Digital Learning Framework (DLF) national longitudinal evaluation:

Wave 2 Final Report

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List of acronyms and abbreviations

CPD	Continuing Professional Development
DEIS	Delivering Equality of opportunity In Schools
DoE	Department of Education
DEAP	EU Digital Education Action Plan 2021-2027
DES	Department of Education and Skills
DL	Digital Learning
DLF	Digital Learning Framework
DLP	Digital Learning Plan (of schools, to implement the DLF)
DLT	Digital Learning Team (in the school)
DSS	Digital Strategy for Schools to 2027
DT	Digital Technology/Technologies
EAL	English as an Additional Language
ELC	Early Learning and Care (pre-primary settings)
ERC	Educational Research Centre
ETB	Education and Training Board
ICT	Information and Communication Technologies
IT	Information Technologies
LAOS	Looking at Our Schools Framework (for School Self-Evaluation)
NAMER	National Assessment of Mathematics and English Reading
NCCA	National Council for Curriculum and Assessment
OCO	Ombudsman for Children Office
OECD	Organisation for Economic Co-operation and Development
PDST	Professional Development Service for Teachers
PIRLS	Progress in International Reading Literacy Study
PISA	Programme for International Student Assessment
SSE	School Self-Evaluation
STEM	Science, Technology, Engineering and Maths
TiE	Technology in Education (a team of the PDST/OIDE responsible for resources and supports to enable schools to implement the DLF)
TIMSS	Trends in International Mathematics and Science Study
TLA	Teaching, Learning, and Assessment
TPL	Teacher Professional Learning
UNESCO	United Nations Educational Scientific and Cultural Organisation

Contents

Executive summary

E.1 Background

This Wave 2 report on the Digital Learning Framework (DLF) national longitudinal evaluation follows on from the baseline and Wave 1 reports (Cosgrove et al., 2019 and Feerick et al., 2021).

The Digital Learning Framework is a guide for schools to assist them in effectively integrating the use of Digital Technologies (DTs) into all aspects of Teaching, Learning and Assessment (TLA). It is now used in combination with the new *Digital Strategy for Schools to 2027* (DSS) (DoE, 2022), providing a practical framework for use in schools, while supporting a number of other department policies.[1]

In common with the previous strategy (which ran from 2015 to 2020), the new DSS aims to support schools to provide all learners with the opportunity to acquire the knowledge and skills needed to navigate an increasingly digital world. The strategy recognises how the development of DT usage in schools was accelerated during the pandemic and it places an emphasis on digital competence while highlighting the importance of the "digital education ecosystem" to achieving the strategy's goals (DoE, 2022, p.11).

Whereas the previous DSS organised its policy priorities under four main themes, the new strategy focuses on three pillars:

- **Pillar 1:** Supporting the embedding of Digital Technologies in teaching, learning and assessment;
- **Pillar 2:** Digital Technology infrastructure;
- **Pillar 3:** Looking to the future: policy, research and digital leadership.

The new DSS makes a commitment of €200 million in capital investment for the period 2022-2027. At the time of publication, €100 million has been issued to schools.

E.2 The Digital Learning Framework (DLF)

The DLF is designed for use alongside the DSS. It is organised along the same structure as the School Self-Evaluation (SSE) framework *Looking at Our School* (DES, 2022). Within the DLF framework, there are two overarching *dimensions* comprising eight *domains*, as follows:

- **Teaching and learning dimension**
  - Domain 1 Learner Outcomes
  - Domain 2 Learner Experiences
  - Domain 3 Teachers' Individual Practice
  - Domain 4 Teachers' Collective/Collaborative Practice
- **Leadership and management dimension**
  - Domain 1 Leading learning and teaching
  - Domain 2 Managing the organisation
  - Domain 3 Leading school development
  - Domain 4 Developing leadership capacity

1 Previously, the DLF worked alongside the *Digital Strategy for Schools 2015-2020*.

A set of standards are embedded within each of these eight domains, accompanied by statements of Effective and Highly effective practice. These statements support school leaders and teachers to effectively plan and support the embedding of DTs into teaching and learning, and also help enable teachers' individual practice. Furthermore, the framework serves as a tool for the evaluation of how DTs are embedded across all areas of school activity (DES, 2017).

Underpinning the Statements of Practice is the UNESCO ICT Competency Framework for Teachers (UNESCO & Microsoft, 2011) and it is also informed by the EU Joint Research Centre's DigCompEdu (Punie & Redecker, 2017) and DigCompOrg frameworks (Panagiotis et al., 2015).[2]

The PDST Technology in Education (TiE) team has developed an integrated suite of resources at www.DLPlanning.ie, including the DL Framework document, DL planning guidelines, DL planning templates, statements of Effective and/or Highly effective practice, sample downloadable questionnaires and other documents, and sample videos of best practice. These resources are intended to support schools with the implementation of the DLF.

E.3 Objective and design of the DLF evaluation

The objective of the DLF evaluation is to *evaluate the implementation of the Digital Learning Framework from the multiple perspectives of school principals, Digital Learning Team leaders, teachers and learners over a three-year period (2019-2022)*.[3]

There were 11 specific aims of the overall DLF evaluation, as outlined in the Wave 1 report (see Feerick et al., 2021). Specific aims relevant to Wave 2 of the evaluation are outlined as follows (see Section 1.2 of this report for more detail):

- Determine if teachers have become more favourably disposed to the use of DTs in their practice as a result of implementing the DLF.
- Capture the views of learners on the use of DTs in classrooms.
- Assess the efficiency of the approach taken by schools in implementing the DLF and, where appropriate, the efficiency of the linkage with the schools' SSE process.

Throughout the DLF evaluation, guidance and advice on key aspects has been provided by members of the Teacher Education Policy (Digital) Unit in the Department of Education and the PDST TiE team (now part of Oide).

The design of the DLF evaluation is longitudinal and mixed-method, involving a baseline phase and two follow-on data collection phases.

The Wave 2 school sample is a continuation of the Wave 1 sample, which was drawn from the baseline school participants, enabling a three-year perspective at the school level on the implementation of the DLF. A priority for Wave 2 was to gather information on the perspectives of young people. Focus groups with students were originally planned, however, in light of the changed circumstances brought about by the COVID-19 pandemic, a pupil/student online survey was conducted instead, the results of which are outlined in detail in Chapter 5.

Data collection for the final wave of the DLF evaluation, Wave 2, was initially carried out in December 2021. The window for collection was extended into May 2022 in an effort to capture more data as response rates were initially low, possibly due in part to the ongoing effects of the COVID-19 pandemic. The Wave 2 survey was administered to respondents online via the Qualtrics survey platform. The questionnaire for Digital Learning

2 Digcomp was updated in 2022 (Digcomp 2.2).

3 This objective is based on the Terms of Reference agreed between the ERC and DoE at the outset of the project.

Team (DLT) leaders (and principals) was developed by the DLF evaluation team at the ERC, in both Irish and English, and subsequently reviewed and approved by representatives from the Department's Teacher Education Policy (Digital) Unit, the Inspectorate, the PDST and the ERC. See Section 1.3.2 of this report for a description of the sample and respondents.

E.4 Key findings from Digital Learning Team leaders' (or Principals') questionnaires

The response rate to the Wave 2 survey was high (79% primary/special and 75% post-primary), with a total of 217 schools (143 primary and 74 post-primary) submitting a questionnaire between December 2021 and May 2022. The most frequent respondents to the survey were the School Principal and the DLT leader (see Chapter 2).

The quantitative results of the teacher surveys at both primary/special and post-primary levels are not presented in this report. This is due to low teacher response rates at both levels, which would mean that the results of the teacher survey data would not enable generalisation to the population of teachers at these schools.

E.4.1 DLT survey key findings

Most schools had established their DLT about a year ago or more, however primary schools were more likely than post-primary not to have a DLT in place at the time of the survey. Almost all primary and post-primary schools had either completed their Digital Learning Plan (DLP) or were in the process of drafting it. The DLT leader and teaching staff were commonly consulted with for the development of the DLP, and were also commonly included on the school's DLT.

Approximately nine out of ten DLT leaders indicated that the Teaching and Learning dimension had been chosen as the school's focus for DLF planning.

The PDST's www.DLPlanning.ie website was well frequented by DLT leaders. The most highly-rated aspects of the website were the DL plan template and the DL Framework document.

Participation by DLT leaders in professional learning over the last two years was high, indicating a continuing commitment in this regard.

In relation to digital leadership skills, DLT leaders indicated that the usage of DTs for TLA was agreeable to school staff, that a culture of digital change was evident within schools, and that this was supported by a high level of digital competence among staff.

As regards school self-assessment (SSE), teachers' level of embedding of DTs and effectiveness of DT usage (as reported by DLT leaders) was higher at Wave 2 than Wave 1.

In relation to the statements in the DLF on which their school was focusing, the majority of schools were Mostly/All at statements of effective practice. Post-primary schools were more likely to report higher levels of Highly effective practice.

On another measure of SSE, a markedly greater proportion of schools identified at an Advanced/Highly advanced level of practice in Wave 2 compared to Wave 1, with post-primary schools being slightly ahead of primary schools in this regard also. The majority of schools however were at an Intermediate level of practice.

As regards DT infrastructure, full-time access to a school-owned computing device for teachers was high, particularly at primary level. Access for pupils/students to school-owned computing devices *when required* was lower at both education levels.

As was the case at Wave 1, technical support was most often delivered through a mixture of internal and external support. Ratings of the effectiveness of several aspects of technical support were higher at post-primary level. Technical support and maintenance at primary level was rated as Fair/Poor in over two-fifths of schools.

Broadband connection was generally rated as being good, however both the availability and awareness of suitable software for teaching and learning, and the availability of digital tools (such as data sensors, cameras and assistive devices) were rated poorly in many schools. Scores on the *DT infrastructure and connectivity* scale were in the moderate range at both education levels, suggesting a need for improvement on this measure.

Mean scores on the *DT teacher and pupil/student engagement* scale were in the moderate range. The highest rated item at both primary and post-primary level was teachers' overall level of knowledge and skills in using DTs for teaching and learning, which the vast majority of respondents at both education levels rated as positively.

Mean scores on the *DLF Impact* scale were in the moderate range for primary and moderately high range for post-primary, though the scale means were not statistically different. The greatest impacts of the DLF, at both education levels, were evident in the sharing of documents or resources among teachers, decisions relating to enhancing DT infrastructure, and teaching and learning activities during class time. A large impact was evident also upon collaborative practices among teachers, particularly at post-primary level.

Results overall indicate that the DLF implementation has had a positive outcome on teaching and learning activities, student engagement, collaborative practices among teachers, and policy and decision making relating to school's DT. Impact on teachers' assessment practices at primary level, however, continues to be low (evident at Wave 1 also).

The overall timeline for implementation and DT infrastructure were rated as being highly/moderately challenging to the implementation of the DLF at both levels. The lack of dedicated time for staff to implement the steps involved was identified as the greatest challenge to implementing the DLF.

Many primary schools had more DTs in place *after* the onset of COVID-19-related school closures in March 2020, whilst post-primary schools tended to have more DTs in place before March 2020. After the onset of the school closures, there was widespread use by both primary and post-primary schools of video meeting tools, whilst cloud-based platforms were in use at both education levels also.

DLT leaders were asked to rate how their schools' DT usage may have changed between March 2020 and the time of the survey. The usage of DTs at both education levels had improved since March 2020 – in particular, to enhance student interest and engagement and to support collaborative teaching and learning, as well as the usage of applications within TLA for literacy, numeracy and scientific literacy.

E.5 Changes, progress and challenges since baseline

Longitudinal changes over time, observed in relation to the implementation of the DLF since the baseline survey, are described in Chapter 3. Analyses presented describe changes only at the school level (not at the teacher level).

With respect to the level of embedding of DTs in TLA, analysis over the three waves of the study showed that the proportion of schools at the lower (Emerging) end of the scale decreased, while the proportion of schools at the upper (Advanced or Highly advanced) levels) increased. Nonetheless, by Wave 2, a majority of schools at both education levels were categorised at the Intermediate level.

Comparisons of changes from the baseline survey to Wave 2 indicated that engagement with DTs had significantly increased over time at both education levels. There were no statistically significant changes from baseline to Wave 2, however, at either school level, in reports of connectivity and infrastructure or in ratings of the effectiveness of schools' technical support.

Regression models examined the associations between a range of predictor variables and three key outcomes: DT engagement, DLF impact, and high levels of practice

For **DT engagement**, at Wave 2 several variables were significantly associated with higher DT engagement at both education levels: school leadership (positive), levels of DT infrastructure and connectivity at Wave 2 (positive), and the effectiveness of technical support (negative). Other variables showed significant patterns for primary and post-primary schools separately.

For **DLF impact**, school leadership was positively associated with higher DLF impact at both education levels. Other variables showed significant patterns for primary and post-primary schools separately.

Finally, for **high levels of practice in relation to the DLF**, primary/special schools and post-primary schools showed different patterns of association. Among primary/special schools, higher levels of DT connectivity and infrastructure at baseline, higher school leadership and – perhaps surprisingly – reporting more negative attitudes to DTs in relation to student learning were associated with reaching a high level of practice at Wave 2. Among post-primary schools, only higher levels of CPD suitability for school staff and higher levels of DT engagement at baseline were associated with reaching a high level of practice at Wave 2.

These findings highlight the importance of school leadership and infrastructure and connectivity in encouraging successful implementation of the DLF.

E.6 DLT leader and teacher perspectives

DLT leaders' and teachers' responses to open-ended questions were analysed in a qualitative framework, to provide a more detailed and contextualised insight into how the DLF is planned for, implemented, and viewed by staff within schools (see Chapter 4).

DLT leaders were asked for their views on what key outcomes should emerge from the embedding of DTs into TLA. At both education levels, the possibility of collaboration between teachers in sharing best practice in using DTs was identified, as well as the usage of DTs for assessment purposes, in particular more usage of DTs for both summative and formative assessment. The usage of DTs as support for inclusion was also important at both levels, in particular with the increased use of DTs for groups with differing needs, such as students with Special Educational Needs, students from diverse language backgrounds, from socioeconomically disadvantaged backgrounds, and refugees.

As a support for the continued implementation of the DLF, leaders at both levels indicated that the purchasing of additional devices for students was a priority. A frequent concern among leaders was the sharing of devices between students, and the limitations this placed on the embedding of DTs into TLA. At post-primary level, additional devices for staff were also seen to be a priority.

As regards using the ICT Infrastructure grant, leaders expressed a need for advice on how to match the school's needs to technologies available, on procurement and purchasing processes, and also the desire for general guidance on the issue.

Key enablers of the successful implementation of the DLF were identified by primary level teachers as being the need for additional and well-maintained devices and also the need for appropriate practical CPD and ongoing support to continue to implement and embed the DLF in TLA. Key enablers identified by post-primary teachers included the need for additional and well-maintained devices as well as an emphasis on purchasing help and funding for DTs, and time for research, planning and implementation.

Primary level teachers' descriptions of how DTs are currently embedded into their TLA focused on the use of devices by students both during class and at home, the employment of educational software and apps for TLA, and the use of interactive whiteboards or other hardware in class. Key differences between primary and

post-primary level were a lower emphasis on the use of whiteboards, and a higher emphasis on the usage of classroom management tools and learning management systems, as well as the emphasis on DTs for assessment purposes at post-primary level.

Professional learning supports for the embedding of DTs into TLA identified by DLT leaders across both school levels included the desire for in-school support/in-service days and continued CPD/DLF seminars/additional training. Teachers also expressed a preference for in-person support, as well as a desire for more/continued DT CPD training in school, and practical training in apps/software by subject/level.

There were key longer-term changes in schools in using DTs in TLA in response to the COVID-19 pandemic. DLT leaders noted how schools were prepared for teaching and learning during the pandemic by certain elements in the DLP. At primary and post-primary level, leaders indicated that digital resources already in place, such as learning management systems, were helpful in addressing the challenges that had to be faced during the pandemic, as well as the fact that teachers had already received training in digital teaching and learning. Leaders commented how skills were passed on to colleagues through systems of online collaboration used through the period of the pandemic.

Teachers noted, across both levels of education, that the level of DT usage in teaching and learning had increased since the pandemic. There was consensus too that the pandemic had led to an increase in collaboration (both between staff members, and between teachers and students) and improved communications.

Reports from leaders and teachers indicate that it is important to assess what the specific needs of the school are in planning and implementing DLPs. These considerations can include teacher professional development needs, student-specific needs, and technological or infrastructural needs.

Reports indicate that the level of DT usage and the level of embedding of DTs into TLA has been much increased since the COVID-19 pandemic when compared to pre-pandemic practices.

E.7 Perspectives of students/pupils and the PDST Digital Technology Advisors

The views of post-primary students, primary pupils and PDST DT Advisors were collected through a mixture of open-ended and closed-ended questions to provide further insight into how DTs are used in an educational setting (see Chapter 5).

Students and pupils were confident in their DT skills across most of the DigComp 2.2 competencies (these competencies being: *information and data literacy; communication and collaboration; digital content creation; safety; and problem solving*). Students/pupils also found DTs accessible and easy to use, and expressed enjoyment in using DTs for schoolwork.

PDST advisors noted that there has been a positive shift in the mindset towards DTs amongst school staff. They also expressed that the implementation of the DLF has allowed for more long-term planning for schools.

Despite these successes, participants also identified a number of challenges related to implementing the DLF and DTs in general. Digital content creation is an area that this cohort of students and pupils engage with infrequently. PDST DT Advisors also identified this area as a particular challenge for teachers, along with existing infrastructure, staff availability for implementation and staff culture.

Future priorities for pupils and students include increasing access to DTs, incorporating them more into schoolwork and to use them as an alternative to traditional teaching methods.

PDST advisors also emphasised enhancing the learning experience for students and pupils through greater collaboration, learning basic IT skills, digital portfolios, prioritising learning outcomes and re-structuring how decisions are made when integrating DTs.

E.8 Successes, challenges and implications

Several successes, challenges and implications related to the implementation of the DLF arise from the collective data described in this report (see Chapter 6).

E.8.1 Successes

DLT leaders' reports indicate that several areas across both education levels have demonstrated **large impacts** as a result of the DLF implementation, including teaching and learning activities, the sharing of documents or resources among teachers, decisions relating to enhancing DT infrastructure, and collaborative practices among teachers (particularly at post-primary level on this final measure).

In relation to **level of embedding of DTs in TLA, o**ver the three waves of the DLF evaluation the proportion of schools at the lower (Emerging) end of the scale decreased, while the proportion of schools at the upper (Advanced or Highly advanced) levels increased. However, by Wave 2, the majority of schools at both levels were self-categorised at the Intermediate level.

On measures of level of embedding and statements of effective practice, post-primary schools were more likely to report higher levels of embedding than primary/special schools.

Comparisons of change from the baseline survey to Wave 2 indicate that **engagement with DTs has significantly increased over time**, both in primary/special schools and in post-primary schools.

The **mindset of school staff towards DT usage** has also changed considerably over time and this has supported the embedding of DTs across multiple areas of teaching and learning.

The **COVID-19 pandemic** in particular, and the subsequent switch to remote teaching and learning, led to increased teacher confidence in DTs and a change in staff mindset towards the usage of DTs.

Evidence from pupils and students suggests that the embedding of DTs in TLA is regarded positively by learners at both levels of education.

Evidence throughout the report suggests that the variety of professional learning modes through which **CPD** is offered are regarded as accessible and efficient.

E.8.2 Challenges

Most schools are still focused on the teaching and learning elements of the DLF, and not the leadership and management strand. **This suggests that there is potential for schools to engage more fully with the whole school elements of the DLF in the future.**

An area where engagement has been consistently low across the three waves of this study is in the use of DTs for assessment. At Wave 2, **low usage of computer-based standardised tests** in both literacy and numeracy were reported at primary level, as well as a **low impact of the implementation of the DLF on teachers' assessment practices** at this level also.

PDST DT Advisors' responses noted that the **implementation of the DLF provided structure, guidance and ongoing support when embedding DTs.** The Wave 2 findings showed that engagement with planning at both levels through DLPs, the establishment of DLTs, and the SSE processes has improved since Wave 1. However, **primary schools are not as advanced on many measures** (in particular, developing the DLT, and proceeding towards more advanced levels of embedding DTs and statements of highly effective practice). PDST advisors identified some possible causal factors – particularly, the opportunity to share responsibilities among more staff in larger schools (which might partly explain the difference).

Some primary/special schools need additional support with progressing the formation of their school's DLP and DLT. In terms of **embedding, supports should be focused for primary/special schools with respect to proceeding towards statements of highly effective practice and an advanced level of embedding DTs.**

In terms of **infrastructure and connectivity**, despite progress made through the Schools Broadband Programme and the National Broadband Plan among other initiatives, the Wave 2 data highlights **persisting low levels of connectivity and DT infrastructure in some primary/special schools**, which still presents a significant barrier to the successful embedding of DTs.

It should be noted that the Wave 2 longitudinal data indicated that there has been no statistically significant changes from baseline to Wave 2, at either school level, in schools' reports of connectivity and infrastructure.

The **sufficiency of technical support provision and maintenance** is an area that continues to be a challenge for schools. While the model of technical support delivery to schools remains consistent, there has been no improvement in the effectiveness of technical support between baseline and Wave 2.

The vast **majority of DLT leaders** indicated that their school required **more funding to implement the DLP.**

Another resource issue highlighted in the Wave 2 data is the lack of dedicated time available to school staff for the implementation of the DLF, a finding which is consistent with Wave 1.

E.8.3 Implications

By Wave 2, the majority of schools were at an Intermediate level of embedding, suggesting that there is **room for further improvement in schools' embedding of DTs for TLA.**

This report suggests that consideration should be given to Ireland's participation in **digital literacy assessment at student and teacher levels**. No direct assessment of digital literacy is currently implemented in the Irish context. This is an important consideration, as the new strategy *Ireland's Literacy, Numeracy and Digital Literacy Strategy 20242033: Every Learner from Birth to Young Adulthood,* places digital literacy at its core.

The Wave 2 data suggest that schools generally take a systematic approach when determining their digital education needs, and that **more detailed and tailored guidance regarding the use of the ICT infrastructure grant is likely to be beneficial in aiding the decision-making process of DLT leaders and school staff.**

Regarding CPD, **teacher responses suggest a preference for DT subject/level-specific CPD**, and **for in-school support**, to facilitate professional learning and development in this area.

The **untapped potential of DTs for assessment** was identified as a key priority by DLT leaders, and should be addressed with **appropriate, specific training and facilitation for teachers**.

Regarding implementing the DLP, **more and consistent resources** should be directed to schools for the **purchasing of additional devices for students, as well as maintenance and upgrading of existing devices, the provision of technical support, and development of infrastructure** to further support the embedding of the DLF in all aspects of teaching, learning and assessment.

In order for full implementation of the DLF, sufficient resources need to be available for **staff** to be able to devote **dedicated time to engage in upskilling in the effective use of new digital tools**.

DLT leaders identified several aspects that they see as key intended outcomes arising from the implementation of the DLF. Prominent among these priorities was the **use of DTs as a support for inclusion**. DLT leaders viewed the potential for more inclusive TLA practices through the increased use of DTs for groups with differing needs (such as students with Special Educational Needs, students from diverse language backgrounds, from socioeconomically disadvantaged backgrounds, and refugees). **The impact of the DLF on the inclusion of**

student groups with diverse needs should be examined in more detail in future research, including by drawing on the perspectives of those student groups.

Chapter 1:
Background, aims and design

1.1 Background and structure of this report

This Wave 2 report on the Digital Learning Framework (DLF) national longitudinal evaluation follows the previously-published baseline (Cosgrove et al., 2019) and Wave 1 reports (Feerick et al., 2021). The design of the longitudinal study was informed by an initial trial conducted in 2017-18 (Cosgrove et al., 2018).

Data collection for the final wave of the DLF evaluation, Wave 2, was initially carried out in December 2021. The window for collection was extended into May 2022 in an effort to capture more data as response rates were initially low, possibly due in part to the ongoing effects of the COVID-19 pandemic. While schools were open and instruction continued through this period, some disruption was nevertheless experienced due to illness and organisational challenges. There is no doubt that the school closures resulting from the COVID-19 pandemic effected a change in Teaching, Learning and Assessment (TLA) practices in Irish schools, and that many of these involved the use of Digital Technologies (DTs). The data presented in this report will provide an opportunity to consider how schools and students responded to some of the challenges presented by the pandemic, particularly with reference to the use of DTs for TLA, and the embedding and implementation of the DLF.

In this introductory chapter, the Wave 2 report is set against the background of Ireland's new *Digital Strategy for Schools to 2027* (DSS) (DoE, 2022), and the purpose and design of the DLF within schools is explained. The objectives and aims of the DLF evaluation are described in Section 1.2, while the survey and sample designs are outlined in Section 1.3. A brief update to the research landscape since the publication of the Wave 1 report, both nationally and internationally, is provided in Section 1.4.

Chapter 2 examines the responses to the DLT leader questionnaire in Wave 2 using quantitative methods. Chapter 3 describes changes over time in DLF implementation and the impact of the DLF from baseline to Wave 2. Chapters 4 and 5 take a qualitative approach in their examination of responses to the teacher questionnaire (Chapter 4) and the pupil questionnaire and insights from PDST[4] Technology in Education (PDST TiE) advisors (Chapter 5).

The concluding chapter (Chapter 6) draws together the key findings of the evaluation as a whole, reporting on the progress of the implementation of the DLF from baseline to Wave 2 and drawing also on recent research emerging in the wake of the pandemic.

1.1.1 Digital Learning Framework and Digital Strategy for Schools (2022-2027)

The Digital Learning Framework is a guide for schools to assist them in effectively integrating the use of DTs into all aspects of TLA. It is now used in combination with the new *Digital Strategy for Schools to 2027* (DoE, 2022), providing a practical framework for use in schools, while supporting a number of other Department of Education policies.[5]

4 Since September 2023, the PDST is part of the newly-formed Oide. However, for the purposes of this report, we will refer to the PDST, which was the relevant body during the period covered by the DLF Evaluation.

5 Previously, the DLF worked alongside the *Digital Strategy for Schools 2015-2020*.

This section provides an overview of the current DSS, which was launched in April 2022. This new strategy builds on the momentum of the previous one, and is projected for use until 2027. It aims to support the objectives of the Department of Education's *Statement of Strategy 2021-2023* (DoE, 2021a).

In common with the previous strategy (which ran from 2015 to 2020),[6] the new plan aims to support schools to provide all learners with the opportunity to acquire the knowledge and skills needed to navigate an increasingly digital world. Given the timing of its publication in early 2022, the strategy recognised how the development of DT usage in schools was accelerated during the pandemic, and "how the effective use of Digital Technologies helped our schools and teachers to respond and to ensure continuity of teaching, learning and assessment for learners in the context of school closures and remote learning" (DoE, 2022, p.10).

The new strategy places an emphasis on digital competence while highlighting the importance of the "digital education ecosystem" to achieving the strategy's goals (DoE, 2022, p.11). The vision aims to:

> empower schools to harness the opportunities of digital transformation to build digital competence and an effective digital education ecosystem so as to develop competent, critically engaged, active learners while supporting them to reach their potential and participate fully as global citizens in a digital world.

This ambition echoes the two high-level priorities set out in the *EU Digital Education Action Plan 2021-2027* (DEAP): "Developing a high performing digital ecosystem" and "Enhancing digital competences for the digital transformation" (European Commission, 2020). DEAP is an EU policy initiative that sets out a common vision of high quality, inclusive and accessible digital education in Europe, which aims to support the adaptation of the education and training systems of Member States to the digital age.

Whereas the previous DSS organised its policy priorities under four main themes (*Teaching, learning and assessment using ICT; Teacher professional learning; Leadership, Research and policy; ICT infrastructure*), the new strategy focuses on three pillars:

- **Pillar 1:** Supporting the embedding of Digital Technologies in teaching, learning and assessment;
- **Pillar 2:** Digital Technology infrastructure;
- **Pillar 3:** Looking to the future: policy, research and digital leadership.

In the previous iteration of the strategy, Teacher Professional Learning (TPL) was a distinct strand. However, in the new DSS, the role of the teacher is embedded within Pillar 1. The new strategy adopts the technological pedagogical content model[7] to inform TPL, which recognises that effective teaching practice with technology requires knowledge in three complementary but distinct realms: technological knowledge, pedagogical knowledge, and content knowledge (DoE, 2022, p.27).

Given its focus on TLA, Pillar 1 is of particular relevance to the DLF and its implementation in schools. Its objectives can be organised into three broad areas. *At the student level* the objectives are to "empower learners become more confident and competent in their digital learning" and to utilise DTs "to enhance inclusion, equity, learner participation and personalisation." *At the teacher level*, the objectives aim to embed "appropriate and effective use of Digital Technologies" at each stage of teacher education, make teachers aware of "supports and resources available relating to the use of Digital Technologies", and provide "flexible, differentiated, needs based" TPL. Finally, *at the system level*, it aims to embed DT use into all "new educational policies and curricula"

6 The previous strategy, *Digital Strategy for Schools 2015-2020: Enhancing teaching, learning and assessment*, built on a number of other related documents such as the *2013 ICT Census of Schools* (Cosgrove et al., 2014), *Investing Effectively in Information and Communications Technology in Schools, 2008-2013* (DES, 2008), and *Building Towards a Learning Society: A National Digital Strategy for Schools* (Butler et al., 2015).

7 The Technological Pedagogical Content Knowledge (TPACK) framework (Mishra & Koehler, 2006) outlines the types of knowledge required by teachers to successfully integrate Digital Technologies in TLA.

and to "provide further supports to assist schools in their self-assessment of progress of embedding [DTs in TLA]" (DoE 2022, p.21).

Pillar 2 concerns itself with Digital Technology infrastructure. Between 2015-2020, €210 million was issued to schools under the ICT Infrastructure grant. The grant is paid directly to schools, and schools determine their infrastructural needs in line with their Digital Learning Plans (DLPs). The new strategy commits a further €200 million in capital investment for the period to 2027, with an additional €13m per annum for schools' broadband connectivity. The strategy states that further decisions in relation to funding will take into account some concerns raised during the consultation process, including the need for funding to address the needs of those at risk of educational disadvantage, the need for schools to have multi-annual funding and certainty around funding, as well as a broad range of supports (DoE, 2022, p.43-44).

A key concern for schools, as noted in the Wave 1 report, is variation in broadband capacity by geographical location and local infrastructure. The vast majority of schools are connected to the Internet through the Schools Broadband Programme.[8] In addition, 672 schools are located in an identified area for intervention under the National Broadband Plan. Progress has been made here since the Wave 1 report, with 54 locations with a network build underway (compared to just five in Wave 1). Similarly, of the 672 schools identified under the National Broadband Ireland rollout, 648 schools are described as having already had high-speed broadband installed.[9] According to the Department of Education, all post-primary schools now have access to high speed connectivity of at least 200 Mbps, and all primary and special schools have access to speeds of at least 100 Mbps.[10]

The DSS makes a commitment of €200 million in capital investment for the period 2022-2027. At the time of the publication of this report, €100m has issued to schools. No funding under the ICT grants scheme was issued in the 2022/23 academic year.

Pillar 3 focuses on policy, research and digital leadership. This pillar places an emphasis on the safe and ethical use of technologies within schools, communication and consultation with school communities and industry, and participation in national and international research to inform future developments and policy-making in this area.

1.1.2 Structure and purpose of the DLF

The DLF is designed for use alongside the DSS. It is organised along the same structure as the School Self-Evaluation (SSE) framework *Looking at Our School* (LAOS) (DES, 2022). Within the DLF framework, there are two overarching *dimensions* comprising eight *domains*, as follows:

- **Teaching and learning dimension**
  - Domain 1 Learner Outcomes
  - Domain 2 Learner Experiences
  - Domain 3 Teachers' Individual Practice
  - Domain 4 Teachers' Collective/Collaborative Practice
- **Leadership and management dimension**
  - Domain 1 Leading learning and teaching
  - Domain 2 Managing the organisation
  - Domain 3 Leading school development
  - Domain 4 Developing leadership capacity

8 According to the OIDE website, 97% of school connections are provided by the Department of Education Schools Broadband Programme (https://www.oidetechnologyineducation.ie/technology-infrastructure/schools-broadband-programme/.) .

9 Figures taken from National Broadband Ireland website Primary Schools BCPs - NBI.

10 Personal communication, 25th April 2024.

A set of standards are embedded within each of these eight domains, accompanied by statements of Effective and Highly effective practice. These statements assist school leaders and teachers to effectively plan and support the embedding of DTs into teaching and learning, and also help enable teachers' individual practice. Furthermore, the framework serves as a tool for the evaluation of how DTs are embedded across all areas of school activity (DES, 2017). These standards and statements are outlined within the framework; Table 1.1 provides an example from Teaching and Learning Domain 2 (Learner Experiences) of the DLF for primary schools.[11]

Table 1.1. Teaching and learning domain 2: learner experiences – example of standards and statements of Effective and Highly effective practice

Domain 2 of Teaching and Learning: Learner experiences		
Standards	**Statements of effective practice**	**Statements of highly effective practice**
Pupils engage purposefully in meaningful learning activities	Pupils use digital technologies for sourcing, exchanging of information to develop understanding and support basic knowledge creation	Pupils use a variety of digital technologies for knowledge creation to source, critique, and manage information and to reflect on their learning.

Source: DES, 2017, p. 6.

Underpinning the Statements of Practice is the UNESCO *ICT Competency Framework for Teachers* (UNESCO & Microsoft, 2011) and it was also informed by the EU Joint Research Centre's *DigCompEdu* (Punie & Redecker, 2017) and *DigCompOrg* frameworks (Panagiotis et al., 2015).[12]

A key aim of the design of the DLF is to encourage collaboration and self-reflection, as well as to guide practice. The DoE (2017a, p.2-3) suggests, in reference to how schools might implement the DLF, that schools' leadership teams should have a "shared understanding" of both why and how schools embed DTs in teaching and learning, and that there should be a commitment towards this aim. The DoE asserts that the DLF should be "viewed as an enabler of self-reflection and improvement" rather than as an "inflexible checklist."

The PDST Technology in Education (TiE) team (now part of Oide) developed an integrated suite of resources at www.DLPlanning.ie, including the DL Framework document, DL planning guidelines, DL planning templates, statements of Effective and/or Highly effective practice, sample downloadable questionnaires and other documents, and sample videos of best practice. These resources are intended to support schools with the implementation of the DLF. Another important resource is www.webwise.ie, an Internet safety initiative managed by the PDST, which promotes awareness of online safety issues and good practice among students, their parents and teachers.

1.2 Objective and aims of the DLF evaluation

The objective of the DLF evaluation is to *evaluate the implementation of the Digital Learning Framework from the multiple perspectives of school principals, Digital Learning Team leaders, teachers and learners over a three-year period (2019-2022)*.[13]

11 The DLF is identical at primary and post-primary levels except for changes in wording to reflect pupils (primary) or students (post-primary).

12 Digcomp was updated in 2022 (Digcomp 2.2).

13 This objective is based on the Terms of Reference agreed between the ERC and DoE at the outset of the project.

There were 11 specific aims of the overall DLF evaluation, as outlined in the Wave 1 report (see Feerick et al., 2021). Only the aims specific to Wave 2 of the evaluation are outlined here (Table 1.2). Some additional aims for Wave 2 of the evaluation were identified in the Wave 1 report, such as key changes that came about in response to COVID-19, please see Feerick et al., 2021 (p. 22-24) for more details.

Table 1.2. Aims of the DLF evaluation for Wave 2

Focus for Wave 2
Determine if teachers have become more favourably disposed to the use of DTs in their practice as a result of implementing the DLF.
Capture the views of learners on the use of DTs in classrooms.
Assess the efficiency of the approach taken by schools in implementing the DLF and, where appropriate, the efficiency of the linkage with the schools' SSE process.

Throughout the DLF evaluation, guidance and advice on key aspects have been provided by members of the Teacher Education Policy (Digital) Unit in the Department of Education and the PDST TiE team. The ERC's role has been to design and implement the surveys used in data collection, and to analyse and report on the responses received.

1.3 Design of the DLF evaluation

The design of the DLF evaluation is longitudinal and mixed-method, involving a baseline phase and two follow-on data collection phases (outlined in Table 1.3).

Table 1.3. Design of the DLF evaluation

Baseline	**Wave 1***	**Wave 2**
Autumn 2018-Spring 2019	Autumn 2019-Spring 2020	Winter 2021-Spring 2022**
Baseline survey	**Wave 1 survey**	**Wave 2 survey**
1,524 primary	150 primary	148 primary
320 post-primary	100 post-primary	98 post-primary
64 special	32 special	32 special
PDST evaluation survey		**PDST TiE survey**
PDST TiE focus groups		**Pupil/student survey**

*Focus groups had been planned for Wave 1 in spring 2020, but were cancelled due to COVID-19.
** Note that the survey window was extended into May 2022 in an effort to increase response rates.

The Wave 2 school sample is a continuation of the Wave 1 sample, which was drawn from the baseline school participants. This enables a three-year perspective at the school level on the implementation of the DLF. A priority for Wave 2 was to gather information on the perspectives of young people. To facilitate this, focus groups with students were originally planned. However, in light of the changed circumstances brought about by the COVID-19 pandemic, the decision was made to conduct a pupil/student online survey instead, the results of which are outlined in detail in Chapter 5.

1.3.1 Wave 2 survey

The Wave 2 survey was administered to respondents online via the Qualtrics survey platform during the period December 2021 to May 2022. The questionnaire for Digital Learning Team (DLT) leaders (and principals) was developed by the DLF evaluation team at the ERC, in both Irish and English, and subsequently reviewed and approved by representatives from the Department's Teacher Education Policy (Digital) Unit, the Inspectorate, the PDST and the ERC. The ERC communicated to participants via letter and the introductory sections of the survey, which outlined the aim of the questionnaire along with information on confidentiality and data security, in line with GDPR guidelines. Individually identifiable data, such as names or IP addresses, were not collected in the survey. The roll number of each school was collected to facilitate the matching of survey items with other school-level information in the public domain, such as enrolment size and DEIS status, for analysis purposes. Respondents were also assured that the results of individual schools would not be published and that only group-level aggregate data would be reported.

A summary of the content of all the questionnaires administered is presented in Appendix 1 in this report. Question types in the DLT leader survey were both closed (tick box) and open (text response). Their closed (numeric) questionnaire data are reported in Chapter 2, with longitudinal trends since baseline described in Chapter 3, while the open (text) data are described in Chapter 4. The questionnaire for teachers contained open response items only, and the data are described in Chapter 4. Finally, findings from the PDST TiE questionnaire and data from the primary and post-primary pupil and student questionnaires are described in Chapter 5.

1.3.2 Sample and respondents

Sampling was initially conducted based on the provisional 2018-19 primary and post-primary school lists from the DoE website. The school lists were matched to the baseline data file which consisted of schools that participated in the initial PDST TiE DLF seminars (i.e., 1,524 primary schools, 64 special schools, and 320 post-primary schools) and a sampling frame was constructed for each of the three school types. Sampling was systematic with a number of implicit stratification variables, depending on the level/type of school:

- In special schools, the sampling frame was sorted (implicit stratification) by region (Rest of Leinster, Dublin, Munster, Connacht, Ulster [part of]), school size (Small [1-35 pupils], Medium [36-70 pupils], Large [>70 pupils]) and current level of embedding DTs (Emerging/Developing, Intermediate, Advanced/Highly Advanced).
- In primary schools, the implicit stratification variables were region (rest of Leinster, Dublin, Munster, Connacht, Ulster [part of]), DEIS status (No, Yes), school size (Small [1-80 pupils], Medium [81-200 pupils], Large [>200 pupils]) and current level of embedding DTs.
- In post-primary schools, the implicit stratification variables were region (Rest of Leinster, Dublin, Munster, Connacht, Ulster [part of]), school type (Community, Comprehensive, Secondary, Vocational), DEIS status (No, Yes), school size (Small [1-350 students], Medium [351-600 students], Large [>600 students]) and current level of embedding DTs.

The inclusion of *current level of embedding of DTs at baseline* as a sampling variable is important as it provides some assurance that the longitudinal sample includes the full range of levels of embedding DTs into teaching, learning and assessment.

Probability proportional to size sampling (e.g. Brewer & Hanif, 1983) was not used as the primary focus of the survey was at school level, rather than at student level. However, as indicated above, school size was taken account of as one of the implicit stratification variables.

In all, 32 special schools, 150 primary schools, and 100 post-primary schools were selected as the longitudinal sample. By Wave 2, the number of schools had reduced to 32 special schools, 148 primary schools and 98 post-primary schools due to a combination of school closures and amalgamations. Appendix 1 of the Wave 1 report (Feerick et al., 2021; Tables A1.1-A1.17) provides comparisons between the population of schools, DLF baseline schools, and Wave 1 schools for each of the stratification variables. Generally, these analyses show that the Wave 1 sample provides a good match to the broader population of schools on these variables, i.e. that the samples are broadly representative by region, school size, level of embedding of DTs, and where applicable, DEIS status (primary and post-primary) and sector (post-primary).

It should be noted that due to low response rates to the Wave 2 questionnaires during the first quarter of 2022, the Wave 2 survey window was extended to May 2022 and the DoE and ERC collaborated to engage with schools to increase the response rates. This yielded satisfactory DLT response rates, but lower than desired response rates from teachers across all three school types, as described next.

Post-primary respondents

Of 98 schools in the longitudinal sample for Wave 2, 118 DLT surveys were received. Teacher surveys were received from 32 of the 100 schools (yielding a total of 298 individual teacher responses).

The pattern of school and teacher responses for post-primary schools is presented in Table 1.4. As shown, 75.5% of schools returned a DLT survey, and 31% of schools returned the DLT survey as well as one or more teacher surveys. In 47% of schools, either the DLT survey or one or more teacher surveys were returned. In 22% of schools, neither survey was returned.

Table 1.4. Wave 2 pattern of returns (percentages) – post-primary schools (N=98)

		Teacher Q returned		Total
		No	Yes	
DLT Q returned	No	22	2	24
	Yes	45	31	76
Total		67	33	100

At baseline, following the removal of duplicate records and records with 10% or fewer of items (questions) completed, the final post-primary dataset consisted of 74 DLT leader responses and 220 teacher responses (from 32 schools). The distributions of responding and non-responding schools did not differ significantly across sector/gender composition, or by level of embedding Digital Technologies at baseline stage (Table 1.5) (in all cases, chi-square tests were in excess of p = .05).

However, some differences in response patterns were seen by enrolment size and DEIS status. Post-primary schools with a Large enrolment size[14] were significantly more likely to have DLT questionnaires returned than either Small or Medium size schools (X^2 (2, N=100)=7.567, p = .023). Non-DEIS schools were significantly more likely to have DLT questionnaires returned than DEIS schools (X^2 (1, N=100)=4.029, p=.045).

For Wave 2, the weights used in analysing the data are constructed to correct for differential response rates across enrolment size, DEIS status and DT embedding at baseline. Procedures used for the weights are described in Section 1.3.3.

14 School enrolment sizes were Small (up to 350 students), Medium (351-600 students), or Large (601+ students).

Table 1.5. Distribution of DLT and teacher questionnaire responses across key school-level characteristics, percentages: post-primary schools

Characteristic	Category	DLT questionnaire		Teacher questionnaire	
		No	Yes	No	Yes
Enrolment	Small	42.3	24.3	35.3	15.6
	Medium	38.5	25.7	29.4	28.1
	Large	19.2	50.0	35.3	56.3
Gender and sector	Sec boys	19.2	10.8	14.7	9.4
	Sec girls	23.1	17.6	14.7	28.1
	Sec mixed	11.5	29.7	23.5	28.1
	ETB / voc	34.6	24.3	30.9	18.8
	Comm/comp	11.5	17.6	16.2	15.6
DEIS	No	61.5	81.1	69.1	90.6
	Yes	38.5	18.9	30.9	9.4
DT embedding (at baseline)	Low	53.8	39.2	40.9	50.0
	Medium	38.5	51.4	48.5	43.8
	High	7.7	9.5	10.6	6.3

Primary and special school respondents

Of 180 primary and special schools in the longitudinal sample for Wave 2, 231 DLT surveys were received. One or more teacher surveys were received from 60 of the 180 schools (yielding a total of 382 responses). The pattern of school and teacher responses is shown in Table 1.6, showing that in 19% of schools, no DLT or teacher surveys were returned. Just under one-third of schools (31%) returned one or more teacher surveys along with the DLT survey, while, in the remaining 50% of schools, either a DLT survey or teacher survey was returned.

Following the removal of duplicate records and records with 10% or fewer of items completed, the final primary and special school dataset consisted of 143 DLT leader responses and 291 teacher responses (from 60 schools).

Table 1.6. Wave 2 pattern of returns (percentages) - primary and special schools (N=180)

		Teacher Q		Total
		No	Yes	
DLT Q	No	19	2	21
	Yes	48	31	79
Total		67	33	100

The distributions of responding and non-responding schools in Wave 2 does not differ significantly by enrolment size, gender composition, DEIS status or level of embedding Digital Technologies at baseline (Table 1.7) (in all cases, chi-square tests were well in excess of $p = .05$). That is, the primary and special school respondents can be considered unbiased in these respects.

Table 1.7. Distribution of DLT and teacher questionnaire responses across key school-level characteristics, percentages: primary and special schools

Characteristic	Category	DLT questionnaire		Teacher questionnaire	
		No	Yes	No	Yes (1 or more)
Enrolment	Very small	23.1	20.3	21.3	20.0
	Small	30.8	26.6	28.7	25.0
	Medium	10.3	21.0	18.0	20.0
	Large	35.9	32.2	32.0	35.0
Gender	Mainly boys	20.5	23.8	22.1	25.0
	Mixed	69.2	67.1	70.5	61.7
	Mainly girls	10.3	9.1	7.4	13.3
DEIS	No	84.6	81.8	87.7	71.7
	Yes	15.4	18.2	12.3	28.3
DT embedding (at baseline)	Low	38.5	51.7	45.1	56.7
	Medium	51.3	41.3	46.7	36.7
	High	10.3	7.0	8.2	6.7

1.3.3 Sampling weights used in the analyses

The sampling weights used in analyses of the DLT leader data were computed from data that are available for all schools in the population. This procedure was followed in order to enable generalisation of the quantitative results of the survey participants to the population.

However, as stated in Section 1.3.2, there were limitations with respect to the teacher survey data. Due to low teacher response rates at both primary and post-primary level, the results of the teacher survey data would not enable generalisation to the population of teachers at these schools. Therefore, the quantitative results of the primary/special, and post-primary, teacher surveys are not presented in this report. As such, the weighting of the teacher survey data is also not described here, with the focus instead being on the weighting of the DLT survey data.

DLT survey weights were calculated as follows (see Pfefferman, 1996, for a methodological overview):

Post-primary schools

- School (DLT) level – non-response adjustments to match with characteristics of the sample on the basis of DEIS status, enrolment size (Small, Medium and Large) and Digital Technology embedding at baseline (Low, Medium/High).

Primary and special schools

- School (DLT) level – non-response adjustments to match with characteristics of the sample on the basis of DEIS status, enrolment size (Very small, Small, Medium and Large) and Digital Technology embedding at baseline (Low, Medium/High).

Quantitative analyses of the Wave 2 DLT leader survey, presented in Chapters 2 and 3 of this report, have been weighted using these weights. The DLT leader survey responses can be considered generalisable to the entire

populations of primary, post-primary and special schools, at least on the basis of the characteristics used in the computation of the sampling weights.

1.3.4 Guidelines for interpreting the DLF Wave 2 results

There are some aspects to this study which require caveats for appropriate interpretation of the research findings.

First, as noted, there was a lower-than-desired teacher response rate and as a result, the findings of the teacher survey are not generalisable to the population of teachers. Therefore, the decision was taken not to report here the quantitative results of the teacher survey. However, the qualitative results of the teacher survey are reported in Chapter 4, notwithstanding this caveat.

Second, this report presents both quantitative and qualitative data as part of a mixed-method approach. Thematic analysis has been carried out on the qualitative data in order to provide succinct summary descriptions of the key themes emerging from the analysis (Chapter 4). Whilst every effort to be objective is made during this process, it is possible that another research team might categorise and prioritise a somewhat different set of themes. In this respect, a completely impartial analysis of qualitative data of this nature is not possible. Similarly, choices made with respect to how and in what ways to analyse quantitative data are informed by researchers' perspectives and relevant prior work.

Third, many of the analyses include comparisons between primary/special and post-primary schools. The data for primary and special schools have been combined in the reporting, given the small number of special schools in the sample. Comparisons across different types of schools are intended to be interpreted in a broad manner, given that school types have significant structural differences (e.g., regarding curriculum, assessment, timetabling, and management). The reader should be mindful of these differences when interpreting these comparisons.

Finally, focus groups with students and PDST DT Advisors were originally planned for Wave 2. However, due to the impact of the COVID-19 pandemic, these focus groups were not feasible as planned. Instead, an online student survey was conducted to glean students' perspectives, as was an online survey of PDST advisors. The results of both of these surveys are described in detail in Chapter 5.

The DLT leader survey responses can be considered as being nationally representative of the populations of primary/special and post-primary schools.

However, due to low teacher response rates at both levels, the quantitative data from the primary/special and post-primary teacher questionnaires are not presented in this report, as the results would not be representative of the population of teachers at these schools. Nevertheless, qualitative findings from the teacher questionnaires are presented in Chapter 4, with the caveat that the findings are not nationally representative.

