential to create a more inclusive education system for all learners was acknowledged. The participants noted the potential of digital technologies to support them within their role in the education system i.e. to manage, to teach and to learn. They see that digital technologies have the potential to create a more inclusive education system for all learners. Despite this, many believed that digital technologies are not being embedded across the curriculum and are often viewed as an additional activity or the responsibility of interested or digitally competent teachers. The lack of clear curriculum and assessment guidelines was viewed as a contributing factor to lack of engagement. It was noted that where digital technology is embedded into curriculum specifications, such as with Design and Communications Graphics (DCG) and Art at post-primary level, there is greater use of digital technology and similar calls were made in relation to the new Leaving Certificate and Primary Curriculum specifications. Teachers and principals indicated that lack of time is the biggest obstacle for them to engage, with further support needed on how and when to use digital technologies effectively in their context. In particular, those in Special Education, require a more holistic set of supports, including the provision of additional time, to procure and better utilise digital technologies. Overall, participants are seeking a holistic approach to digital education, that embeds digital into all aspects of school life and stress the need to further align policies, support, content, funding, and teacher CPD to truly embed it into the lives of school leaders, teachers and learners.

Teacher Professional Learning

Teacher professional learning is a key issue and the complexity of ensuring that ALL teachers and principals have access to a range of professional learning activities that best meet their needs was acknowledged. Moreover, schools are seeking greater flexibility and choice when it comes to professional learning and in particular, around the types of professional learning they engage in, and when, so that all staff are confident and competent to use digital technology to support teaching, learning and assessment activities. The renewed emphasis on digital education in Céim was

⁷⁷ <https://www.gov.ie/en/publication/69fb88-digital-strategy-for-schools/>

welcomed by the initial teacher education (ITE) providers and many indicated that they plan to move to a more embedded or integrated approach across the entire institution as part of Céim. In welcoming the emphasis on digital education many noted that student teachers will require further support and attention in using digital technologies while on placement. Ultimately the need for a holistic set of professional learning supports that will enable all key stakeholders in schools to embed digital technologies into their practice was stressed. While significant supports are already available to schools, there is also a need to explore how the system can raise awareness of available supports and incentivise teachers to avail of these supports as there seems to be a significant lack of awareness throughout the system of available supports.

Leadership, Research and Policy

Schools believe that the DLF has been effective in providing a focus for digital learning in schools but they believe they require additional time to consider it and to embed it into their school improvement plans. Leadership in school was highlighted as being vital to the successful and effective use of digital technologies in schools. Besides professional learning needs for school leaders, the role of the Digital Learning Coordinator (DLC), was cited as an area that requires further consideration and clarification, in the form of additional time to carry out these duties. There was general agreement that teachers in this role should focus primarily on providing pedagogical support to their colleagues. It was noted that school-based research projects (e.g. Schools Excellence Fund Digital) are extremely valuable and that Initial Teacher Education (ITE) providers could play a more strategic role in future school-based digital research projects by being involved in the design, implementation, and evaluation of such projects. Finally, the issue of student management systems has to date been outside the remit of previous digital strategies and it was suggested that it may now be timely to review this issue and consider if student attendance and associated services should now be included in any future digital strategy for schools.

ICT infrastructure

The focus groups reiterated the need to provide schools with access to high-speed broadband, industry grade Wi-Fi and the ongoing funding to purchase and update appropriate digital technologies. Schools welcomed the funding provided by the Department of Education in recent years to procure digital technologies, while also noting that the procurement of such technologies is time consuming and can be challenging. Ideally schools would prefer not to be engaged in procuring equipment and obtaining quotes etc. as it is time consuming. However, schools value the flexibility to decide what kinds of technology they wish to procure for their teachers and learners. Furthermore, primary schools would like additional flexibility and choice in procuring equipment and associated services from local suppliers. To enable them to make well informed decisions locally they would need access to timely advice in relation to the specifications of a range of technologies and services that are typically deployed in schools. Similarly, schools recognise the importance of technical support services to ensure their equipment and services are fully operational. Generally, such services are obtained from various commercial providers, usually at local level and this can be both costly and time consuming. However, there was limited support for the provision of regional technical support models. Schools envision a range of supports, such as courses on maintaining equipment in schools to the provision of advice on technical support matters. Schools realise that there is no easy solution and may need to implement several approaches to ensure staff and learners have constant access to reliable and effective digital technologies and services.

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