Furthermore, due to the small number of special school returns, the results of special schools and primary schools are reported as a single group in Chapters 2-5.

1.4 Recent policy developments and national and international research findings

This section gives an overview of recent policy and research developments relevant to the Wave 2 DLF evaluation findings, concluding with a review of the findings from the DLF Wave 1 report.

1.4.1 European policy and research

As mentioned in Section 1.1.1, the *Digital Education Action Plan* (DEAP) is a European Union policy initiative that sets out a vision of high-quality, inclusive and accessible digital education in Europe. The initiative contributes to the EU digital strategy that aims to make this transformation to digital education work for people and businesses while helping to achieve its target of a climate-neutral Europe by 2050. DEAP plays a role in facilitating the realisation of the goal of establishing a European Education Area by 2025, and contributes to achieving the goals of the European Skills Agenda, the European Social Pillar Action Plan and the 2030 Digital Compass: the European way for the Digital Decade. The EU Commission adopted two key recommendations linked to DEAP in April 2023 with regard to digital education. In response to common challenges faced by EU Member States (the lack of a whole-of-government approach to digital education, and difficulties equipping people with digital skills), the Commission adopted a proposal that aims at "strengthening key enabling factors" for digital transformation "to ensure universal access to inclusive and high-quality digital education and training" (EC, 2023a). Secondly, another proposal adopted aims to improve digital skills teaching at each level of education and training. A key action associated with these proposals will be the recognition of certification of digital skills, to be rolled out later in 2024.[15]

Ireland's position relative to other EU countries with regard to digital transformation, and especially DTs in learning, was described in the *Index of Readiness for Digital Lifelong Learning* (IRDLL) (Beblavý et al., 2019). The IRDLL takes a broad view of Digital Learning, describing it as encompassing "any type of learning that is undertaken with the support of digital technology" including learning that occurs in formal and non-formal educational settings, as well as voluntary informal learning activities in everyday life (Beblavý et al., 2019, p 7). The index covers three main areas: *learning and participation outcomes, institutions and policies for Digital Learning, and availability for Digital Learning*. On the overall index, Ireland was ranked in 12th position, slightly below the EU average, with Estonia and Netherlands in 1st and 2nd positions. The 2019 report noted Ireland's strong performance in the area of accessibility and acknowledges that a national skills architecture is in place. However, while Ireland performed above the EU average in high-level digital skills, the authors also noted that "the average digital skills of its people remains low" (Beblavý et al., 2019, p. 50). This is attributed to a lack of support for teachers, a high level of independence within educational institutions, and a lack of "long-term sustainability in funding for pilot initiatives" (Beblavý et al., 2019, p. 50).

The IRDLL index was published in 2019, in a period before the transformations instigated by the COVID-19 pandemic came about. A more recent report (European Commission, 2023b) notes that the percentage of adults in Ireland with at least basic digital skills (70%) is above the EU average (54%), alongside a higher proportion of ICT specialist workers and graduates from ICT-related programmes of study in Ireland relative to EU norms. The report also highlights improvements in network coverage at a national level between 2020 and 2022, albeit while noting that take-up of high-speed broadband (at least 100 Mbps and 1Gbps) should be further expanded. Further, the Digital Economy and Society Index (DESI) (2022), reports Ireland's progress in the digitalisation of society and economy as faster than expected (between 2017 and 2022), and ranks Ireland as one of the top five most advanced digital economies in the EU (EC, 2022).

15 The European Digital Skills Certificate is part of Action 9 of the DEAP.

The Wave 1 data collection for the DLF evaluation took place between autumn 2019 and spring 2020, just prior to the onset of the COVID-19 pandemic in Ireland and the associated school disruptions. The Wave 2 data collection was carried out between December 2021 and May 2022. There have been important changes in policy and in the research literature at both international and national levels since then, but data gathered within this period are inextricably linked to students' and teachers' experiences of the pandemic and remote learning. As the closure of schools was very sudden, giving schools and school communities very little time to prepare, there is evidence to suggest that schools varied in their capacity to respond effectively to the challenges presented.

1.4.2 Research on use of DTs in Irish educational contexts

Cosgrove et al. (2022) examined PISA[16] data in Ireland from three different cycles (2012, 2015 and 2018) to examine the provision, use and experiences of DTs over time. They noted that despite investment and planning, the average digital skills of students in Ireland "remain comparatively low", which is attributed to a need for more support to facilitate changes in pedagogical practices, better funding (particularly targeted funding for digital skills education), and more coordinating efforts to achieve better digital education (Cosgrove et al., 2022, p.42). The adequacy of technical support to schools was found to be lacking, echoing similar findings in the baseline and Wave 1 DLF reports (Cosgrove et al., 2019, Feerick et al., 2021).

Cosgrove et al. (2022) found that students in Ireland at post-primary level had relatively good access to DTs, at levels similar to the EU and OECD averages in 2012, 2015 and 2018. However, "reported usage during school time in Ireland was considerably and significantly lower" than their EU and OECD counterparts (Cosgrove et al., 2022, p.44). Of note is that students' access to DTs at home was higher than on average internationally. In particular, Cosgrove et al. note that while the PISA data points to widespread ICT infrastructure and access to devices in Ireland, at least in terms of quantity, this does not translate to "actual levels of usage of Digital Technologies by students for their learning at school or at home" (Cosgrove et al., 2022, p.44). Ultimately, the report calls for "an over-arching competence framework to accompany any implementation plan with actions and targets" along with a system for assessing and monitoring digital competence (Cosgrove et al., 2022, p.47).

A recent report by Butler and Leahy (2022) informed the development of the new *Digital Strategy for Schools 2022-27*. Overall, Butler and Leahy (2022) rate the previous DSS as being largely positive and impactful. In relation to the events of the pandemic, they stress that changes made in the emergency conditions of school closures can be informative but cannot provide an adequate template for the digital transformation that is needed for the future. They emphasise the need to address pre-existing issues such as digital education capacity and inequalities. Specifically, they note the need to support digital competence development for both adults and young people, highlighting existing digital skill deficiencies and divides related to gender, socio-economic background, and geographic location.

1.4.3 Children's digital lives during COVID-19

At an international level, several studies have sought to understand how young people's lives changed in response to the societal changes resulting from the public health crisis. *Kids' Digital Lives in Covid-19 Times* (KiDiCoTi), a European Commission study conducted in 15 European countries including Ireland, found a significant increase in digital device acquisition, screen time, and changes in schoolwork volume for children during lockdown. Specifically, 71% of children reported using digital platforms more frequently than before, with notable increases in the usage of gaming consoles, social media, and direct/instant messaging. Additionally, 77% of children engaged in online school-related activities, highlighting the shift to digital education during the

16 Programme for International Student Assessment.

lockdown. Notably, the engagement with Digital Technology for school purposes remained consistent across different income levels (Milosevic et al., 2021).

At a national level, information on children's experiences of Digital Technologies during the pandemic is available from surveys carried out by the Ombudsman for Children Office (OCO, 2022), and the National Advisory Council for Online Safety (NACOS, 2021). OCO (2022) reported that nearly half (48%) of children surveyed said that the pandemic significantly changed their lives, including 51% among secondary school students and 55% of girls. About 60% of students noted an increase in time spent on digital devices, excluding time spent online for educational purposes (OCO, 2022). On average, children spent 2.1 hours online each weekday, increasing to 3.4 hours per day at weekends (NACOS, 2021). The increase in screen time coincided with a decrease in other activities, with 60% of respondents reporting school restrictions having impacted "a lot" on activities such as training, trips, choir or drama (OCO, 2022). Schools were reported to be the second most important environment for children's Internet usage in Ireland during the pandemic, closely following homes in first position (NACOS, 2021).

1.4.4 Changing experiences of digital education in Ireland during the pandemic

Other studies have focused specifically on children's experience of education in Ireland during the pandemic. Mohan et al. (2020) investigated the broad effects of COVID-19-related school closures on second-level education in Ireland. The report underlined the digital disparities in schools, highlighting the impacts of issues such as inadequate broadband coverage and household incomes on learners in DEIS schools and those from economically disadvantaged backgrounds, as well as students with Special Educational Needs and English as an Additional Language (EAL) learners. Mohan et al. (2020) also found that schools with systems of online learning in place before COVID-19 found the transition to remote learning easier.

According to the DoE Inspectorate (DoE, 2021b), nearly all schools and centres reported effective planning and digital infrastructure in operation throughout the remote learning period in January and February 2021. Remote teaching and learning was implemented through various methods, including online platforms, sending assignments via email or postal service, and facilitating online lessons. Teachers reported adjusting their teaching methods during the pandemic through Digital Technologies. Nearly all parents reported their children using DTs for learning (DoE, 2021b), marking a notable improvement compared to the corresponding surveys in April 2020 (DoE, 2020) when only three-fifths of primary school parents indicated their child using DTs for educational engagement. In the 2021 report, fewer than half of parents with children attending special schools reported their child using DTs for the same purpose.

Scully et al. (2021) documented secondary schools' experience of the first set of Irish school closures in 2020, with a focus on the use of DTs in remote learning. The study adopted the Innovative Digital School Model (Ilomäki & Lakkala, 2018) to analyse the pandemic experiences from the perspective of school leaders, finding that secondary school leaders in Ireland were confident in their use of DTs, while simultaneously being aware of the additional burden they can bring to teachers (Scully et al., 2021). Schools also reported being well equipped in terms of technological infrastructure and connectivity, though less so when it came to students being allocated DTs on a one-to-one basis. School leaders' responses suggested that "clear plans, intentional development orientation, motivational and networking practices, and distributed leadership in relation to digital technology are relatively commonplace" and well aligned with best practice (Scully et al., 2021, p.176). However, while leaders reported that their teachers were open to collaboration and sharing of expertise, many believed that teachers do not have sufficient time to plan for technology integration. The report also draws attention to pedagogical practices in relation to DTs, noting that "teacher-centred pedagogies still prevail" despite the integration of the DLF into teacher training (Scully et al., 2021, p.177). In terms of the impact of COVID-19, schools found the emergency provision of remote learning challenging, with poor student engagement and lack

of provision or access to Internet or to a digital device listed as the most prominent challenges. This aligns with the findings of Mohan et al. (2020), with these barriers being reported more often in DEIS schools (Scully et al., 2021). Finally, teachers' lack of experience and familiarity with pedagogic practices to support remote learning also emerged as a significant challenge. Scully et al. suggest that more professional learning opportunities focusing on "pedagogic aspects of digital competence" (Scully et al., 2021, p.179) are needed to address this challenge and to build on the gains in terms of DT familiarity acquired during the pandemic.

Finally, recent findings from two large-scale international studies shed additional light on students' experiences of DTs for TLA during COVID-19. The Progress in International Reading Literacy Study (PIRLS) reported that the majority of Irish students attended schools that offered various digital resources to facilitate remote learning during the pandemic such as: Internet-based resources for pupils (99%); recommendations for teachers about how to provide online instruction (98%); recommendations for parents about how to support pupils' engagement with remote learning (97%); access to digital devices for teachers (96%); a whole-school policy on remote learning (90%); access to digital devices for pupils (85%); and technical support for teachers (85%) (Delaney et al., 2023). The majority of parents in PIRLS 2021 reported providing physical resources such as books and digital devices to their children, as well as sourcing digitally-based learning activities for pupils to use (Delaney et al., 2023).

In PISA 2022, principals reported that all students in Ireland attended schools where at least half of the classes were taught remotely using digital devices. This indicates a widespread adoption of remote learning methods in Irish schools during COVID-19 closures, with minimal disruption to the continuity of instruction despite class cancellations (Donohue et al., 2023). Similarly, on a number of measures related to the use of DTs in education during this period, students' reports indicate that Ireland was above the OECD average. Around 70% of students in Ireland reported that someone from their school uploaded material on a learning management system or school learning platform every day or almost every day, compared to 46% across the OECD. Similarly, 70% of students in Ireland reported being offered live virtual classes on a video communication program every day or almost every day (OECD: 51%) (Donohue et al., 2023). Overall, these findings suggest that students in Ireland received a higher level of contact and continuity of instruction during school closures compared to the OECD average.

Readers are also advised of a number of forthcoming reports from the Educational Research Centre that will explore the accessibility, ownership, and usage of DTs in education:

- The PIRLS 2021 contextual report for Ireland (expected in 2024) will examine student achievement based on factors such as device ownership and digital self-efficacy, the availability of computers/tablets during reading lessons, and access to digital resources in the school library.
- The National Assessment of Mathematics and English Reading (NAMER) 2021 context report (expected in 2024) will provide data on DT availability and use at the pupil, teacher and school levels.
- Initial findings from the Trends in International Mathematics and Science Study (TIMSS) 2023 study will be published in December 2024 with further reporting expected in 2025, providing information on DT usage among Fourth Class and Second Year students, their teachers, and their schools.

1.4.5 DLF evaluation: Summary of key Wave 1 findings

Finally, the findings of the DLF Wave 1 survey are briefly reviewed. The findings are reported in detail in Feerick et al. (2021), but some key findings can be summarised as follows:

- In terms of planning, schools overwhelmingly indicated that they had focused on the teaching and learning dimension of the DLF. At both levels, there were very high rates (over 90%) of implementation of DT-related policies and guidelines.

- Post-primary teachers were more likely than primary teachers to report that they were at an Advanced or Highly advanced level of embedding DTs in TLA. (See Feerick et al., 2022, for more detail on teachers' understanding of embedding DTs.)
- Most DLT leaders had visited the DLPlanning.ie website, although the visits were not very frequent. In contrast, teachers reported lower levels of usage of the DLPlanning.ie website.
- Participation in professional learning in the area of DTs was high in the two years prior to the Wave 1 survey. The most frequently attended CPD by primary teachers was summer courses (39%); for post-primary teachers in-school PDST support was most common (49%).
- DLT leaders' levels of comfort and familiarity with DTs were in the moderate to high range, particularly at post-primary level. DLT respondents expressed a very positive view of DTs for supporting learning. Some concerns were also evident, especially the perceived risk that DTs encourage copying of material from Internet sources (at post-primary level) and confusion over the large number of apps to choose from (at primary).
- Post-primary teachers reported using DTs in TLA in a more diverse way and more regularly than primary respondents. Specifically, post-primary respondents were more likely to use DTs for communication with students, and to support peer-to-peer assessment.
- Most DLT leaders rated the availability of computing devices for TLA as Good, Very good or Excellent. There was sizeable variation in terms of the age and condition of computing devices, their availability, and awareness of suitable software. More than one third of teachers indicated that the age and condition of computing devices was only Fair or Poor.
- Technical support effectiveness was rated as being more effective at post-primary than at primary level. Smaller primary schools used internal support and maintenance more frequently, whereas larger primary schools used external technical support more frequently. Importantly, the availability of technical support was identified by about one third of teacher respondents as a barrier to their schools' implementation of the DLF.
- The highest perceived impact of the DLF related to decisions on DT infrastructure. The perceived impact on teachers' assessment practices was low; notably so at primary level.
- The highest rated challenges to DLF implementation, as reported by DLT leaders, included dedicated time for staff for implementation, DT infrastructure, leadership by school management, sharing learning across staff, and staff competency levels in using DTs for TLA. According to teacher reports, key areas of concern related to DT infrastructure, time to implement the DLP, and the fit between the aims of the DLF and the structure of standardised assessments (at both primary and post-primary level).
- DT infrastructure/connectivity and consultative approaches emerged as significant enablers of successful implementation of the DLF at both levels. At primary level, more successful implementation of the DLF was associated with: the school's infrastructure/connectivity, consultative leadership, presence or absence of challenges, and the extent to which DLT leaders felt that CPD was targeted to the goals of the DLF. At post-primary level, more successful implementation was associated with attitudes and beliefs of the DLT leader, along with a consultative approach to developing the DLP and the presence of infrastructural and connectivity supports.

Chapter 2:
Key findings from the Wave 2 Digital Learning Team leader questionnaire

2.1 Chapter overview

This chapter presents quantitative findings from the Wave 2 DLT leader questionnaire for both primary and post-primary schools. Findings in this chapter are presented in four main sections:

- Description of respondents and schools;
- Overview of the DLF in primary and post-primary schools;
- Key findings from the DLT leader questionnaire - primary and post-primary schools;
- Key points from Chapter 2.

The term 'DLT leader' is used throughout the chapter to refer to the DLT leader or Principal who completed the questionnaire. Comparisons are made between primary and post-primary schools, and where appropriate, some comparisons are made with Wave 1 findings (longitudinal changes between Waves 1 and 2 are described in more depth in Chapter 3). As for Wave 1, results for primary and special schools are combined for reporting purposes. Results are weighted (see Chapter 1 for detail) in order to be generalisable to the populations of primary, special and post-primary schools in the country.[17] Tables and figures supplementary to this chapter are available in Appendix 2.

Some of the survey questions have been combined to form scales (see Appendix Tables A1 to A4 of this report for a full description of the survey content, and Appendix A for a description of how these scales were constructed). Information on scale reliabilities, as well as the relationships between the scores on these scales (the intercorrelations) is available in Appendix 2. For every scale reported, higher scores indicate a more positive outcome. All scale scores range from 0-100, thus direct comparisons can be made between scales at both primary and post-primary level.

Table 2.1 provides a brief description of the scales that are reported in this chapter. In presenting the results of these scales, individual item responses of the scale are described as illustrative examples of the scale content. Scale mean scores across primary and post-primary levels are compared and, within each level, we describe whether or not the scale means vary significantly by key school characteristics, such as DEIS status and enrolment size (and sector, for post-primary level only).

17 The sample is generalisable to the general population of schools on the basis of the characteristics that are in the weights - enrolment size, DEIS status, sector, and gender composition. However, the sample may not be representative on other relevant characteristics such as the overall quality of Digital Technology infrastructure.

Table 2.1 Description of the questionnaire scales reported in Chapter 2

Scale Name	Description
DLT attitudes to DTs for student learning	Attitudes towards using DTs: preference to support constructivist learning over traditional methods.
DLT attitudes to DTs - impediments to learning	Attitudes towards using DTs: view of DTs as impediments to teaching and learning.
School digital leadership	School leadership: assessing extent of leadership style in context of using digital tools and assessing digital leadership skills, and how this applies to staff in leadership positions in the school.
DLT professional learning suitability	Extent to which Digital Technology-related CPD has included a focus on a range of relevant elements (curriculum materials, content knowledge, teaching and learning practices, participation with other teachers in the school).
DT infrastructure and connectivity	Perceived adequacy of school's DT infrastructure and connectivity to meet teaching, learning and assessment needs.
DT teacher and student engagement	Perceived overall level of teachers' and students' levels of knowledge, skills and engagement with DTs for teaching and learning.
DLT technical support effectiveness	Perceived extent to which technical support is effective in keeping computing and other devices in good repair and up to date, and for maintaining connectivity.
DLT impact of DLF	Perceived overall level of impact of the school's implementation of the DLF on teaching, learning and assessment activities, student engagement, collaborative practices, and policy and decision making relating to school's DT.
DLT implementation challenges	Ongoing challenges related to DLF embedding, including the overall timeline for implementation of the DLP, DT infrastructure, staff culture and attitudes towards using DTs, and leadership from school management.

2.2 Description of respondents and schools

This section describes the characteristics of the schools responding to the questionnaire, and of the respondents.

2.2.1 Characteristics of DLT leader questionnaire respondents

Questionnaires were completed online between December 2021 and May 2022. In all, 217 schools submitted usable responses to the DLT leader questionnaire. Of the 180 primary and special schools which received a survey invitation, 143 (79%) returned a usable response. Of the 99 post-primary schools which received a survey invitation, 74 (75%) returned a usable response. These response rates at Wave 2 were higher than the corresponding rates in Wave 1 (73% primary; 60% post-primary).

At primary level, the majority of respondents were principals (53%), and a sizable proportion of respondents at post-primary level also were principals (38%) (Table 2.2). At post-primary level however, the largest category of respondents were DLT leaders (40%), which also accounted for one-third of respondents in primary schools (34%). As can be seen in Table 2.2, some respondents selected multiple roles.

Table 2.2. Respondents' roles in the school, percentages, primary and post-primary

Role	Primary (n=143) %	Post-primary (n=74) %
Principal	53	38
DLT leader	34	40
Class / Subject Teacher	21	11
SET Teacher	11	1
Assistant Principal 1	8	18
Assistant Principal 2	16	12
Deputy Principal	20	20
Other	1	1

Note. Responses sum to more than 100%, as respondents were permitted to choose multiple roles.

Respondents were also asked about the year they joined their current school, their age group, the number of teachers in their school, their educational qualifications, and whether they were on the school's Digital Learning Team. At post-primary level, data were also gathered on whether Applied Technology, Coding or Digital Media Literacy were taught in the Junior Cycle, and whether Computer Science, Technology or Digital Technology (or related courses during Transition Year) were taught in the Leaving Certificate Cycle. The results for these questions are presented in full in Appendix 2 (Table A2.3a for primary and Table A2.3b for post-primary schools).

Briefly, the majority of respondents at primary (52%) and post-primary level (55%) had been employed in their current school since at least the 2010/11 school year at the time of this survey. The age profile of respondents varied across primary and post-primary school respondents, with 73% of primary respondents aged between 30 and 49 years compared to 60% of post-primary respondents. The proportion of respondents who were aged over 50 was higher at post-primary (38%) than primary level (27%). A small proportion of post-primary respondents, only, were under the age of 25 (2.5%), no respondents aged under 25 were recorded at primary level.

Primary and post-primary respondents were broadly similar with respect to their teaching-related educational qualifications. At primary level, almost two-fifths of respondents (39%) had a certificate or diploma related to education, compared to 45% of respondents at post-primary level. Similarly, 70% of primary respondents had a Master's degree or Higher Diploma, and 3% had a PhD or EdD, while the respective figures were 67% and 4% at post-primary level. The figures for postgraduate education (Masters or Higher Diploma) of respondents were higher than those found at Wave 1.[18]

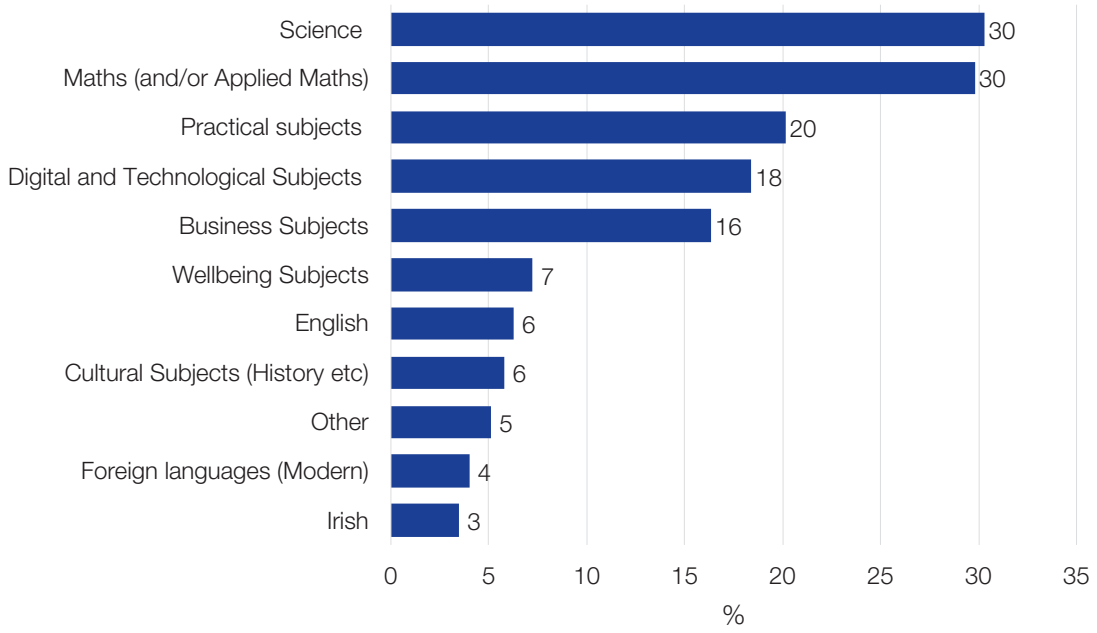
Respondents' DLT membership status was somewhat similar across primary and post-primary schools. Approximately half of all respondents identified as their school's DLT leader, while approximately one-third of primary respondents and over two-fifths of post-primary respondents indicated that they were DLT members but not leaders. Just 4% of primary and 1% of post-primary respondents indicated that they were not on the DLT. At Wave 1, one-tenth of respondents indicated that they were not on the school's DLT, and it was concluded that those respondents were likely in schools which did not have a DLT in place at the time of the survey (Feerick et al, 2021). It is possible that this is also the case with those respondents who indicated that they were not on the DLT at Wave 2.

With respect to schools who had not yet established a DLT, primary schools (17%) were about three times as likely as post-primary (6%) to not have a DLT in place at the time of the survey. Of those schools that did have a DLT in place, the vast majority had established it a year ago or more (96% primary; 91% post-primary).

18 International studies have found that 42% (PIRLS 2016) and 53% (TIMSS 2019) of primary level principals in Ireland had a postgraduate degree, and 77% of post-primary principals had the same qualification (TIMSS 2019). However, these figures are not directly comparable to the current study, as the respondent to this survey in many instances, as already noted, was not the principal.

Respondents at post-primary level only were also asked which subjects they taught. The most commonly taught subjects were Science, Maths/Applied Maths and practical subjects (e.g. Construction Studies). A number of respondents taught Digital and Technological or Business subjects, with fewer teaching subjects such as Wellbeing subjects, English, Cultural subjects, Foreign languages and Irish (see Figure 2.1). Approximately one-fifth of post-primary respondents indicated that they were not currently working as a class teacher.

Figure 2.1. Respondents' subjects taught (percentages), post-primary schools (n=74)



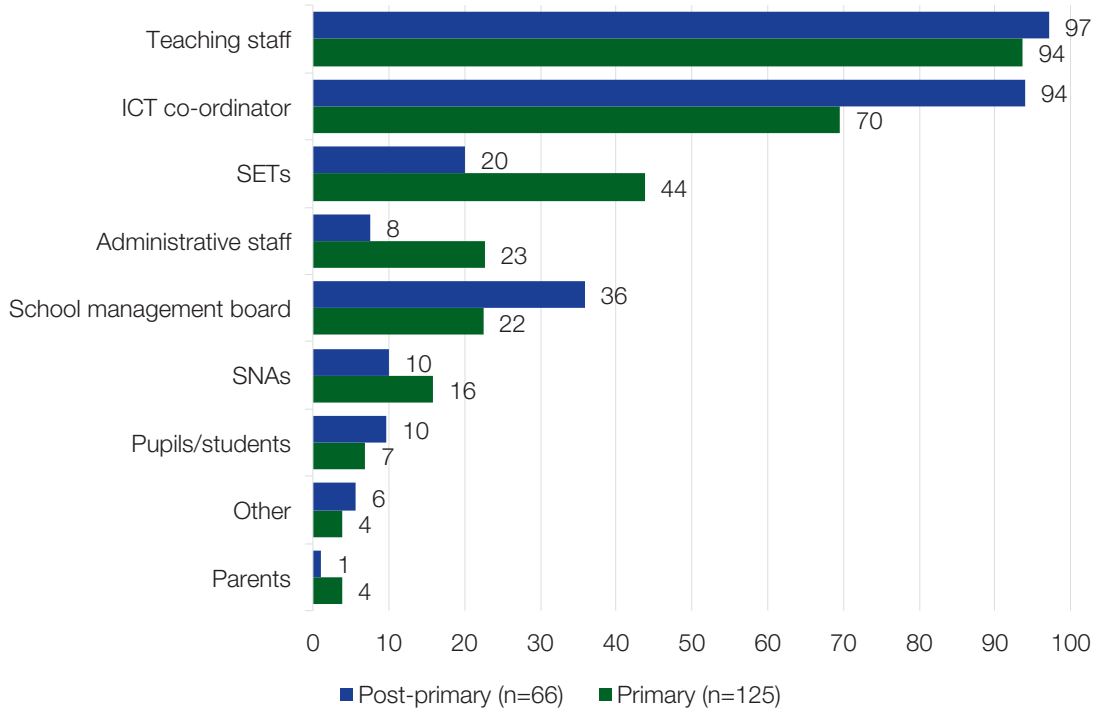
Note: Respondents were permitted to select more than one response to this question.

2.2.2 Characteristics of schools and schools' DLTs

Post-primary DLTs tended to have more members than primary DLTs. Whilst most primary DLTs had 2-3 members (64%), the most common DLT sizes at post-primary level were 4-5 members (38%) and 6-8 members (26.5%). The average enrolment size at post-primary level was 561 students, and the corresponding figure at primary level was 173 pupils. It is possible that post-primary schools required more members on their DLTs due to their larger enrolment size and larger staffing requirements.

In both primary and post-primary schools, the most common group to be included in the DLT were teachers, with 94% of primary schools and 97% of post-primary schools having teachers on the DLT (Figure 2.2). The DLT leader was also commonly on the DLT (in 70% of primary schools and 94% of post-primary schools). Over two-fifths (44%) of primary schools had SET representatives and almost one quarter (23%) had administrative staff on the DLT, whereas over one-third (36%) of post-primary schools included representatives from the school management board. SNAs featured in a minority of schools (16% of primary, 10% of post-primary schools). A small minority of DLTs included parents (4% of primary, 1% of post-primary schools) or students (7% of primary, 10% of post-primary).

Figure 2.2. Members of school's Digital Learning Team (primary and post-primary, percentages)



DLT membership was most commonly decided through volunteering by interested staff (73% at primary, 69% at post-primary). In approximately one-fifth of schools at primary and almost one-third of schools at post-primary level, staff were selected across year levels or departments, while some schools used other (unspecified) methods of selection.

The vast majority of DLTs met either *less often than once per month* (82% of primary,71% of post-primary) or *about once per month* (16% of primary, 22% of post-primary).

2.3 Overview of the DLF in primary and post-primary schools

This section describes how DLT leaders plan for the DLF and how it is implemented, and the use of DTs in assessment.

2.3.1 DLF dimension and domain of focus

It will be recalled from previous DLF evaluation reports (Feerick et al., 2021 and Cosgrove et al., 2019), and from Chapter 1, that the Digital Learning Framework follows the same structure as the Looking at Our Schools 2016 quality framework used in School Self-Evaluation (DES, 2016a, b), underpinned by a six-stage planning process. The DLF framework, as with the LAOS framework, specifies two overarching dimensions and, within each dimension, four 'domains' which are each associated with statements of Effective and Highly effective practice (see Chapter 1, Section 1.1.2).

DLT leaders were asked to indicate which dimension and domain had been chosen as their school's focus. At both primary and post-primary level, the vast majority of schools chose the Teaching and Learning dimension of the DLF as their focus (91% at primary and 93% at post-primary level). This was also the case in Wave 1 and is not unexpected, due to the required focus for School Self-Evaluation from 2016 to 2022 being on teaching and learning (Department of Education and Skills, 201619).

At primary level, within the Teaching and Learning dimension, the most commonly-chosen domains were learner experiences and learner outcomes. Within these domains, the most frequently chosen standards were: Learner experiences (*pupils engage purposefully in meaningful learning activities),* chosen by 80% of primary respondents who focused on this domain, and Learner outcomes *(pupils enjoy their learning, are motivated to learn and expect to achieve as learners)* chosen by 86.5% of primary respondents who focused on this domain (see Table 2.3 and Appendix Figures A2.6a to A2.6d).

At post-primary level, the most commonly-chosen domain was Teachers' collective/collaborative practice. The most frequently chosen standards were: Teachers' collective/collaborative practice (*teachers contribute to building whole-staff capacity by sharing their expertise*), chosen by 69% of post-primary respondents who focused on this domain, and Teachers' collective/collaborative practice (*teachers value and engage in professional development and professional collaboration*), chosen by 49% of post-primary respondents who focused on this domain (see Table 2.3[20] and Appendix Figures A2.6e to A2.6h).

Table 2.3. Distribution of DLF domains across schools; primary, post-primary, and overall

Domain	Primary (n=140)		Post-primary (n=74)		All (n=214)	
	n	% focusing on this domain	n	% focusing on this domain	n	% focusing on this domain
Teaching and Learning						
Domain 1: Learner outcomes	60	42.9	18	24.3	78	36.4
Domain 2: Learner experiences	68	48.6	27	36.5	95	44.4
Domain 3: Teachers' individual practice	39	27.9	28	37.8	67	31.3
Domain 4: Teachers' collective/collaborative practice	27	19.3	39	52.7	66	30.8
Leadership and Management						
Domain 1: Leading teaching and learning	7	5	2	2.7	9	4.2
Domain 2: Managing the organisation	7	5	3	4	10	4.7
Domain 3: Leading school development	3	2.1	3	4	6	2.8
Domain 4: Developing leadership capacity	0	0	4	5.4	4	1.9

Among the small minority of primary schools which chose the Leadership and Management dimension as their focus, the most commonly chosen standard was from Domain 2: Managing the organisation (*manage the school's human, physical, and financial resources so as to create and maintain a learning organisation*), chosen by 72% of those who chose this domain as their focus. At post-primary level, the most commonly chosen standard in the Leadership and Management dimension was from Domain 4: Developing leadership capacity

19 https://pdst.ie/sites/default/files/School-Self-Evaluation-Guidelines-2016-2020_Post-Primary_English_WEB.pdf

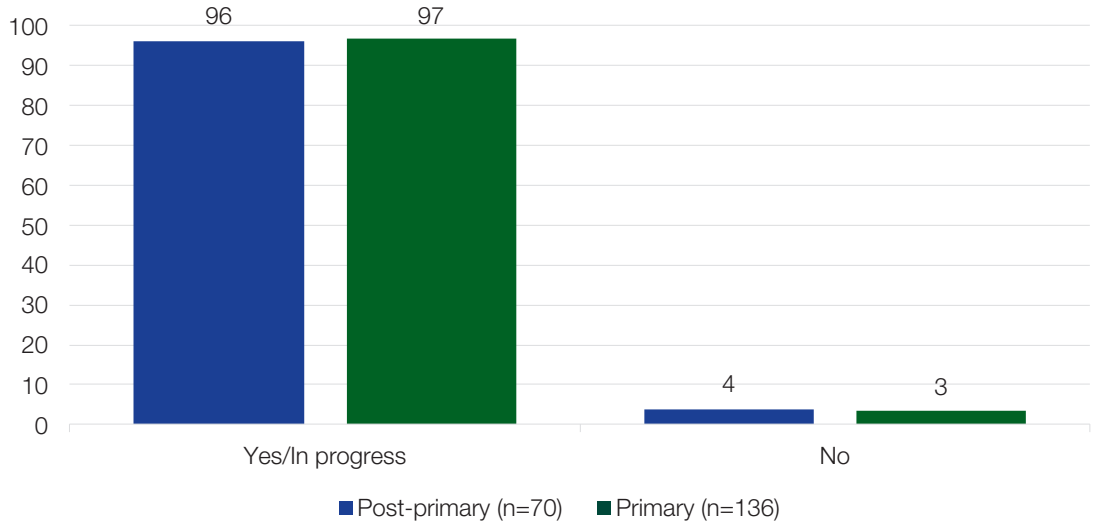
20 Note that Table 2.3 lists the domains within dimensions, but not standards, for ease of reading. The standards within the domains are outlined as the specific behaviours and characteristics of practices in a well-functioning school. There are a total of 32 standards. An important objective of these standards is to assist schools in recognising those areas of their practice that are Effective or Highly effective, and to identify where improvements need to be prioritised (DL Framework for Primary schools https://www.dlplanning.ie/)

(*empower staff to take on and carry out leadership roles*), chosen by 74% of those who chose this domain from the leadership and management dimension.

2.3.2 Implementation of and supports for the DLP

Schools were almost identical at primary and post-primary level with respect to their Digital Learning Plan status. At the time of the survey, almost all schools had either completed their DLP or were in the process of drafting it (97% of primary, 96% of post-primary). Fewer than 5% at each level had yet to begin work on their DLP (Figure 2.3). The school's Digital Learning Team usually coordinates the process of creating the DLP, ideally with input from all staff (see the Digital Learning Planning guidelines at www.dlplanning.ie).

Figure 2.3. Whether a Digital Learning Plan has been completed at primary and post-primary levels (percentages)



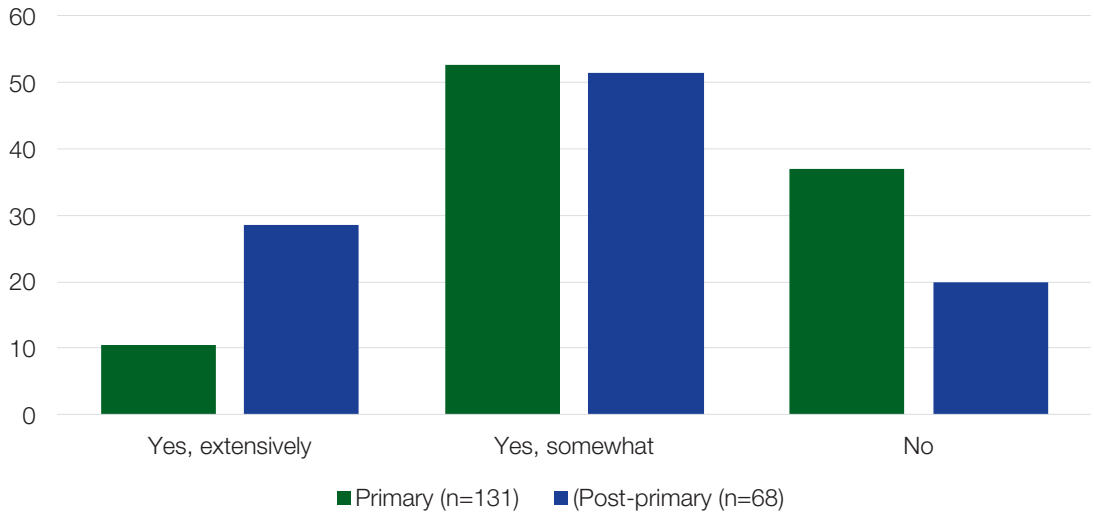
With respect to the development of the DLP, primary schools mainly consulted the DLT leader and teaching staff. In 74% of primary schools, the DLT leader was extensively consulted; whilst in 61% of schools, teaching staff were extensively consulted in the development of the DLP. A small minority of schools extensively consulted pupils (2%) or parents/parents associations (2%), although approximately half of schools consulted pupils somewhat, and approximately two-fifths of schools consulted parents at least somewhat. Special Education teachers were also consulted extensively in 44% of primary schools, and consulted somewhat in 45% of schools. The school management board was consulted in 78% of schools, and in 9% of schools was consulted extensively. The PDST[21] was consulted in 51% of schools; of these 13.5% were classed as extensive consultation.

At post-primary level, like primary, the two groups consulted most extensively were the DLT leaders (71%) and teaching staff (49%). Special Education teachers were also consulted in an extensive manner in 23% of post-primary schools, and consulted somewhat in 61% of schools. The school management board was consulted in 69% of cases, of which 20% were classed as extensive consultation. Parents were more likely to have been consulted at post-primary level (52%) than at primary. Students also were consulted in the development of the DLP more frequently at post-primary level, in 71% of schools, including extensively so in 14%. The PDST was consulted in 66% of schools; of which 6.5% were classed as extensive consultation.

21 The PDST now is a part of Oide, the new support service for teachers and school leaders https://oide.ie/

When DLT leaders were asked whether the school's DLP had been revised since first being drafted, post-primary schools (29%) were almost three times more likely than primary schools (10%) to indicate that the DLP had undergone extensive revision (see Figure 2.4). Approximately half of schools at each level indicated that the DLP had been somewhat revised. Primary schools were more likely than post-primary to indicate that there had been no revision to the DLP (37% of primary, 20% of post-primary schools). Furthermore, of those respondents who indicated that their DLP had been revised (either extensively or somewhat), almost two-fifths at each level indicated that there had been a change in the dimension on which the DLP was focused since first being drafted (56% of primary, 58% of post-primary schools).

Figure 2.4. Whether the Digital Learning Plan has been revised (percentages) primary and post-primary levels



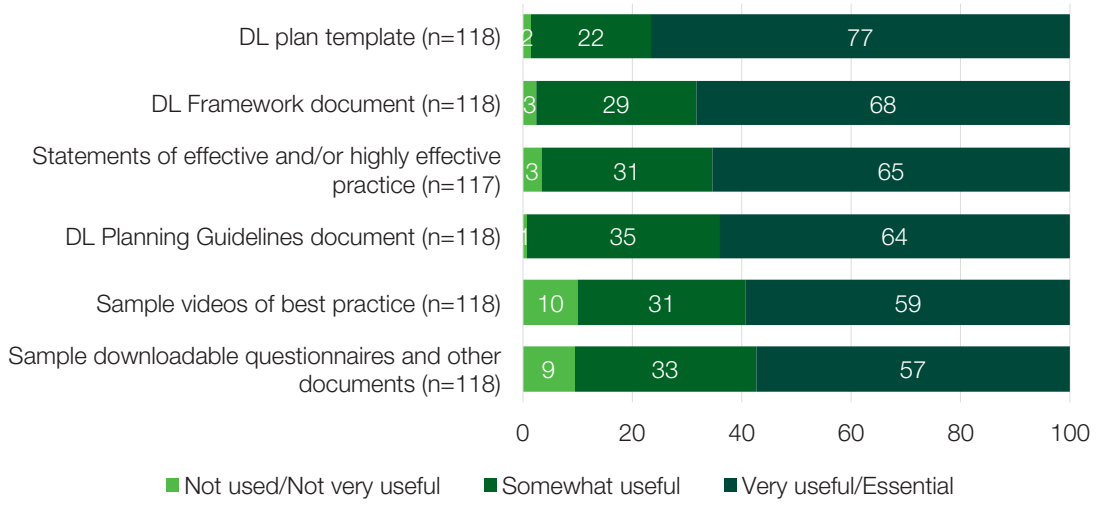
As a support to the school's DLP, post-primary schools were more likely to indicate that more than one staff member had a key role in guiding the pedagogical use of Digital Technologies (39% of primary, 60% of post-primary schools). Primary level respondents were more likely to indicate that one staff member guides this function (45% of primary, 26% of post-primary schools). About one-in-seven schools at each level indicated that they did not have a staff member in this role at all (15% of primary, 14% of post-primary schools).

DLT leaders were asked how often they visited the PDST's www.DLPlanning.ie website. Approximately one-tenth (12%) of primary and one-fifth (20%) of post-primary respondents indicated that they had never visited the site. Although a higher proportion of post-primary respondents had never visited the website, post-primary school respondents were also slightly more likely to have visited the website five or more times (25% vs 20% at primary). The majority of respondents at both levels reported that they had visited the website between one and four times (67% of primary and 55% of post-primary schools).

Respondents were also asked to rate aspects of the DLPlanning website in terms of their usefulness to their implementation of the DLF. There were five response options (Not used, Not very useful, Somewhat useful, Very useful, Essential), which were subsequently collapsed to three categories for reporting (see Figures 2.5 and 2.6).

A majority of respondents, at both levels, rated all six aspects of the DLPlanning website as being Very useful/ Essential. The most highly rated aspect at both primary and post-primary level was the DL Plan template (77% primary, of which 22.5% rated as Essential; 75% post-primary, of which 27% rated as Essential).

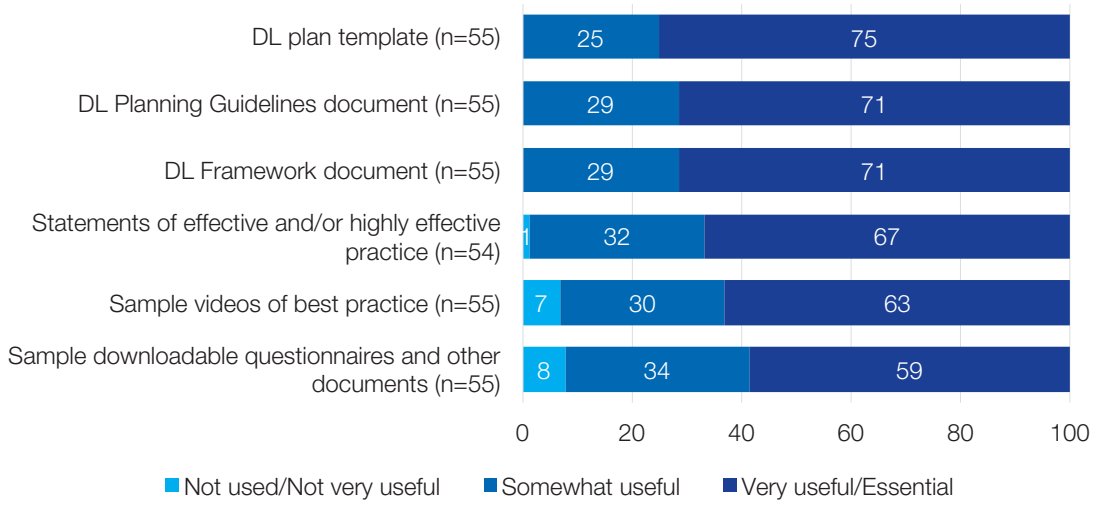
Figure 2.5. DLT leader ratings of aspects of the www.DLPlanning.ie website (percentages) primary schools



Approximately two-thirds of primary respondents rated the DL Framework document (68%), Statements of Effective and/or Highly effective practice (65%) and the DL Planning Guidelines document (64%) as Very useful/Essential. Ratings for these aspects were marginally higher at post-primary level. The DL Planning Guidelines document (71% Very useful/Essential) and the DL Framework document (71%) were rated equally highly by post-primary respondents, and a similar proportion rated the Statements of Effective and/or Highly effective practice as Very useful/Essential (67%).

The Sample Videos of Best Practice and the Sample Downloadable Questionnaires achieved the lowest ratings by respondents. One tenth of primary respondents rated the Sample Videos and Sample Downloadable Questionnaires as Not used/Not very useful (10% and 9%, respectively). The corresponding percentages at post-primary level were 7% and 8%, respectively. However, it should be noted that the majority of respondents at both levels rated the Sample Videos and Sample Downloadable Questionnaires as useful, overall.

Figure 2.6. DLT leader ratings of aspects of the DLPlanning website (percentages) post-primary schools



2.3.3 Use of DTs in standardised testing

With respect to standardised tests, only primary schools were asked about their administration in paper-based and online formats.[22] [23] The percentage of primary level DLT leaders reporting that they used computers to administer standardised tests of either Reading or Mathematics to any classes in the school was just 5%. At all class levels, the vast majority of primary schools (>87%) administered standardised tests via pencil and paper.

Standardised tests of reading were slightly more likely to have been administered on computer than standardised tests of mathematics (e.g. 4% vs. 3% in fourth and sixth class; 5% vs. 3% in fifth class). The most frequent use of computers for standardised tests was in fifth class tests of reading, which 5% of schools administered via computer (see Table 2.4 for details).

Table 2.4. Percentages of primary schools administering standardised tests via computer and via pencil and paper

Class Level	Paper-based Reading	Computer-based Reading	Paper-based Maths	Computer-based Maths
First class	92.6%	N/A	92.6%	N/A
Second class	95.5%	N/A	94.8%	N/A
Third class	91.0%	0.9%	91.0%	0.9%
Fourth class	91.0%	3.7%	91.0%	2.8%
Fifth class	87.4%	4.7%	89.2%	2.8%
Sixth class	90.0%	3.7%	91.0%	2.8%

2.4 Key findings from the DLT leader questionnaire – primary and post-primary schools

This section presents the key findings from the DLT leader questionnaire.

2.4.1 DLT leaders' attitudes to leadership and DTs

Leadership style

DLT leaders were asked several questions relating to leadership style in the context of using digital tools and assessing digital leadership skills, and how this applies to staff in leadership positions in the school. A new scale was adopted for Wave 2, entitled *school digital leadership*. This scale specifically assesses digital leadership skills, as opposed to a more global leadership skills scale. Respondents selected from four response options for this scale, on six statements, with responses ranging from Strongly disagree to Strongly agree. (The six statements can be viewed in Figure 2.7.) Higher scores on the *school digital leadership* scale indicate more positive impressions of digital leadership in the school for digital leadership skills.

All six items in this scale elicited high rates of agreement (65% or more at primary, and 67% or more at post-primary). At primary level (Figure 2.7), the high levels of agreement reflect positive views of DLT leaders towards

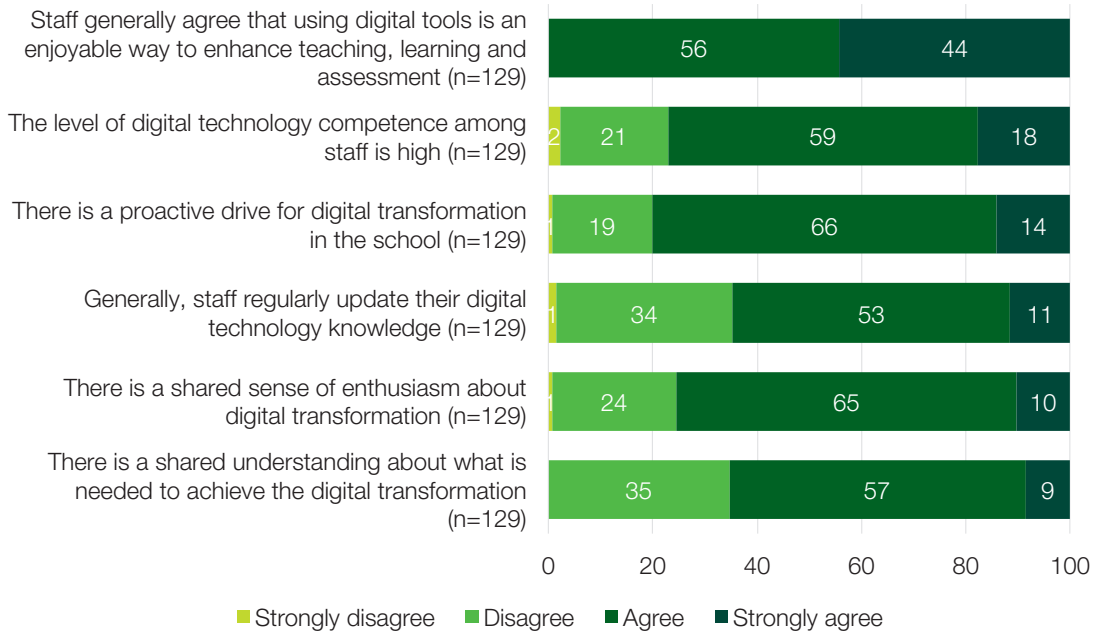
22 For example, via the ERC DOTS (Drumcondra Online Testing System) platform: https://www.tests.erc.ie/primary-online-tests

23 Post-primary schools were not asked this question because standardised testing is mandatory only at primary level.

staff in leadership positions within the school, using Digital Technologies for TLA. For example, 100% of DLT leaders supported the statement that staff generally agree that using digital tools is an enjoyable way to enhance teaching, learning and assessment (44% of which Strongly agree). Furthermore, 80% of DLT leaders agreed that there is a proactive drive for digital transformation in the school (14% of which Strongly agree). These results highlight how the majority of primary schools viewed the adoption of Digital Technologies within the school, and in TLA, as being of key significance.

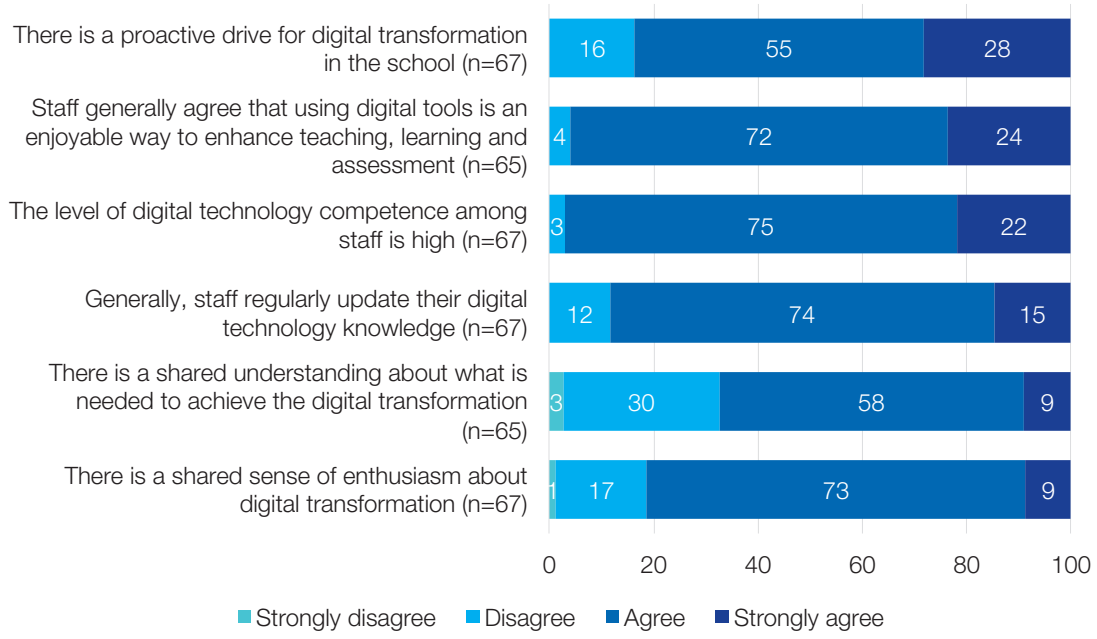
However, approximately one-third of DLT leaders disagreed that there is a shared understanding about what is needed to achieve the digital transformation (35% disagree), and also disagreed that staff regularly update their Digital Technology knowledge (34% disagree). These findings suggest a need for greater articulation among staff in some schools of the vision for digital transformation, as well as encouragement for continual digital upskilling by staff.

Figure 2.7. DLT leader ratings of school digital leadership – primary schools – agreement with items comprising school digital leadership scale (percentages)



At post-primary level, the statements which elicited the highest rates of agreement were that the level of Digital Technology competence among staff is high (97% Agree, 22% of which Strongly agree), and like primary level, that staff generally agree that using digital tools is an enjoyable way to enhance teaching, learning and assessment (96% Agree, 24% of which Strongly) (see Figure 2.8). Similar to primary level also, 30% of DLT leaders disagreed that there is a shared understanding about what is needed to achieve the digital transformation.

Figure 2.8. DLT leader ratings of school digital leadership – post-primary schools - agreement with items comprising school digital leadership scale (percentages)



The mean scores for the *school digital leadership* scale were moderately high[24] (mean primary 64.7, SD 15.2; mean post-primary 67.5, SD 13.9), with no significant difference between the mean scores for primary and post-primary levels ($t(193)=1.272$, $p=.201$). None of the means on the leadership scale varied across schools, either by enrolment size and DEIS status (primary and post-primary), or by sector (post-primary only). At both primary and post-primary levels, there were several moderate, positive correlations and one strong, positive correlation between this scale and the scales reported in the following sections (see Appendix 2, Tables A2.1a and A2.1b).

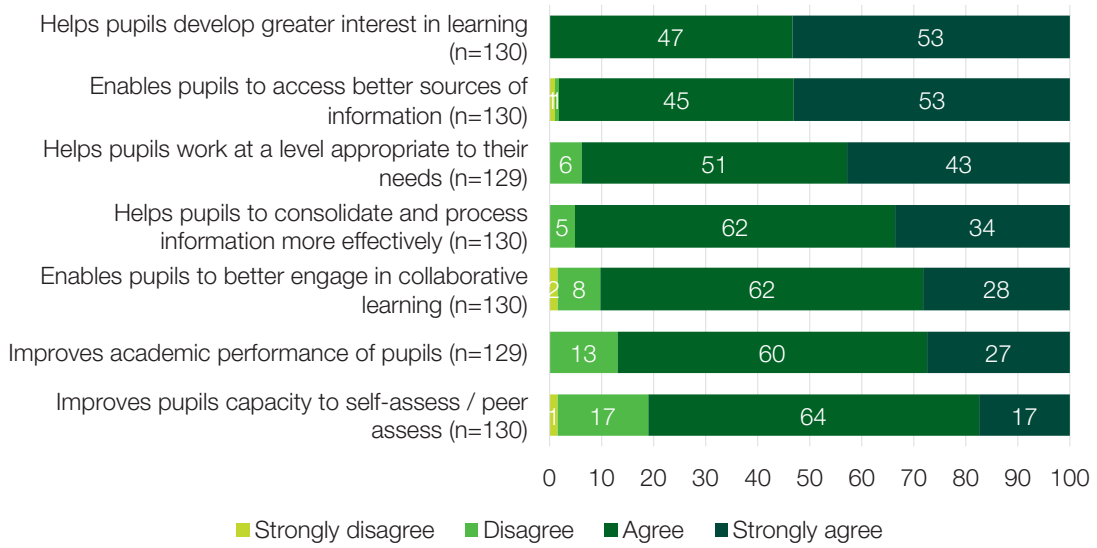
Attitudes to DTs for learning

The scale *DLT attitudes to DTs for student learning*, which was also used in Wave 1, assessed the attitudes of DLT leaders in using DTs, how this impacts student learning, and their preference for constructivist learning over traditional methods. Respondents selected from four response options for this scale, on seven statements, with responses ranging from Strongly disagree to Strongly agree. Higher scores on this scale correspond to a greater preference by DLT leaders for constructivist approaches to learning over more traditional methods.

At both primary and post-primary level, a majority of items elicited high rates (80% or more) of agreement. This pattern was evident in the Wave 1 DLF evaluation findings also (Feerick et al., 2021). In particular, primary respondents expressed high levels of agreement that using DTs helps pupils develop greater interest in learning (100% Agree, 53% of which Strongly agree), and enables pupils to access better sources of information (98% Agree, 53% of which Strongly). These were also the most agreed-with statements at post-primary level, with 100% of respondents agreeing that using DTs enables students to access better sources of information (of which 43% Strongly agree), and 99% agreeing that using DTs helps students develop greater interest in learning (of which 30.5% Strongly) (see Figures 2.9 and 2.10). This is consistent with the findings in Wave 1 also.

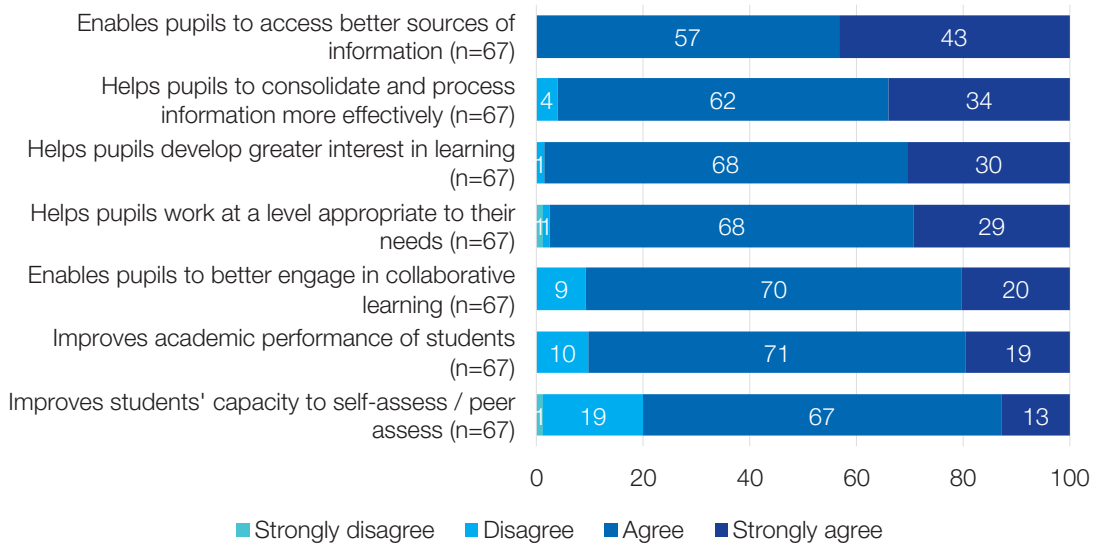
24 As a reminder, all scales reported in this chapter are presented on a 0-100 scale.

Figure 2.9. DLT leader ratings of DTs for pupil learning - primary schools - agreement with items comprising DLT attitudes to DTs for pupil learning scale (percentages)



At both primary and post-primary level, the least agreed-with statement was that using DTs improves pupils' capacity to self-assess or peer assess. Approximately 20% of respondents at each level disagreed with this statement. Nonetheless, 81% agreed with the statement at primary level (17.5% strongly) and 80% agreed at post-primary level (13% strongly).

Figure 2.10. DLT leader ratings of DTs for student learning – post-primary schools - agreement with items comprising DLT attitudes to DTs for student learning scale (percentages)



The mean scores for DLT respondents for the scale *DLT attitudes to DTs for student learning* were high. This indicates that both primary and post-primary DLT leaders generally held a preference towards constructivist learning over more traditional methods. There was no significant difference between the mean score of primary schools compared to post-primary schools (mean primary 76.1, SD 13.2 vs mean post-primary 73.3, SD 12.3; $t(195)=-1.417$, $p=.528$). Scores on this scale did not vary significantly between schools, either by enrolment size and DEIS status (primary and post-primary), or by sector (post-primary only). At primary level, there were

several moderate, positive correlations and one strong, positive correlation with other scales. At post-primary level, there were several moderate, positive correlations with other scales (see Appendix 2, Tables A2.1a and A2.1b for more detail).

Impediments to learning

The scale *DLT attitudes to DTs for impediments to learning* assessed the extent to which DLT leaders believed that using DTs impedes student learning. Respondents were required to select one of four response options, from Strongly disagree to Strongly agree. The items in this scale have been reverse-scored; therefore, higher scores on this scale indicate fewer perceived impediments to learning as a result of using DTs.

At primary level, the most agreed-with statements on this scale were that using DTs encourages copying material from published Internet sources (54% Agree, 7% of which Strongly), and that using DTs introduces organisational problems for schools (51.5% Agree, 9% of which Strongly). At post-primary level, these were also the most agreed-with statements, with 70% agreeing that using DTs encourages copying from published Internet sources (14% of which Strongly agree) and 48% agreeing that using DTs introduces organisational problems for schools (8.5% of which Strongly agree) (see Figures 2.11 and 2.12). These were also the most agreed with statements at both primary and post-primary level at Wave 1.

Figure 2.11. DLT leader ratings of DTs for impediments to learning - primary schools - agreement with items comprising DLT attitudes to DTs for Impediments to learning scale (percentages)

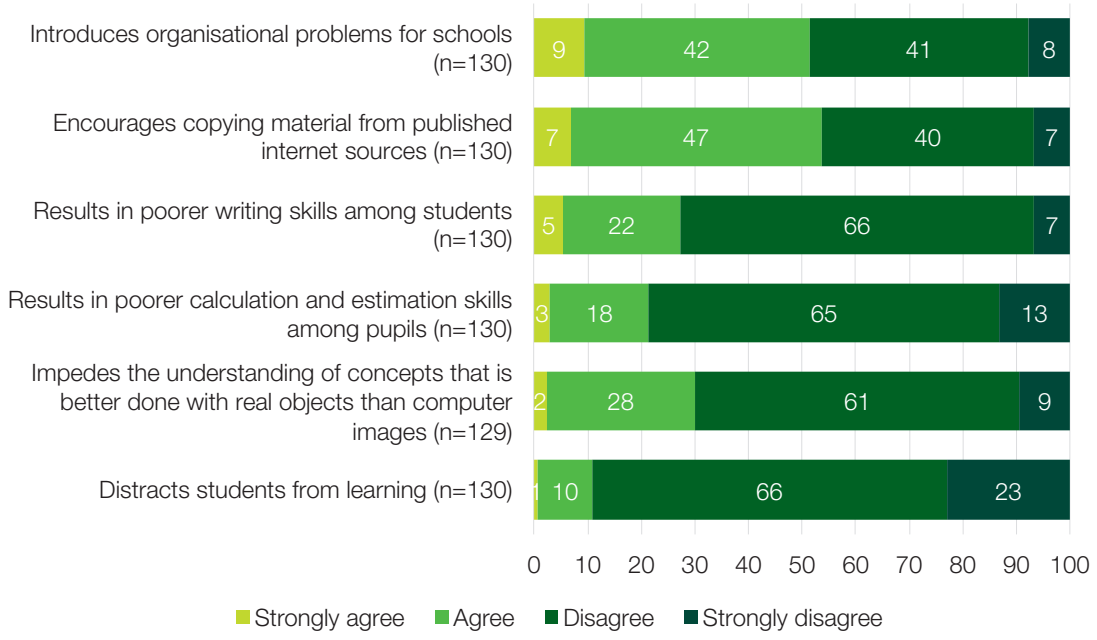
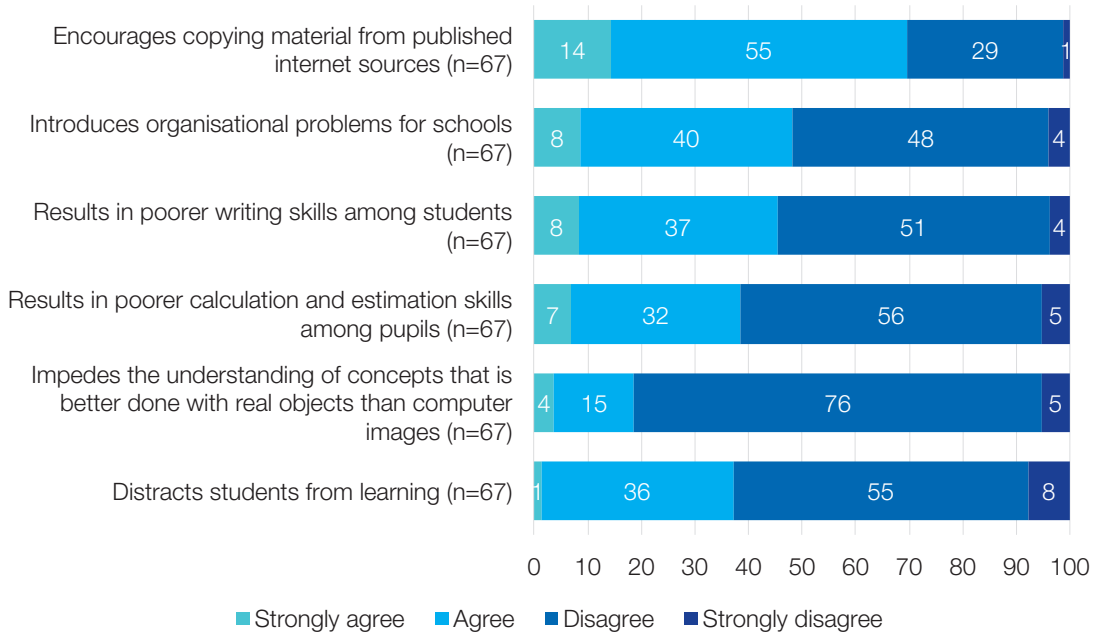


Figure 2.12. DLT leader ratings of DTs for impediments to learning – post-primary schools - agreement with items comprising DLT attitudes to DTs for Impediments to learning scale (percentages)



There was no significant difference between the mean scores on the scale *DLT attitudes to DTs for impediments to learning* at primary and post-primary levels (mean primary 58, SD 16.1 and mean post-primary 51.5, SD 16; t(195)=-2.702, p=.606). Furthermore, scores on this scale did not differ at primary or post-primary level either by enrolment size and DEIS status (primary and post-primary) or by sector (post-primary only). At both primary and post-primary level, there was one moderate, positive correlation with another scale (see Appendix 2, Tables A2.1a and A2.1b for more detail).

2.4.2 Participation in professional learning and initiatives relevant to DLF implementation

DLT leaders were asked to indicate whether any member of their staff had participated in any Digital Technology-related professional learning in the last two years. Results are presented in Table 2.5. Summer courses (73.5%) and Digital Learning webinars (42%) were attended by primary school staff most frequently in the previous two years. This is a similar pattern to that observed in Wave 1, when summer courses (78%) and DLF seminars (74%) were also the most frequented (Feerick et al., 2021). Digital Learning Plan (DLP) online courses (7%) were the least frequented by primary school staff at Wave 2; this finding is consistent also with Wave 1.

At post-primary level, the most frequently attended professional learning activities over the last two years were Digital Learning webinars (78%) and Workshops (e.g., those provided to support the introduction of the JC Framework) (63%). Workshops were the most frequently attended activity at Wave 1 (83%), along with in-school PDST support (69%). Face-to-face summer courses (6%) were the least frequented by post-primary staff at Wave 2, a finding found at Wave 1 also.

Table 2.5. Percentages of primary and post-primary staff participation in professional learning relevant to DLF implementation in the last two years

	Primary (n=119)	Post-primary (n=67)
Summer course (*primary*)/Face-to-face summer courses (*post-primary*)	73.5	6.2
Term time online courses	n/a	47.2
PDST online summer course	n/a	18.0
Junior cycle cluster CPD	n/a	17.2
Workshops	n/a	63.3
In-school PDST support	26.2	40.5
DLF Seminar	23.3	31.0
Digital Learning webinars	41.7	77.8
DLP online course	6.7	n/a
PDST Digital Technologies face to face course	16.8	23.8
Other PDST online course	40.5	49.2
Other	11.9	21.3

Post-primary respondents only were also asked to indicate whether any member of their staff had participated in any Digital Technology related initiatives or events in recent years. Participation across the majority of initiatives/events was lower than 40% in most instances. However, a majority of post-primary respondents indicated that their staff had attended the PDST/GAA Future leaders Transition Year programme in recent years (57%). See Table 2.6 for more detail.

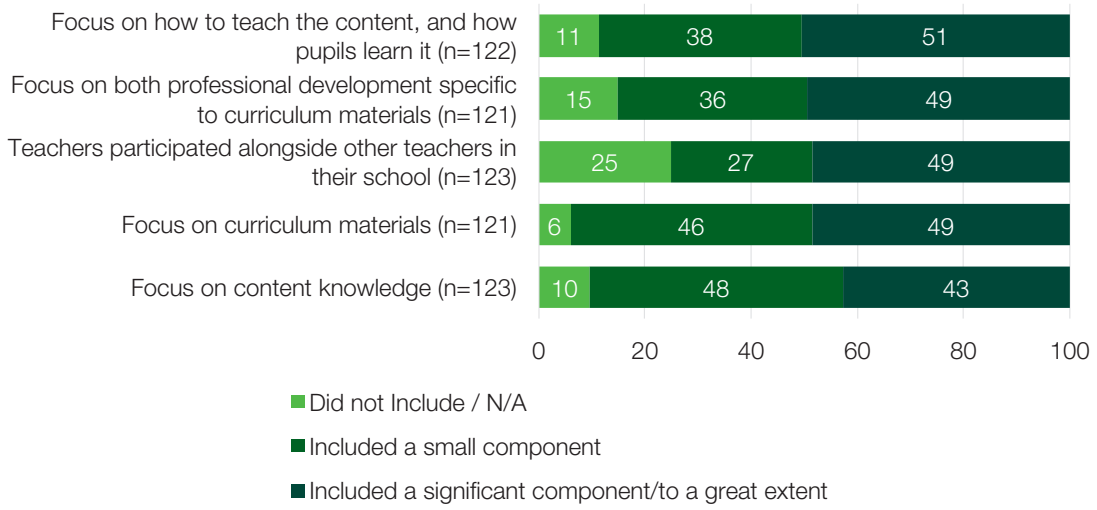
Table 2.6. Percentages of post-primary respondents' participation in DT related initiatives/events in recent years

	Post-primary (n=61)
PDST/GAA Future leaders Transition Year programme	57.2
Coding Ireland	38.8
EU Code Week	34.4
Formative Assessment Using Digital Portfolios Initiative	33.5
Trinity Access 21 (aka Bridge21)	22.7
Other	19.3
Computing at schools (CAS)	14.8
School Excellence Fund Digital Initiative	10.2
Tech Space	10.0
MakerMeetIE	4.4
Code like a girl Ireland	2.8
Fluirse	1.4

DLT respondents were also asked for their ratings of the curriculum and content-related components of the professional learning which their school had participated in. For the scale, *professional learning suitability*, higher scores indicate a higher degree of suitability of the professional learning components. This scale had four

response options, for five statements, ranging from "Did not include or N/A" to "Included to a great extent." See Figures 2.13 and 2.14 for detail.

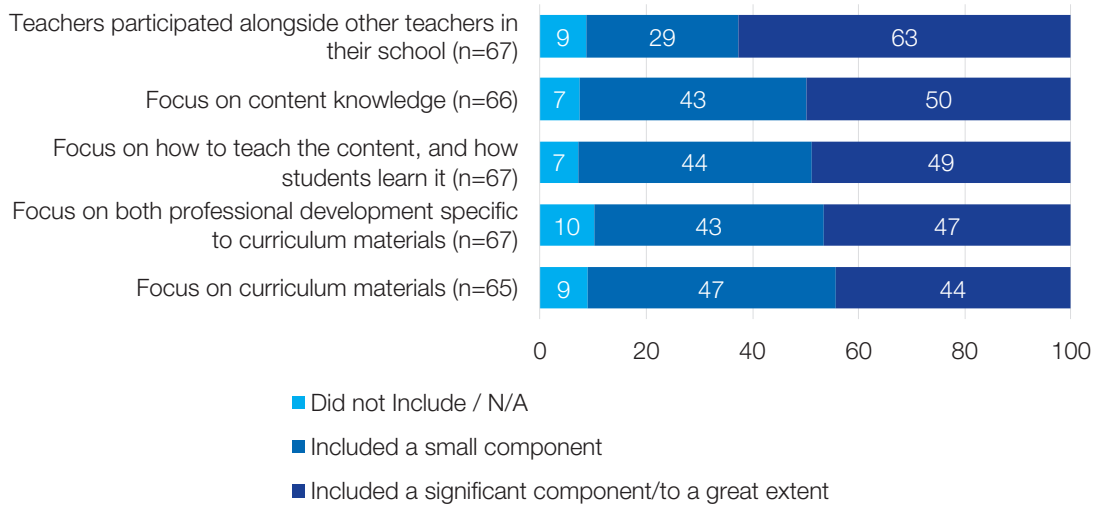
Figure 2.13. DLT leader ratings of curriculum and content related components of professional learning which the school has participated in, primary schools - agreement with items comprising professional learning suitability scale (percentages)



At primary level, the pattern of responses was quite evenly distributed across the five statements, with 43-51% of respondents indicating that their professional learning was reflected by *a significant component or to a great extent* across the five statements. The statement which elicited the highest rating was the focus on how to teach content, and how pupils learn it (51%), a finding which is consistent with Wave 1 also. At the other end of the scale, 49-58% responded that their professional learning *Did not include/NA* or *Included a small component*. The statement which elicited the lowest rating was the focus on content knowledge (58%). This statement received the second lowest rating at Wave 1 (46%).

At post-primary level, there was somewhat more variation evident in the responses with the most positive responses ranging from 44-63% across items (this pattern was evident at Wave 1 also) (Figure 2.14). Similar to the Wave 1 findings, there was a greater perceived focus on teachers participating alongside other teachers in the school at post-primary level, relative to primary. However, in contrast to Wave 1, the focus on content knowledge was perceived to be somewhat higher in Wave 2 at post-primary level than at primary.

Figure 2.14. DLT leader ratings of curriculum and content related components of professional learning which the school has participated in, post-primary schools - agreement with items comprising professional learning suitability scale (percentages)



Mean scores on the scale *Professional learning suitability* did not significantly differ between primary and post-primary levels (mean primary 47.2, SD 21.3 and mean post-primary 49.8, SD 17.9; $t(188)=.838$, $p=.378$). Furthermore, scores on this scale did not differ at post-primary level by enrolment size, DEIS status or by sector.

At primary level, there was no significant difference by DEIS status also. However, there was a significant effect of enrolment size on the scale mean ($F(3, 119)=3.619$, $p=.015$). Post hoc comparisons using the Bonferroni test indicated that the mean score on this scale for Large schools (defined as enrolment of 201 pupils or more; mean = 54, SD = 19.3) was significantly higher than the mean score of Very small schools (up to 60 pupils; mean = 39.7, SD = 23.6). However, the mean score of Large schools on this scale did not differ significantly from the mean of both Small and Medium size schools.[25] This finding indicates that DLT leaders from schools with a Large enrolment size (201 or more) were more likely than schools with a Very small enrolment size (up to 60) to assign higher ratings to the curriculum and content-related components of the professional learning which their school had participated in. There were several moderate, positive correlations with other scales at primary level. At post-primary level, there was one moderate, positive correlation with another scale (see Appendix 2, Tables A2.1a and A2.1b for more detail).

Similar percentages of primary (23%) and post-primary (25%) DLT respondents received additional support from the PDST TiE following attendance at the PDST seminar on the DLF (Table 2.7). Of those who indicated that they received additional support, one school visit was the most frequent type of support indicated by respondents at primary level (51%); at post-primary level the most frequent type of support indicated was more than one school visit (44%). These findings are broadly similar to Wave 1. Online supports such as webinars and online courses were sparsely attended by primary school respondents at Wave 1 (4% each), however this attendance figure had increased to 17% and 28%, respectively, at Wave 2.

25 Enrolment size of schools is classified as following:
Primary: Very small (up to 60), Small (61-120), Medium (121-200) and Large (201 or more).
Post-primary: Small (up to 350), Medium (351-600), Large (601 or more).

Table 2.7. Percentages of respondents indicating that they received additional support from PDST TiE and, of those who did receive additional support, the percentages of the types of support received since the DLF seminar, primary and post-primary schools

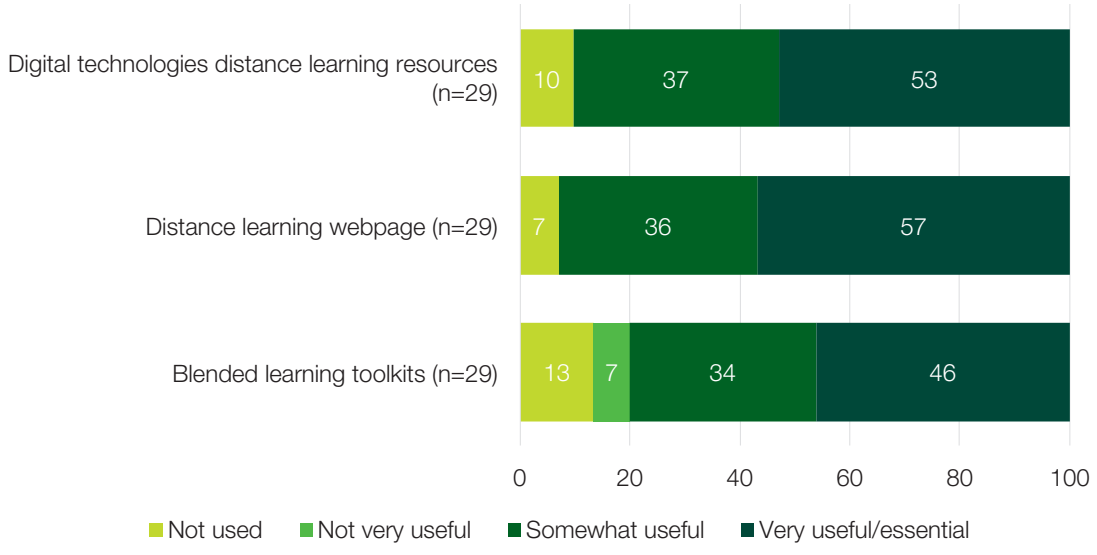
	Primary (n=127)	Post-primary (n=67)
% of respondents who received additional support from PDST TiE	23.1	24.7
% of those who received additional support:		
One school visit	50.9	22.9
More than one school visit	38.7	44.0
Webinars	17.1	n/a
Online courses	27.9	n/a
Phone calls in which support and guidance was given	43.3	43.4
Digital correspondence in which support and guidance was given	28.0	24.9
Guidance on the purchasing of Digital Technologies	24.3	37.6
Other	3.3	0.0

Note. Responses sum to more than 100%, as respondents were permitted to choose more than one option.

In a new item for Wave 2, DLT respondents who indicated that they had received additional support from the PDST TiE were asked to rate the usefulness of PDST resources in supporting TLA within the school over the past year. Results are presented in Figures 2.15 and 2.16.

Overall, at both levels, a majority of respondents rated all three items as useful in some way (Somewhat, or Very useful/Essential). Ratings across all items were higher at primary level than at post-primary. At primary level, the distance learning webpage was the most highly rated item, with almost three-fifths (57%) of primary respondents indicating that it was Very useful/Essential.

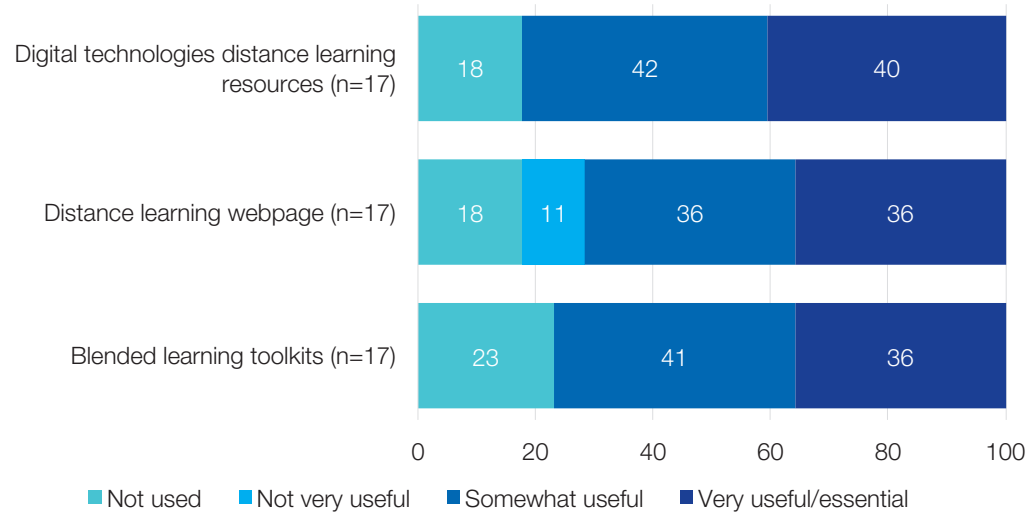
Figure 2.15. DLT leader ratings of the usefulness of PDST resources in supporting the school's digital teaching learning and assessment activities over the past year, percentages, primary schools



At post-primary level, the Digital Technologies distance learning resources were most highly rated, with two-fifths (40%) indicating that they were Very useful/Essential. At post-primary level also, almost one fifth (18%) of

respondents did not use the Digital Technologies distance learning resources or the Distance learning webpage, and almost one quarter (23%) did not use the Blended learning toolkits.

Figure 2.16. DLT leader ratings of the usefulness of PDST resources in supporting the school's digital teaching learning and assessment activities over the past year, percentages, post-primary schools

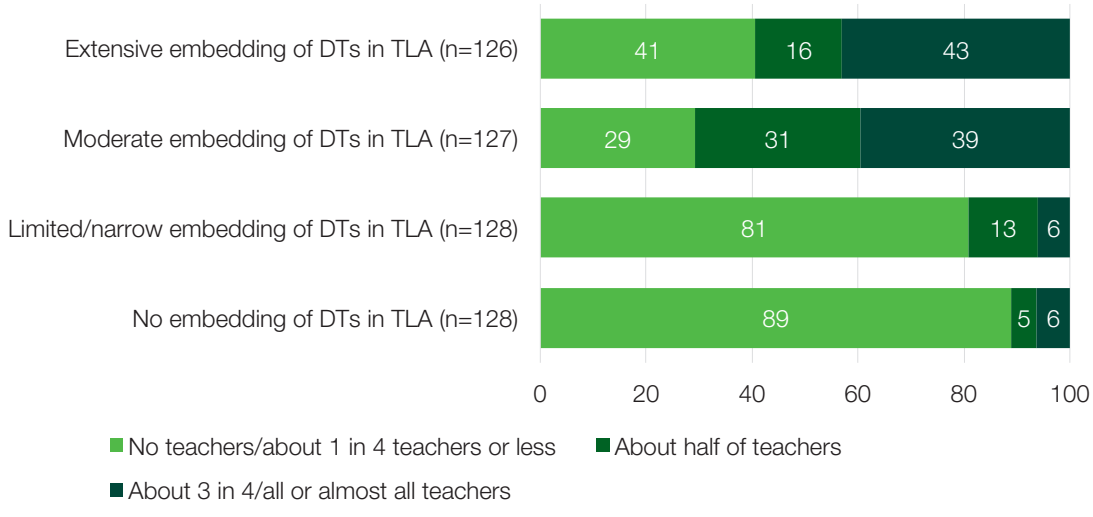


2.4.3 Self-assessment of current level of embedding DTs in TLA

Respondents were asked about their schools' current level of embedding DTs in teaching, learning and assessment. Primary level DLT leaders indicated that *Extensive* embedding was being practiced by a majority or all teachers in 43% of schools, and by about half of teachers in 16% of schools. This is a marked increase from Wave 1 (where the corresponding figures for Extensive embedding were 28% and 13%, respectively).

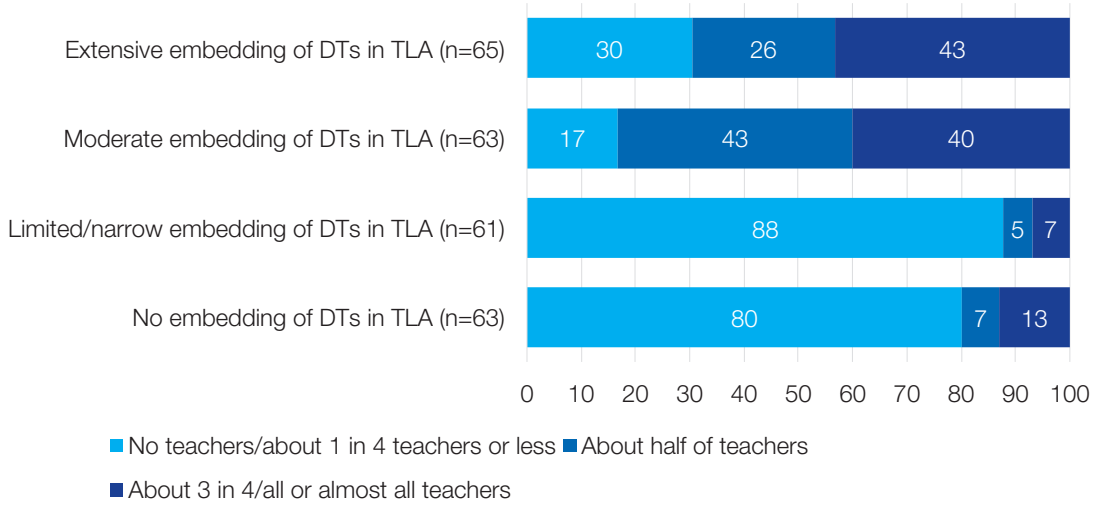
A *Moderate* level of embedding was being practiced by a majority or all of teachers in 39% of schools and by about half of teachers in 31% of schools (see Figure 2.17). These results for the Moderate level of embedding are broadly similar to Wave 1 (34% and 30%, respectively).

Figure 2.17. Teacher patterns of embedding DTs in school, primary schools (percentages)



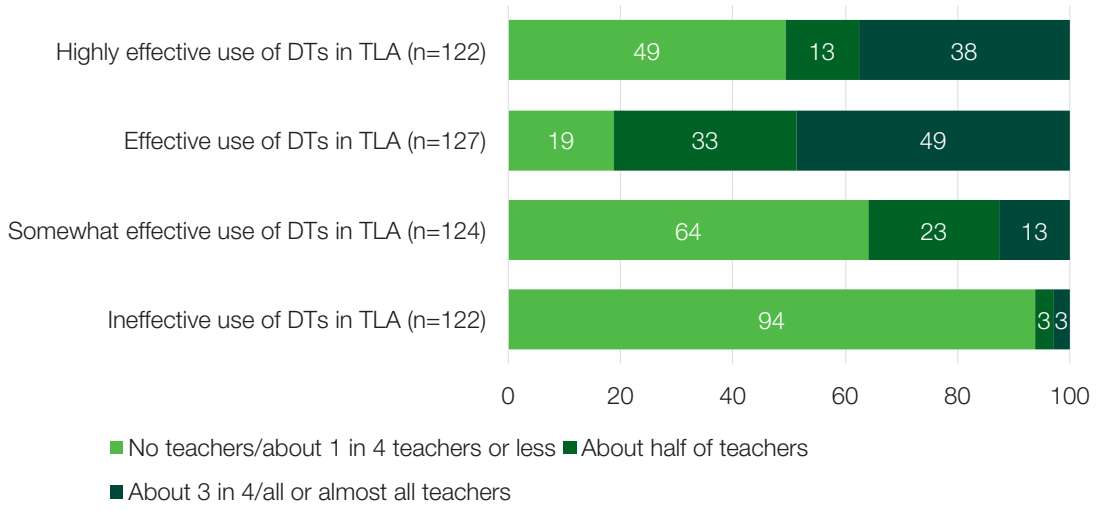
The pattern of results is broadly similar at post-primary level (Figure 2.18), with a marked increase also evident between Waves 1 and 2 in the percentages of post-primary schools at Extensive or Moderate levels of embedding. For example, at Wave 2, DLT leaders indicated that Extensive embedding was being practiced by a majority or all of teachers in 43% of schools, and by about half of teachers in 26% of schools (the corresponding figures at Wave 1 were 12% and 23%, respectively).

Figure 2.18. Teacher patterns of embedding DTs in school, post-primary schools (percentages)



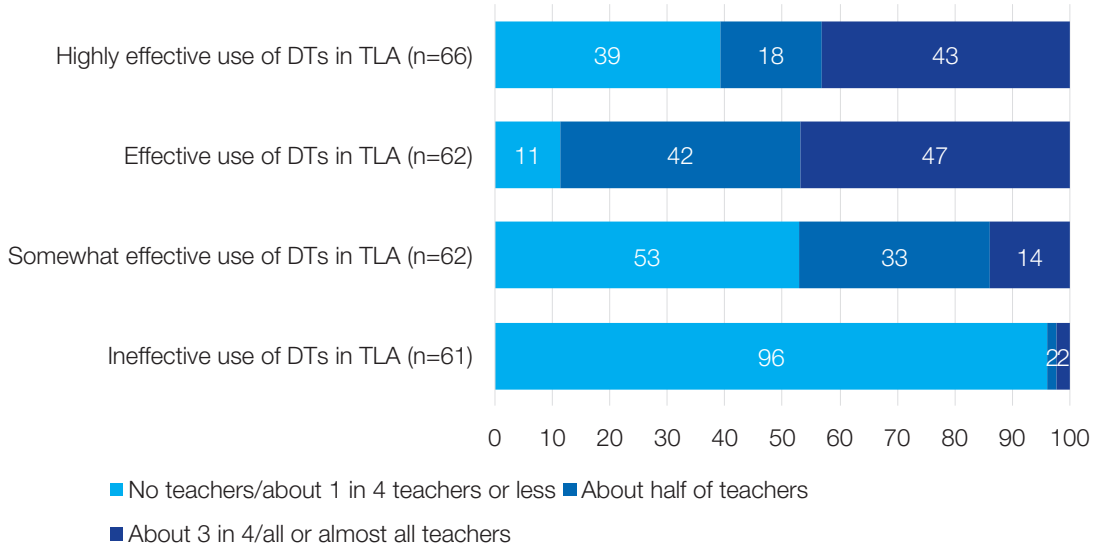
DLT leaders were further asked about the effectiveness of their teachers' use of DTs in teaching, learning and assessment (see Figures 2.19 and 2.20 for primary and post-primary, respectively). At primary level, 38% of respondents indicated that most or all teachers were making Highly effective use of DTs, and 49% indicated that most or all teachers were making Effective use of DTs. This is a higher level of endorsement than was reported in Wave 1 (corresponding figures at Wave 1 were 30% and 31%, respectively).

Figure 2.19. Use of DTs by teachers in teaching, learning and assessment, percentages, primary schools



At post-primary level, the responses are of a similar magnitude, at 43% for Highly effective use of DTs by teachers and 47% for Effective use of DTs by teachers. The increase from Wave 1 is more marked at post-primary level (where the corresponding figures at Wave 1 were 5% and 24%, respectively). This indicates that a substantially higher percentage of post-primary teachers at Wave 2 reported practising Highly effective or Effective use of DTs in their teaching, learning and assessment.

Figure 2.20. Use of DTs by teachers in teaching, learning and assessment, percentages, post-primary schools

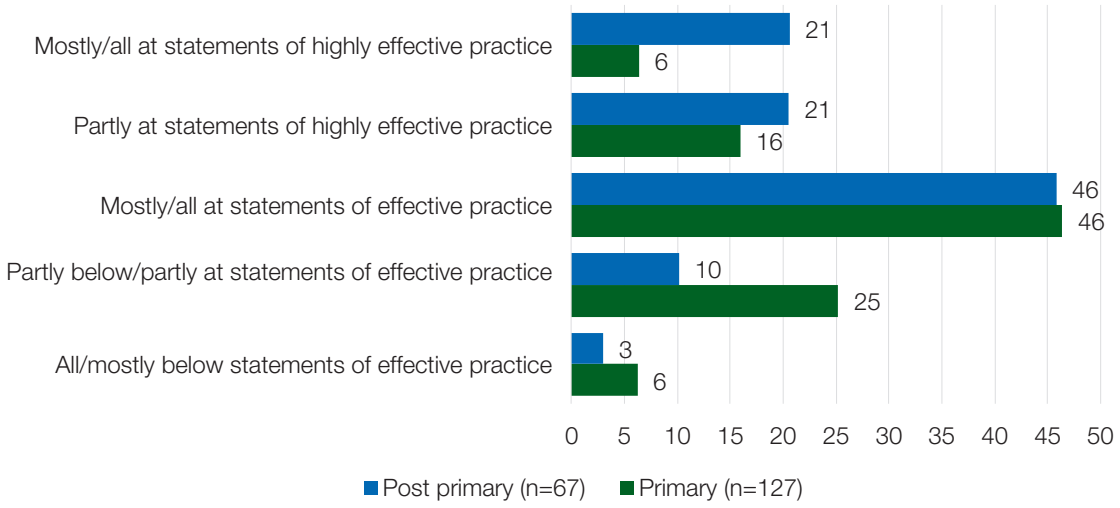


DLT leader respondents were also asked about their schools' current level of practice in relation to the statements in the DLF on which their school was focusing (Figure 2.21). The picture at Wave 2 demonstrates some improvement from Wave 1. Most primary and post-primary school respondents (46% at each level) indicated that they were Mostly/All at statements of effective practice. Very few primary (6%) and post-primary (3%) respondents indicated that they were All/Mostly Below statements of effective practice (the corresponding figures at Wave 1 were 11% primary and 9% post-primary). Nonetheless, 25% of primary school respondents indicated that they were Partly Below or Partly At statements of effective practice. The corresponding figure for post-primary schools was 10%.

Post-primary schools were generally further ahead than primary schools in relation to Statements of Highly effective practice: 21% of post-primary respondents indicated that they were Partly At statements of Highly effective practice (16% at Wave 1) whereas the comparable percentage at primary level was 16% (8% at Wave 1). In terms of being Mostly/All at statements of Highly effective practice, 21% of post-primary respondents indicated that they were at this level (6% at Wave 1) while the corresponding figure at primary level was 6% (7% at Wave 1).

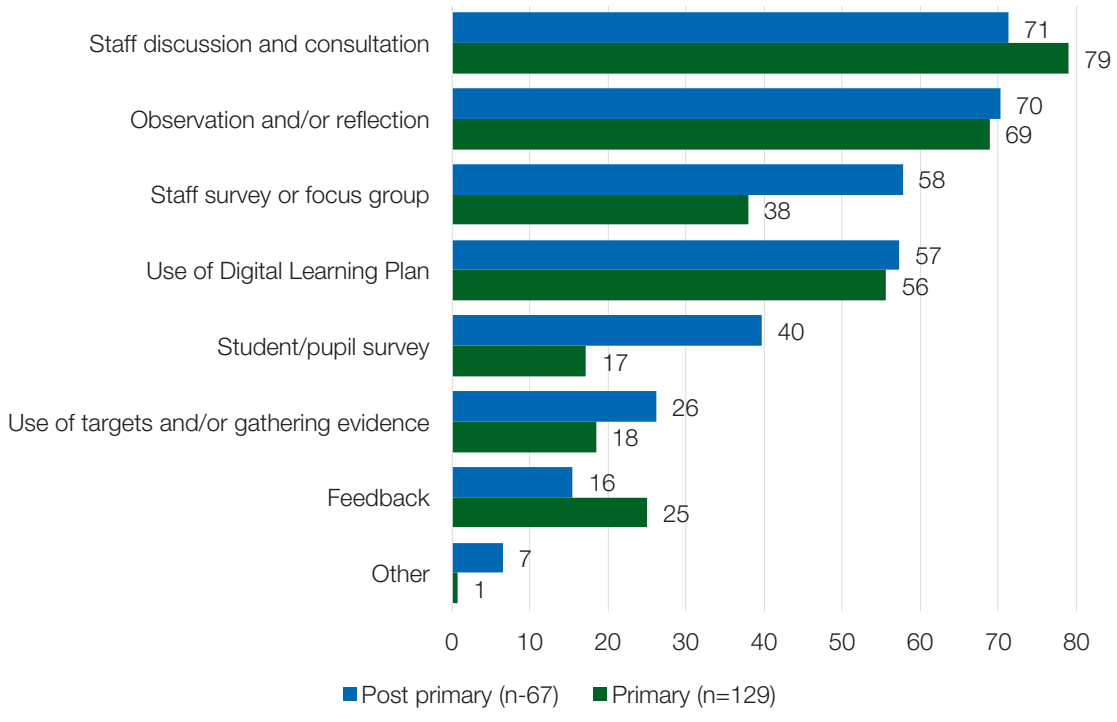
Overall, the picture in relation to schools' current level of practice at both primary and post-primary level appears to have improved since Wave 1.

Figure 2.21. Schools' current level of practice in relation to the statements in the DLF on which the school is focusing; primary and post-primary schools (percentages)



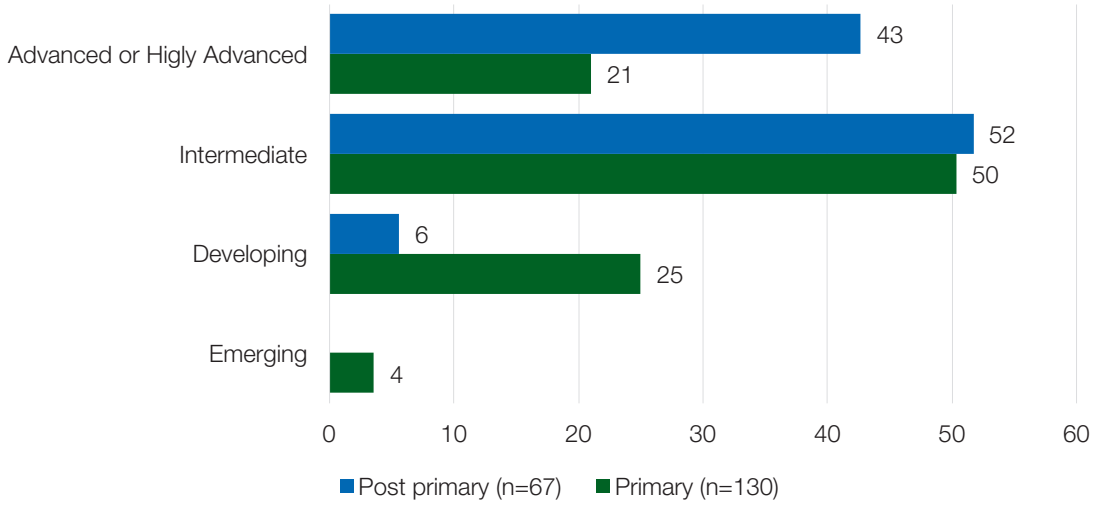
DLT leader respondents were also asked to indicate the methods used to identify their schools' current level of practice. Results are presented in Figure 2.22. Staff discussion and consultation was utilised most frequently by primary and post-primary schools to identify their current level of practice (79% and 71%, respectively). Observation and/or reflection was also commonly used by both primary and post-primary schools (69% and 70%, respectively). Feedback (e.g. from monthly reports) was used least frequently by post-primary schools (16%), and pupil survey was used least frequently by primary schools (17%).

Figure 2.22. How DLT leaders identified their schools' current level of practice; primary and post-primary schools (percentages)



Furthermore, respondents were asked to describe their schools' current level of practice in relation to embedding DTs in teaching, learning and assessment. Results indicate that post-primary schools were generally further along with their current level of practice in embedding DTs. Post-primary schools were about twice as likely to indicate that they were at an Advanced/Highly advanced level in relation to embedding DTs (21% primary v 43% post-primary) (see Figure 2.23). About half of primary and post-primary respondents indicated that they were at an Intermediate level of practice (50% primary and 52% post-primary).

Figure 2.23. School's current level of practice in relation to embedding DTs in teaching, learning and assessment; primary and post-primary schools (percentages)

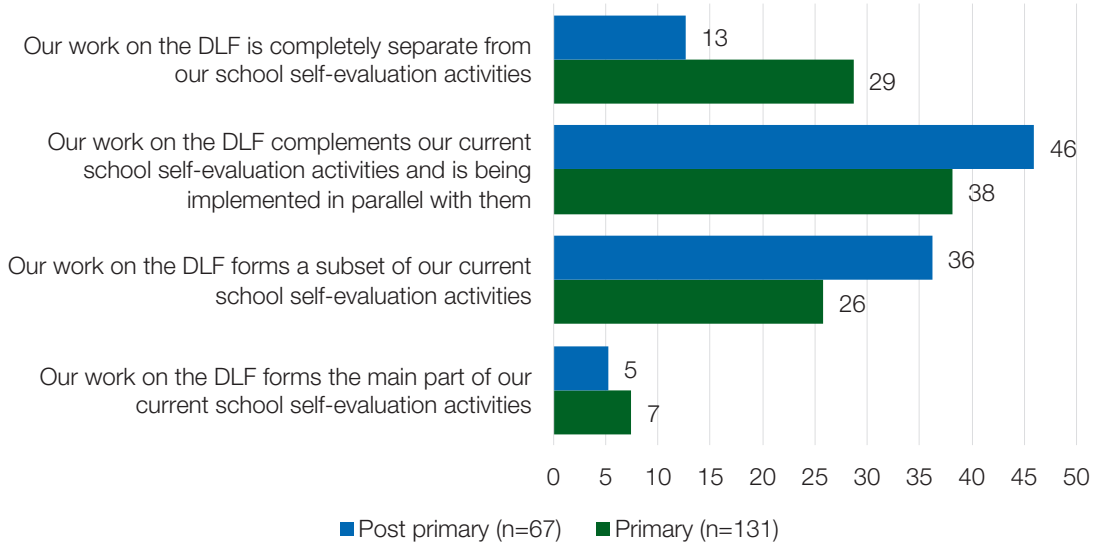


Comparisons can be made between levels of practice as reported at Wave 1 and Wave 2. Some progress is apparent with these comparisons. For example, at primary level, 12% rated themselves as Advanced/Highly advanced at Wave 1, compared with 21% at Wave 2. The picture is more pronounced at post-primary level, where the corresponding figures are 10% (Wave 1) increasing to 43% (Wave 2). At the other end of the scale, the percentage of respondents rating themselves as Emerging or Developing decreased between Wave 1 (56%) and Wave 2 (29%) at primary level and from 23% to 6% at post-primary. Chapter 3 considers change over time in more detail.

Finally, for this section, DLF leader respondents were asked to indicate what best described the relationship between the DLF and LAOS[26] in their school (see Figure 2.24). This was considered important as the structure of the DLF is the same as that of LAOS. The most frequently chosen statement was that "our work on the DLF complements our current School Self-Evaluation activities and is being implemented in parallel with them" (38% primary and 46% post-primary). The statement least frequently chosen was "our work on the DLF forms the main part of our current School Self-Evaluation activities" (7% primary and 5% post-primary).

26 Looking at Our School (School Self-Evaluation).

Figure 2.24. The relationship between the DLF and LAOS in the school; primary and post-primary schools (percentages)



2.4.4 Digital Technology infrastructure and technical support

DLT leaders were asked several questions in relation to Digital Technology infrastructure and technical support in their schools. With respect to Internet access, 70% of primary level respondents indicated that they had reliable Internet access at *school* whereas 88% of post-primary respondents indicated that this was the case. With respect to Internet access at *home*, 89% of primary respondents and 86% of post-primary respondents indicated that they had reliable Internet access at home.

Respondents were also asked about the pattern of access to computing devices for teachers and pupils/students at school. The pattern of responses is somewhat similar across primary and post-primary level. The vast majority of respondents indicated that all teachers in the school had *full-time* access to a school-owned computing device, e.g. laptop, tablet, or PC (93% primary; 79% post-primary) (see Figures 2.25 and 2.26). At post-primary level also, 85% of respondents indicated that all teachers in the school had access to a school-owned computing device when needed. Furthermore, at both levels, more than 60% of respondents indicated that all teachers in the school had access to their own computing devices, e.g. laptop, mobile phone (65% primary and 66% post-primary).

With respect to pupil/student access, over 50% of respondents indicated that all pupils in the school had access to a school-owned computing device *when required*, e.g. laptop, tablet, or PC (55% each at primary and post-primary level). However, access for pupils to their own computing device at home (e.g. mobile phone, tablet) was somewhat lower, especially at primary level. The majority of primary level respondents (66%) indicated that *none* or just *some* of the pupils in the school had access to their own computing device when required. At this level also, just 19% of respondents indicated that *all* pupils in the school had access to their own computing device. The corresponding figure at post-primary level was 45%.

Figure 2.25. Teacher and pupil access to computing devices, percentages; primary schools

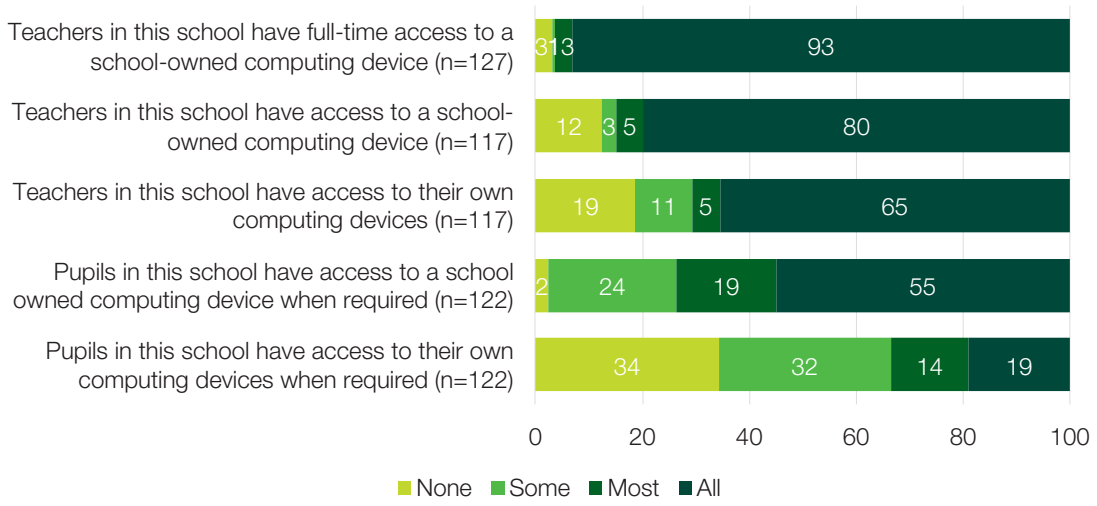
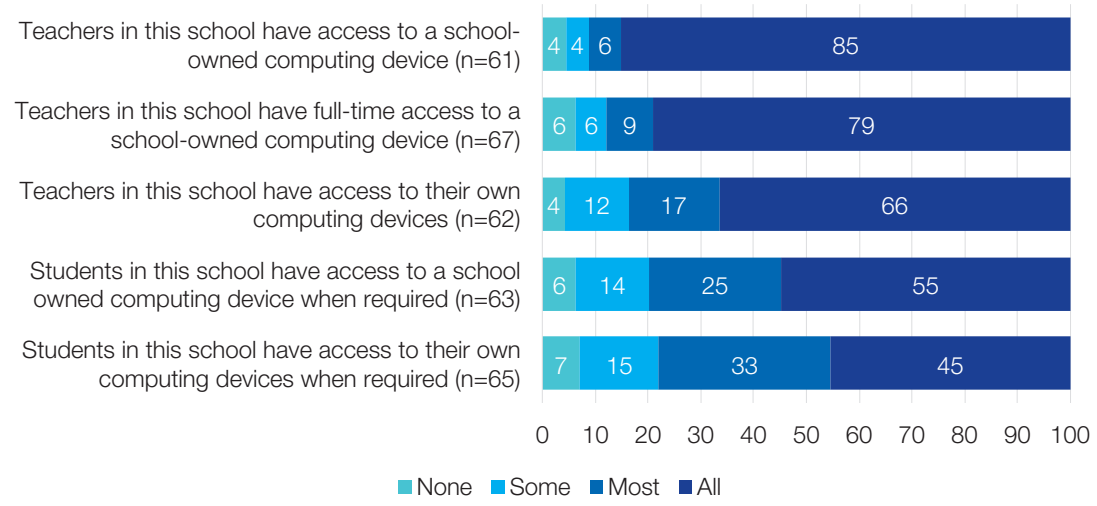
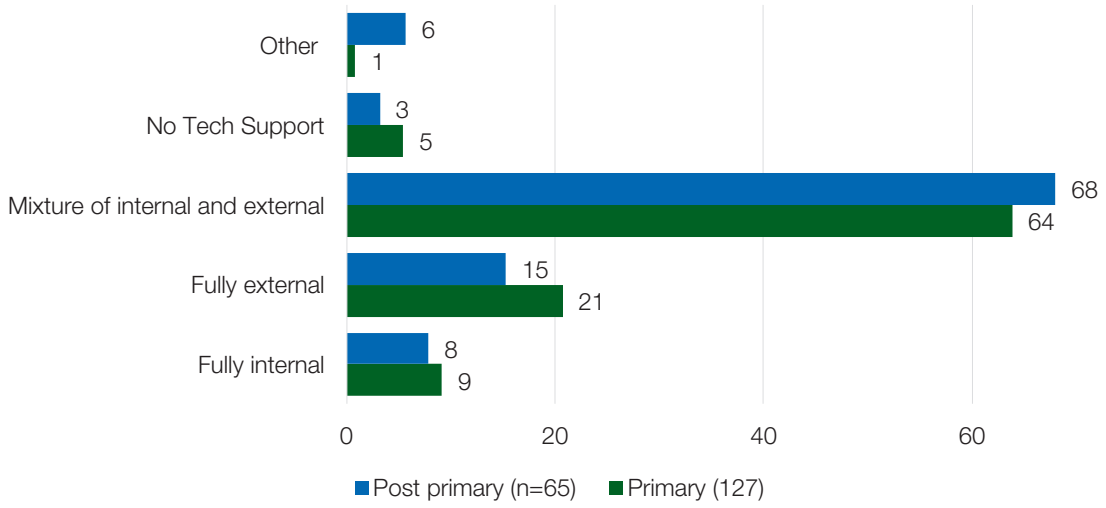


Figure 2.26. Teacher and student access to computing devices, percentages; post-primary schools



Respondents were also asked to indicate how technical support is provided in their schools (see Figure 2.27). The pattern was fairly similar at both primary and post-primary level. Technical support in both primary and post-primary schools was most often delivered through a mixture of internal and external support, with 64% of primary respondents and 68% of post-primary respondents indicating that this was the case. The next most common type of support was external support, with 21% of primary and 15% of post-primary schools indicating that they rely solely on external support for their technical support. Internally-provided support was least common, with just 9% of primary schools and 8% of post-primary school indicating that technical support was solely delivered internally. Five per cent of primary schools and 3% of post-primary schools had no technical support at the time of the survey.

Figure 2.27. How technical support is provided in schools; primary and post-primary schools (percentages)



Respondents were asked to rate the effectiveness of technical support in their schools. The *technical support effectiveness* scale assessed the perceived extent to which technical support is effective in keeping computing and other devices in good repair and up to date, and for maintaining connectivity. There were four response options for this question, ranging from Not effective to Highly effective. Higher scores on this scale indicate higher perceived effectiveness of technical support.

At primary level, between 51% and 72% of respondents rated the five aspects of technical support (maintaining connectivity, keeping computing devices in good repair, keeping devices up to date, keeping other devices in good repair, and dealing with day-to-day technical support queries from staff) as Quite or Highly effective. Similar to Wave 1, the effectiveness of technical support was rated more highly at post-primary level. Between 74% and 90% of respondents at post-primary level rated the five aspects of technical support (maintaining connectivity, keeping computing devices in good repair, keeping devices up to date, keeping other devices in good repair, and dealing with day-to-day technical support queries from staff) as Quite or Highly effective.

There was no significant difference in the mean scores for the *technical support effectiveness* scale between primary and post-primary levels (mean primary 59.4, SD 23.4 and mean post-primary 70.4 (SD 20.1); $t(179)=3.116$, $p=.182$). There was no significant variation on this scale by enrolment size and DEIS status (primary and post-primary), or by sector (post-primary only). The size of the standard deviations (23 at primary and 20 at post-primary), which are similar to those observed in Wave 1, reflects substantial variation across schools in perceived effectiveness of technical support. There was one strong, positive correlation for the scale *Technical support effectiveness* with another scale at primary level and a couple of moderate, positive correlations with other scales at post-primary level (see Appendix 2, Tables A2.1a and A2.1b for more detail).

Respondents were asked to indicate how the school pays for technical support and maintenance (see Table 2.8). The most common method of payment for technical support and maintenance was through the Capitation grant (83% of primary and 66% of post-primary schools). Fundraising or Donations was the next most common method of payment by schools (27% of primary and 13% of post-primary schools).

Table 2.8. How the school pays for technical support and maintenance, percentages, primary and post-primary schools

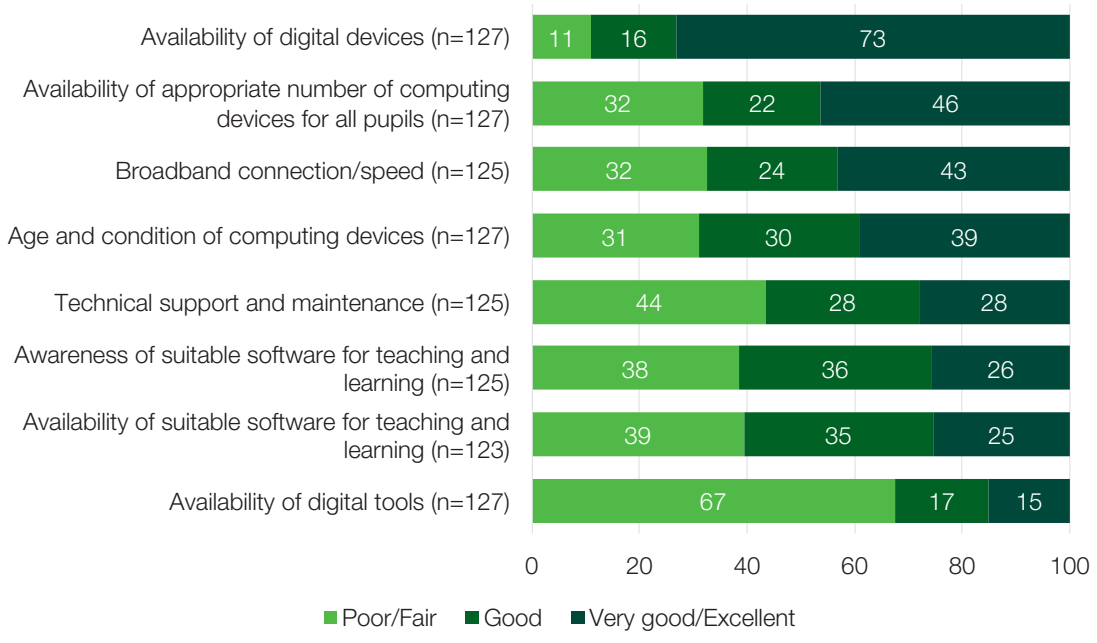
	Primary (n=118)	Post-primary (n=61)
Capitation grant	83.3	66.3
Voluntary subscription	8.7	14.5
Fundraising or Donations	26.8	12.9
Not applicable – there is no cost associated with technical support	2.5	5.8
Not applicable – there is no technical support	3.3	0.0
Other	11.9	31.3

Respondents were also asked about components of Digital Technology infrastructure within their schools. To assess this, ratings of eight different aspects of Digital Technologies in schools were obtained from respondents. Response options were collapsed to produce three categories (Fair/Poor, Good, and Excellent/ Very good) for reporting the *DT infrastructure and connectivity* scale (see Figures 2.28 and 2.29). This scale taps into two components: DT infrastructure and DT connectivity.

Regarding the connectivity aspect of this scale, two-thirds of primary school respondents rated their broadband connection as Good (24%) or Very good/Excellent (43%). One third, however rated their broadband connection as Poor/Fair (32%). By contrast, at post-primary level, over two thirds (68%) of schools rated their broadband connection as Very good or Excellent. A further fifth (20%) rated it as Good, while 12% reported it as being Poor or Fair.

Regarding the DT infrastructure component of this scale, a majority of primary and post-primary schools (89% and 81%, respectively) rated the availability of digital devices such as whiteboards and digital projectors as Excellent, Very good or Good. These figures are very similar to Wave 1. At post-primary level, a majority (77%) also rated technical support and maintenance as Excellent, Very good or Good. This level of endorsement is somewhat lower than the corresponding Wave 1 figure of 87%. At primary level, the figures for this positive rating of technical support and maintenance were consistent between Waves 1 and 2, at 53% and 56% respectively.

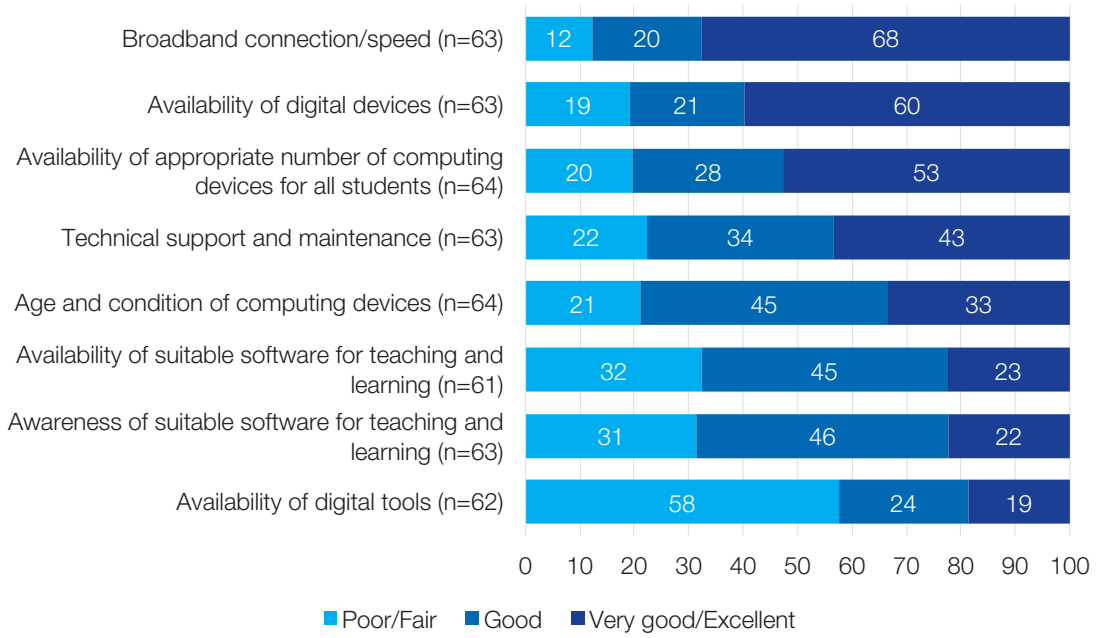
Figure 2.28. DLT leader ratings of ICT infrastructure and DTs in the school, primary schools - agreement with items comprising DT infrastructure and connectivity scale (percentages)



Some areas were highlighted as requiring improvement. Approximately one third to two fifths of schools rated each of the following as Fair/Poor, suggesting a need for improvement in several aspects of DT infrastructure: availability of appropriate number of computing devices for all pupils (32% primary only); age and condition of computing devices (31% primary only); technical support and maintenance (44% primary only); availability of suitable software for teaching and learning (39% primary and 32% post-primary); and awareness of suitable software for teaching and learning (38% primary and 31% post-primary).

Approximately two-thirds of primary and three-fifths of post-primary schools (67% and 58% respectively) indicated that the availability of digital tools such as data sensors, cameras and assistive devices were Fair/Poor. This result is similar to Wave 1, though the figures suggest some improvement since Wave 1 (when corresponding figures were 72% and 77%, respectively). Nevertheless, these results continue to suggest a need for improvement in both the understanding of the uses of these peripheral devices, as well as their effective installation in teaching, learning and assessment.

Figure 2.29. DLT leader ratings of ICT infrastructure and DTs in the school, post-primary schools - agreement with items comprising DT infrastructure and connectivity scale (percentages)



There was no significant difference between the mean scores of primary and post-primary levels on the *DT Infrastructure and Connectivity* scale (mean primary 49.7, SD 18.5 and mean post-primary 54.9, SD 16.6; $t(188)=1.886$, $p=.135$). At Wave 1, there was a difference between the levels, with the mean for post-primary being significantly and substantially higher than the mean score at primary on this scale. However, the magnitude of the difference between the means of primary and post-primary levels has reduced somewhat by Wave 2.

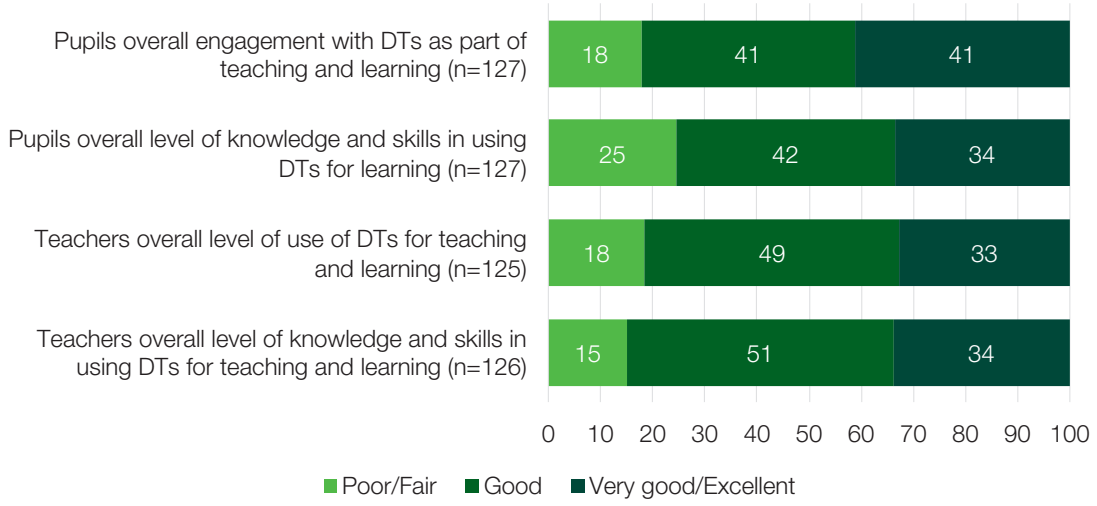
No differences were observed for the scale either by enrolment size or DEIS status (at primary and post-primary level) or by sector (post-primary only). At primary level, there were several moderate, positive correlations and a couple of strong, positive correlations with other scales. At post-primary level, there were some moderate, positive correlations with other scales (see Appendix 2, Tables A2.1a and A2.1b).

Respondents were also asked to rate a set of four statements about teacher and pupil Digital Technology engagement. The scale *DT teacher and pupil engagement* assessed the perceived overall level of teachers' and students' knowledge, skills and engagement with DTs for teaching and learning. There were five response options to this scale, ranging from Poor to Excellent, with response options collapsed to three (Poor/Fair, Good,

Very good/Excellent) for reporting. Higher scores on the scale indicate a higher perceived level of teacher and pupil engagement with DTs for teaching and learning.

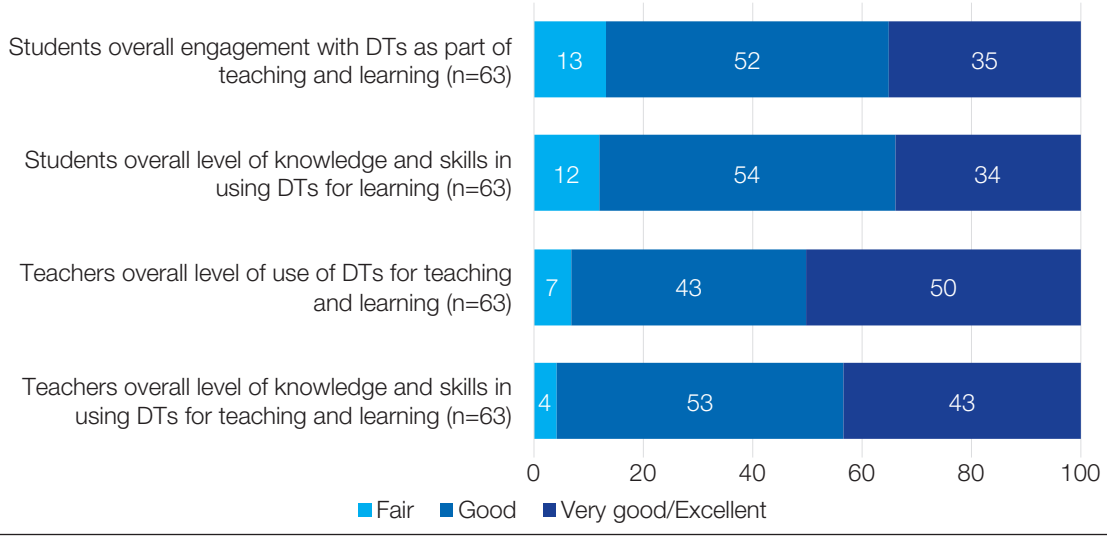
At primary level, a large majority of schools rated the following items as Excellent, Very good or Good: pupils' overall engagement with DTs as part of teaching and learning (82%), pupils' overall level of knowledge and skills in using DTs for learning (76%), teachers' overall level of use of DTs for teaching and learning (82%), and teachers' overall level of knowledge and skills in using DTs for teaching and learning (85%) (see Figure 2.30).

Figure 2.30. DLT leader ratings of teacher and pupil engagement with DTs in the school, percentages, primary schools - agreement with items comprising DT teacher and pupil engagement scale



At post-primary level also, all four statements received high ratings by DLT respondents. It is worth noting that no item received a Poor rating at this level. Vast majorities of respondents rated the following as Excellent, Very good or Good: students' overall engagement with DTs as part of teaching and learning (87%), students' overall level of knowledge and skills in using DTs for learning (88%), teachers' overall level of use of DTs for teaching and learning (93%), and teachers' overall level of knowledge and skills in using DTs for teaching and learning (96%) (see Figure 2.31).

Figure 2.31. DLT leader ratings of teacher and student engagement with DTs in the school, percentages, post-primary schools - agreement with items comprising DT teacher and student engagement scale



No significant difference was observed between the mean scores for the *DT teacher and pupil engagement* scale for both primary and post-primary schools (mean primary 54.5, SD 16.9) compared with mean post-primary 59, SD 15.4; $t(187)=1.781$, $p=.424$), with both scores in the moderate range, as in Wave 1, although slightly higher scores were observed at Wave 2. No differences were observed at primary and post-primary level for this scale by enrolment size and DEIS status (primary and post-primary), or by sector (post-primary only). For the *DT teacher and pupil engagement* scale, there were several moderate, positive and some strong, positive correlations with other scales at primary level. At post-primary level, there were also several moderate, positive correlations and one strong, positive correlation with other scales (see Appendix 2, Tables A2.1a and A2.1b).

In a set of new items presented in Wave 2, DLT leaders were asked a series of questions about the ICT Infrastructure Grant. Following on from the guidance list from the DoE Circular Grant Scheme for ICT Infrastructure (Department of Education, Nov. 2020, Circular 0077/2020), respondents were asked to identify items which were purchased using this grant (see Table 2.9). A majority of schools purchased the following: teaching computers (80.5% primary and 93% post-primary), shared pupil/student computers (70% primary and 83% post-primary), projectors (54% primary and 82% post-primary), and networking equipment (52% primary and 54% post-primary). A majority of schools also purchased other ICT equipment, such as audio visual equipment, mobile laptop/tablet trollies, printers and a school server (55% primary and 72% post-primary). A total of 12% of primary and 7% of post-primary respondents indicated that they purchased other IT-related items that were not included in the guidance list.

Table 2.9. Items purchased using the ICT infrastructure grant for the 2020-21 school year, primary and post-primary schools (percentages)

	Primary (n=126)	Post-primary (n=62)
Teaching computers	80.5	92.7
Shared pupil/student computers	69.7	82.8
Projectors	54.2	81.7
Networking equipment	52.1	54.3
Cloud based tools and applications	31.4	18.1
Learning platforms	36.7	24.2
Local software or apps to support learning	48.3	21.6
Other ICT Equipment	54.7	72.1

Respondents were asked to indicate how involved certain groups or individuals were in deciding how the ICT Infrastructure grant was spent. There were four response options to this item, ranging from *Not consulted at all or N/A* to *Key decision-maker(s)* (see Tables 2.10 and 2.11 for more detail).

The findings were remarkably similar across primary and post-primary levels. A majority of primary respondents indicated that the School Principal (77%) and the Vice/Deputy/Assistant Principal (55%) were key decision-makers; this finding was replicated at post-primary level (76% and 57%, respectively). The Digital Learning Team leader was also cited frequently as a key decision-maker (47% of primary and 46% of post-primary schools). The School Management Board was formally consulted by a majority of schools (52.5% primary and 65% post-primary). Of those informally consulted, pupils/students were consulted most frequently at both levels (40% of primary and 48% of post-primary schools). A majority of schools did not consult the following groups: parents (63% of primary, 57% of post-primary schools), the Schools Procurement Unit (72% of primary schools), PDST TiE (72% of primary and 52% of post-primary schools), and the Teacher Education Policy (Digital) Unit (88% of primary and 82% of post-primary schools).

Table 2.10. DLT leaders ratings of groups/individuals' involvement in deciding how the ICT infrastructure grant (2020/21 school year) was spent, percentages; primary schools

	Not consulted at all or N/A	Informally consulted	Formally consulted	Key decision-maker(s)
School principal (n=125)	0.8	5.0	17.5	76.7
Vice/deputy/assistant principal (n=122)	4.9	11.3	28.5	55.3
Digital Learning Team leader (n=119)	27.5	8.8	16.4	47.2
Teaching staff on the Digital Learning Team (n=123)	16.1	20.7	30.3	32.9
Teaching staff not on the Digital Learning Team (n=124)	16.8	35.0	40.8	7.4
School management board (n=126)	12.3	19.2	52.5	16.0
Parents (n=124)	62.6	31.5	5.9	0.0
Pupils (n=123)	54.1	40.2	5.6	0.0
The Schools Procurement Unit (DE) (n=123)	72.0	16.2	10.8	1.0
PDST TiE (n=123)	72.1	18.7	8.3	0.9
Teacher Education Policy (Digital) Unit (DE) (n=123)	87.9	8.0	4.2	0.0
Other external body (n=118)	77.1	13.5	8.7	0.7

Table 2.11. DLT leader ratings of groups/individuals' involvement in deciding how the ICT infrastructure grant (2020/21 school year) was spent, percentages; post-primary schools

	Not consulted at all or N/A	Informally consulted	Formally consulted	Key decision-maker(s)
School principal (n=62)	0.0	7.9	16.2	75.9
Vice/deputy/assistant principal (n=62)	1.6	14.9	26.9	56.7
Digital Learning Team leader (n=61)	8.9	15.6	29.3	46.2
Teaching staff on the Digital Learning Team (n=62)	15.1	28.7	39.9	16.3
Teaching staff not on the Digital Learning Team (n=62)	19.6	45.1	35.3	0.0
School management board (n=62)	12.7	15.9	65.5	5.8
Parents (n=61)	57.1	35.2	7.6	0.0
Students (n=62)	38.2	48.0	13.7	0.0
The Schools Procurement Unit (DoE) (n=60)	37.6	16.7	30.3	15.5
PDST TiE (n=60)	52.1	27.8	18.7	1.4
Teacher Education Policy (Digital) Unit (DoE) (n=59)	82.2	11.9	3.1	2.9
Other external body (n=52)	62.3	17.0	15.1	5.6

DLT leaders were also asked to identify how influential each of a provided list of factors were in deciding how to spend the ICT Infrastructure grant in the 2020/21 school year. There were five response options to this item, ranging from *N/A or Not influential* to *Central*. Response options were collapsed to four for reporting (see Figures 2.32 and 2.33).

There were three major factors which were identified by respondents as being Moderately or Highly influential/central in the decision-making process for spending the ICT Infrastructure grant: these were items identified in the DLP (73% primary, 80% post-primary), school closures arising from COVID-19 (72% primary, 70% post-primary), and the DE Circular ICT Infrastructure Grant Scheme (67% primary, 88% post-primary).

Figure 2.32. DLT leader ratings of influential factors in deciding how to spend the ICT infrastructure grant (2020/21 school year); primary schools (percentages)

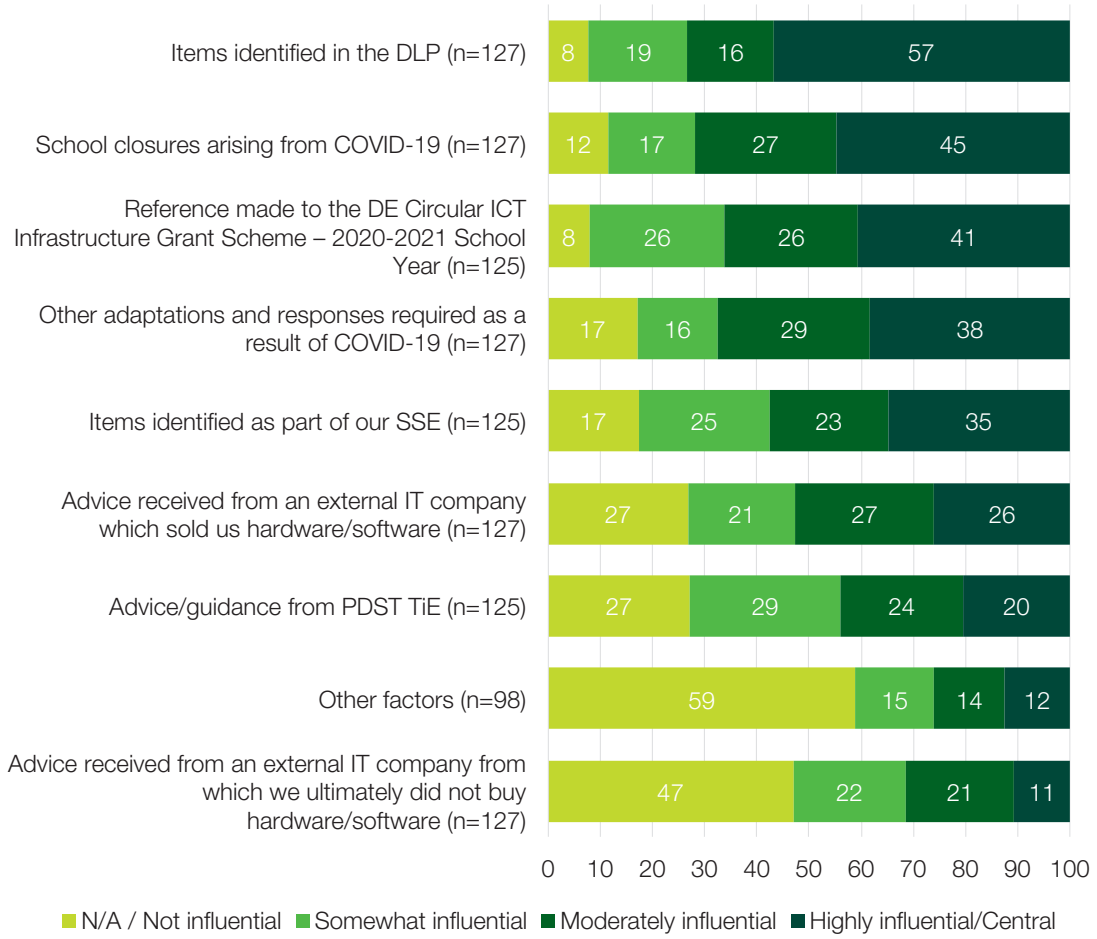
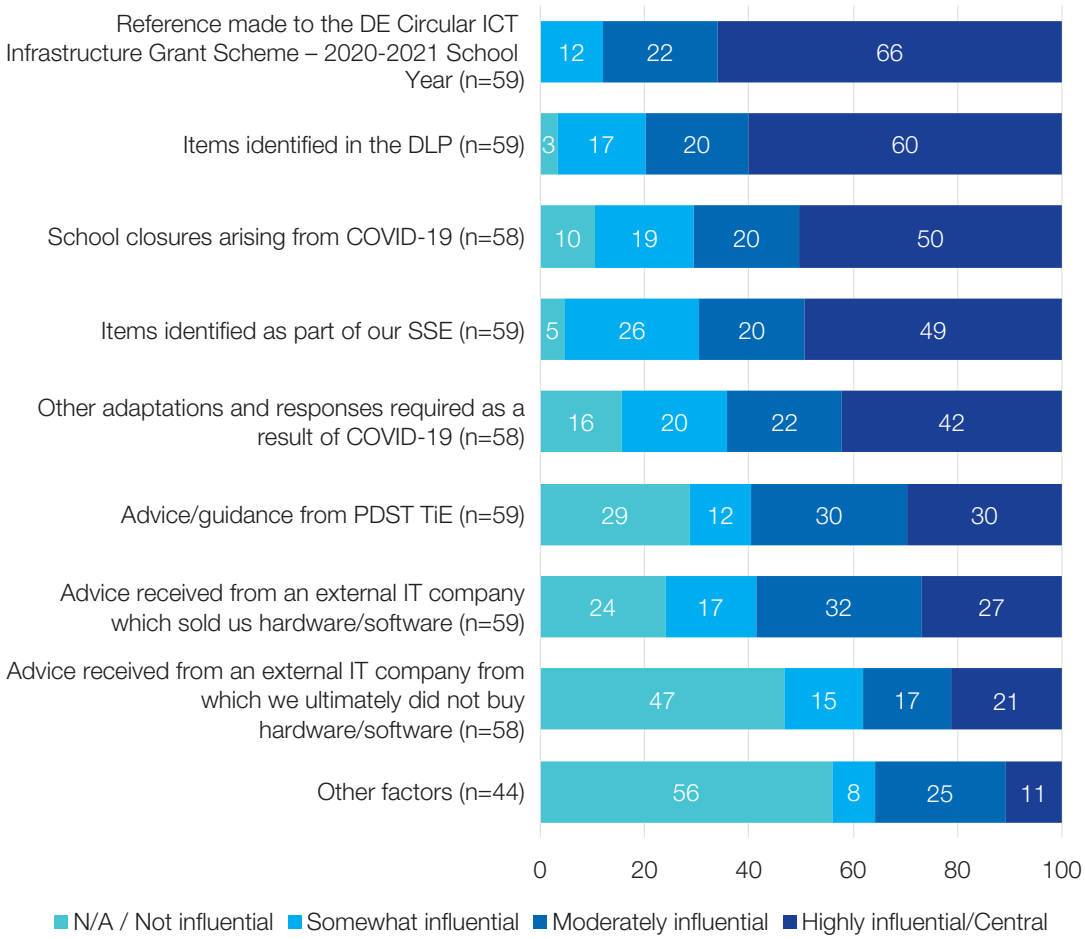
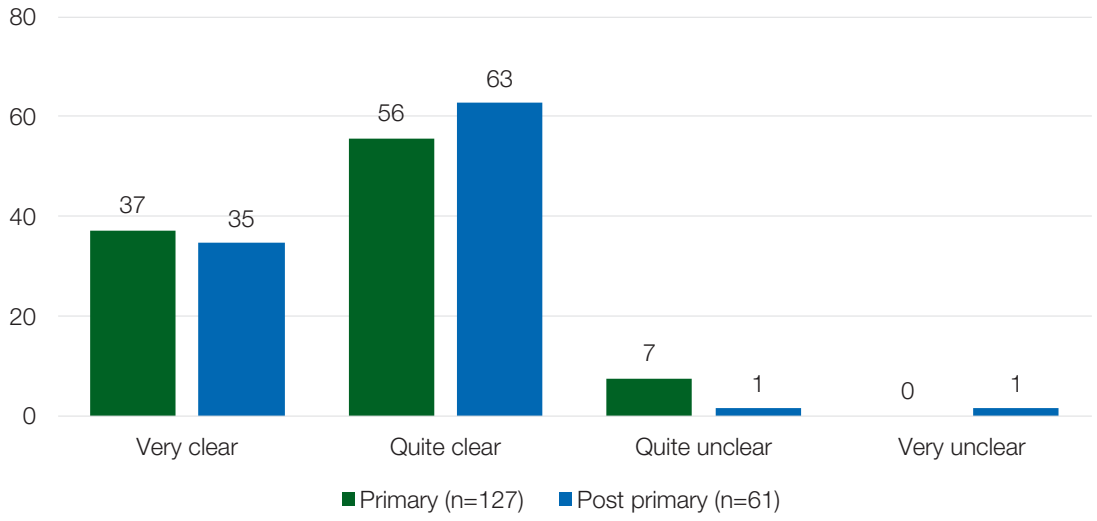


Figure 2.33. DLT leader ratings of influential factors in deciding how to spend the ICT infrastructure grant (2020/21 school year); post-primary schools (percentages)



DLT leaders were also asked to rate how clear or unclear the DT needs of the school were in terms of availing of the ICT Infrastructure grant in 2020/21 (Figure 2.34). Approximately one-third of respondents rated their DT needs as very clear (37% primary, 35% post-primary) and a majority rated their DT needs as quite clear (56% primary, 63% post-primary). Just 7% of primary respondents rated their DT needs as quite unclear (and 0% as very unclear), and a small minority of post-primary respondents rated their DT needs as quite unclear (1%) or very unclear (1%).

Figure 2.34. DLT leader ratings of how clear or unclear the DT needs of the school in terms of availing of the ICT infrastructure grant (2020/21), percentages; primary and post-primary schools



About three-quarters of respondents (76% primary and 72% post-primary) indicated that they would benefit from additional guidance on how to use the ICT Infrastructure grant in order the meet the Digital Technology needs of the school. Respondents were further asked to indicate whether the school required more funding to implement the DLP. Most schools (80% of primary and 92.5% of post-primary) indicated that this was the case. Chapter 4, Section 4.2.3 contains some qualitative analysis of responses to follow-on questions on this theme as well as responses to a follow-on question about what the funding would be spent on.

Finally, respondents were also asked to indicate, on a scale from 0-10, how *ad-hoc/informal* or *systematic/formal* their approach was in determining the schools' needs in terms of availing of the ICT Infrastructure grant in 2020/21. Lower scores on this scale indicate a more ad-hoc/informal approach and higher scores indicate a more systematic/formal approach, with a maximum scale score of 10. The mean scores on this scale for primary and post-primary were very similar, with a mean score of 7 at primary level and a mean score of 8 at post-primary level. This indicates that schools tended towards a more systematic/formal approach, at both levels, in determining the schools' needs in terms of availing of the ICT Infrastructure grant in 2020/21.

2.4.5 Impacts and challenges associated with implementing the DLF

DLT leaders' ratings of the impacts and challenges associated with implementing the DLF are described in this section. Firstly, respondents were asked to rate several aspects of Digital Technology, along with aspects of teaching, learning and assessment practices, and the associated impact of the DLF on these aspects. Ratings were on a four-point scale ranging from *No change* to *Significant change*, collapsed to three categories for reporting. The 10 items assessing impact were combined into a scale for analysis. The *DLF impact* scale assessed the perceived overall level of impact of the school's implementation of the DLF on teaching, learning and assessment activities, student engagement, collaborative practices among teachers, and policy and decision making relating to schools' DT. Higher scores on the scale indicate a higher degree of change for these outcomes related to DLF Impact.

Several patterns were evident at primary level. A majority of respondents (65%) indicated that there was No change or a Minor change in teachers' assessment practices; this finding is consistent with Wave 1 also. For all nine of the other outcome measures, however, most respondents (54%-79%) indicated that there was a Moderate

or Significant change over time (see Figure 2.35). This represents a difference from the Wave 1 findings on the impact of the DLF, where a Moderate or Significant change was reported across just five of the items.

Most notably, approximately four-fifths of respondents indicated that there was a Moderate or Significant change in the following aspects as a result of the DLF: the sharing of documents or resources among teachers (79%, of which 34% Significant change); in decisions relating to enhancing DT infrastructure (78%, of which 30% Significant change); and in teaching and learning activities during class time (78%, of which 20% Significant change).

At post-primary level, a majority of DLT respondents (between 65%-90%) indicated that there was Significant or Moderate change on all ten outcome measures (see Figure 2.36). However, approximately one-third of respondents (35%) indicated that there was No change or Minor change to decisions relating to enhancing broadband connectivity/Wi-Fi connectivity or reliability. In Wave 1, more variation was evident across some of these items.

Figure 2.35. DLT leader ratings of the impact of the DLF in the school to date, percentages, primary schools – agreement with items comprising DLF impact scale

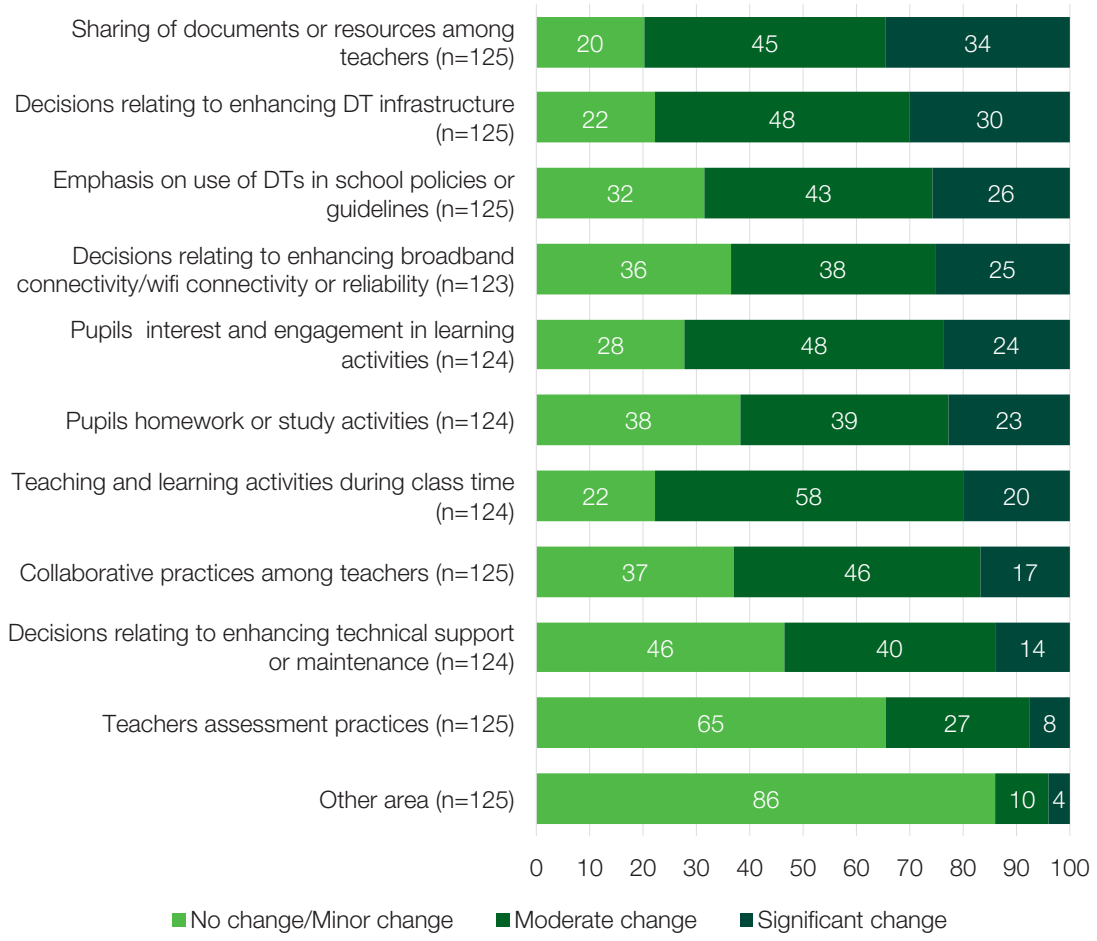
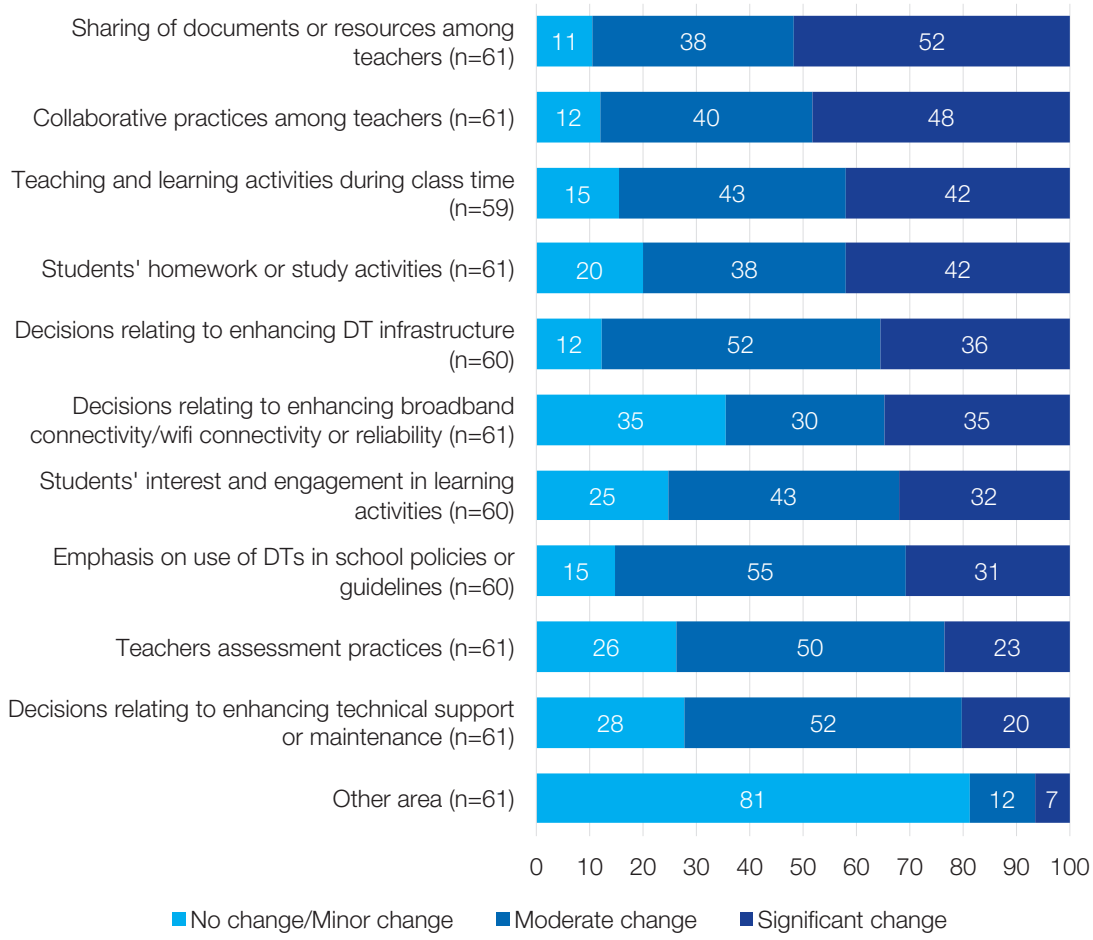


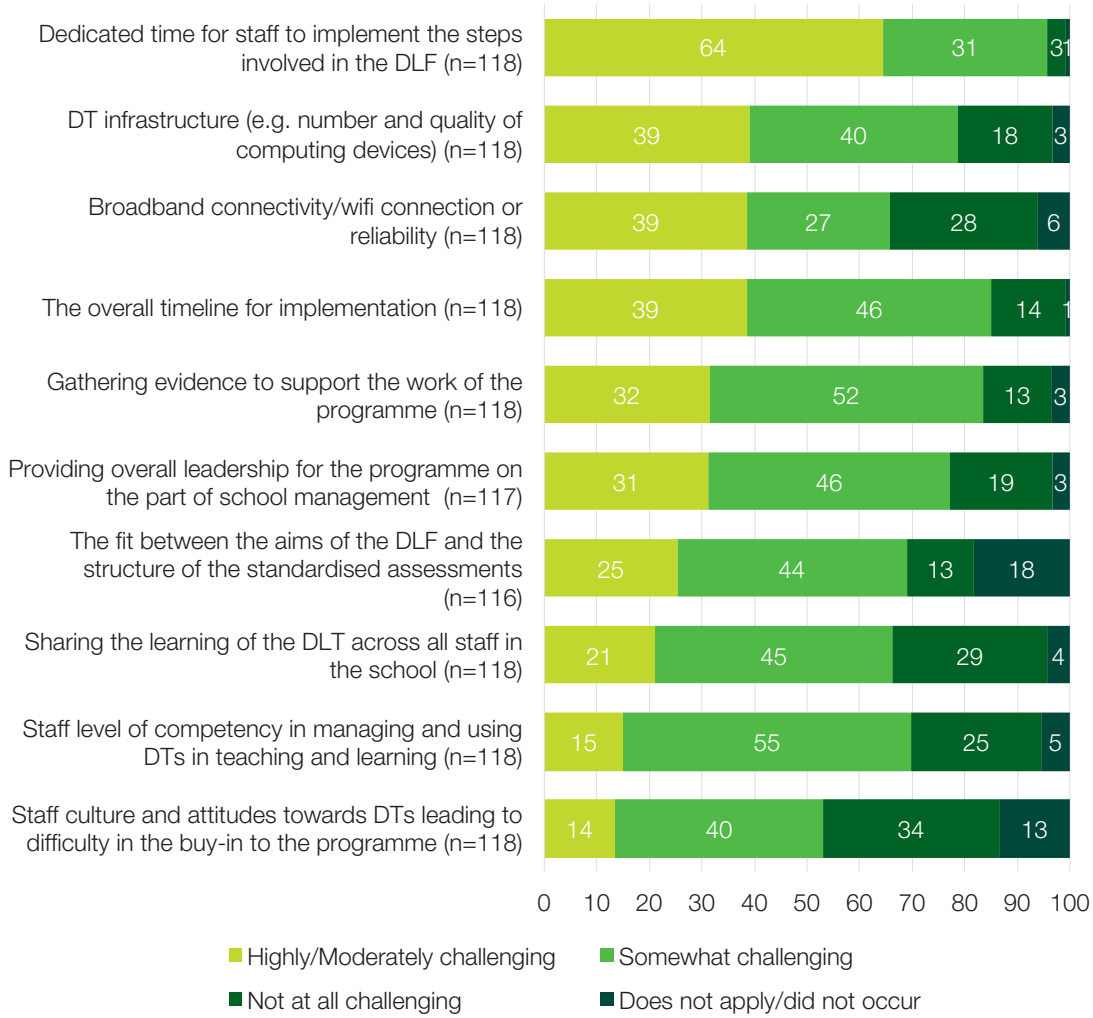
Figure 2.36. DLT leader ratings of the impact of the DLF in the school to date, percentages, post-primary schools – agreement with items comprising DLF impact scale



No significant difference was observed between the mean scores for the scale *DLF impact* for primary and post-primary schools (primary mean 55.4, SD 18.9 vs post-primary mean 65.8, SD 16.7; $t(184)=3.676$, $p=.183$). This is in contrast to Wave 1, where the mean score for post-primary was significantly and substantially higher than the mean score for primary. Longitudinal change related to the scale *DLF impact* is examined in more depth in Chapter 3. No significant differences were observed for this scale between schools by enrolment size or DEIS status (primary and post-primary) or by sector (post-primary only). There were several moderate, positive correlations and one strong, positive correlation with this scale at primary level, and a moderate, positive correlation for this scale with other scales at post-primary level (see Appendix 2, Tables A2.1a and A2.1b).

Finally, for this section, DLT leaders were asked to rate 10 school-level significant, ongoing challenges in relation to the implementation of the DLF. The *DLF Implementation Challenges* scale assessed the ongoing challenges related to DLF embedding, including the overall timeline for implementation of the DLP, DT infrastructure, staff culture and attitudes towards using DTs, and leadership from school management. For Wave 2, the 10 items have been reverse-scored, so that *higher scores on the scale* indicate *fewer implementation challenges* for schools. Results are displayed in Figures 2.37 and 2.38.

Figure 2.37. DLT leader ratings of the challenges in implementing the DLF in the school to date, percentages, primary schools - agreement with items comprising DLF Implementation Challenges scale



The greatest challenge evident from the results at both primary and post-primary level was the lack of dedicated time for staff to implement the steps involved in the DLF, which approximately two-thirds of respondents rated as Highly/Moderately challenging (64% primary; 68% post-primary). This challenge of dedicated time for staff was the most highly rated challenge at Wave 1 also (69% primary; 79% post-primary) (see Figures 2.37 and 2.38).

Furthermore, at primary level, two-fifths of respondents rated the following as Highly/Moderately challenging:

- the overall timeline for implementation
  (39% at Wave 2; Wave 1 was 44% - indicating a slight improvement at Wave 2);
- broadband connectivity/Wi-Fi connection or reliability
  (39% at Wave 2; unchanged since Wave 1); and
- DT infrastructure
  (39% at Wave 2; Wave 1 was 54% - indicating improvement at Wave 2).

All other items in the scale were rated by a majority of respondents at primary level as being challenging in some way (either Highly/Moderately or Somewhat challenging). In particular, over four-fifths of respondents rated the issue of gathering the evidence to support the work of the programme as being challenging in some

way (84% at Wave 2; 78% at Wave 1). Likewise, almost four-fifths rated the issue of providing overall leadership for the programme on the part of school management as being challenging in some way (77% at Wave 2; 81% at Wave 1).

Though some improvement is evident since the Wave 1 results, these findings indicate that implementation challenges with the DLF remained an issue with primary schools, at the time of the survey. Of note, issues related to the time for implementation of the DLF (for both staff to implement the steps and the overall timeline), DT infrastructure, and broadband connectivity represented a challenge for many primary schools, at the time of the survey.

At post-primary level, the following items were rated as Highly/Moderately challenging (see Figure 2.38):

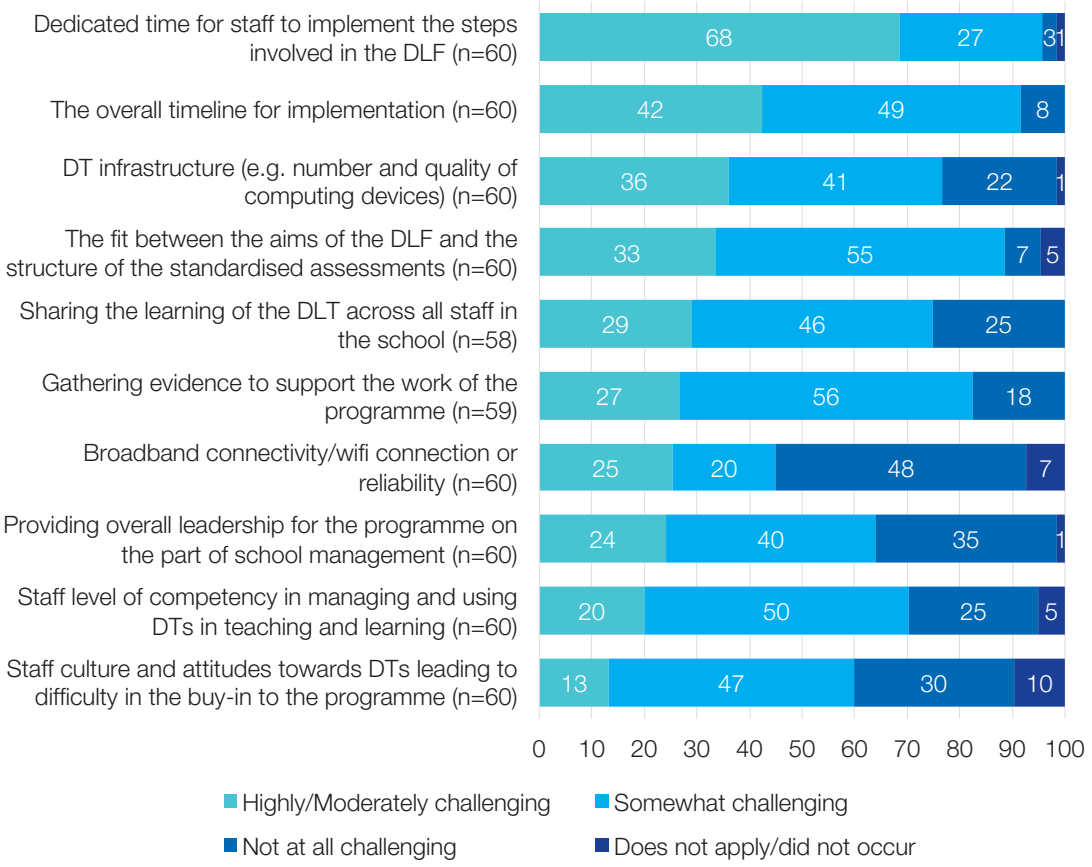
- the overall timeline for implementation, rated by over two-fifths of respondents as Highly/Moderately challenging
  (42% at Wave 2, unchanged since Wave 1)
- DT infrastructure, rated by over one-third of respondents as Highly/Moderately challenging
  (36% at Wave 2; Wave 1 was 43% - indicating some improvement at Wave 2).

For most other scale items (with the exception of broadband connectivity), a majority of post-primary respondents rated the remaining implementation issues as challenging in some way (Moderately/Highly or Somewhat challenging). In particular, a large majority rated the fit between the aims of the DLF and the structure of the standardised assessments as challenging in some way (88% at Wave 2; 92% at Wave 1). Furthermore, approximately four-fifths of respondents rated gathering the evidence to support the work of the programme as challenging in some way (83% at Wave 2; 92% at Wave 1).

Therefore, despite some improvement between Wave 1 and 2, implementation difficulties with the DLF represented a significant challenge for many post-primary schools. In particular, issues related to the time available for staff for the implementation of the DLF emerged as a significant challenge, as well as DT infrastructure and the overall timeline (though this last point is under the control of individual schools as they determine the timelines).

No significant difference was observed between the mean scores for the *DLF Implementation Challenges* scale for both primary and post-primary schools (mean primary 53.3, SD 13.5, compared with mean post-primary 53.3, SD 13.7; $t(176)=-.027$, $p=.92$). The mean scores at Wave 2 were identical at primary and post-primary levels. No significant differences were observed for this scale between schools, either by enrolment size or DEIS status (primary and post-primary) or by sector (post-primary only). There were some moderate, positive correlations with this scale at primary level and one moderate, positive correlation for this scale with another scale at post-primary level (see Appendix 2, Tables A2.1a and A2.1b).

Figure 2.38. DLT leader ratings of the challenges in implementing the DLF in the school to date, percentages, post-primary schools - agreement with items comprising DLF Implementation Challenges scale

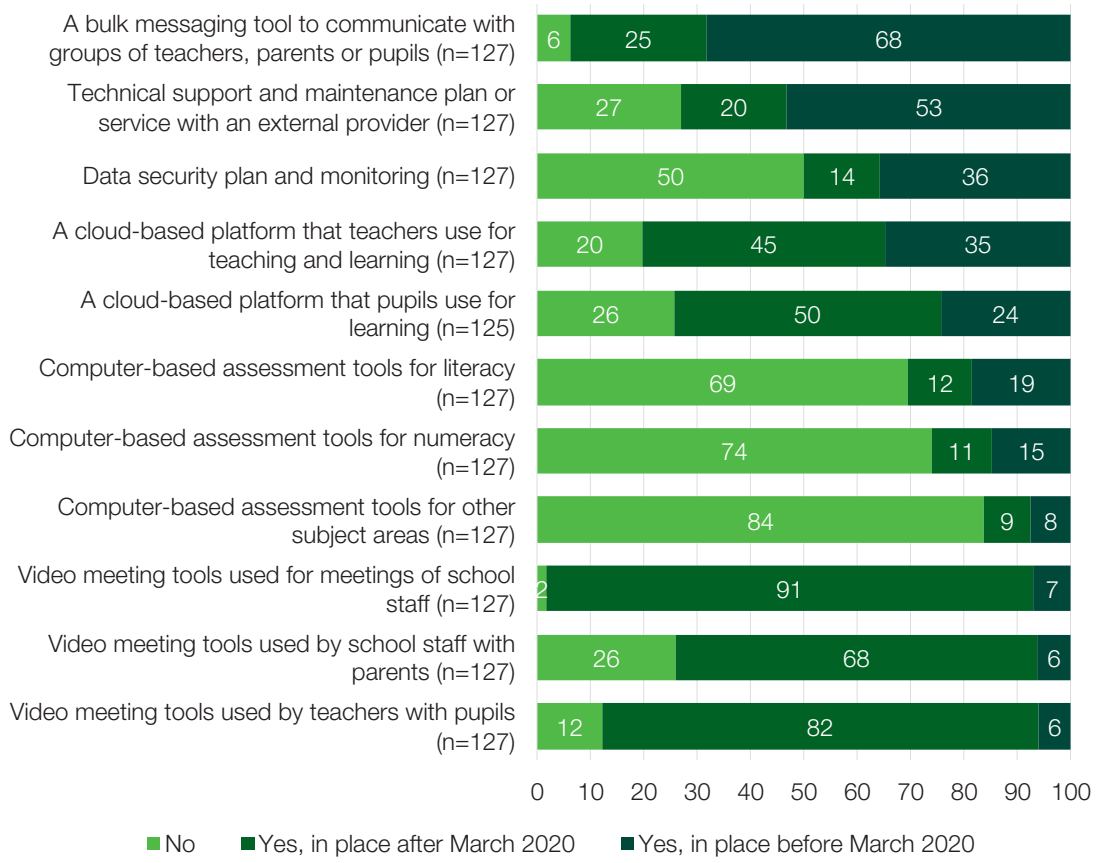


2.4.6 Impacts and challenges associated with COVID-19

The COVID-19 pandemic represented an unprecedented time for schools, and therefore it was deemed important in Wave 2 to assess the impact of the pandemic upon schools in terms of requirements and changes in the usage of Digital Technology. DLT leaders were asked whether they had in place any item from a provided list of DT tools/software and technical support resources, either at the time of the survey, or before or after the onset of COVID-19 school closures in March 2020.

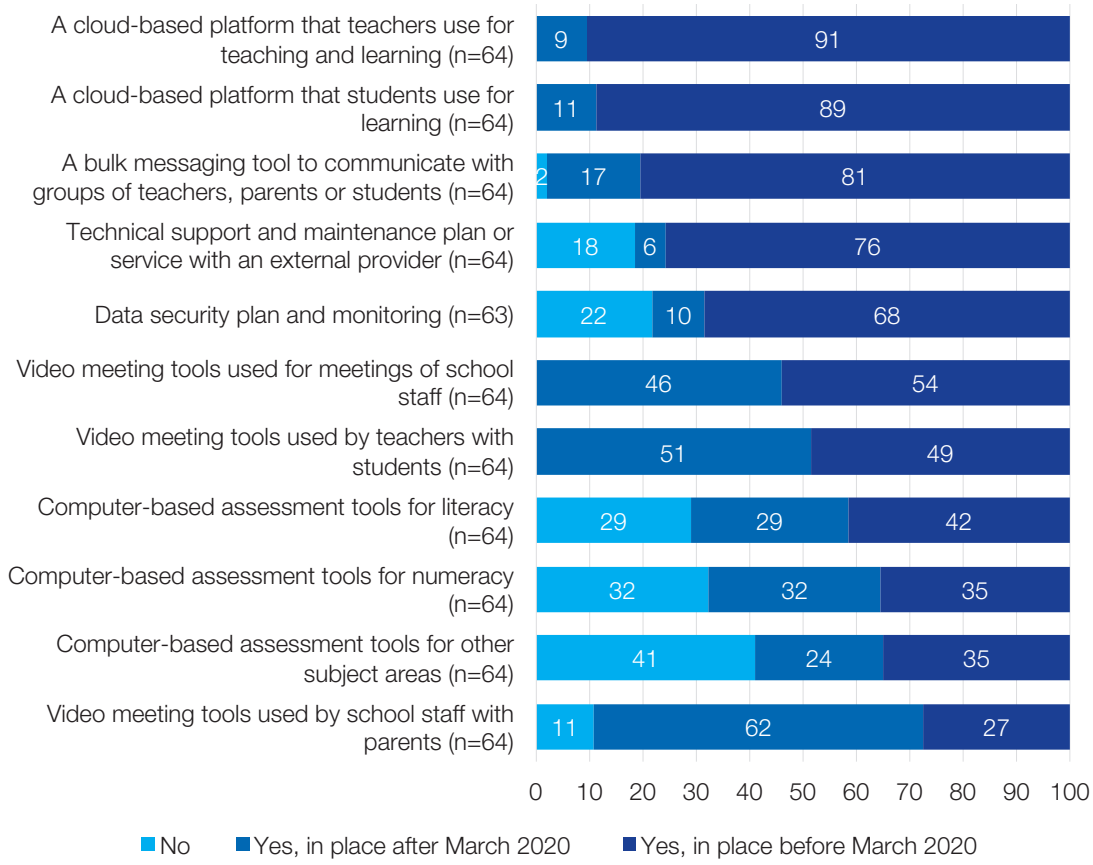
At primary level (Figure 2.39), a majority of respondents indicated that the school had the following in place *before March 2020*: a bulk messaging tool to communicate with groups of teachers, parents or pupils (68%), and a technical support and maintenance plan or service with an external provider (53%).

Figure 2.39. Aspects of Digital Technologies in place in schools, before or after the onset of COVID-19 (March 2020), or not in place at all, percentages; primary schools



In contrast, post-primary schools had many more aspects of these Digital Technologies in place *before March 2020* (Figure 2.40). A majority of respondents indicated that the school had the following: a cloud-based platform that teachers use for teaching and learning (91%); a cloud-based platform that students use for learning (89%); a bulk messaging tool to communicate with groups of teachers, parents or students (81%); a technical support and maintenance plan or service with an external provider (76%); data security plan and monitoring (68%); and video meeting tools used for meetings of school staff (54%).

Figure 2.40. Aspects of Digital Technologies in place in schools, before or after the onset of COVID-19 (March 2020), or not in place at all, percentages; post-primary schools



With respect to DTs in place *after March 2020*, a majority of respondents indicated that they had the following: video meeting tools used for meetings of school staff (91% primary); video meeting tools used by teachers with pupils (82% primary, 51% post-primary); video meeting tools used by school staff with parents (68% primary, 62% post-primary); and a cloud-based platform that pupils use for learning (50% primary).

A majority of respondents at primary level indicated that they *did not have* the following aspects of DTs in place in school *at the time of this survey* (December 2021-May 2022): computer-based assessment tools for other subject areas (84%); computer-based assessment tools for numeracy (74%); computer-based assessment tools for literacy (69%); and data security plan and monitoring (50%). At post-primary level, there was more variation in responses, with approximately one-third or more of respondents indicating that they did not have the following aspects of DTs in place at the time of the survey: computer-based assessment tools for literacy (29%); computer-based assessment tools for numeracy (32%); and computer-based assessment tools for other subject areas (41%).

Overall, it is clear from these results that schools had more DTs in place *after the onset of school closures as a result of COVID-19 in March 2020*. In particular, there was widespread use of video meeting tools by primary level schools, and one-half of primary schools indicated that they had adopted a cloud-based platform for pupils. However, most primary schools did not have computer-based assessment tools after this time. At post-primary level, schools had many more DTs in place *before March 2020* (such as cloud-based platforms and bulk messaging tools), but after the onset of COVID-19, video meeting tools and cloud-based platforms were widespread across post-primary schools.

Finally, for this section, DLT leaders were asked to rate how their schools' Digital Technology usage may have changed between March 2020 and the time of this survey (December 2021-May 2022) with respect to Teaching, Learning and Assessment (or TLA). Respondents were asked to rate each of five statements relating to the use of DTs in TLA on a five-point rating scale, ranging from *Disimprovement* to *Extensive change or improvement*. Response options were collapsed to four for reporting purposes.

Responses were mostly positive for this item, tending to be slightly more positive at post-primary level (Figures 2.41 and 2.42). By far, the greatest change evident at both levels was the use of DTs to enhance pupils'/students' interest and engagement (78% primary and 84% post-primary indicated a Moderate or Extensive change or improvement for this item).

A majority of respondents (60% of more) indicated that there was a Moderate or Extensive change or improvement in the following areas of TLA: the frequency with which software applications are used appropriately in teaching and learning scientific literacy (71% post-primary); the frequency with which software applications are used appropriately in teaching and learning numeracy (61% primary, 70% post-primary); the frequency with which DTs are used to support collaborative teaching and learning (63% primary, 78% post-primary); and the frequency with which software applications are used appropriately in teaching and learning literacy (69% primary; 64% post-primary).

It should be noted that a rating of Disimprovement was not indicated by any respondent at post-primary level. At primary level, only one statement received any rating of Disimprovement, with 2% of primary respondents reporting a Disimprovement in the frequency with which software applications are used appropriately in teaching and learning scientific literacy. This item showed more variability than others in the response pattern at primary level, with 14% indicating that there was No change or improvement, 35% indicating that there was a Slight change or improvement, and 49% indicating that there was a Moderate/Extensive change or improvement.

Figure 2.41. The extent to which schools' DT usage has changed, with respect to teaching and learning, since March 2020, percentages; primary schools

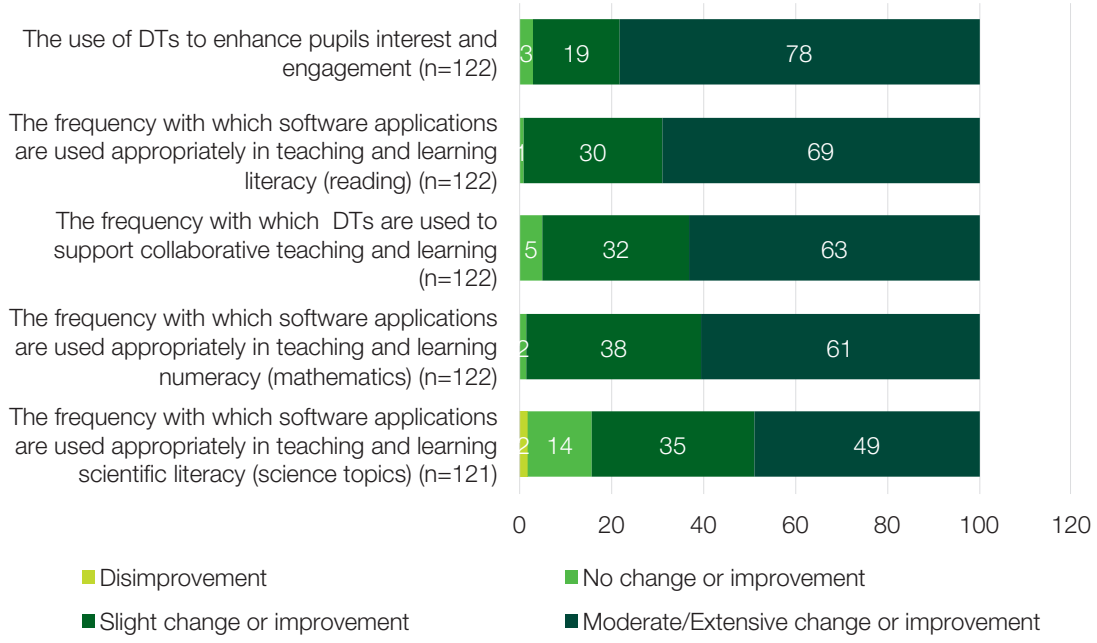
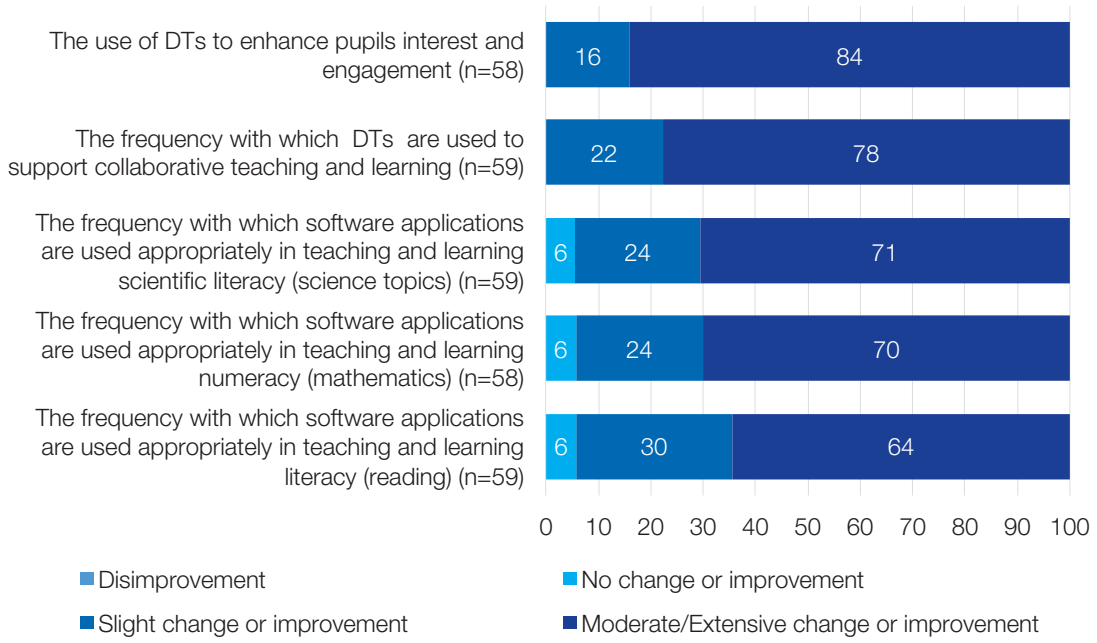


Figure 2.42. The extent to which schools' DT usage has changed, with respect to teaching and learning, since March 2020, percentages; post-primary schools



2.4.7 Priorities for student groups

DLT leaders were asked about their priorities for pupils/students with Special Educational Needs, and those who come from disadvantaged homes and communities. Respondents were asked to select from a list of six items (for pupils/students with Special Educational Needs) and five items (for disadvantaged pupils/students) of active priorities within the school for these pupil/student groups. (It should be noted that this analysis was performed on all schools at primary level, including special schools.) Results are displayed in Tables 2.12 and 2.13.

A large majority (over 90%) of respondents at both levels, for both sets of student groups, indicated that an active priority within the school was the use of Digital Technologies to enhance pupils'/students' interest and engagement (for pupils/students with Special Educational Needs: 94% primary and 93% post-primary; for disadvantaged pupils/students: 97% primary and 92% post-primary). For pupils/students with Special Educational Needs, a clear majority of respondents also indicated that the use of Digital Technologies (particularly assistive technologies) where required was an active priority for the school (73% primary and 79% post-primary).

Table 2.12. DLT leader active priorities in the school for pupils/students with Special Educational Needs, percentages; primary and post-primary schools

	Primary (n=121)	Post-primary (n=61)
The use of Digital Technologies to enhance pupils interest and engagement	94.1	93.0
The use of Digital Technologies (particularly assistive technologies) where required	73.3	78.9
The frequency with which software applications are used appropriately in assessing literacy (reading)	39.4	48.9
The frequency with which software applications are used appropriately in assessing numeracy (mathematics)	28.9	37.3
The frequency with which software applications are used appropriately in assessing scientific literacy (science topics)	10.1	25.0
The frequency with which Digital Technologies are used appropriately to assess group learning outcomes	36.0	39.0

For pupils/students from socioeconomically disadvantaged homes and communities, approximately two-fifths of respondents, at both levels, identified as the next clearest priority the frequency with which software applications are used appropriately in assessing literacy (41% primary and 39% post-primary), and also, at post-primary level, the frequency with which Digital Technologies are used appropriately to assess group learning outcomes, e.g., collaborative project work (post-primary 39%).

Table 2.13. DLT leader active priorities in the school for pupils/students from socioeconomically disadvantaged homes and communities, percentages; primary and post-primary schools

	Primary (n=116)	Post-primary (n=59)
The use of Digital Technologies to enhance pupils interest and engagement	96.7	91.9
The frequency with which software applications are used appropriately in assessing literacy (reading)	40.6	39.2
The frequency with which software applications are used appropriately in assessing numeracy (mathematics)	31.5	29.9
The frequency with which software applications are used appropriately in assessing scientific literacy (science topics)	9.8	20.0
The frequency with which Digital Technologies are used appropriately to assess group learning outcomes	21.3	39.4

2.4.8 Relationships with *DLF impact* and *DT teacher and pupil engagement scales*

This section describes the intercorrelations for two scales – *DLF impact* and *DT teacher and pupil engagement* – and their relationships with other measures in the survey. These scales are considered important as they represent two key outcome measures of the implementation of the DLF. Examining these relationships is useful as they can point to the factors which are most strongly related to change due to DLF implementation. These key outcomes will be described in more detail in Chapter 3; however, for this section, the correlational relationships for these scales are described.

DLF Impact

Firstly, the scale *DLF impact* assessed the perceived overall level of impact of the school's implementation of the DLF on teaching, learning and assessment activities, student engagement, collaborative practices among teachers, and policy and decision making relating to school's DT. Higher scores on this scale represent greater levels of change in these outcomes as a result of DLF implementation.

At primary level, correlations with the *DLF impact* scale revealed that higher levels of DLF-related impact was significantly associated with higher scores on the following scales:

- *Professional learning suitability* (*r*=.4)
- *DT teacher and pupil engagement* (*r*=.43)
- *School digital leadership* (*r*=.48)
- *DLT attitudes to DTs for pupil learning* (*r*=.52)

These correlations are moderate to strong in strength, and suggest that a range of factors were related to *DLF impact* at primary level. These factors were, respectively:

- a higher degree of suitability of professional learning for staff in the school,
- a higher perceived overall level of teacher and pupil knowledge, skills and engagement with DTs,
- a greater degree of digital leadership skills by staff in leadership positions in the school, and
- a greater preference of DLT leaders towards supporting constructivist learning and using DTs for pupil learning.

At Wave 1, the *DT teacher and pupil engagement* and *DLT attitudes to DTs for pupil learning* scales were also found to correlate with *DLF impact* at primary level.

At post-primary level, higher *DLF impact* scores were significantly associated with higher scores on the following scales:

- *School digital leadership* (*r*=.44)
- *DT teacher and student engagement* (*r*=.44)

These correlations are moderate in strength, and suggest that *DLF impact* at post-primary level was related to:

- a greater degree of digital leadership skills by staff in leadership positions in the school, and
- a higher perceived overall level of teacher and student knowledge, skills and engagement with DTs.

At Wave 1, the scale *DT teacher and student engagement* was also found to correlate with *DLF impact* at post-primary level.

DT teacher and student engagement

The second scale of interest in this section is *DT teacher and student engagement*, which assessed the perceived overall level of teachers' and pupils'/students' levels of knowledge, skills and engagement with DTs for teaching and learning. Higher scores on this scale correspond to greater levels of knowledge, skill, and engagement with DTs in TLA.

At primary level, correlations with the scale *DT teacher and pupil engagement* revealed that higher levels of teacher and pupil engagement with DTs was significantly associated with higher scores on the following scales:

- *DLT attitudes to DTs for pupil learning* (*r*=.33)
- *DLF impact* (*r*=.43)

- *Professional learning suitability* (*r*=.49)
- *DT Infrastructure and connectivity* (*r*=.51)
- *School digital leadership* (*r*=.61)

These correlations are moderate to strong in strength. The relationship between *DT teacher and pupil engagement* and *DLF impact* has already been described in the previous section. Other factors which were significantly associated with *DT teacher and pupil engagement* at primary level, were:

- a greater preference of DLT leaders towards supporting constructivist learning and using DTs for pupil learning,
- a higher degree of suitability of professional learning for staff in the school,
- a higher perceived adequacy of the school's DT infrastructure and connectivity, and
- a greater degree of digital leadership skills by staff in leadership positions in the school.

At Wave 1, the scales *DLT attitudes to DTs for pupil learning*, *professional learning suitability* and *DT infrastructure and connectivity* were also found to correlate with *DT teacher and pupil engagement* at primary level.

At post-primary level, higher *DT teacher and student engagement* scores were significantly associated with higher scores on the following scales:

- *DLT attitudes to DTs for pupil learning* (*r*=.36)
- *DT Infrastructure and connectivity* (*r*=.43)
- *DLF impact* (*r*=.44)
- *School digital leadership* (*r*=.53)

These correlations are moderate to strong in strength. The relationship between *DT teacher and student engagement* and *DLF impact* has already been described in the previous section. Other factors which were significantly associated with *DT teacher and student engagement* at post-primary level were:

- a greater preference of DLT leaders towards supporting constructivist learning and using DTs for student learning,
- a higher perceived adequacy of the school's DT infrastructure and connectivity, and
- a greater degree of digital leadership skills by staff in leadership positions in the school.

At Wave 1, *DT infrastructure and connectivity* was also found to correlate with *DT teacher and student engagement* at post-primary level.

2.5 Key points from Chapter 2

A total of 217 schools (143 primary and 74 post-primary) submitted a questionnaire between December 2021 and May 2022 for Wave 2 of the DLF evaluation. This represented a response rate of 79% at primary and 75% at post-primary level. The School Principal and the DLT leader were the most frequent respondents to the survey. Approximately half of all respondents identified as their school's DLT leader.

An integral part of the Digital Learning Framework is the formation of a Digital Learning Team and Digital Learning Plan for the school. **Primary schools were about three times as likely as post-primary not to have a DLT in place at the time of the survey** (17% primary versus 6% post-primary). Of those schools that did have a DLT, the vast majority had established its DLT about a year ago or more. Typically, the DLT size was larger at post-primary level. This finding

likely reflects the larger enrolment size and staffing requirements at post-primary level. At both primary and post-primary level, teachers and the DLT leader were among the most common groups to be included on the DLT. As at Wave 1, membership of the DLT was commonly decided in the school through volunteering by interested staff. The vast majority of schools' DLT met less often than once per month, or about once per month.

With respect to the DLP, the school's DLT usually coordinates the process of creating the DLP, ideally with input from all staff (Digital Learning Planning Guidelines, www.DLPlanning.ie). At the time of the survey, almost all primary and post-primary schools either had completed their DLP or were in the process of drafting it. Many schools had also revised their DLP since first being drafted, with post-primary schools being more likely to have revised it extensively. Groups consulted with for the development of the DLP at both primary and post-primary level were commonly the DLT leader and teaching staff, among others.

As regards the dimensions and domains of the DLF Framework, **approximately 9 out of 10 DLT leaders indicated that the teaching and learning dimension had been chosen as the school's focus.** This was evident at Wave 1 also, and highlights that there has been no shift over time towards the leadership and management dimension. At primary level, commonly chosen domains were learner experiences and learner outcomes, whilst at post-primary level, teachers' collective/collaborative practice was chosen often.

A majority of DLT leaders had visited the PDST's www.DLPlanning.ie website. Several aspects of the website were rated highly, suggesting the website had good relevance for a majority of respondents. **The DL plan template and the DL Framework document were the most highly rated aspects at both primary and post-primary level. The DL Planning Guidelines document was also rated highly by post-primary respondents.**

DLT leaders were asked several questions about their digital leadership skills, and how these skills apply to staff in leadership positions in the school. **The mean scores for the scale *digital leadership skills* were moderately high at both primary and post-primary levels, suggesting a relatively high level of digital leadership skills in schools.** Responses to individual items indicate that the usage of DTs for TLA was agreeable to staff, that a culture of digital change was evident within schools, and that this was supported by a high level of digital competence among staff.

Participation by DLT leaders in professional learning over the last 2 years was high, indicating a continuing commitment in this regard. Summer courses and Digital Learning webinars were attended most frequently by primary school DLT leaders. At post-primary level, the most frequently attended professional learning activities were Digital Learning webinars and workshops. About one quarter of DLT leaders indicated that they received additional support from the PDST TiE since the DLF seminar.

With regards to school self-assessment of their current level of embedding, **DLT leaders reported that teachers' level of embedding of DTs within TLA – in particular, extensive embedding of DTs – was markedly higher than in Wave 1. The reported effectiveness of teachers' use of DTs was also higher than in Wave 1.** As regards the school's current level of practice in relation to the statements in the DLF on which their school was focusing, most respondents indicated that they were Mostly/All at statements of effective practice. In terms of highly effective practice, post-primary schools generally reported higher levels compared to primary schools. Methods most commonly used by DLT leaders to identify their schools' current level of practice included staff discussion, consultation, and observation and reflection.

In terms of schools' current level of practice in relation to embedding DTs in TLA, **a considerably greater proportion of schools identified at an Advanced/Highly advanced level of practice in Wave 2 compared to Wave 1.** Primary schools reported lower levels of practice compared to post-primary schools in this respect, though progress at primary level was evident since Wave 1 also.

With respect to school DT infrastructure and technical support, a few key points are of note. **Results indicate that access to computing devices for teachers was high**. The vast majority of primary school DLT leaders indicated that all teachers in the school had *full-time* access to a school-owned computing device. Though access was somewhat less at post-primary level, nevertheless there was still a high level of *full-time* access to school-owned computing

devices for all teachers in post-primary schools also. **Access for pupils/students to school-owned computing devices *when required* was lower at both levels.**

As was the case at Wave 1, in both primary and post-primary schools **technical support was most often delivered through a mixture of internal and external support**. **Ratings of the effectiveness of several aspects of technical support were moderate to high, although ratings were higher at post-primary level.** Technical support and maintenance was most frequently paid for through the Capitation grant. Scores on the *DT infrastructure and connectivity* scale were in the moderate range at both primary and post-primary level, suggesting a need for improvement on this measure. Whilst broadband connection was generally rated as being good, **several other areas related to DT infrastructure were highlighted as requiring improvement in schools**. **For example, technical support and maintenance at primary level was rated as Fair/Poor in over two-fifths of schools.** Also, both the availability and awareness of suitable software for teaching and learning, and the availability of digital tools (such as data sensors, cameras and assistive devices) were rated poorly in many schools.

DT teacher and pupil/student engagement is another important scale, which assessed the perceived overall level of teachers' and students' knowledge, skills and engagement with DTs for teaching and learning. Mean scores on this scale were in the moderate range (mean primary 54.4; mean post-primary 59). There were five response options to these items, with Good being the middle response option. The response option Good was chosen frequently by respondents, hence scores being in the moderate range. **The highest rated item at both primary and post-primary level was teachers' overall level of knowledge and skills in using DTs for teaching and learning,** which the vast majority of primary and post-primary respondents rated as Excellent, Very good or Good.

DLT leaders were asked to rate the impact of the DLF on several aspects relating to DT, including aspects of teaching, learning and assessment practices. For the *DLF impact* scale, scores were in the moderate range for primary and moderately high range for post-primary, though the scale means were not statistically different. **The greatest impact of the DLF, at both primary and post-primary level, was evident in the sharing of documents or resources among teachers, decisions relating to enhancing DT infrastructure, and teaching and learning activities during class time.** Also of note, a large impact was evident upon collaborative practices among teachers, particularly at post-primary level. Overall, results indicate that the DLF implementation is having a positive outcome on teaching and learning activities, student engagement, collaborative practices among teachers, and policy and decision making relating to school's DT. **However, the impact on teachers' assessment practices at primary level, continues to be low (a finding evident at Wave 1 also) and thus remains a continuing challenge.**

Several items were rated as being Highly/Moderately challenging to the implementation of the DLF at both levels, including the overall timeline for implementation and DT infrastructure. **The greatest challenge identified to implementing the DLF was the lack of dedicated time for staff to implement the steps involved**.

In a new set of items for Wave 2, DLT leaders were asked about DT tools/software and technical support which were in place before or after the onset of school closures due to COVID-19 in March 2020. **Many primary schools had more DTs in place *after* the onset of COVID-19-related school closures in March 2020.** In particular, there was widespread use by primary schools of video meeting tools for school staff and with pupils and parents, while many primary schools indicated that they had adopted a cloud-based platform for pupils. However, most primary schools did not have computer-based assessment tools by the time of this survey in December 2021-May 2022. **At post-primary level, many more schools than at primary level had various DTs in place *before* March 2020 (such as cloud-based platforms, bulk messaging tools, technical support and maintenance, and a data security plan).** However, after the onset of COVID-19, video meeting tools for staff and students, and cloud-based platforms were in widespread use by post-primary schools.

DLT leader reports also indicate that the usage of DTs at both primary and post-primary level had improved since March 2020 – in particular, to enhance student interest and engagement and to support collaborative teaching and learning, as well as the usage of applications within TLA for literacy, numeracy and scientific literacy.

Chapter 3:
Changes, progress and challenges from baseline to Wave 2

3.1 Chapter overview

This chapter builds on previous chapters by describing changes over time which can be observed in relation to the implementation of the DLF since the baseline survey, which was administered in 2018/19 (Cosgrove et al., 2019). As the baseline phase of the DLF evaluation did not include a teacher questionnaire, and in keeping with the approach used in the Wave 1 report (Feerick et al., 2021), the analyses presented below describe changes only at the school level.

Section 3.2 provides a brief overview of the approach taken to the longitudinal comparisons described in this analysis, including the analytic framework. Section 3.3 presents descriptive findings of changes from baseline through Wave 1 to Wave 2, focusing on four indicators of DLF impacts:

1) The level of embedding of DTs in teaching, learning and assessment;
2) The level of engagement of teachers and students with DTs;
3) The perceived impact of the DLF on teaching, learning and assessment; and
4) The level of practice with respect to embedding DTs in teaching, learning and assessment.

In Section 3.4, the results of two sets of multivariate regression models are then presented, which consider three key Wave 2 outcomes (level of engagement of teachers and students with DTs, perceived level of impact of DLF implementation, and reaching a high level of practice with respect to embedding DTs in teaching, learning and assessment) in conjunction with their relationships to other characteristics. One set of regression models is run for primary and special schools, and another set is run for post-primary schools. Finally, Section 3.5 concludes the chapter with a brief summary of key findings.

3.2 Analytic framework

A key strength of the DLF evaluation study is that – unlike many purely cross-sectional studies in the field of educational research – it follows a longitudinal design at the population level. By gathering data on repeated occasions from the same representative sample of schools (Feerick et al., 2021), we can better monitor and understand progress and challenges with the implementation of the DLF over time.

The analyses presented in the following sections were carried out by merging the school-level survey data files from the baseline data collection, from Wave 1, and from Wave 2. The first step of the analysis provides descriptive results documenting changes across the three waves of the study, allowing us to examine the extent of change for key enablers and impacts of DLF implementation (Section 3.3). In the second stage of analysis, a series of multiple regression models are used to gain a more detailed look at the impacts of the DLF (Section 3.4), identifying the extent to which selected characteristics can explain variations in key outcomes at Wave 2.

Following similar models which were described in the Wave 1 report (Feerick et al., 2021), the explanatory variables in the multiple regressions for Wave 2 (Section 3.4) are grouped into conceptually-related "blocks" for the purposes of the analysis. Table 3.1 shows these blocks, with all variables categorised either as outcomes

(the variables of substantive interest that are examined in the models), inputs (pre-existing characteristics that are controlled for in the analysis, divided into school characteristics and baseline characteristics on DLF-related variables), and covariates (variables that were gathered at the same time as the outcomes that may be expected to covary with the outcomes).

In constructing the regression models, the three blocks of inputs and covariates were entered sequentially. All school characteristics variables were retained in the final models, alongside any variables from the other two blocks that showed statistically significant associations with the outcome when entered as part of their block.

Table 3.1. Analysis framework for regressions at primary and post-primary level: Wave 2 outcomes, school characteristics, baseline inputs, and Wave 2 covariates

Outcomes (Wave 2)	**Covariates (Wave 2)**
Student and teacher engagement with DTs index	DT attitudes index: positive constructivist student learning
Level of impact of DLF on teaching, learning and assessment	DT attitudes index: impediments of DTs to teaching, learning and assessment
Level of practice with respect to embedding DTs in teaching, learning and assessment	School leadership index
Inputs (school characteristics)	CPD suitability index
School enrolment size	Teacher and student access to DT
DEIS status (including urban/rural at primary level)	DT Infrastructure and Connectivity index
School sector (post-primary level only)	Technical Support Effectiveness
Inputs (baseline characteristics)	School has received additional PDST support
Effectiveness of technical support index	Level of consultation on DLP
Infrastructure and connectivity index	Implementation challenges index
Student and teacher engagement with DTs index	Extent to which DLP is integrated with SSE

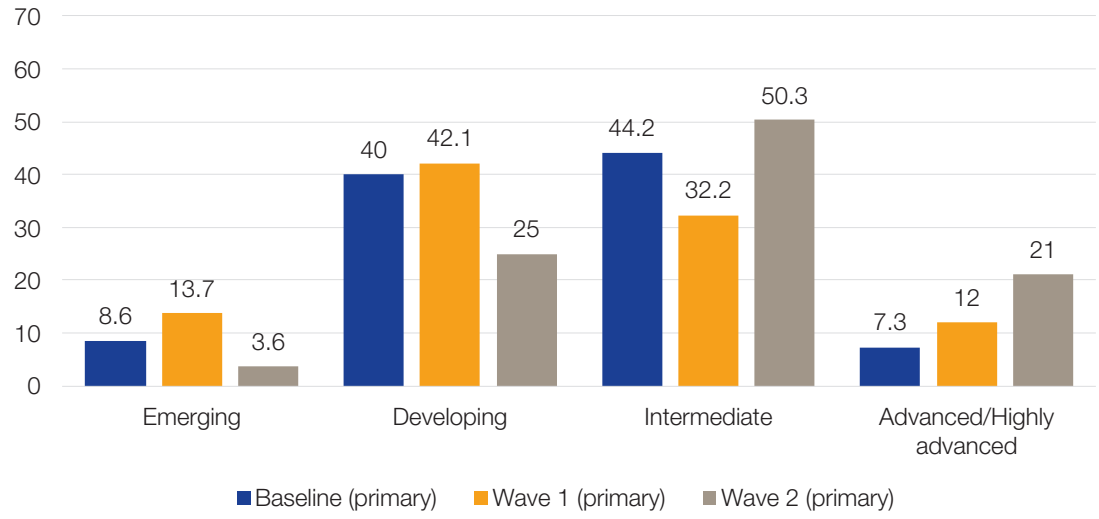
3.3 Changes in key indicators from baseline to Wave 2

3.3.1 Level of embedding DTs in TLA

Figure 3.1 (primary and special schools) and Figure 3.2 (post-primary schools) show schools' ratings of their level of embedding of Digital Technologies in teaching, learning and assessment at baseline and at Waves 1 and 2.

Over the course of the three waves of the evaluation there was a notable shift in schools' responses, with many schools reporting moving from the lower levels of embedding towards the higher levels. For example, among primary/special schools, almost half of schools categorised themselves at the Emerging or Developing levels at baseline (49%), whereas the equivalent figure by Wave 2 was just more than one-quarter (29%). Conversely, the proportion of schools categorising themselves at the Advanced or Highly advanced levels almost tripled, from 7% to 21%, over the three waves. Nonetheless, even by Wave 2, the majority of schools (50%) indicated their level of embedding as being Intermediate rather than at a higher level.

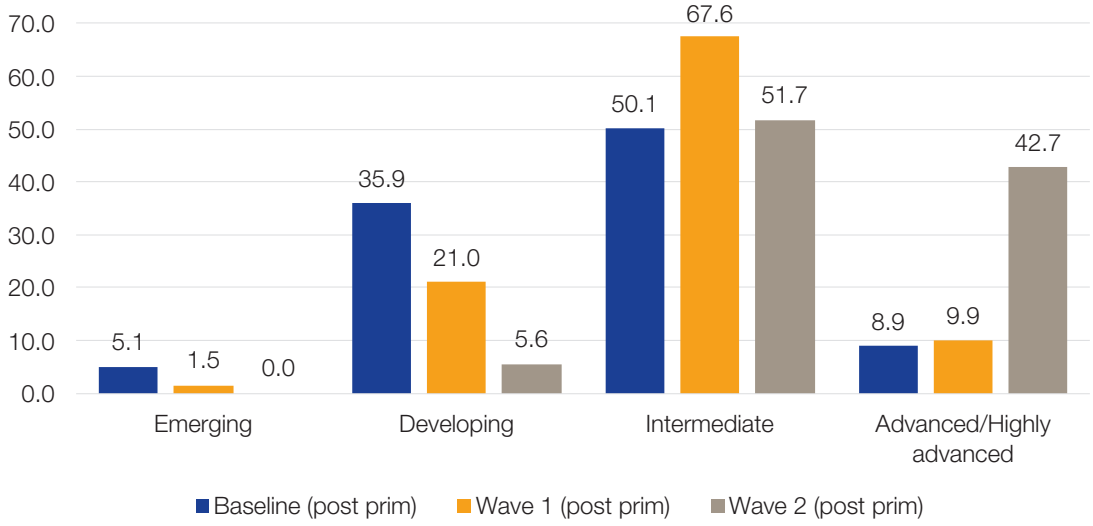
Figure 3.1. Level of embedding of DTs in teaching, learning and assessment at baseline, Wave 1 and Wave 2 in primary/special schools (percentages)



The same pattern, though to a greater extent, was also evident at post-primary level. Although very few schools (5%) categorised themselves at the Emerging level at baseline, no schools remained at this level by Wave 2. Over the same period, the proportion of schools at the Developing level decreased to a large degree (from 36% to 6%) with a concomitant increase at the Advanced and Highly advanced levels (from 9% to 43%).

This means that, by Wave 2, the vast majority of post-primary schools (94%) considered themselves to be at an Intermediate level or higher in terms of embedding DTs in teaching, learning and assessment. Among primary and special schools, the corresponding proportion is lower but still accounts for a majority of schools (71%). At both levels, the single most common category selected by schools was "Intermediate," accounting for just over half of schools at each level.

Figure 3.2. Level of embedding of DTs in teaching, learning and assessment at baseline, Wave 1 and Wave 2 in Post-primary schools (percentages)



3.3.2 Connectivity and infrastructure; engagement with DTs; and technical support effectiveness

At all waves through the evaluation, DLT leaders/Principals were asked to rate eight aspects of the infrastructure and connectivity in their school on a five-point scale (ranging from Excellent to Poor). These responses were combined to create an index of DT connectivity and infrastructure. Similar indices were created to represent schools' level of engagement with DTs (based on responses to four questions on the same five-point scale) and the effectiveness of the technical support in their school (based on responses to four questions on a four-point scale ranging from Highly effective to Not effective).

The mean scores and accompanying standard deviations for each of the resulting scales at each of the three time points are shown in Table 3.2 (primary and special schools) and Table 3.3 (post-primary schools). Among primary and special schools:

- For connectivity and infrastructure, the change in means from baseline to Wave 2 was not statistically significant ($t = 1.775$, $p = .078$).
- For level of engagement with DTs, the change in means from baseline to Wave 2 was statistically significant ($t = 5.271$, $p < .001$).
- For technical support effectiveness, the change in means from baseline to Wave 2 was not statistically significant ($t = .251$, $p = .802$).

Table 3.2. Mean scale scores at baseline, Wave 1 and Wave 2 for primary and special schools for (i) connectivity and infrastructure, (ii) engagement with DTs, and (iii) technical support effectiveness

	Baseline	Wave 1	Wave 2
		Connectivity and infrastructure	
Mean	44.4	46.7	49.7
SD	19.7	17.0	18.5
		Level of engagement with DTs	
Mean	43.3	50.0	54.5
SD	18.9	17.6	16.9
		Technical support effectiveness	
Mean	59.4	54.1	59.4
SD	23.3	26.5	23.4

Among post-primary schools:

- For connectivity and infrastructure, the change in means from baseline to Wave 2 was not statistically significant (t = 1.537, p = .129).
- For level of engagement with DTs, the change in means from baseline to Wave 2 was statistically significant (t = 5.143, p < .001).
- For technical support effectiveness, the change in means from baseline to Wave 2 was not statistically significant (t = .206, p = .838).

Table 3.3. Mean scales scores at baseline, Wave 1 and Wave 2 for post-primary schools for (i) connectivity and infrastructure, (ii) engagement with DTs, and (iii) technical support effectiveness

	Baseline	Wave 1	Wave 2
		Connectivity and infrastructure	
Mean	53.7	52.2	54.9
SD	17.6	16.4	16.6
		Level of engagement with DTs	
Mean	47.3	49.1	59.0
SD	15.7	13.9	15.4
		Technical support effectiveness	
Mean	72.0	70.2	70.4
SD	21.8	22.1	20.1

In summary, DLT leaders'/Principals' responses to the DLF questionnaires indicate that, at both primary and post-primary levels, the level of engagement with DTs in schools improved significantly over time. However, there have been no changes in the levels of connectivity and infrastructure in schools, nor in the effectiveness of technical support.

3.4 Impacts of DLF implementation: what factors are related to key outcomes?

The results of a series of regression models are presented next. These models describe the association between the outcomes of interest – DT engagement, DLF impact, and high level of practice – and selected covariates. Importantly, these models take account of covariation between the included variables – that is, findings of significant associations are significant *after accounting for the impact of the other variables in the model.* However, it should also be noted that a *statistically* significant relationship may not always be *substantively* important; making the latter judgement requires informed interpretation of the model results in their broader context.

3.4.1 Primary and special schools

First, Table 3.4 presents a summary version of the model results for primary and special schools (which are presented in more detail in Tables 3.5-3.7).

3.4.1.1 Summary of model results for primary and special schools

In this summary, variables that showed a statistically significant association with the outcomes of interest are shown in green colouring in Table 3.4; variables that were not significantly related to the outcome are coloured in grey. The models explained moderate levels of the variance in the outcome measures, with up to 45% of the variance in DT engagement and 42% of the variance in DLF impact accounted for by the selected covariates.

Only one variable, school leadership, was significantly associated with each of the three outcome measures in primary and special schools. In each case, school leadership was positively associated with the outcomes – i.e., stronger school leadership was associated with higher levels of DT engagement, a higher impact of the DLF, and higher levels of practice in the school.[27]

One variable – the attitudinal scale indicating the extent to which DLT leaders believe that the use of DTs impedes student learning (with lower scores indicating a more negative attitude to DTs) – was significantly associated with two outcomes. More negative attitudes to the use of DTs were associated with a lower perceived level of impact of the school's implementation of the DLF. However, more negative attitudes were also associated with a higher level of practice in embedding DTs in teaching, learning and assessment.

In addition, several variables were associated with only one of the outcomes:

- As well as school leadership, DT engagement was significantly positively associated with levels of DT infrastructure and connectivity, negatively associated with the perceived effectiveness of technical support, and negatively associated with the extent of implementation challenges reported by DLT leaders. No baseline inputs were significantly associated with DT engagement at Wave 2.
- As well as school leadership and DLT leaders' perceptions of impediments to TLA arising from the use of DTs, DLF impact was significantly positively associated with leaders' positive attitudes to constructivist learning and positively associated with the degree of consultation on the schools' DLP. No baseline inputs were significantly associated with DLF impact at Wave 2.
- As well as school leadership and DLT leaders' perceptions of impediments to TLA arising from the use of DTs, schools' reporting a high level of practice in relation to the DLF was significantly associated with their baseline reports of DT infrastructure and connectivity. Specifically, schools that reported a

27 Detail on the direction and magnitude of the statistical associations is presented in Tables 3.5-3.7.

higher level of DT connectivity and infrastructure at baseline were more likely to report a high level of practice by Wave 2.

Neither DEIS status nor the enrolment size of the school were significantly associated with any of the three outcome measures.

Table 3.4. Summary of results of regression models: Primary

Explanatory variable groups and variables	Outcome variables and model results		
	DT engagement	DLF Impact	Level of practice (High)
School features			
DEIS			
Enrolment size			
Wave 2 covariates			
DT attitudes: positive constructivist student learning			
DT attitudes: impediments to TLA			
School leadership			
CPD suitability			
Teacher and student access to DT			
DT infrastructure and connectivity			
Tech support effectiveness			
Additional PDST support			
Consultation on DLP			
Implementation challenges			
Integration with SSE			
Baseline inputs			
DT engagement			
DT infrastructure and connectivity scale			
Tech support effectiveness			
R^2 of final model	.446	.424	.314*
Not significant p > .05			
Significant p ≤ .05			

**This is the Nagelkerke pseudo r-square value which is not a true measure of variance explained by the model.*

3.4.1.2 Detailed model results for primary and special schools

Table 3.5 provides more detail on the multiple regression results for DT engagement. Statistically significant p-values are highlighted in bold. The B column shows the standardised coefficients for each variable, which allow for a comparison of the relative strength of the association between each variable and the outcome. School leadership (B = .494) and DT infrastructure and connectivity (.498) are the two variables with the strongest association with DT engagement at Wave 2. Although statistically significant, the strength of association for implementation challenges (-.202) and tech support effectiveness (-.163) was lower. For each of the latter two variables, the association with DT engagement at Wave 2 was negative.

Table 3.5. Detailed multiple linear regression model results for DT engagement at Wave 2: primary and special schools

Final model of DT Engagement	(dummy variable contrasts)	Parameter estimate	SE	B	Stat	Stat Value	p
Enrolment size	Small - Very small	-1.654	3.205	-0.043	F	0.855	.466
	Medium - Very small	-4.432	3.248	-0.127			
	Large - Very small	-1.029	3.043	-0.033			
DEIS	band 1 and band 2 - nonDeis	-3.097	2.922	-0.068	F	1.661	.194
	Rural - non DEIS	6.259	4.376	0.094			
School leadership		7.941	1.111	0.494	t	7.146	**<.001**
DT infrastructure and connectivity		7.583	1.225	0.498	t	6.189	**<.001**
Tech support effectiveness		-2.490	1.171	-0.163	t	-2.126	**.035**
Implementation challenges		-3.084	1.137	-0.202	t	-2.711	**.008**

Table 3.6 provides more detail on the multiple regression results for DLF impact. Statistically significant p-values are highlighted in bold. The strongest association was seen for positive constructivist attitudes to student learning (B = .482), with weaker associations for school leadership (.243) and attitudes of DT impediments to TLA (-.186).

Table 3.6. Detailed multiple linear regression model results for DLF impact at Wave 2: primary and special schools

Final model of DLF impact	(dummy variable contrasts)	Parameter estimate	SE	B	Stat	Stat Value	p
Enrolment size	Small - Very small	0.483	0.193	0.199	F	2.333	.077
	Medium - Very small	0.235	0.191	0.103			
	Large - Very small	0.369	0.185	0.181			
DEIS	band 1 and band 2 – non Deis	-0.230	0.193	-0.076	F	.891	.412
	rural-non DEIS	0.167	0.285	0.038			
DT attitudes: positive constructivist student learning		0.470	0.074	0.482	t	6.347	**<.001**
DT attitudes: impediments to TLA		-0.181	0.067	-0.186	t	-2.712	**.008**
School leadership		0.227	0.070	0.227	t	3.257	**.001**
Consultation on DLP		0.238	0.064	0.243	t	3.734	**<.001**

Table 3.7 provides more detail on the logistic regression results for high levels of practice. This model is specified differently to the models above as, rather than a continuous outcome variable (e.g., DT engagement), this model predicts a discrete binary outcome (high levels of practice vs lower levels of practice). Here, odds ratios can be used to compare the relative strength of associations. Odds ratios below 1 indicate that a variable is negatively associated with the outcome, while odds ratios above 1 indicate that a variable is positively associated with the outcome. Statistically significant p-values are highlighted in bold.

The strongest association was seen for attitudes of DT impediments to TLA, with high levels of practice more likely to be reported alongside higher scores on the DT impediments scale (indicating more impediments). Specifically, a one-unit increase on the DT impediments scale was associated with just over twice the likelihood of being in the high practice category (odds ratio = 2.11). Higher levels of school leadership and stronger DT infrastructure and connectivity were also associated with high levels of practice at Wave 2 in primary and special schools.

Table 3.7. Detailed binary logistic regression model results for (high) level of practice at Wave 2: primary and special schools

Final model of high level of embedding DTs	(dummy variable contrasts)	B	SE	Odds ratio	Stat	Stat Value	p
Enrolment size	Small - Very small	-0.195	0.737	0.823	chi-square	3.010	.390
	Medium - Very small	-1.012	0.739	0.364			
	Large - Very small	-0.261	0.626	0.771			
DEIS	band 1 and band 2 - non Deis	-0.525	0.822	0.592	chi-square	2.356	.502
	Rural - non DEIS	-0.650	1.163	0.522			
DT attitudes: impediments to TLA		0.746	0.258	2.110	Wald	8.383	**.004**
School leadership		0.688	0.231	1.989	Wald	8.837	**.003**
DT infrastructure and connectivity scale		0.562	0.243	1.755	Wald	5.361	**.021**

3.4.2 Post-primary schools

Next, Table 3.8 presents a summary version of the model results for post-primary schools (presented in more detail in Tables 3.9-3.11).

3.4.2.1 Summary of model results for post-primary schools

Next, Table 3.8 presents a summary version of the model results for post-primary schools (presented in more detail in Tables 3.9-3.11). In Table 3.8, variables that showed a significantly significant association with the outcomes of interest are shown in blue colouring, while variables that were not significantly related to the outcome are coloured in grey. The models explained moderate to high levels of the variance in the outcome measures. In particular, 58% of the variance in DT engagement was accounted for by the selected covariates, with a lower proportion of variance (29%) explained for DLF impact.

No variables were statistically significant with all three outcome measures at post-primary level. Two variables – school leadership, and teacher and student access to DTs – were significantly associated with both DT engagement and DLF impact. School leadership was positively associated with both outcomes.[28] On the other hand, teacher and student access to DTs was positively associated with DLF impact, but negatively related to DT engagement.

In addition, several variables were associated with only one of the outcomes:

- As well as school leadership and teacher and student access to DTs, DT engagement was significantly negatively associated with the perceived effectiveness of technical support, but positively associated with levels of DT infrastructure and connectivity at both baseline and in Wave 2.
- School leadership and teacher and student access to DTs were the only two predictors that were significantly associated with DLF impact. No baseline inputs were significantly associated with DLF impact at Wave 2.
- Higher levels of CPD suitability for school staff, and higher levels of DT engagement at baseline, were associated with schools' reporting a high level of practice in relation to the DLF at Wave 2.

Neither DEIS status nor the enrolment size of the school were significantly associated with any of the three outcome measures.

28 Detail on the direction and magnitude of the statistical associations is presented in Tables 3.9-3.11.

Table 3.8. Summary of results of regression models: post-primary

Explanatory variable groups and variables	Outcome variables and model results		
	DT engagement	DLF Impact	Level of practice (High)
School features			
DEIS			
Enrolment size			
Wave 2 covariates			
DT attitudes: positive constructivist student learning			
DT attitudes: impediments to TLA			
School leadership	■	■	
CPD suitability			■
Teacher and student access to DT	■	■	
DT infrastructure and connectivity	■		
Tech support effectiveness	■		
Additional PDST support			
Consultation on DLP			
Implementation challenges			
Integration with SSE			
Baseline inputs			
DT engagement			■
DT infrastructure and connectivity	■		
Tech support effectiveness			
R^2 of final model	.584	.286	.332*
Not significant p > .05			
Significant p ≤ .05	■		

**This is the Nagelkerke pseudo r-square value which is not a true measure of variance explained by the model.*

3.4.2.2 Detailed model results for post-primary schools

Table 3.9 provides more detail on the multiple regression results for DT engagement at Wave 2 at post-primary level. Statistically significant p-values are highlighted in bold. The B column shows the standardised coefficients for each variable, which allow for a comparison of the relative strength of the association between each variable and the outcome. DT infrastructure and connectivity at Wave 2 (B = .670), controlling for connectivity and infrastructure at baseline, had the strongest association with DT engagement at Wave 2. There was a smaller association between DT engagement at Wave 2 and levels of connectivity and infrastructure at baseline (.309). The association between DT engagement and school leadership (.511) was also relatively strong. Negative associations were found between DT engagement at Wave 2 and tech support effectiveness (-.262) and teacher and student access to DTs (-.210).

Table 3.9. Detailed multiple linear regression model results for DT engagement at Wave 2: post-primary

Final model of DT Engagement	(dummy variable contrasts)	Parameter estimate	SE	B	Stat	Stat Value	p
Enrolment size	Medium-Small	-0.052	0.193	-0.024	F	.384	.683
	Large-Small	-0.265	0.178	-0.132			
DEIS	no-yes	0.248	0.210	0.092	t	1.179	.242
Sector	comm/comp-secondary	-0.115	0.212	-0.044	F	.144	.866
	ETB-secondary	0.042	0.185	0.019			
School leadership		0.505	0.073	0.511	t	6.924	**<.001**
Teacher and student access to DT		-0.205	0.077	-0.210	t	-2.654	**.010**
DT infrastructure and connectivity (Wave 2)		0.672	0.085	0.670	t	7.933	**<.001**
Tech support effectiveness		-0.261	0.079	-0.262	t	-3.299	**.002**
DT infrastructure and connectivity (baseline)		0.317	0.080	0.309	t	3.952	**<.001**

Table 3.10 provides more detail on the multiple regression results for DLF impact at Wave 2 in post-primary schools. Statistically significant p-values are highlighted in bold. The strongest associations were seen for school leadership (B = .457) and teacher and student access to DTs (.329), both in a positive direction.

Table 3.10. Detailed multiple linear regression model results for DLF impact at Wave 2: post-primary

Final model of DLF impact	(dummy variable contrasts)	Parameter estimate	SE	B	Stat	Stat Value	p
Enrolment size	Medium-Small	-0.290	0.251	-0.131	F	.928	.400
	Large-Small	0.006	0.235	0.003			
DEIS	no-yes	-0.210	0.273	-0.080	t	-0.769	.444
Sector	comm/comp-secondary	0.077	0.279	0.029	F	.291	.748
	ETB-secondary	0.183	0.240	0.083			
School leadership		0.442	0.095	0.457	t	4.645	**<.001**
Teacher and student access to DT		0.332	0.102	0.329	t	3.243	**0.002**

Table 3.11 provides more detail on the logistic regression results for high levels of practice. This model is specified differently to those presented in Table 3.9 and 3.10 as, rather than a continuous outcome variable (e.g., DT engagement), this model predicts a discrete binary outcome (high levels of practice vs lower levels of practice). As noted above, odds ratios below 1 indicate that a variable is negatively associated with the outcome, while odds ratios above 1 indicate that a variable is positively associated with the outcome. Statistically significant p-values are highlighted in bold.

CPD suitability for school staff and the baseline levels of DT engagement were similarly strong predictors of high levels of practice at Wave 2. For both predictors, a one-unit increase was associated with DLT leaders/ Principals being 1.9 times more likely to report a high level of practice.

Table 3.11. Detailed binary logistic regression model results for (high) level of practice at Wave 2: post-primary

Final model of high level of embedding DTs	(dummy variable contrasts)	B	SE	Odds ratio	Stat	Stat Value	p
Enrolment size	Medium-Small	-0.614	0.697	0.541	chi-square	3.622	.163
	Large-Small	0.541	0.613	1.718			
DEIS	no-yes	-0.642	0.774	0.526	Wald	0.688	.407
Sector	comm/comp-secondary	0.179	0.726	1.196	chi-square	4.088	.130
	ETB-secondary	-1.192	0.656	0.304			
CPD suitability		0.643	0.273	1.902	Wald	5.560	**.018**
DT engagement (baseline)		0.659	0.300	1.933	Wald	4.836	**.028**

3.5 Key points from Chapter 3

This chapter presented findings from analyses of change over time in several key outcome measures of the DLF, as reported by schools' DLT leaders/Principals.

The first analysis, on the **level of embedding of DTs in TLA**, showed that over the three waves of the study **the proportion of schools at the lower (Emerging) end of the scale decreased**, while **the proportion of schools at the upper (Advanced or Highly advanced) levels increased**. Nonetheless, **at both primary/special and post-primary levels, a majority of schools are categorised at the Intermediate level at Wave 2, indicating that there remains substantial scope for further development** in schools' embedding of DTs for TLA**.**

Next, comparisons of changes from the baseline survey to Wave 2 indicated that **engagement with DTs had significantly increased over time in both primary/special schools and post-primary schools.** However, there were **no statistically significant changes** from baseline to Wave 2, at either school level, **in schools' reports of connectivity and infrastructure or in their ratings of the effectiveness of their technical support.**

Finally, a series of regression models were run in order to examine associations between a range of predictor variables and three key outcomes: DT engagement, DLF impact, and high levels of practice. **Neither DEIS status nor the enrolment size of the school were significantly associated with any of the three outcome measures, in either primary/special or post-primary schools.**

For DT engagement, **several variables were significantly associated with higher DT engagement at Wave 2 at both primary/special and post-primary levels**. These were: **school leadership (positive), levels of DT infrastructure and connectivity in Wave 2 (positive), and effectiveness of technical support (negative).** In addition, **among primary/special schools only,** the extent of implementation challenges reported by DLT leaders was negatively associated with DT engagement. **Among post-primary schools only**, baseline levels of DT infrastructure and connectivity and teacher and student access to DTs were positively associated with DT engagement at Wave 2.

For DLF impact, **school leadership was positively associated with higher DLF impact among both primary/special schools and post-primary schools.** In addition, **among primary/special schools only,** higher DLF impact was associated with leaders' positive attitudes to constructivist learning and the degree of consultation on the schools' DLP, but negatively associated with DLT leaders' perceptions of impediments to TLA arising from the use of DTs. **Among post-primary schools only**, teacher and student access to DTs were positively associated with higher DLF impact.

Finally, for high levels of practice in relation to the DLF, primary/special schools and post-primary schools showed different patterns of association. **Among primary/special schools,** higher levels of DT connectivity

and infrastructure at baseline, higher school leadership and – perhaps surprisingly – reporting more negative attitudes to DTs in relation to student learning were associated with reaching a high level of practice at Wave 2. **Among post-primary schools**, only higher levels of CPD suitability for school staff and higher levels of DT engagement at baseline were associated with reaching a high level of practice at Wave 2.

These findings provide a nuanced view of progress made in some areas, but less so in others, over the course of the three waves of the DLF evaluation. The importance of school leadership and infrastructure and connectivity in encouraging successful implementation of the DLF are evident in several respects. These results will be discussed further in Chapter 6.

Chapter 4:
Digital Learning Team (DLT) leader perspectives and teacher perspectives

4.1 Chapter overview

The DLT leader and teacher surveys included a number of open-ended text format questions, in which respondents could express their views on a number of topics in more detail. These open-ended questions invited teachers and DLT leaders to comment on a number of areas including: the details of who is involved in DLP planning, their school's current level of practice, their views on the ideal outcome of DLP implementation, their views on the supports available for DLF implementation, and finally, their opinions on the impact of the COVID-19 pandemic.

This chapter reports on the results of a thematic analysis carried out on responses to the DLT leader and teacher questionnaires. This qualitative analysis provides a snapshot of DLT leaders' and teachers' views on a range of issues connected to the DLF and the use of DTs in teaching, learning and assessment. As with any qualitative analysis, the themes were identified and prioritised by a set of researchers. It is possible that another team might interpret the responses in another way. As it is not possible to be entirely impartial we encourage readers to interpret the results with caution. In particular, it should be noted (as discussed in Chapter 1) that response rates for teacher questionnaires were low, and clustered within a small number of schools, so particular caution should be exercised when interpreting results discussed from the teacher questionnaire below.

A thematic analysis was carried out on responses at primary and post-primary levels, grouping responses into common themes. Taken together, the responses provide a valuable insight into respondents' views on the implementation of the DLF, their experiences of teaching and learning using DTs, and their ongoing needs as they continue to engage with the DLF and Digital Learning.

The findings of this analysis are presented in several sections according to theme and survey type. First, the themes emerging from an analysis of the responses from the DLT leaders' survey are presented, followed by the responses from the teacher survey. Finally, the key findings of the chapter are presented.

DLT leader

- Description of contributors to identification of school's digital needs
- Views on key outcomes from embedding Digital Technologies in teaching, learning and assessment
- Views on resources for implementing the Digital Learning Framework and Plan
- Views on professional learning supports for implementation of the Digital Learning Framework and Plan
- Views on the impact of the COVID-19 pandemic on the Digital Learning Framework and Plan

Teacher	› Description of how DTs are currently embedded into teaching, learning and assessment › Views on enablers of the Digital Learning Plan implementation › Views on professional learning supports for implementing the Digital Learning Plan › Views on changes in how DTs are used since the onset of COVID-19

For each question analysed, the most commonly-mentioned themes are discussed in detail, and frequency charts with each theme emerging for the topic are presented. Comparisons are drawn, where appropriate, between the themes occurring across primary and post-primary respondents. As elsewhere in the report, responses from special schools are reported with those of primary schools.

One overarching theme emerges from the variety of responses gathered from the surveys, which is the impact the COVID-19 pandemic and associated school closures have had on the implementation of the DLF and DLPs. Both DLT leaders and teachers draw their experiences of using DTs during the pandemic into their responses. Leaders and teachers indicated that a change in their use of DTs has taken place since the pandemic, but how this change has manifested varies from school to school.

4.2 DLT leaders' perspectives on what works

The following sections describe the perspectives of DLT leaders, beginning with their views on the identification of schools' current digital needs.

4.2.1 Who contributes to identifying the schools' current digital needs

DLT leaders were asked who or what plays a part in determining the Digital Technological needs of the school. At primary level, 121 responses were recorded for this question, with an average of 1.82 themes per response. At post-primary level, 53 responses were gathered, with an average of 2.15 themes per response.

At both levels, principals, DLT members and teachers are those who play the largest roles in determining the digital needs of schools, with some differences in the distributions between categories across the school levels (Figure 4.1 and Figure 4.2). At both primary and post-primary level, the top three most frequently-identified groups are: teacher/staff members (the most popular at primary level with 48% of responses, and 43% of responses at post-primary level), principal/deputy principal (31% of primary responses, and 42% of post-primary responses), and DLT team (featuring in 31% of primary responses but the most popular theme at post-primary level, mentioned in 60% of responses). There is therefore some evidence indicating that DLT members play a more prominent role in determining the DT needs of post-primary schools relative to primary level.

Figure 4.1. Themes emerging from primary DLT leader respondents' answers to the question "Generally, who or what determines the Digital Technology-related needs of the school?" Figures represent percentage of comments containing each theme (n=121)

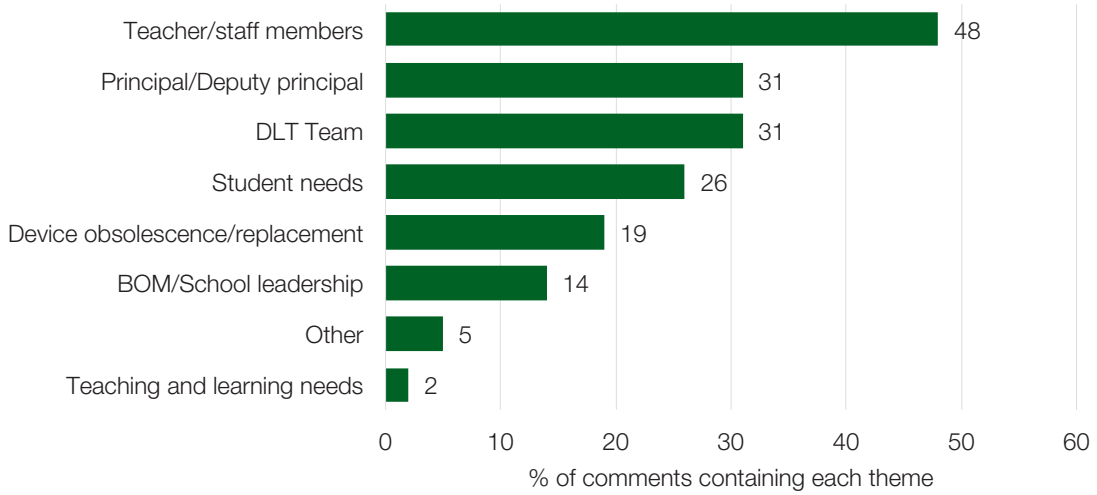
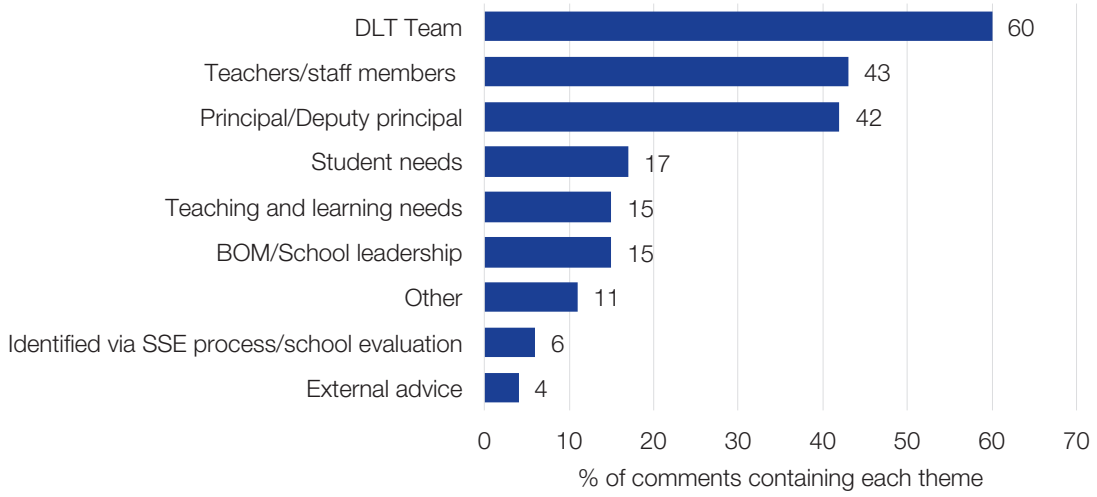


Figure 4.2. Themes emerging from post-primary DLT leader respondents' answers to the question "Generally, who or what determines the Digital Technology-related needs of the school?" Figures represent percentage of comments containing each theme (n=53)



4.2.2 Views on key outcomes from embedding DTs in TLA

DLT leaders and Principals were asked to provide three key outcomes that they would like to see achieved as a result of embedding DTs in teaching, learning and assessment. At primary level, 103 respondents provided at least one desired outcome in response to this question, while at post-primary, 52 respondents submitted at least one outcome. Results of the thematic analysis for this item are displayed in Figures 4.3 and 4.4.

The most commonly-mentioned outcomes showed some differences and some similarities between primary and post-primary levels. Two themes were common across the levels: the sharing of best practice in using DTs

among teachers, and facilitation of DTs for assessment. At primary level, the most common outcomes that DLT leaders wished to see from the DLF were the use of DTs for both formative and summative assessment (61%), the sharing of good practice between teachers (55%), and as support for inclusion (48%). At post-primary level, the most commonly-mentioned outcomes were enhanced teaching and learning outcomes (74%), the facilitation of the sharing of good practice (47%), the facilitation of the use of DTs for assessment (38%), and support for inclusion (38%).

The use of DTs for assessment was the most common theme identified at primary level as a key desired outcome, and was the third most common theme at post-primary level. Some of the responses at primary level indicated that digital assessment was either a new development, or a mode of assessment that the school had minimal experience of, with one DLT leader indicating they would like their school "to begin to use technology to assess literacy and numeracy." Another primary respondent expressed a desire to be able to "identify accessible assessment tools in digital format." Others highlighted the need for training in this area to further encourage and facilitate teachers in the use of DTs in assessment. Echoing the responses at primary level, post-primary DLT leaders mentioned both formative and summative assessment in relation to assessment. Leaders at this level expressed a desire for DTs to "enhance assessment practices," with one leader proposing that while DTs are already extensively used for formative assessment, it needed to be employed more in summative assessment.

At both levels, the facilitation of sharing of good practice in using DTs between teachers was the second most common theme, with 55% of responses at primary level and 47% of post-primary responses at post-primary level mentioning it. DLT leaders expressed a desire for teachers to collaborate more, with one primary leader hoping that "staff members will have a chance to share experiences and try out programmes together." One post-primary leader highlighted the learning potential for the whole school from this collaborative practice, stating that teachers "contribute to building whole-staff capacity by sharing their expertise." Another leader commented that, ideally, best practices would be shared school-wide and then adapted and put into action by individual staff members.

Another frequently-mentioned key outcome was the desire for the DLF to support inclusion within the school, with 48% of responses at primary level and 38% at post-primary featuring this theme. DLT leaders see an opportunity in the DLF to provide support to the inclusion work already underway in schools. One primary DLT leader expressed a wish for "every child to have access to and the skills to use DL to enhance their own learning." Many leaders see the DLF implementation as an opportunity not only to include children with additional needs through assistive technologies, but also as a chance to improve the learning experiences of children from "disadvantaged and EAL families." DLT leaders identify that DTs can be used for children of all needs and abilities to improve their learning outcomes through differentiation. Responses at post-primary level again underlined how DTs can be used to "support equal access to learning for all," giving particular mention to "students from Ukraine[29] and students with Special Educational Needs" as well as those with EAL and from disadvantaged backgrounds. Respondents here, as at primary level, seem to understand the potential for differentiation that DTs provide.

At post-primary level, the outcome that emerged as the most popular, mentioned in 74% of responses, was enhanced teaching and learning outcomes. The facilitation of sharing of good practice between teachers also emerges as an important priority for DLT leaders, featured in 47% of responses. Further, the facilitation of the use of DTs for assessment, and support for inclusion, both feature in 38% of responses. On the theme of enhanced teaching and learning outcomes, leaders expressed a belief that the use of DTs could "provide more student-centred learning experiences" and "improve literacy and numeracy outcomes." DLT leaders believed that DT use can "enhance the teaching and learning experience for both teachers and students" and lead to "enhanced outcomes" for both groups.

29 These responses were gathered in the first half of 2022, at a time when Ukrainian families were arriving in Ireland and Ukrainian students were joining schools in Ireland following the invasion of Ukraine by Russia in February 2022.

Figure 4.3. Themes emerging from primary responses to the question "What key outcomes would the school like to achieve from embedding DTs into teaching, learning and assessment?" Figures represent percentage of responses featuring this theme.

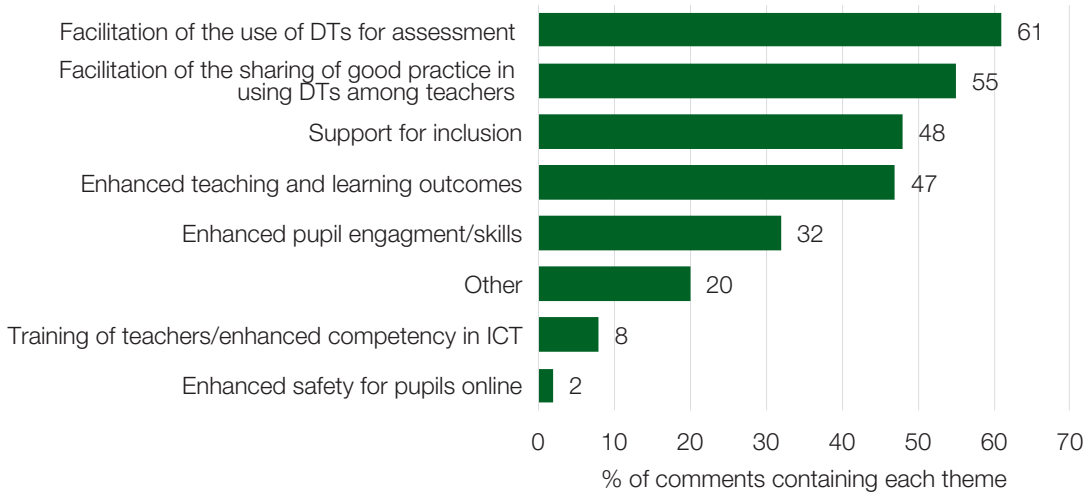
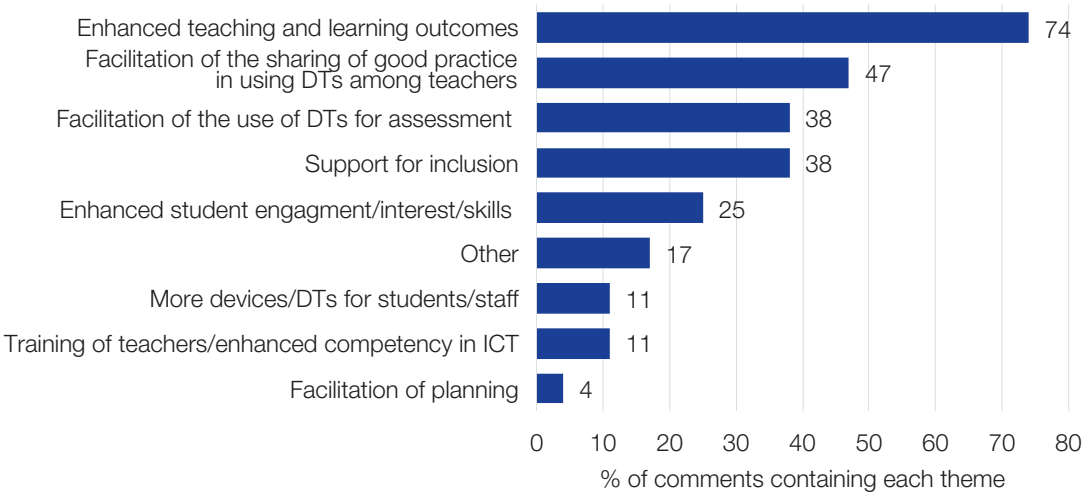


Figure 4.4. Themes emerging from post-primary responses to the question "What key outcomes would the school like to achieve from embedding DTs into teaching, learning and assessment?" Figures represent percentage of responses featuring this theme



4.2.3 Views on resources for implementing the DLF/DLP

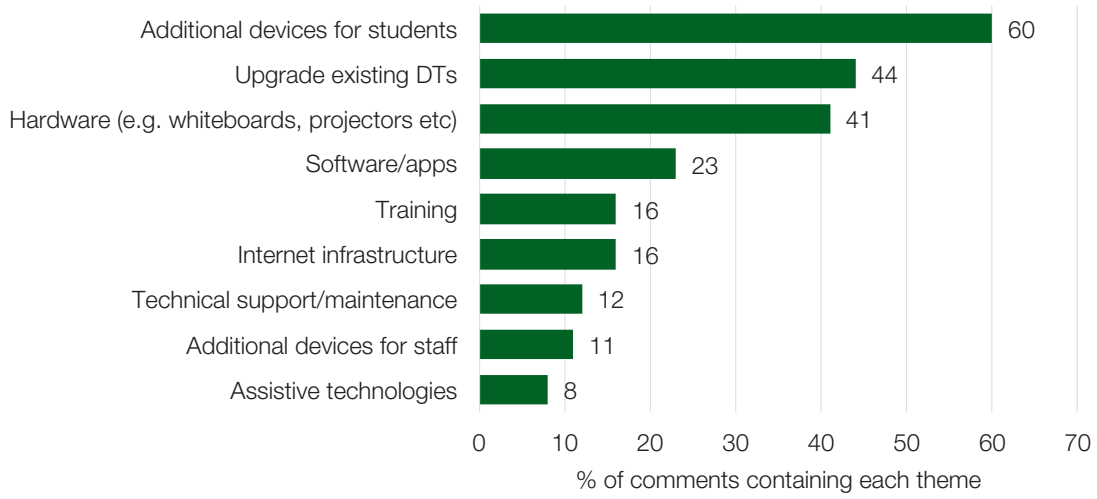
As part of the survey, DLT leaders were asked if they needed additional funding to implement the DLF. Following up on a positive response to this question (when the respondent selected "yes"), leaders were then asked to describe what that money would be used for. In response to this question, 98 leaders at primary level selected

"yes" and added an open response, with an average of 2.33 themes per response. At post-primary level, 57 responses were recorded in response to this question, with an average of 2.02 themes per response.[30]

At primary level, leaders indicated that they would use funding for additional devices for students (60% of responses), to upgrade existing devices (44%), and for the purchase of hardware (41%). At primary level, one leader indicated that the purchase of additional student devices would be important as "we do not have a laptop or iPad for each student in our school, which in this day and age is a necessity." Another leader expressed the need for more devices as "the current devices accessible by pupils are shared and moved from class to class." The sharing of devices between students during teaching was highlighted as an issue to be addressed, as was the short window of time in which devices could be used for teaching and learning due to the demand on a small number of devices.

On the related topic of upgrading existing devices or hardware, one leader noted that "our present stock of laptops and iPads are five years old," while another leader commented that their tablets would no longer "allow updated Appstore download," thus limiting how students could engage with the DLF. Other DTs were mentioned as being outdated by various leaders including whiteboards, teacher devices, and internet infrastructure. In terms of hardware, one leader mentioned the need for a new projector as "the current one is nearly at end-of-life use and replacement parts cannot be sourced any longer for the model."

Figure 4.5. Themes emerging from primary responses to the question "What would the funding be used for?" Figures represent percentage of responses featuring this theme (n=98)



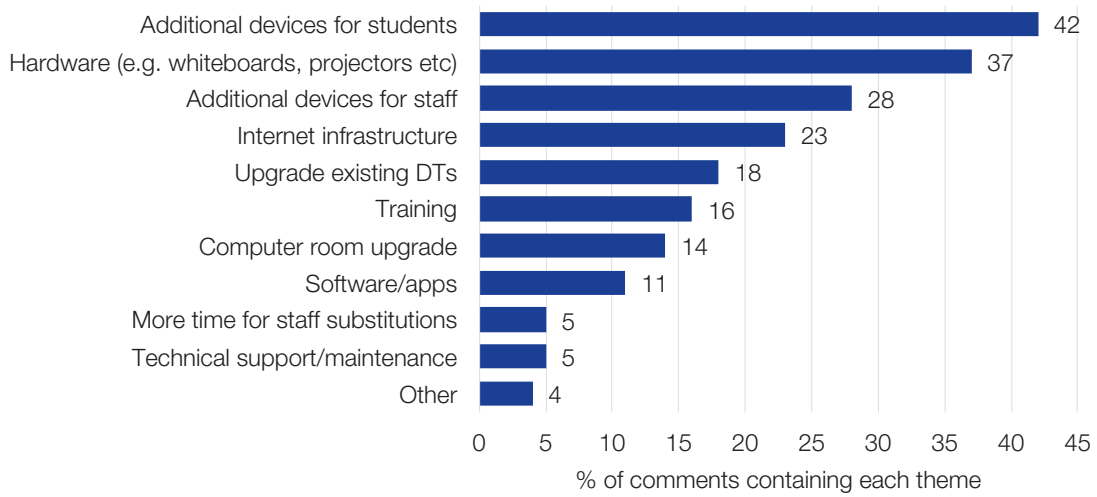
At post-primary level, the most common themes echo those at primary level, with additional devices for students being the most popular theme (42%), and hardware for teacher use in the classroom the next most important (37%). In third position, unlike at primary level, additional devices for staff emerged as a frequently-cited theme (28%). By contrast, at primary level, only 11% of responses concerned devices for staff.

These responses indicate that additional devices for students and staff are of prime interest for DLT leaders at post-primary level, demonstrating again an emphasis on the need for individual devices for students to increase opportunities for DLF implementation. One leader highlighted how the lack of devices impacts on the implementation of the DLF, noting that the laptop trolley "must be booked in advance and is heavily used." This same leader underlined also how the lack of hardware infrastructure impacts participation in learning and

30 At primary level, 98 of 143 respondents (68.5%), and at post-primary 57 of 60 respondents (95%) selected yes.

assessment activities, "more printers are needed to complete the many CBAs." The availability of adequate devices for staff is also a concern. One leader noted that many of their teacher devices "are over 8 or 9 years old." The upgrade of these staff devices, according to the DLT leader, would "futureproof against staff being unable to collaborate with their students in the next one or two years, due to old hardware."

Figure 4.6. Themes emerging from post-primary responses to the question "What would the funding be used for?" Figures represent percentage of responses featuring this theme (n=57)



Another question asked DLT leaders if they would benefit from additional guidance on how to use the ICT Infrastructure grant. If they indicated that guidance would be useful, they were then asked to specify what additional guidance they would welcome. At primary level, 87 responses were received in response to this prompt, with 1.40 themes on average per response. At post-primary level, 37 responses were recorded, with an average of 1.47 themes per response. At both levels, the top three most commonly-mentioned themes were the same, though the order of preference differed. These themes were: *general guidance, procurement and purchasing guidance,* and *guidance on matching school's needs to technologies*.

At primary level, the most common theme emerging (mentioned in one-third of responses) was the need for advice on how to match the school's individual needs to the technologies available (e.g., "what devices to purchase for the junior end of the school"). This was the third most common theme at post-primary level (24% of responses). Some DLT leaders mentioned issues specific to their school that needed input from an external party to help them address the school's requirements for appropriate technologies and software. Many leaders wanted some help with considering where the school was currently in terms of their DTs and using that information to plan for the future. These comments often contained references to the changing nature of DTs and the need for advice on future proofing their purchases; as one leader put it: "where technology is going so we can prepare our children for their future needs."

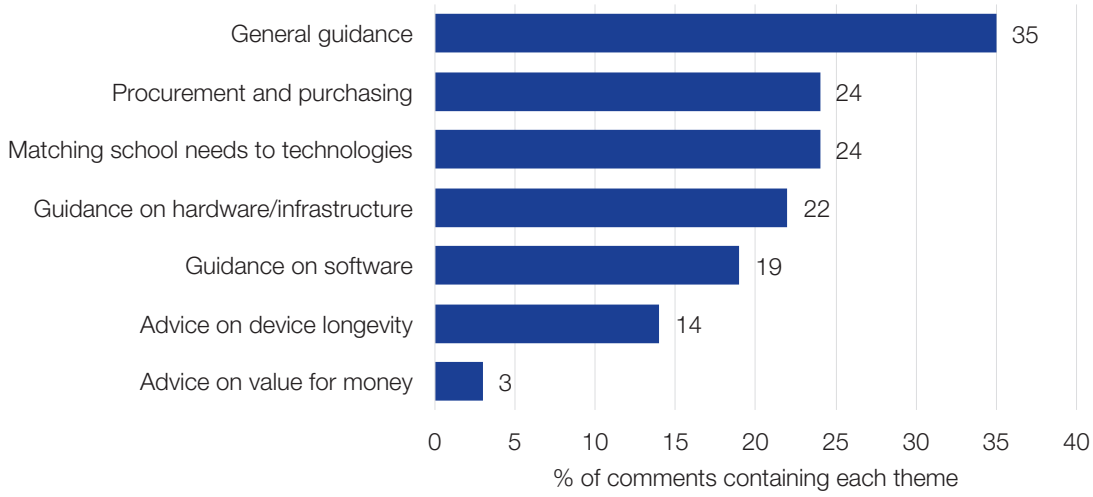
Decisions around purchasing and procurement was the second most commonly-mentioned theme at both levels, with 24% of responses at both primary and post-primary levels. DLT leaders identified a number of issues for which they would like advice in regard to purchasing, including information on "recommended, established retailers," companies recognised "as qualified to work with schools and provide technical support," guidance on the procurement process, advice on the specific qualities of hardware and software, and their suitability for use in teaching and learning.

Finally, the wish to avail of general guidance on the spending of the ICT grant was the most common theme at post-primary level (35% of responses), and the third most common theme at primary level (23%). Under the theme

of general guidance, post-primary leaders expressed a desire to have both structured, formal interventions from the PDST and ETBs ("training and staff CPD," "bi-annual school visits"), as well as informal consultations about specific issues arising. The desire to draw on the experiences and knowledge built up in other schools was a feature at both levels, with one post-primary leader expressing a wish for "sharing of good practice with other schools."

Figure 4.7. Themes emerging from primary responses to the question "What additional guidance on spending the ICT grant would be useful?" Figures represent percentage of responses featuring this theme (n=87)

Figure 4.8. Themes emerging from post-primary responses to the question "What additional guidance on spending the ICT grant would be useful?" Figures represent percentage of responses featuring this theme (n=37)



4.2.4 Views on professional learning supports

In the survey, DLT leaders were asked to express an opinion on what kind of professional learning supports they would like to see in their continued implementation of the Digital Learning Framework. At primary level, 107 responses were recorded, with an average of 1.83 themes per response. At post-primary level, 56 responses were gathered for this question, with an average of 1.96 themes per response.

At primary level, the three most common themes that emerged were: *in-school support/in-service days* (44% of responses), *continued CPD/DLF seminars/additional training* (35%), and *PDST support* (35%). This reflects the pattern that was also observed in the Wave 1 survey. At post-primary level, two of these concerns also appeared in the top three most common themes: *continued CPD/DLF seminars/additional training* (45%), and *in-school support/in-service days* (21%). Another two themes emerged as frequent concerns here, with *time given to DLP* mentioned in 36% of responses, and *technical support/IT support/advisor* (21%).

In-school support and in-service days emerged as important themes at both primary and post-primary levels. Many of the responses indicated how important regular school visits by PDST advisors are to the implementation of school's DLPs. For example, one leader commented that "inhouse supports are highly effective." At both levels, the importance placed on face-to-face support from advisors and in-person training was clear. One leader expressed a preference for in-person work as "online support was not always easily accessible," while one post-primary leader commented how at that point in time "Zoom is hated." Given the timing of the surveys, completed between December 2021 and May 2022, it may be that a certain fatigue for online engagement at that particular time was reflected in these responses.

Continued CPD/DLF seminars/additional training was considered important at both levels, emerging as the most common theme at post-primary level (45% of responses), and the second most common at primary level (35%). Some of the professional learning supports suggested by the primary DLT leaders were:

- Training specific to the needs of small schools;
- Training on the use of new and innovative hardware and software;
- Training on using DTs for digital assessment;
- Training on specific topics such as digital citizenship, use of e-portfolios, and subject-specific apps.

Some of the professional learning supports suggested by the post-primary DLT leaders were:

- CPD tailored to school needs;
- Training on new Digital Strategy;
- Training on the use of DTs for CBAs;
- Training on specific platforms and packages;
- Use of Digital Technologies should be embedded into all CPD courses, instead of being stand-alone courses.

At primary level, the importance of PDST advice and support was a key theme (33% of responses). PDST advice on formulating and adjusting a DLP, helping to assess the status of a school in relation to the DLP, and the regularity of PDST interventions were considered to be important in effective implementation of the DLF in a school context. DLT leaders expressed a desire to continue with work with PDST DT Advisors, with one leader leaning on the advisor's "experience and knowledge" as the school continued "to implement our digital learning plan." Leaders commented positively on the manner in which PDST advisors can work at multiple levels in the school, helping with planning, working with staff with differing levels of skills in the use of DTs, and tailoring their advice to the specific needs within the school.

At both levels, the time to implement the DLP emerged as an important theme, featuring in 36% of responses at post-primary level and 21% at primary level. This theme featured more prominently in Wave 2 than at Wave 1. Some leaders felt that time for planning "to develop digital resources" should be a priority.

Figure 4.9. Themes emerging from primary DLT leader respondents' answers to the question "In an ideal scenario, what professional learning supports would you like to see available to facilitate your school's continued implementation of the Digital Learning Framework/Digital Learning Plan?" Figures represent percentage of comments containing each theme (n=107)

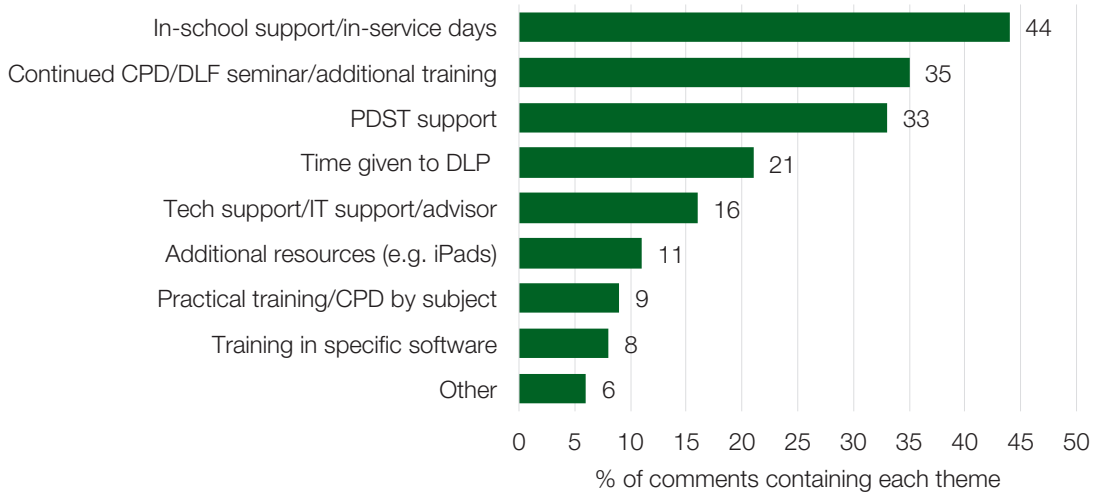
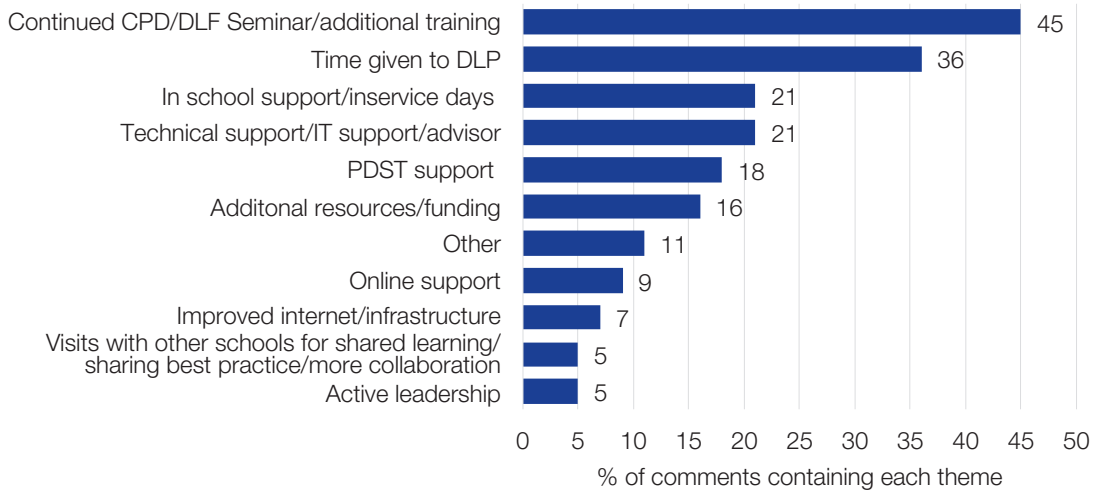


Figure 4.10. Themes emerging from post-primary DLT leader respondents' answers to the question "In an ideal scenario, what professional learning supports would you like to see available to facilitate your school's continued implementation of the Digital Learning Framework/Digital Learning Plan?" Figures represent percentage of comments containing each theme (n=56)



4.2.5 Views on the impact of the COVID-19 pandemic on the DLF/DLP

In light of the exceptional circumstances created by restrictions resulting from the COVID-19 pandemic, the survey asked DLT leaders about how the experience of the pandemic influenced their approach to using DTs in teaching and learning.

In the first of two questions, DLT leaders were asked to outline which elements of the school's DLP were particularly helpful in addressing the challenges faced by COVID-19. At primary level, 107 responses to this question were gathered, with 1.36 themes per response on average. At post-primary level, 51 responses were recorded, with an average of 1.64 themes per response.

At both primary and post-primary level, the most commonly-occurring themes were*: resources already in place for remote teaching* (33% of responses at primary and 63% at post-primary) and *teachers already trained in digital teaching and learning* (31% at primary and 27% at post-primary). Both these responses indicate that the preparation for digital teaching and learning stated in schools' Digital Learning Plans laid the foundations for the move to remote learning.

At primary level, some leaders indicated that their school had certain learning management systems in place prior to the pandemic as part of the school's implementation of the DLP. One leader described this as a "huge advantage" during the school closures. The same leader commented that having these resources in place meant that "parents and pupils were already familiar with this platform" allowing the school "to begin utilising it as a teaching & learning communication tool immediately." Other leaders echoed this sentiment, with one leader pointing out how the learning platform they had adopted in 2019 suddenly became "the central communications and teaching and learning tool in the school." Similar experiences were reported at post-primary level, with many leaders indicating that their school had learning platforms embedded within their practices before the pandemic, with one leader commenting that the school was "really well placed to move to online teaching, learning and assessment" during the school closures.

The next most frequently-mentioned theme at both levels was *teachers already training in digital teaching and learning*. There is a sense that there was already a level of preparation within schools for the shift to remote learning with the embedding of resources (described above) bolstered by the professional development of teachers in this respect. One leader indicated that on foot of this training, "teachers went online very effectively and with great efficiency during COVID online learning." Training in specific platforms and apps was mentioned, as well as courses offered by the PDST. Although the training provided a base for remote learning, it still required a large shift on the teachers' behalf, requiring continued "upskilling" as well as investment in introducing children to the online learning environment. At post-primary, leaders commented on how teachers' prior CPD in the area smoothed the transition to remote learning. One leader commented how their school used an "in-house train the trainer" approach, allowing the school to be adaptable "in terms of the school's digital need." This facilitated the sharing of digital skills throughout the school during the school closures. Another leader commented that "the professional development of staff practices empowered our staff to engage in remote teaching and learning."

Figure 4.11. Themes emerging from primary DLT leader respondents' answers to the question "What elements of your DLP were particularly helpful for your school in addressing the challenges faced by COVID-19?" Figures represent percentage of comments containing each theme (n=107)

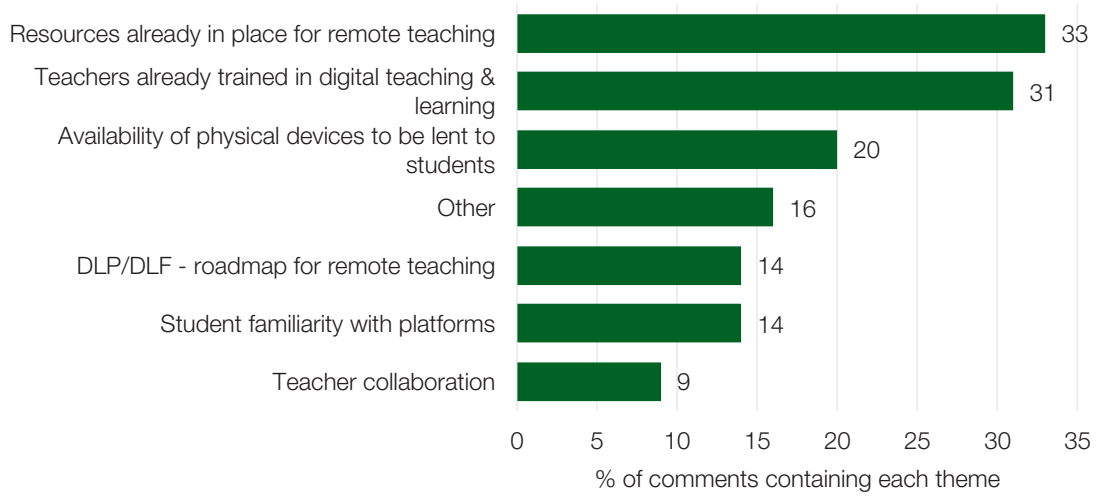
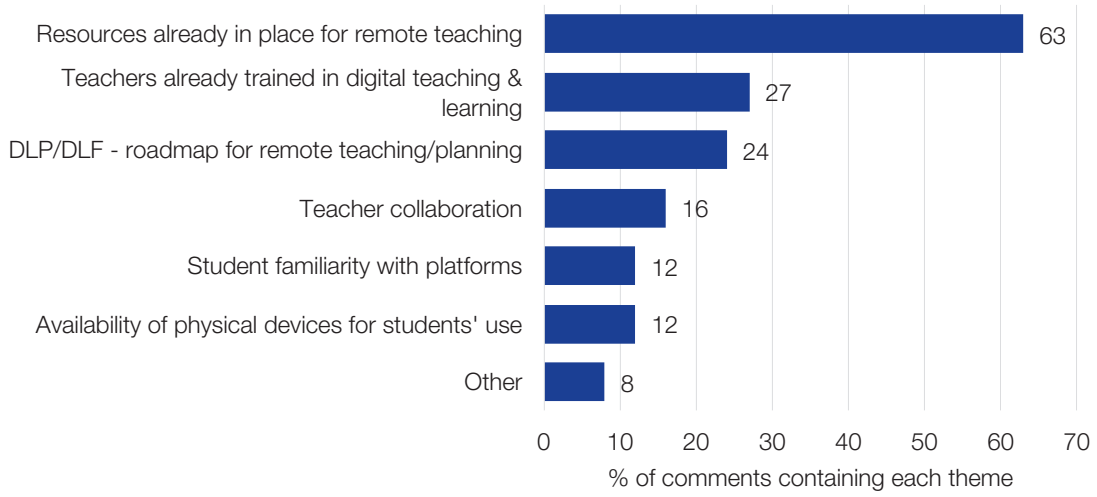


Figure 4.12. Themes emerging from post-primary DLT leader respondents' answers to the question "What elements of your DLP were particularly helpful for your school in addressing the challenges faced by COVID-19?" Figures represent percentage of comments containing each theme (n=51)



Another question asked DLT leaders what learnings from COVID-19 had instigated further change with respect to their school's DLP. At primary level, 101 responses were recorded for this question, with an average of 1.47 themes per response. At post-primary level instead, 49 responses were gathered with an average of 1.41 themes per response.

In answering this question, DLT leaders offered their view on the *learnings* that had prompted additional changes in the DLP. However, a substantial number of responses did not comment on the learnings emerging from their

experience of the pandemic, and instead offered *observations*[31] of the changes witnessed since the COVID-19 school closures. Both *observations* and *learnings* have been included in our findings here. In Figure 4.13, the *learnings* are indicated at primary level by the colour green, while the *observations* are coloured dark grey. In Figure 4.14, the *learnings* at post-primary level are represented by the colour blue, while the *observations* are coloured purple.

The most common theme to emerge at primary level, and the second most important theme at post-primary level was an *observation* on the changes since COVID-19; *increased use of DTs for remote and in-class teaching* (58% of responses at primary and 28% at post-primary level contained this theme). One primary leader commented on how "pupil and staff engagement with ICT changed during COVID-19. Our DLP will have to be updated to reflect these changes." Leaders at both levels noted how the switch to remote teaching increased the use of DTs (as expected), but that the change in mode was retained even when teaching returned to in-person instruction. One primary DLT leader commented how the use of online platforms continues "as part of a blended approach to learning." More leaders commented on how technologies were now used for homework activities, with one primary leader stating that their school has a policy of setting online homework weekly "so that the children and parents keep and enhance the skills they have acquired."

One *learning* emerged as the second most mentioned theme at primary level: the *need to upgrade infrastructure* (17% of responses). Working through the school closures due to the COVID-19 pandemic, DLT leaders commented on how the experience made the lacunae in ICT infrastructure, both within the school and within pupils' homes, evident. Broadband issues, the need for additional and upgraded devices, and increased cloud storage capacity were all mentioned. The increased embedding of DTs into teaching and learning seemed to be driving this demand, as in this comment from one leader: "teachers' use of digital portfolios really accelerated and shared knowledge came on. It also drove demand from teachers to have all-day devices for their pupils."

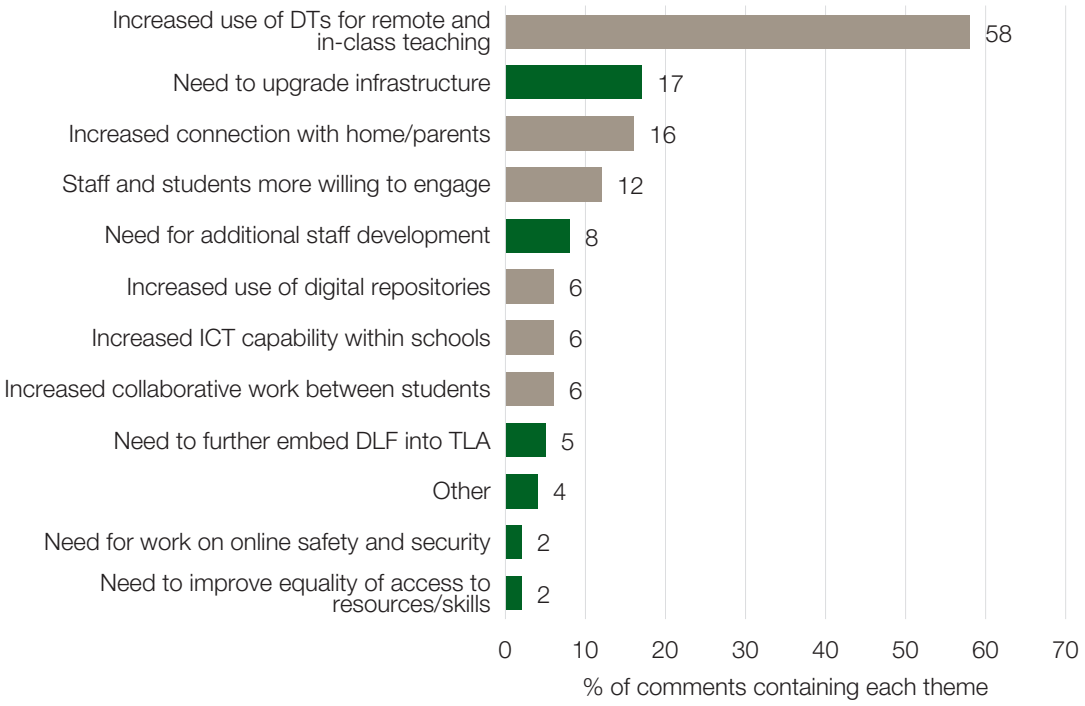
The next most popular theme at primary level was also in the category of an *observation*; namely, the *increased connection with pupil's home and parents* (16% of responses). Leaders commented on how there had been more frequent communications and connections with pupils' parents and guardians. Email and applications such as Seesaw were mentioned as avenues of communication. Leaders mentioned that online meetings are still in place, meaning "that all parents can access the meeting without having to attend in person." More than one leader mentioned how this increase in communication does add an additional responsibility on the teacher, as "parents need support with regard to the use of digital technologies at home also."

At post-primary level, the most common theme to emerge was a *learning*: the *need to further embed the DLF into teaching, learning and assessment* (with 34% of responses containing this theme). One leader commented that "COVID was the greatest force in implementing the DLP." Many leaders drew a link between the learnings garnered during COVID-19 and the need to continue implementing the DLF and the DLP into teaching and learning in the post-COVID-19 context. One leader underlined the need to aim to embed ICT "in all aspects of school life." This leader went on to identify two key areas as being in need of further development with regard to embedding of DTs: their use in assessment, and "supporting students with additional needs to engage and shine." Other leaders highlighted the need for constant revision and updating of the DLP "as the needs of the school change."

The next most common themes at post-primary level are two *observations*; the *increased use of DTs for remote and in-class teaching and learning* (28% of all responses – outlined above), and the *increased ICT capability within schools* (16%).

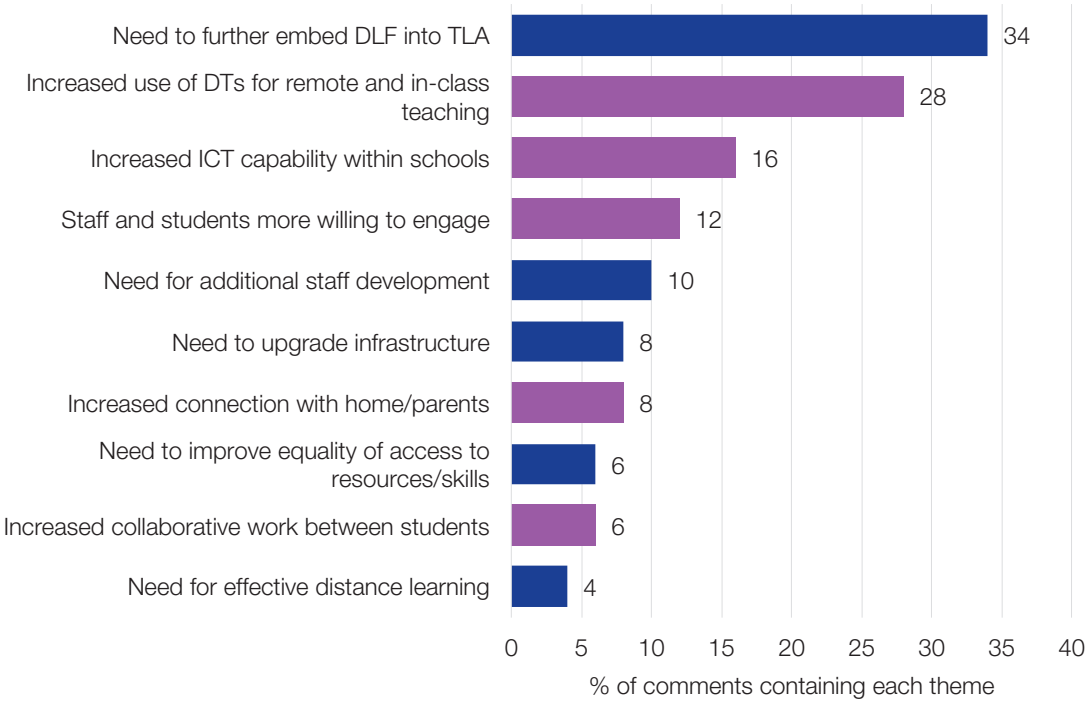
31 *Learning* here refers to key information learned by respondents during COVID-19 that informed their school's approach to DLF planning. An observation instead refers to responses that simply described and commented on changes that came about during the period.

Figure 4.13. Themes emerging from primary DLT leader respondents' answers to the question "What learning from COVID-19 has instigated further change with respect to the DLP?" Figures represent percentage of comments containing each theme (n=101)



* *Learnings* are indicated by the colour green, while observations are coloured grey

Figure 4.14. Themes emerging from post-primary DLT leader respondents' answers to the question "What learning from COVID-19 has instigated further change with respect to the DLP?" Figures represent percentage of comments containing each theme (n=49)



* *Learnings* are represented by the colour blue, while observations are coloured purple

4.3 Teachers' perspectives

Teachers were asked their opinions on the implementation of the Digital Learning Framework. These teacher questionnaires also contained open-response questions, where teachers could write freely in response to a small number of questions. In this section, we will report on these responses. However, given the low response rates, and the clustered nature of the respondents, we urge caution in interpretation of these responses. They can not be said to be nationally representative, and no meaningful comparison with Wave 1 responses can be made. They should be read as a snapshot in time of some teachers surveyed during the specified period. The comments may be indicative of the type of comments teachers may make about DT usage after the COVID-19 period.

4.3.1 How DTs are currently embedded into TLA

Teachers were asked to provide a brief description of how they embedded Digital Technologies into their teaching, learning and assessment at the time of responding to the survey. At primary level, there were 203 responses to this question, with an average of 2.47 themes per comment. At post-primary level, there were 155 responses to this question, with an average of 2.67 themes per comment.

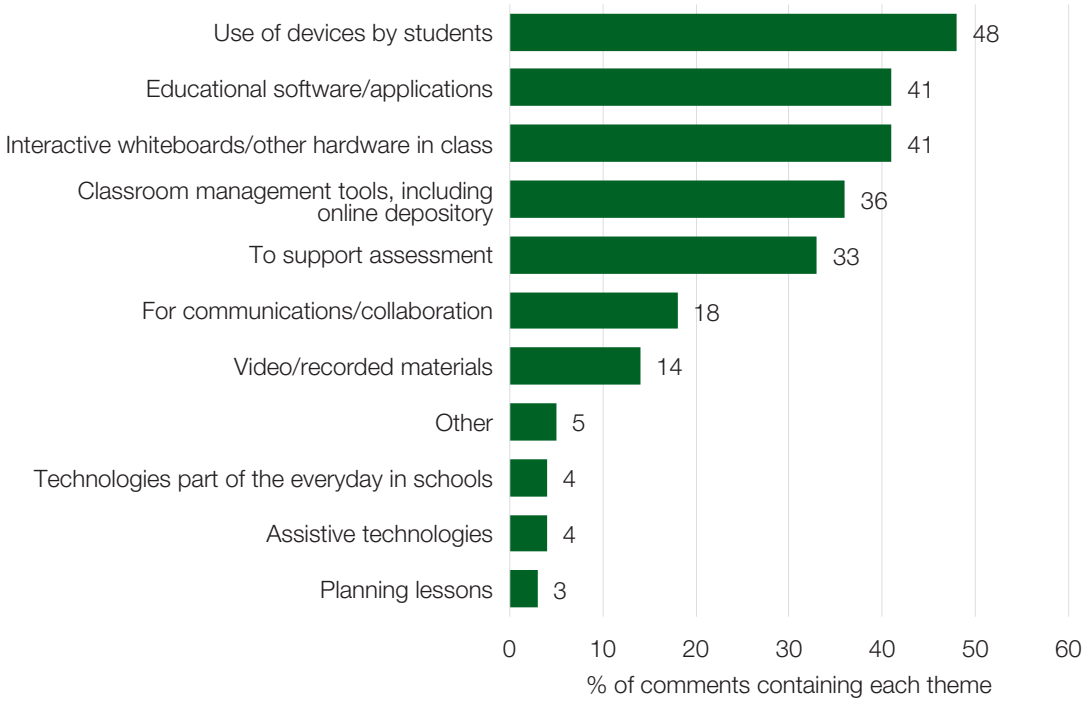
The top three themes to emerge in relation to how DTs are embedded in teaching, learning and assessment at primary level focused on the *use of devices by students*, the *use of educational software and applications*, and the *use of interactive whiteboards and similar* hardware in classrooms.

Teachers noted that students used devices (including laptops and iPads) either individually, or as part of group work in the classroom. The nature of the pupils' interaction with these devices varied. Access to devices was not uniform, with one teacher indicating that their school had one iPad per class, and others indicating that students had individual devices. These devices were used for a number of different purposes, but their use as a tool for literacy and numeracy learning was a recurring theme – for example, "We use iPads during stations for literacy and numeracy." Another theme to emerge was the use of student devices for learning processes such as researching and writing of reports, which are "uploaded to Seesaw and emailed to the teacher." For children of a lower age profile, one teacher commented on how iPads are "used for aistear, show and tell and also for station teaching." Other teachers indicated that devices were used for content creation and recording – "for research, creation of reports, posters, etc."

The next most popular theme at primary level, the use of *educational software and or applications* featured in 41% of responses. Specific software such as Spark ("for writing or teaching letter formation"), Jolly Phonics, Bua na Cainte, Book Creator, Mentimeter ("for English writing"), Toontastic, and Spellings for Me were among those mentioned. One teacher commented how they use "a variety of maths games online to support engagement in maths lessons."

Another 41% of responses included the theme of *interactive whiteboards or other hardware in class.* Teachers indicated that they make extensive use of the interactive whiteboard and visualisers throughout the teaching day "when teaching in all subject areas." One teacher described how they use the board "to provide visually stimulating experiences in things such as our Reading Group that explores stories by way of ebooks." Many teachers stated that they use the whiteboard for learning games, bringing a ludic element into learning. There is a sense across the responses that the use of the smartboards improves the learning experience for teachers and students alike, making some aspects of learning "easy and fun."

Figure 4.15. Themes emerging from primary teacher respondents' answers to the prompt "Please provide a brief description of how you currently embed Digital Technologies into teaching, learning and assessment." Figures represent percentage of comments containing each theme (n=203)



At post-primary level, the majority of responses (65%) indicated that teachers and schools utilised classroom management tools and platforms in their efforts to embed Digital Technologies into teaching, learning and assessment. Learning management systems like Google Classroom, Microsoft Teams, and Schoology were regularly referred to by teachers as being fundamental to their teaching and assessment practices. The suite of options offered by these platforms means that students, teachers and parents are using their features in a variety of ways: "All teachers and students are on the same google platform. This is used to upload notes and homework, it is embedded into the daily running of the class and acts as catch-up tool to those who are absent. It also keeps a digital record of lessons and assignments." Other teachers reiterated this experience of using such platforms as repositories for learning materials, forming a digital record of lessons and associated materials, which is accessible by students at home and in their own time. Teachers also indicated that they used these platforms for the setting and submission of homework assignments.

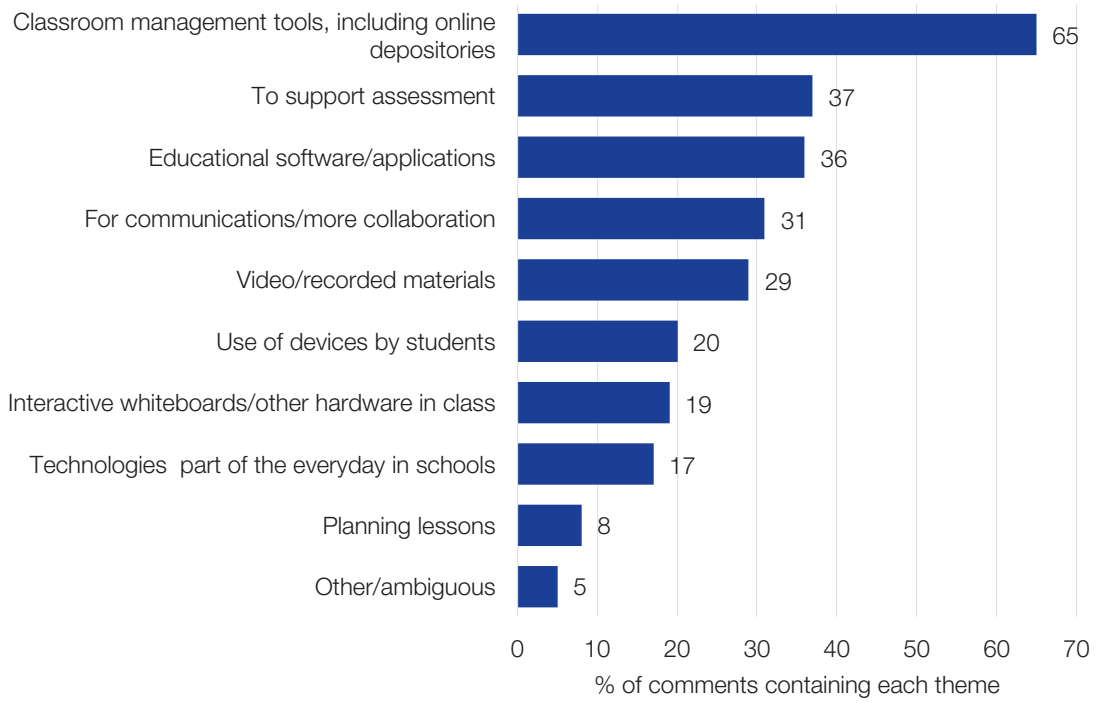
Some teachers underlined how they used these platforms to share resources and experiences with other staff members within the school: "subject department planning is collaborative and shared digitally." Teachers indicated how these types of platforms facilitated connection between teachers, students, and the home, as well as connecting teachers to one another for collaboration and professional learning. One teacher underlined how this is "a highly inclusive practice and allows for both remote and in-person learning should the need arise."

The next most popular theme was the use of DTs to support assessment, with 37% of responses indicating their regular use in teaching and learning. Teachers indicated that they use Digital Technologies for both formative and summative assessment. Applications such as Kahoot, Quizizz, and Nearpod were mentioned regularly, as well as platforms such as Google Forms for putting tests online. Digital Technologies seem to be embedded into assessment processes, with technologies used for revision, homework, and formative quizzes on a regular basis. As one teacher commented: "websites used for assessment and tracking of reading/literacy levels. Games and Quizzes used online for checking progress." These technologies also played a role in teacher

planning, with one teacher indicating that they used them "to gauge prior learning to know where I need to pitch my lesson."

Educational applications/software were next most popular. While some of the applications were subject-specific, such as Geogebra, some software mentioned was not specifically educational in design (Powerpoint/Office, etc.) and other applications were relevant across subjects (such as Wizer, Metimeter, Padlet, Loom, and Chatterpix): "Using Pinterest to create mood boards for project work. Loom to create Visual Culture videos"; "Use digital technologies to complete CBA for science project."

Figure 4.16. Themes emerging from post-primary teacher respondents' answers to the prompt "Please provide a brief description of how you currently embed Digital Technologies into teaching, learning and assessment." Figures represent percentage of comments containing each theme (n=155)



4.3.2 Views on enablers of DLP implementation

Teachers were asked what they thought would enable them to implement the DLF and DLP in their teaching, learning and assessment more efficiently and effectively. At primary level, 154 responses with an average of 2.30 themes per response were gathered. At post-primary level, 90 responses to this prompt were recorded with an average of 1.88 themes emerging per response.

At primary level, the four most popular response types centred around two main themes: *training* and the *availability of infrastructure and devices*.

Almost half of responses mentioned the need for additional, better or more modern devices to be available to teachers and students (49%), while a third of responses spoke to the need for devices and infrastructure to be well maintained. On these themes, one teacher expressed the need for "more IP addresses [and] reliable, faster wifi." In addition, the same teacher underlined a desire for "more technical support to keep devices updated," highlighting the key role that consistent maintenance plays in embedding the DLF in teaching and learning.

Many other teachers' responses echoed these views, with one teacher highlighting how the age of DTs can prove an obstacle to embedding, as they were using a whiteboard "with very poor definition/quality."

In terms of training, 42% of responses cited a desire for appropriate and practical CPD and training, while 37% of responses expressed a desire for continued or additional support and training. In discussing appropriate training, some teachers expressed a wish for training to be targeted at their particular school's needs, whether that be in terms of the school size (e.g., "training that is tailored to our small school situation") or students' needs (with one teacher requesting "specialized CPD for special class setting for teachers and SNAs."). Many teachers expressed a desire for a return to in-person training and support in the wake of restrictions imposed during the COVID-19 pandemic.

Figure 4.17. Themes emerging from primary teacher respondents' answers to the prompt "Name up to three things that you think would best enable you and your school to implement the DLF." Figures represent percentage of comments containing each theme (n=154)

At post-primary level, three themes emerged as important for respondents: the *availability and maintenance of devices*, as well as the *financial capacity to facilitate the DLF* and the *time to implement its various aspects*. As at primary level, the theme most commonly-mentioned in teachers' responses was the desire for additional, newer and better quality devices, with 39% of responses featuring this theme. A further 22% of teachers expressed a desire for DT infrastructure and/or devices to be well-maintained. One teacher's response focused on the first of these themes: "better access to hardware (student devices etc.), better broadband connectivity, standardised equipment across the whole school, increased access for students to the wifi in school. Ability to problem solve my own minor issues in school." Another expressed the need for "regular updating of equipment" in order to better meet the demands of the DLF.

The next most commonly-occurring themes were the requirement for help with purchasing and more funding to facilitate implementation of the DLF, and the need for additional time to dedicate to it. Both of these themes were present in 31% of responses. On the theme of time, one teacher noted the challenges of "trying to upskill in such a busy environment" when additional time is not specifically allocated to the task. This clash between an

already busy schedule and the demands of the DLF were echoed by a number of teachers, with some teachers suggesting that Croke Park hours could be assigned to this work. Time and funding were often mentioned together in a single comment. Some teachers placed an emphasis on the need for regular funding to keep pace with the changing technology, stating that funding "would help to provide an update on software and hardware on a continuous basis."

Figure 4.18. Themes emerging from post-primary teacher respondents' answers to the prompt "Name up to three things that you think would best enable you and your school to implement the DLF." Figures represent percentage of comments containing each theme (n=90)

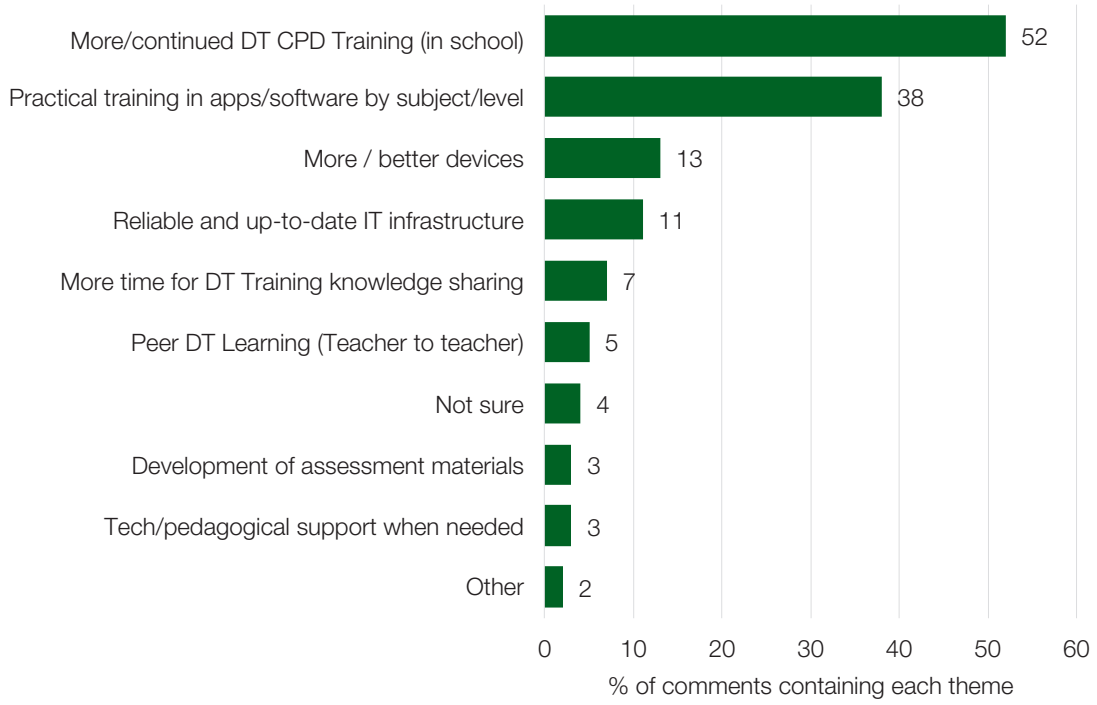
4.3.3 Views on professional learning supports

Teachers were asked about which professional learning supports they would like to see available to facilitate their school's continued implementation of the Digital Learning Framework/Digital Learning Plan. At primary level, 176 responses to this question were recorded with an average of 1.4 themes per comment, while at post-primary 108 responses were gathered with an average of 1.65 themes per response.

At primary level, a clear desire for *more in-school CPD training* was expressed with the theme emerging 91 times (over 52% of responses). The second most mentioned theme was the wish for *practical training in the use of specific applications tailored to the subject or level* (38%). One teacher expressed a wish to be "brought to the computer room and given a working knowledge of how software operates. Time to see how it can be used subject specific. [Receive] In-school CPD." Across responses, there was a repeated desire to return to in-school CPD after COVID-19. Some teachers underlined the importance of being able to avail of ongoing CPD training in the changing context of DTs: "More training for teachers to familiarise them with constantly evolving technologies."

The next two most frequent responses referred to the necessity for adequate hardware and infrastructure to support the school's implementation of the DLF in their school, with 13% of responses mentioning the need for *more or better devices* and 11% expressing the need for *reliable and up-to-date infrastructure*.

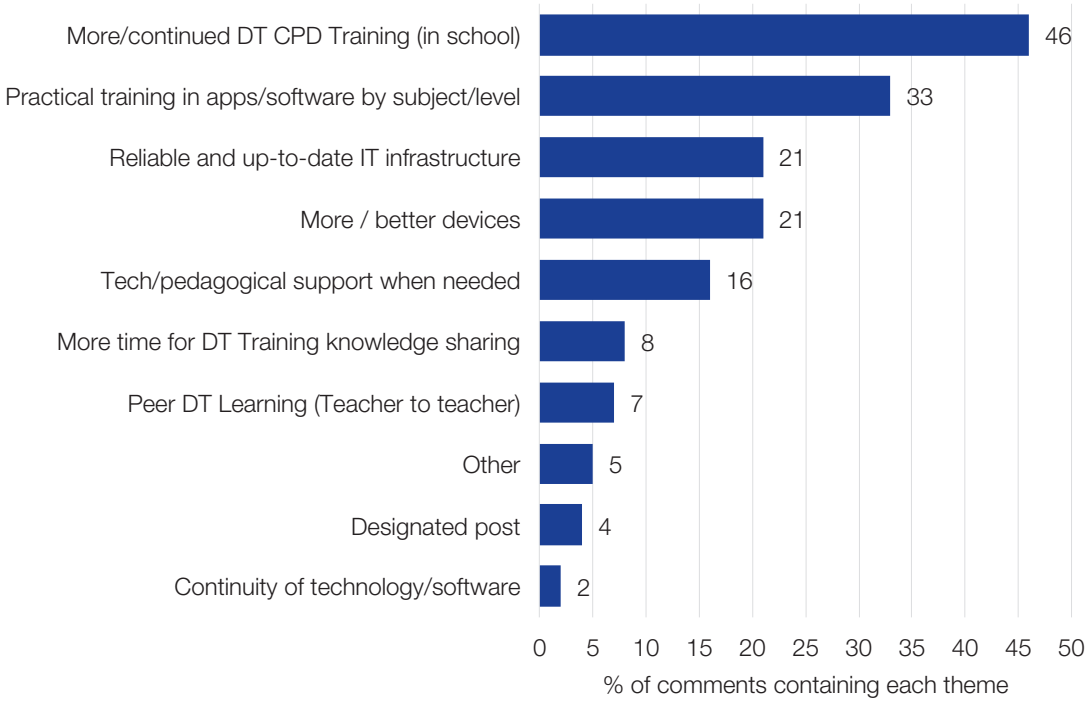
Figure 4.19. Themes emerging from primary teacher respondents' answers to the question "In an ideal scenario, what professional learning supports would you like to see made available to facilitate your school's continued implementation of the Digital Learning Framework/Digital Learning Plan?" Figures represent percentage of comments containing each theme (n=176)



At post-primary level, a similar pattern in responses emerged. Like teachers at primary level, post-primary teachers expressed a desire for *more CPD and training in school* (46% of responses) and the *need for subject-/level-specific training in applications and software* (33%). Some of the themes focused on the practical aspect of embedding DTs into teaching and learning, while other comments linked these practical aspects with the holistic aims of the DLF: "greater use of OneNote as a tool to provide formative assessment where the student takes full responsibility for their learning and improvement."

The next two most frequent responses at post-primary level referred to the necessity for adequate hardware and infrastructure to support the school's implementation of the DLF in their school, with 21% of responses mentioning the *need for more or better devices* and another 21% expressing the *need for reliable and up-to-date infrastructure*.

Figure 4.20. Themes emerging from post-primary teacher respondents' answers to the question "In an ideal scenario, what professional learning supports would you like to see made available to facilitate your school's continued implementation of the Digital Learning Framework/Digital Learning Plan?" Figures represent percentage of comments containing each theme (n=107)



4.3.4 Views on changes in how DTs are used since the onset of COVID-19

Teachers were asked about what changes they had noticed in how they use DTs to support teaching, learning and assessment since the emergence of the COVID-19 pandemic and the associated school closures and restrictions. At primary level, 170 responses were provided to this question, with an average of 2.13 themes per response. At post-primary level, 107 responses were recorded for this question, with an average of 2.28 themes emerging from each response.

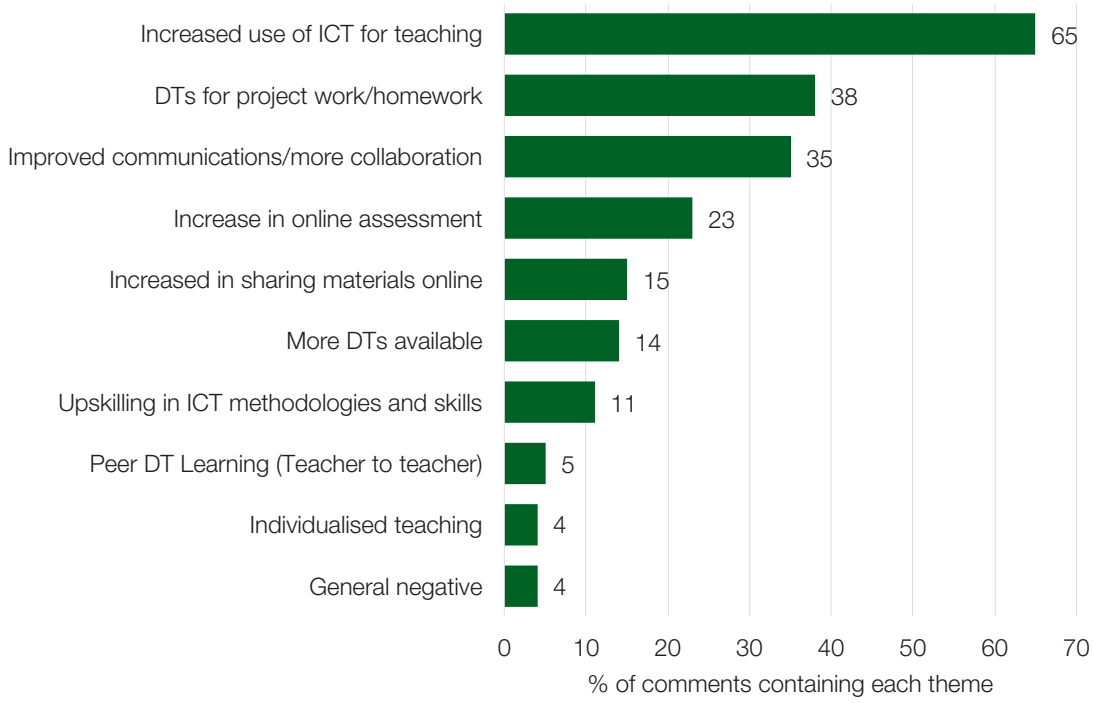
Teachers at primary and post-primary levels differed in their expression of how their use of DTs has changed since COVID-19 closed schools in March 2020. While teachers at both levels agreed that their use of ICT for teaching has increased since COVID-19 (65% at primary and 47% at post-primary), differences emerged in terms of how those DTs were used.

At primary level, 38% of responses indicated that teachers used DTs for project work or homework activities. Many teachers mentioned the use of platforms and applications like SeeSaw to assign homework and project activities for students during class: "I feel blended learning has now been utilised a lot since Jan 2020. I use Seesaw a lot for in class work and also for homework." A number of teachers indicated that the use of such apps had improved the student experience, making "the learning experience more inclusive and engaging."

Primary teachers (35%) also indicated that the use of DTs since COVID-19 had led to improved and more frequent communications between school and home, between teacher and students, and between students themselves. One teacher commented on their "constant use of the app SeeSaw to communicate weekly work with children while also giving them the forum to contact me if they need to. The children also upload work

weekly on SeeSaw as part of their homework! Also parents having my email address for them to contact me directly about anything they may need help with."

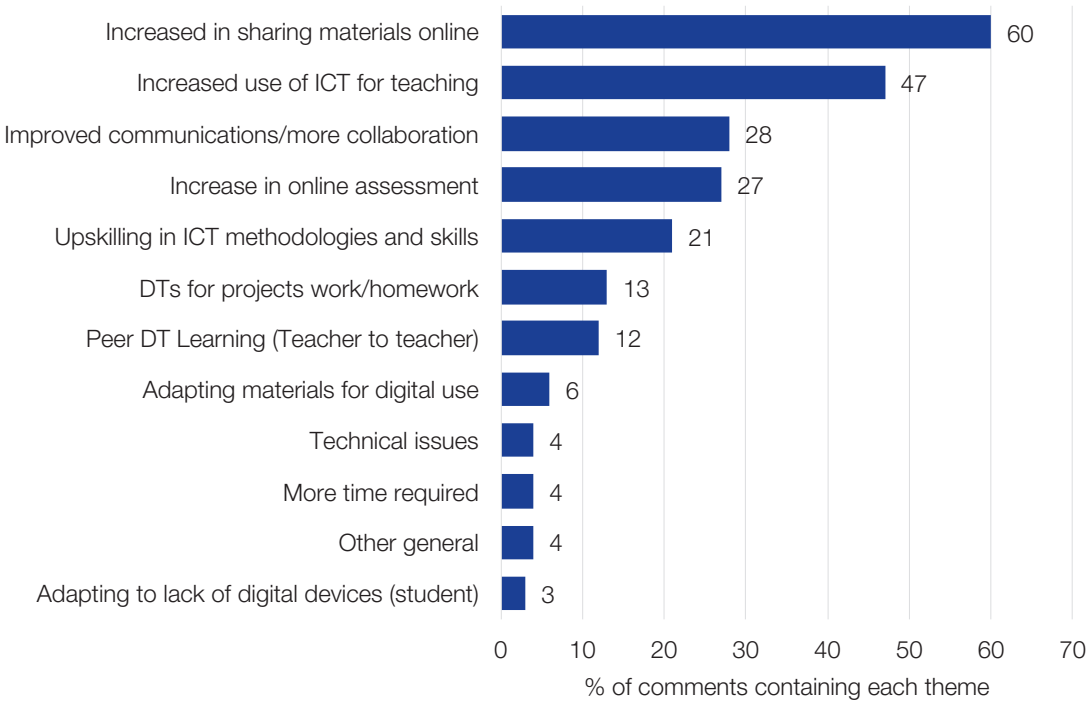
Figure 4.21. Themes emerging from primary teacher respondents' answers to the prompt "Please describe the biggest changes in how you use Digital Technologies to support teaching, learning and assessment, specifically in relation to the implementation of the DLP, since the onset of COVID-19." Figures represent percentage of comments containing each theme (n=170)



At post-primary level, 60% of teachers' responses indicated that they had experienced an increase in the sharing of materials online since the COVID-19 pandemic began. Teachers indicate that a variety of platforms are used to collaborate, share materials, and access resources: "Microsoft Office - Teams for online teaching and learning, collaboration/sharing resources among staff, communication (between staff, with students), digitalisation of resources e.g. handouts, making videos for students to re-watch how to do questions." Some teachers indicated that using online repositories was an effective way to store class materials as well as supplementary resources for easy access for students in the longer term "Using Google classroom to set assignments rather than photocopying as the draft always remains in place for the student instead of losing sheets."

Some 28% of responses at post-primary level featured commentary under the theme of *improved communications or more collaboration*. Teachers highlighted how they have been able to use DTs to communicate with one another and with students and parents. One teacher commented how, since the onset of COVID-19, they had experienced "greater and more creative communication" with colleagues and students. Other teachers commented on the power of using DTs to reach out "to students who cannot physically be present in the school," allowing staff "to be in daily contact with them regarding assessment, feedback etc." However, this improvement does carry a negative implication for some teachers, as there "are much greater expectations to be available at all times."

Figure 4.22. Themes emerging from post-primary teacher respondents' answers to the prompt "Please describe the biggest changes in how you use Digital Technologies to support teaching, learning and assessment, specifically in relation to the implementation of the DLP, since the onset of COVID-19." Figures represent percentage of comments containing each theme (n=107)



4.4 Key points from Chapter 4

This largely qualitative analysis of DLT leaders' and teachers' responses to open-ended questions from two questionnaires has provided a more detailed and contextualised insight into how the DLF is planned for, implemented, and viewed by staff within schools. This summary gives an overview of the key points emerging from the analysis under three headings: *planning, implementation, and the impact of the COVID-19 pandemic.*

4.4.1 Planning

In terms of **planning** for the DLF, two questions were asked of DLT leaders. In the first of these questions, leaders were asked to indicate who contributes to identifying the school's digital needs. At both primary and post-primary levels, *teachers/staff members*, the *principal/deputy principal*, and the *DLT team* members were the top three themes mentioned. At post-primary level, the *DLT team* were observed to have the most responsibility or input (mentioned in 60% of responses), while at primary level, the responsibility seemed to be more dispersed across the teaching body and other staff members (48% of responses). These differences may reflect the smaller size of many primary schools, whereby a larger proportion of staff can easily have an input into the DLP.

The second question asked for DLT leaders' views on what key outcomes should emerge from the embedding of DTs into teaching, learning and assessment. This question asks for information on the aims and outcomes guiding the leaders in the development and implementation of the DLF/DLP. One shared key outcome across primary and post-primary was the possibility of collaboration between teachers in sharing best practice in

using DTs (55% of responses at primary and 47% at post-primary). The potential for using DTs for assessment purposes featured heavily at both levels. Assessment was the most-commonly featured theme at primary level, and the third most common theme at post-primary level. Leaders reported a desire to see more use of DTs for both summative and formative assessment, with some leaders admitting that their school is in the very early stages of this process, while others have a more embedded approach at this point. Finally, the use of DTs as support for inclusion was important at both levels, with 48% of all primary responses featuring this theme and 38% at post-primary. Leaders see the potential for more inclusive teaching, learning and assessment practices through the increased use of DTs for groups with differing needs, such as students with Special Educational Needs, students from diverse language backgrounds, from disadvantaged backgrounds, and refugees.

4.4.2 Implementation

Four questions on the teacher and DLT leader questionnaires asked about various aspects of the **implementation** of the DLF. Two questions on the DLT leader questionnaire asked about supports for the continued implementation of the DLF; one question asked about where **funding** would be directed, while the other asked about the potential for additional **guidance** on spending the ICT infrastructure grant.

In response to the first question, DLT leaders at both levels indicated that the purchasing of additional devices for students would be a priority, with 60% of primary responses and 42% of post-primary responses featuring this theme. The sharing of devices between students, and the limitations this placed on the embedding of DTs into teaching, learning and assessment was mentioned in multiple responses at both levels. At post-primary level, additional devices for staff were seen to be a priority. The demand for more staff and student devices could be seen as a consequence of the successful implementation of the DLF, with an increasing number of activities in and out of class reliant on using DTs. Another area of attention here was the need to upgrade existing devices to keep pace with technological change and advancement, and to combat obsolescence.

A second DLT leader question asked respondents to specify what kind of advice they would like on how to use the ICT Infrastructure grant. Similarities emerged across the two levels of education, with the top three responses containing the same themes, albeit with different distributions. Leaders expressed a need for advice on how to *match the school's needs to technologies* available, on *procurement and purchasing* processes, and also the desire for *general guidance* on the issue. Some schools wanted specific advice on meeting the needs of particular demographics within the school, while others wished to meet those needs in a future-proofed manner – i.e., spending money on technologies that were unlikely to reach obsolescence in the near future. Purchasing and procurement processes were also of concern at both levels, with leaders seeking help in identifying reliable, qualified, and experienced suppliers when spending their funds. They would also like advice on the suitability, longevity, and efficiencies of Digital Technologies.

One question on the teacher questionnaire asked about supports for the DLF, asking specifically about its **key enablers**. At primary level, teachers identified the need for *additional and well-maintained devices* and emphasised the need for *appropriate practical CPD* and *continued support* to continue to implement and embed the DLF in teaching, learning and assessment. This closely matches the findings of a similar question in Wave 1, and echoes the responses of DLT leaders reported above. At post-primary level, the need for additional and well-maintained devices to enable full implementation of the DLF was highlighted. This was accompanied by an emphasis on purchasing help and funding for DTs, and on time for research, planning and implementation.

Teachers were also asked to describe **how DTs are currently embedded** into their teaching, learning and assessment practices. At primary level, responses focused on the use of devices by students both during class and at home, the employment of educational software and apps for teaching, learning and assessment, and the use of interactive whiteboards or other hardware in class. Teachers described in their comments how devices are used in class for project or individual work, and at home for homework tasks and formative assessment. They described how educational software is used either on these devices, or in combination with interactive boards

for teaching, learning and assessment. The flexibility of approaches offered by various software packages and the ludic value of using apps together with the whiteboard were noted.

A key difference between primary and post-primary level was a lower emphasis on the use of whiteboards, and a higher emphasis on the utilisation of classroom management tools and learning management systems at post-primary level. Teachers and students are able to access a suite of tools and resources for planning, communications, teaching, learning and assessment through these systems, which now seem to be integrated in the schools' daily practices. Another difference was the emphasis placed on DTs for assessment at post-primary level.

Finally, both DLT leaders and teachers were asked about **professional learning supports** for the embedding of DTs into teaching, learning and assessment. Two themes were common across the school levels, namely the desire for *in-school support/in-service days* and *continued CPD/DLF seminars/additional training*. Amongst the comments, it was evident that there was a desire to return to in-person training for the most part, though leaders did note the value of the online approach. Leaders had specific ideas about what topics could be incorporated into this professional learning support training, with suggestions that concerned the matching of training with the school's particular needs, training on specific topics or software, training on using DTs for assessment, and training on new developments such as the new Digital Strategy and innovative technologies.

A similar question was asked of teachers. Again, a preference for in-person support emerged with the top two responses at both levels expressing a desire for *more/continued DT CPD training in school*, and *practical training in apps/software by subject/level*. This reflects the emphasis seen in Wave 1 on the specificity and practicality of interventions. Within the teachers' responses to this question, a need for the training support to be bolstered by a robust infrastructure comprised of *more/better devices* and *reliable and up-to-date infrastructure* is evident.

4.4.3 Impact of the COVID-19 pandemic

A final set of questions concerned the **impact of the COVID-19 pandemic** on the implementation of the DLF. These questions were helpful in establishing the key longer-term changes that have occurred in schools in using Digital Technologies in teaching, learning and assessment in response to COVID-19, and in determining if teachers have become more favourably disposed to the use of Digital Technologies in their practice as a result of implementing the DLF. DLT leaders were asked how the DLF planning had prepared schools for the pandemic, and then what learning from the pandemic had instigated further change in the DLP. Teachers were asked to comment on changes in DT use since the pandemic.

The two questions responded to by DLT leaders concerned **how schools were prepared** for teaching and learning during the pandemic by certain elements in the DLP. At primary and post-primary level, leaders indicated that digital resources already in place were helpful in addressing the challenges that had to be faced during the pandemic, as well as the fact that **teachers had already received training** in digital teaching and learning. Technologies such as learning management systems that had been adopted prior to 2020 became central tools in the management of teaching and learning during the pandemic. This early adoption was seen as an advantage compared to schools which had not set similar systems in place before the school closures. Another element smoothing the transition was identified as the training teachers had already undergone in the use of DTs for teaching and learning. This training was identified as providing a solid base for the significant upskilling in the area of DTs that teaching during the pandemic required. Leaders commented how skills were passed on to colleagues through systems of online collaboration used through the period of the pandemic.

Finally, teachers responded to a question asking what **changes they noticed in how DTs are used** in teaching, learning and assessment since COVID-19. There was agreement across both levels of education that the level of DT use in teaching and learning had increased since the pandemic. There was consensus too that the pandemic had led to an increase in collaboration (both between staff members, and between teachers and

students) and improved communications. Differences emerged between primary and post-primary levels on the manner in which DTs are used, with teachers at primary emphasizing their use for project work and homework in particular, while the most popular theme at post-primary was an increase in the sharing of materials online. The latter response could perhaps be reflective of the emphasis given by DLT leaders, as noted above, to the centrality of learning management systems at post-primary level.

4.4.4 Summary

Overall, the findings in this chapter reflect how planning for and implementing the DLF and DLP within schools is a complex process that must take into account the varying needs of a school and its students. Planning for the DLF currently considers the views of multiple groups, and reports from leaders and teachers indicate that it is important to assess what the specific needs of the school are in planning and implementing DLPs. These considerations can include teacher professional development needs, student-specific needs, and technological or infrastructural needs. Planning and implementation must match technologies to each of these requirements for successful implementation of the DLF.

It seems evident that good planning and implementation of the DLF helped some schools to better face the unexpected and unprecedented challenges posed by the COVID-19 pandemic. Clearly, meeting these challenges required a level of interaction with DTs that had not been required before, and all staff had to stretch beyond their levels of comfort to deliver teaching and learning during this time. While not all changes that occurred during the period of school closures have been retained, reports indicate that the level of DT use and the level of embedding of DTs into teaching, learning and assessment is much increased when compared to pre-pandemic practices.

Chapter 5:
Perspectives of students/pupils and the PDST Digital Technology advisors

5.1 Chapter overview

Gathering the views of young people on their use of Digital Technologies (DTs) in teaching, learning and assessment was identified as one of the priorities for the second wave of data collection for this evaluation, as outlined in the Wave 1 report (Feerick et al., 2021). This prompted the data collection exercises, analyses and results outlined in this chapter, which include results of surveys of students/pupils alongside those of surveys administered to PDST DT Advisors.

As part of the surveys, DLT leaders (or Principals) were invited to participate in a focus group during spring 2022. These focus groups were to involve students/pupils from their schools. However, it was later decided to administer student/pupil surveys instead (see Section 5.2). These surveys contained a mix of closed-ended questions on the participants' perceived competence in different areas of DTs and open-ended questions on how DTs are used in their schools.

In addition, the 15 PDST[32] Digital Technology Advisors were invited to participate in a focus group. This group work in a full-time capacity as Digital Technology advisors providing CPD to schools through a range of models to support the embedding of Digital Technologies in teaching, learning and assessment, and as such were considered to be well placed to provide feedback on their observations of teachers and how they use and interact with DTs in the classroom. Previously in the evaluation, the PDST collaborated with the ERC team by facilitating administration of the baseline surveys during their seminars in 2019. As with the student/pupil focus groups, the planned PDST focus group was subsequently changed to an online survey. The PDST survey also contained a mix of closed-ended and open-ended questions. The closed-ended questions in this survey asked the participants about their perception of teachers' competence in different areas of DTs in schools with which they have worked, while the open-ended questions asked about the successes and challenges of implementing the DLF in these schools, as well as priorities for schools when implementing the DLF.

For the closed-ended questions, frequencies are reported. The open-ended questions have been subjected to thematic analysis, which drew out common themes in the respondents' answers. Several themes emerged relating to the participants' experiences with DT in general and in an academic setting specifically, their observations on how these DTs are being used, and suggestions on how DTs can be used better. These findings are presented here in several sections, with students' and pupils' responses considered together, and PDST members' responses considered separately. Where relevant, differences and similarities between primary and post-primary levels are discussed. As in previous chapters, special schools are combined with primary schools for reporting purposes. Overall, a wide range of themes and issues emerged from the student/pupil and PDST DT Advisors' responses.

32 Since September 2023, the PDST (Professional Development Service for Teachers) is part of Oide.

5.2 Implementation of surveys

Initially, remote (online-only) focus groups were planned to gather data from students/pupils and PDST members. These plans were changed as schools, and society more generally, were adapting to life following disruptions and restrictions related to the COVID-19 pandemic, with some disruptions still occurring (e.g., outbreaks of COVID-19 in schools) and with some restrictions still in place in a lot of schools (e.g., social distancing requirements) at the time of the data collection. Furthermore, the May-June period is an exceptionally busy period for schools even in non-pandemic years. To reduce the burden on participating students/pupils and PDST Digital Technology Advisors, it was decided to instead use online surveys as a more efficient and logistically simpler means of gathering responses so that more participants could be reached. These surveys were developed by the ERC and reviewed and approved by DoE staff members and the PDST. The survey was delivered online using Qualtrics.[33] The collection of individually identifiable data was avoided (that is, IP addresses and other individually-identifying information were not collected). The purpose of the surveys, with assurances of confidentiality, was communicated to respondents in cover letters and as part of the introductory section of the surveys (in accordance with GDPR requirements and best practice).

Question types were both closed (tick box) and open (text response). In this report, the text analyses are described in Sections 5.4 and 5.6, while the closed or numeric questionnaire data frequencies are described in Sections 5.5 and 5.7.

Survey Content Tables

Overall school sampling is described in Chapter 1. To recruit participants for the student/pupil surveys, every school that received the DLT survey (178 schools) was asked if they would be willing to participate in a focus group during spring 2022. Initially, 12 post-primary schools and 12 primary schools selected "yes" for this question. Of these 24 schools, nine post-primary schools and 10 primary schools subsequently agreed to participate in the survey. The surveys were sent to the DLF contact person who was requested to forward them to the appropriate class teachers. These class teachers then distributed the surveys to the students/pupils in their class, and the surveys were completed during class time. The PDST survey was issued in digital format to the PDST Digital Technologies team leader, who then distributed the survey to the team of advisors.

It is important to note, when interpreting results presented here, that the student/pupil surveys should be considered as indicative and not nationally representative, as they were distributed to a small number of non-randomly-selected schools.

5.3 Description of respondents and students'/ pupils' use of DTs

Student/pupil questionnaires were completed by respondents online between May 11th and June 16th 2022. In all, 19 schools received the survey: 9 post-primary schools and 10 primary schools. However, as responses were submitted anonymously, it is impossible to determine how many responses were received from each school or whether responses were received from all of these schools. Nevertheless, in total, 652 usable responses were collected: 549 from post-primary students and 102 from primary pupils (Table 5.1). At post-primary level, the

33 Qualtrics is a web-based software tool that facilitates creation and distribution of surveys, polls etc., using a variety of distribution means.

majority of responses were from Second Year students (62%), followed by Fifth Year (26%). At primary school level, the responses were spread relatively evenly across 5th class (51.5%) and 6th class (47%).

The PDST survey was sent to 15 PDST DT Advisors, of which all 15 returned usable responses.

Table 5.1 School and class level details of student/pupil respondents

Respondents' Year/Class Level	Post-Primary (n=549)		Primary (n=102)	
	n	%	*n*	%
1st Year / 1st Class	22	4.0	0	0
2nd Year / 2nd Class	340	61.9	0	0
3rd Year / 3rd Class	15	2.7	0	0
4th (Transition) Year / 4th Class	14	2.6	0	0
5th Year / 5th Class	144	26.2	53	51.9
6th Year / 6th Class	14	2.6	48	47.1
A different year/class group*	0	0	1	1.0

* Respondent indicated that they were not in 5th or 6th class – no further information available.

For both the post-primary and primary surveys, respondents were asked about their gender, the age at which they first used the Internet, the age at which they first used a computer, the DT devices they have access to at school and at home, and the frequency with which they use various DT applications and software for learning or study. The results are outlined throughout the remainder of this section.

At post-primary level, the majority of respondents identified as girls (55%; 39% boys), whereas at primary level, more respondents identified as boys (58%; 35% girls) (see Table 2). A small percentage of respondents (primary 3%; post-primary 2%) described themselves as *Another Gender*. The remainder of respondents at both school levels chose the option *Prefer Not to Say*. (See Table 5.2 for more details.)

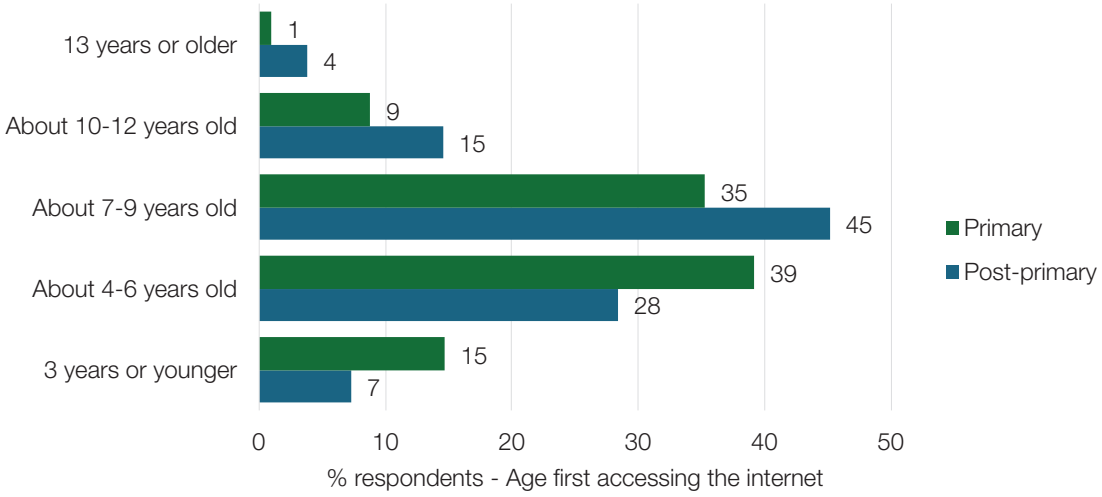
The PDST surveys were completed online between May 20th and June 3rd, 2022, by 15 PDST members. Of these, five (33%) worked at post-primary level and 10 (67%) worked at primary level. The majority of respondents (nine individuals, or 60%) had worked for four or more years in a secondment role with the PDST.

Table 5.2 Gender of school student/pupil participants, by school level

Gender	Post-Primary (n=546)	Primary (n=102)
Girl	304	36
Boy	212	60
Another Gender	11	3
Prefer Not to Say	19	3

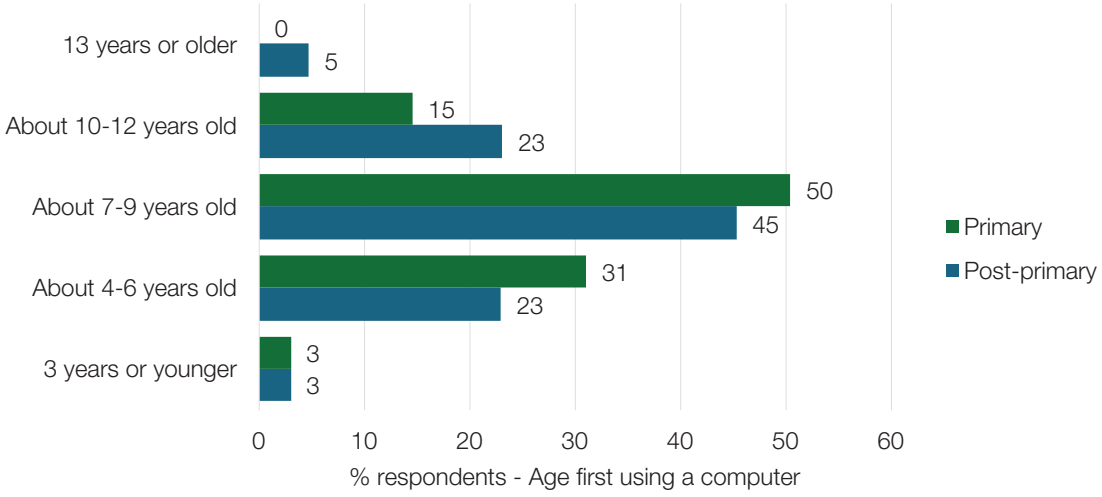
When asked at what age respondents first used the Internet (Figure 5.1), the most common answer at post-primary level was about 7-9 years old (45%) and, for primary level, it was about 4-6 years old (39%). Over half (54%) of primary respondents indicated that they were 6 years or younger when they first accessed the Internet, compared to 35% of post-primary respondents for the same age range. This might indicate that children are now accessing the Internet at a younger age than previously, but it is also worth noting that reports of activities that occurred when children were very young may be more prone to estimation or error.

Figure 5.1. Percentage distribution of Internet access initiation by age range: primary and post-primary responses



When asked at what age respondents first used a computer, the most common answer was about 7-9 years old for both post-primary (39%) and primary (50%) levels (Figure 5.2). As for the previous question, a greater proportion of primary respondents reported first use of a computer at 6 years old or younger (34%) compared to their post-primary counterparts (26%).

Figure 5.2. Percentage distribution of computer usage initiation by age range: primary and post-primary responses



For post-primary respondents, smartphones were reported as the most commonly available DT device (98%), with over two thirds (69%) reporting that they had access to their smartphone while in school. The level of access to a smartphone while in school was much lower for primary school respondents (14%). However, almost 90% of primary school respondents said that they have some access to a smartphone.

The vast majority of students/pupils at both school levels reported having access to a laptop device either at home or in school (post-primary 90%; primary 87%) and this was the most popular type of PC used by

respondents. The next most popular device used (in school or at home) by post-primary respondents was a desktop computer (84%), while for primary pupils the second most popular device was a tablet PC (85%). Lower percentages of respondents at post-primary level (71%) reported having access to tablet devices in school or at home, with a smaller number of primary respondents reporting having access to desktop devices in school or at home (60%). These figures show some differences in availability of PC device types between the two school levels, possibly indicating that touch-screen tablet devices are more suited to the younger cohort.

Reported access to a reliable Internet connection was similar for both school levels, with almost all respondents reporting having access to a good Internet connect either at home, in school or both (post-primary 95%; primary 92%). A higher percentage of primary respondents (6%) reported having no access to a good Internet connection than their post-primary counterparts (3%).

Figure 5.3. Post-primary respondents reported access to various DT devices and to the Internet (percentages)

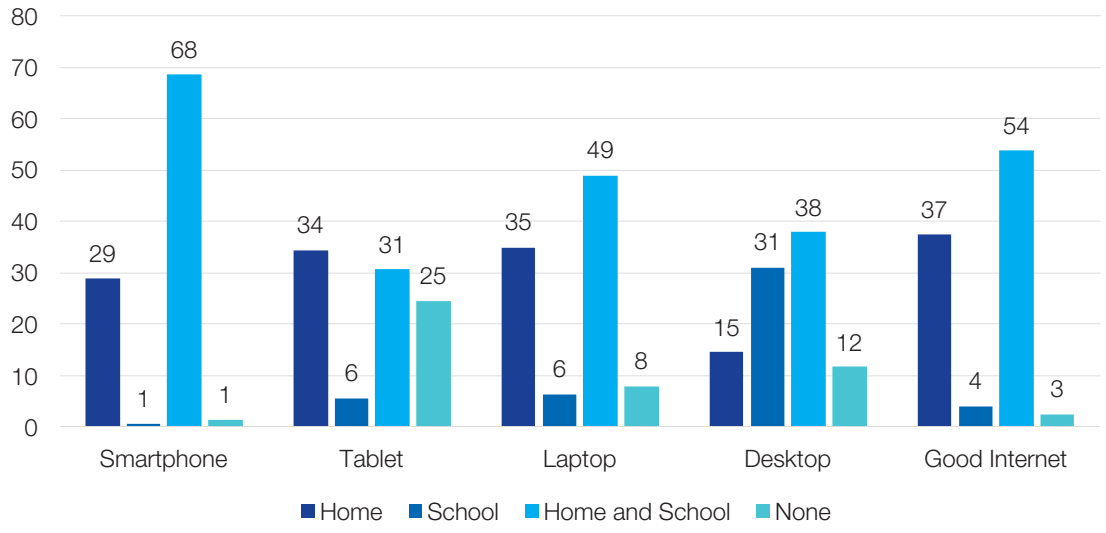
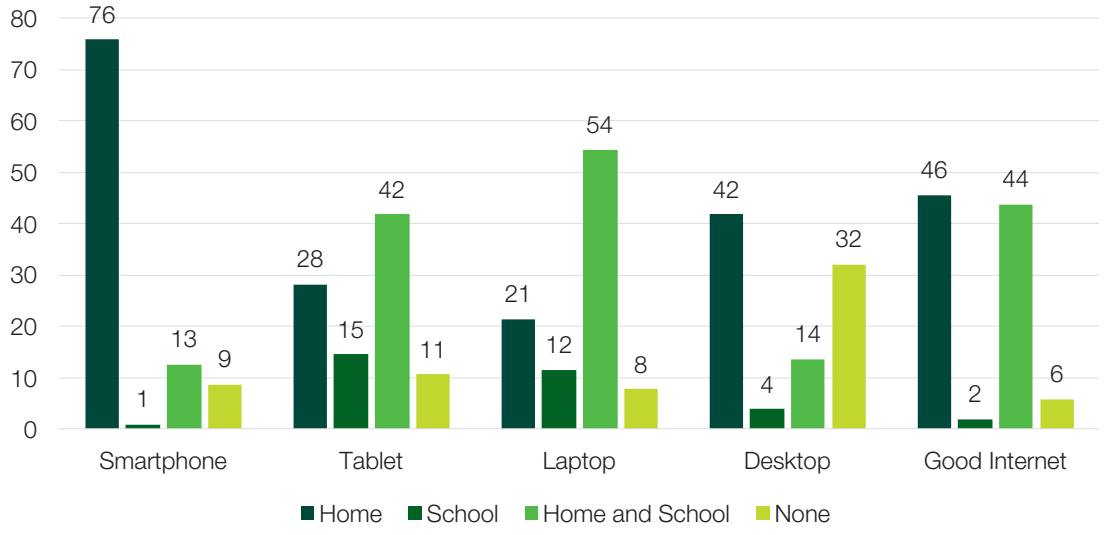


Figure 5.4. Primary respondents reported access to various DT devices and to the Internet (percentages)



In terms of software and applications usage for learning or study, messaging services such as WhatsApp or Snapchat were reported as most frequently used at both post-primary and primary levels (85% and 76%, respectively, reporting usage Sometimes, Often or Very often). Also popular among post-primary students was presentation software (e.g., MS PowerPoint) with almost three quarters (72%) of respondents indicating that they use this type of software Sometimes, Often or Very often. Word-processing software was also frequently used by post-primary students with almost two-thirds (62%) reporting use of this type of software Sometimes, Often or Very often. The corresponding percentages of primary respondents were 62% (presentation software) and 49% (word-processing software). Most respondents (80% at post-primary; 77% at primary) reported Rarely or Never using spreadsheets for their learning or study.

Software for learning maths and reading/literacy were more commonly used by primary pupils. Half of primary respondents indicated that they Sometimes, Often or Very often used software for learning maths, while two fifths (41%) reported the same frequency of use for software designed to help with development of reading/literacy skills. The corresponding percentages at post-primary level were much lower: 17% (software for learning maths) and 12% (software for learning reading/literacy). App development software such as Flutter or Jira were least used at both levels, with 75% (post-primary) and 65% (primary) reporting them as Never used.

Figure 5.5. Usage levels of various types of software and applications among post-primary students

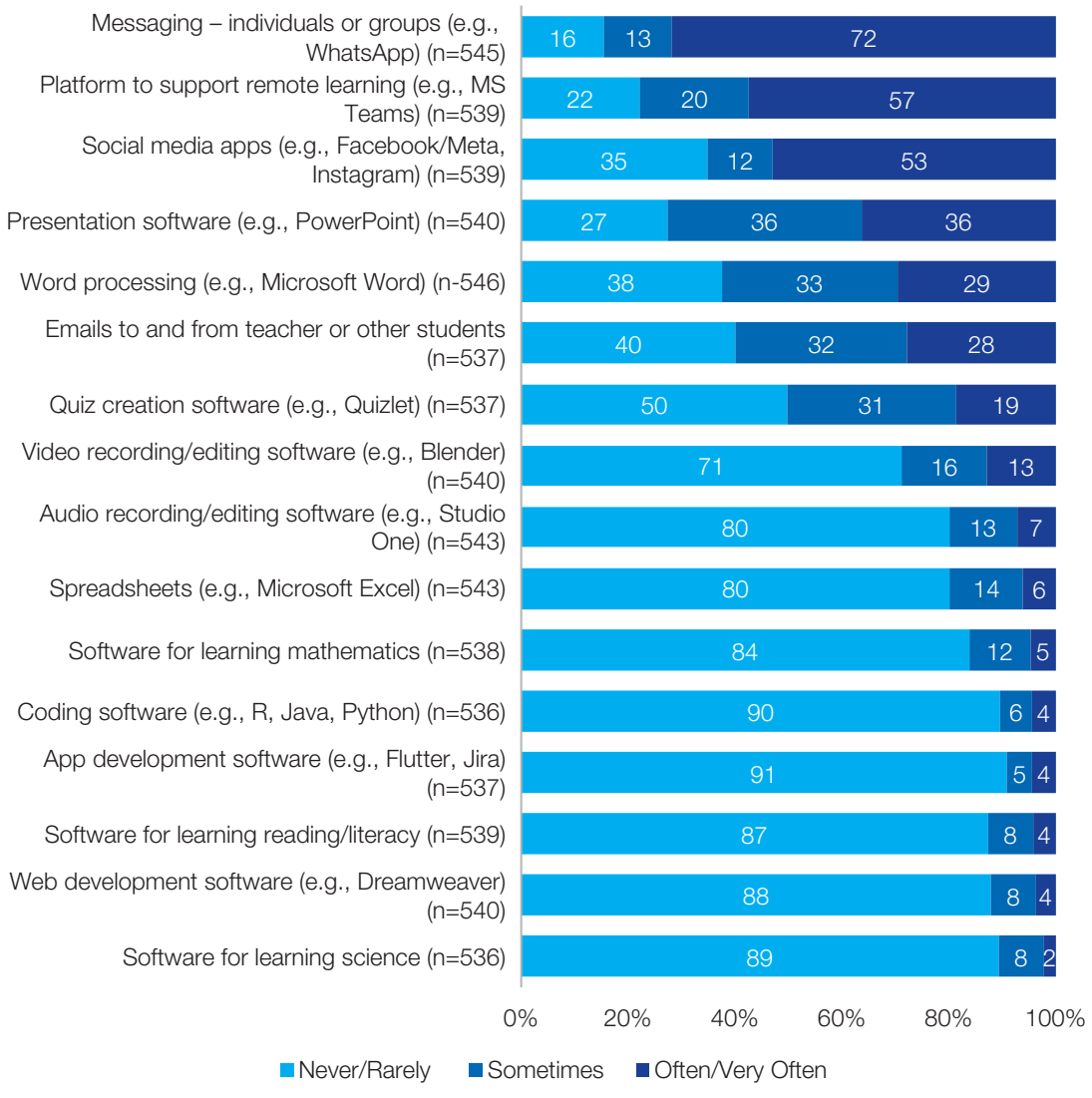
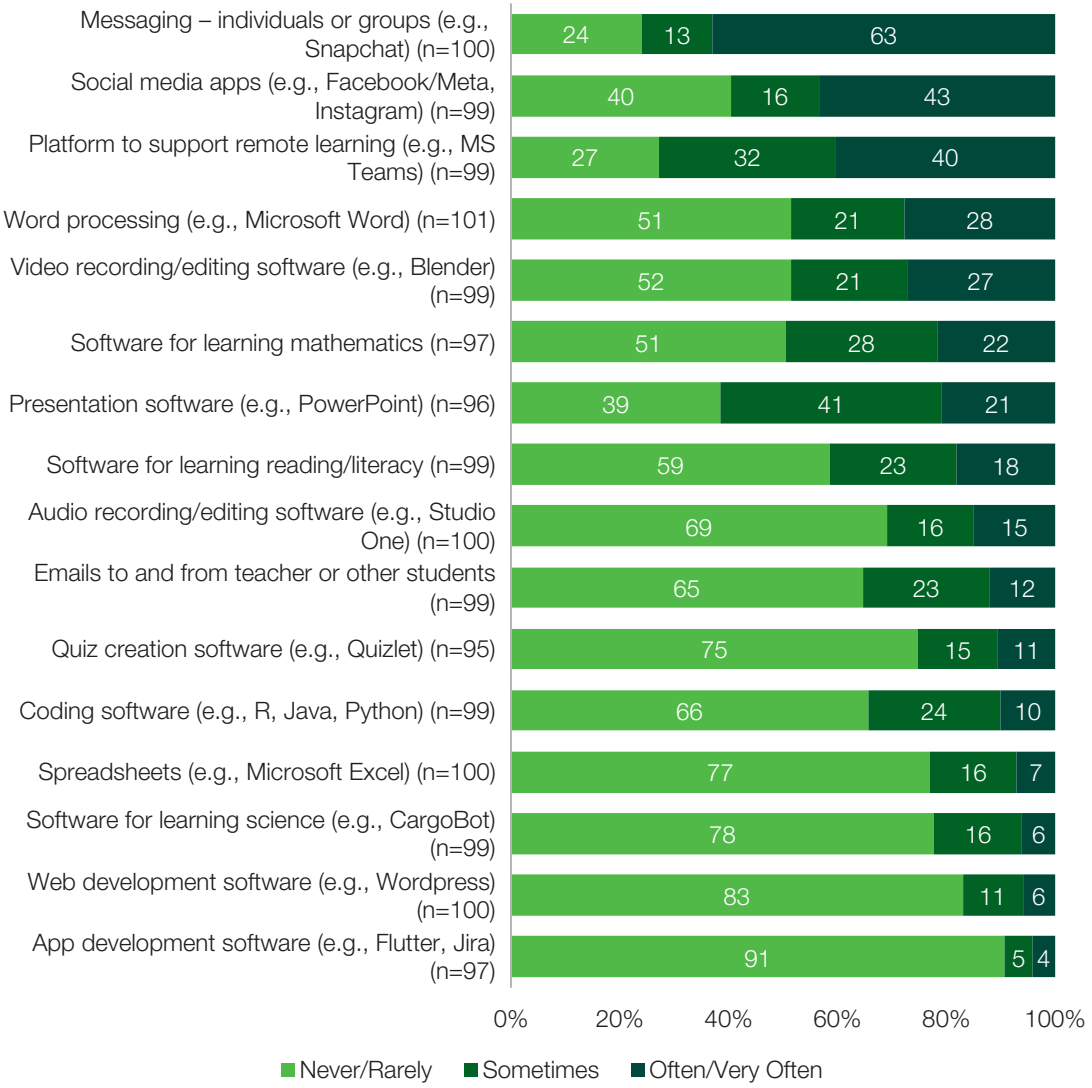


Figure 5.6. Usage levels of various types of software and applications among primary pupils



5.4 Students'/pupils' views on the DLF

As part of the surveys, students/pupils were asked some questions in an open-ended text format. These questions sought to gain an insight into how students/pupils perceived their own use of DTs in school, what is working well for them and where improvements might be made. A thematic analysis was carried out on these responses. Following identification and assignment of distinct themes, a consistency review was also carried out. Some responses reflected multiple themes.

The main topics that emerged from students'/pupils' responses were:

- Ease and frequency of use, and availability of, hardware/software and integration;
- Using DTs for independent or group tasks (collaboration, communication, research, project work and creativity);
- Learning to use DTs/software;

- Alternatives to traditional learning or increased learning options (e.g., games, digital books, storage);
- DTs as learning facilitators (interactivity and fun).

The last two themes listed were combined into one at primary level due to the nature of pupils' responses, with answers given by post-primary respondents, in general, showing more nuanced responses. Sections 5.4.1-5.4.3 provide a summary of the types of responses for each of the three open-ended text response questions.

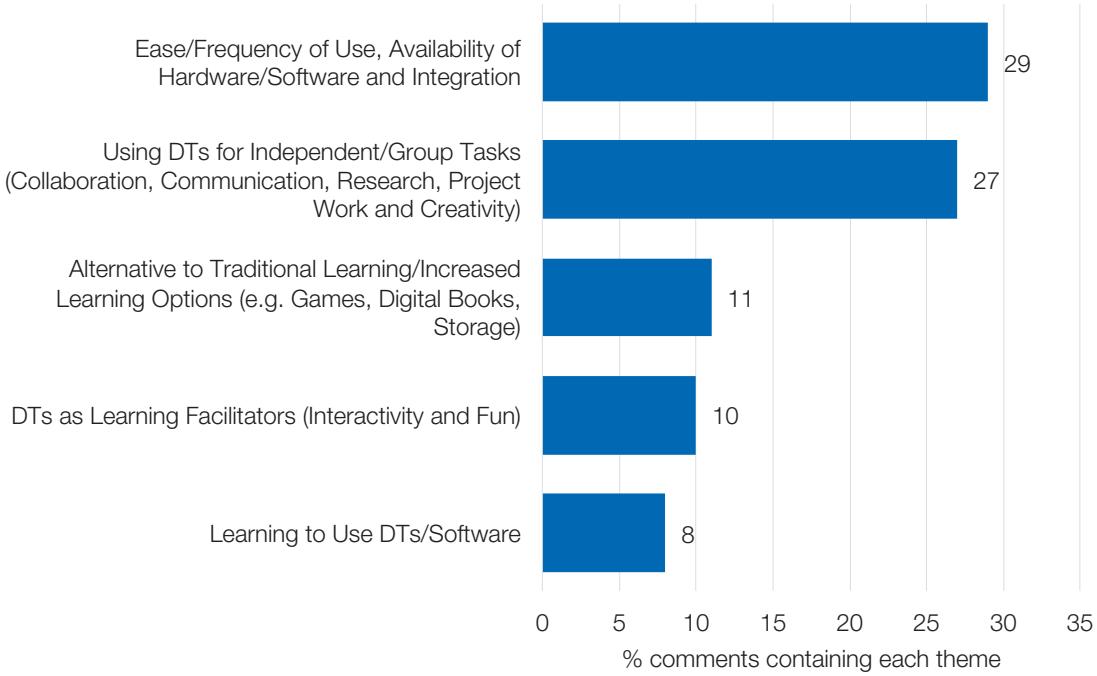
5.4.1 What do you like best about how Digital Technologies are used at your school?

In response to this question the most common themes that emerged, for post-primary students, were the ease of use and ease of access to DTs (present in 29% of all responses), and enjoyment of using DTs for independent and collaborative group tasks in the classroom (present in 27% of all responses). For example, it was noted that DTs can help "make researching a topic a lot easier." One post-primary respondent commented: "It is easy to find extra learning resources online which supports my learning." Another responded by saying "…it's easier to present stuff from a slide show instead of having to write it out." There were a number of responses that commented on how much easier, physically, it was to use DTs: "[no need to] carry heavy books and instead use iPads." Another respondent commented: "We use [DTs] instead of books which makes my bag way lighter and I never have to think about what books I have because they're all there."

Some of the most common themes from the primary level responses were the same as for post-primary, along with the most popular view (almost one third of all responses) that DTs are used as an alternative way to learn in the classroom, mainly through games and fun activities. One primary pupil commented: "it makes it easy to find research and we can play very fun games online in school." Another stated: "I like that we can do digital learning, which I find fun, so we are learning but also having fun."

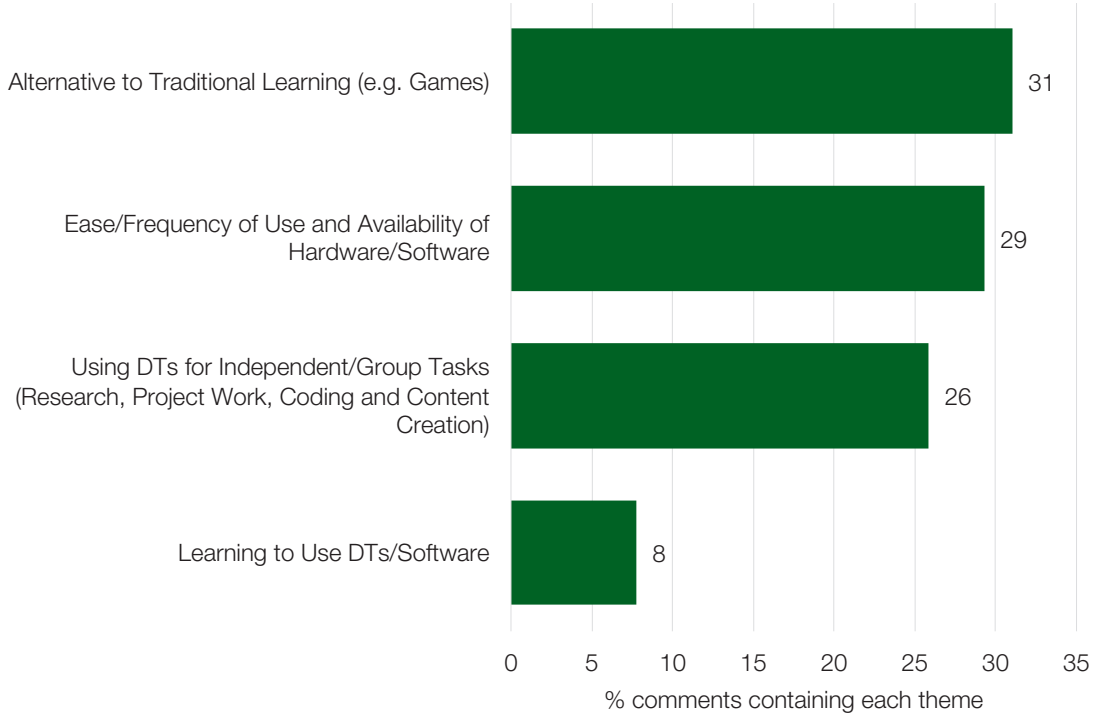
Enjoyment of learning to use DTs and software was a theme present in responses to this question at both school levels but appeared in only a small number of answers (less than 10% overall). One post-primary respondent commented: "Technology is the future so I like learning how to use it because I think it's important."

Figure 5.7. Themes emerging from post-primary student respondents' answers to the question **"What do you like best about how Digital Technologies are used at your school?"**



Note: Figures represent percentage of comments containing each theme (n=365); some comments contain more than one theme. Comments categorised under General Comments comprise the remaining percentage and are not included here.

Figure 5.8. Themes emerging from primary pupil respondents' answers to the question **"What do you like best about how Digital Technologies are used at your school?"**



Note: Figures represent percentage of comments containing each theme (n=95); some comments contain more than one theme. Comments categorised under General Comments comprise the remaining percentage and are not included here.

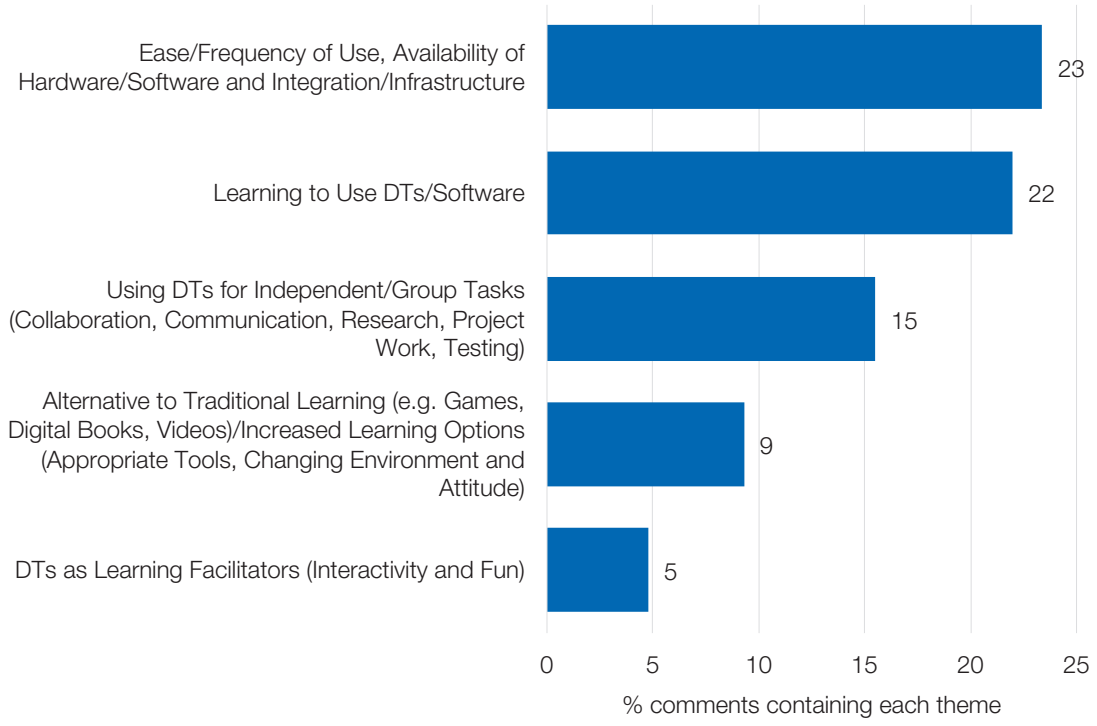
5.4.2 How would you like to see Digital Technologies used in your school by students/pupils to help students learn better?

The most common type of response to this question among post-primary respondents was that DTs should be utilised more often and made more available (e.g., hardware, Internet connectivity) for work and learning in the classroom. This sentiment was present in almost one quarter of all responses (23%). This call for more access to DTs from students included a number of respondents suggesting that they should be allowed use their phones while at school for classroom activities. Several points were made in favour of using phones in the classroom, such as ensuring access to technology that is "faster and cheaper for people." One student commented that they would like to be "able to go on our phones more to do learning activities," while another suggested that "phones are handy for language classes to quickly translate."

The next most common theme to emerge for post-primary respondents was that students would like to have the opportunity to learn how to use applications and software (e.g., MS Teams, OneNote) more effectively and more often (present in 22% of all responses). This theme includes responses proposing that coding should be taught more widely in the classroom, with one post-primary respondent requesting a "coding class more than twice a week."

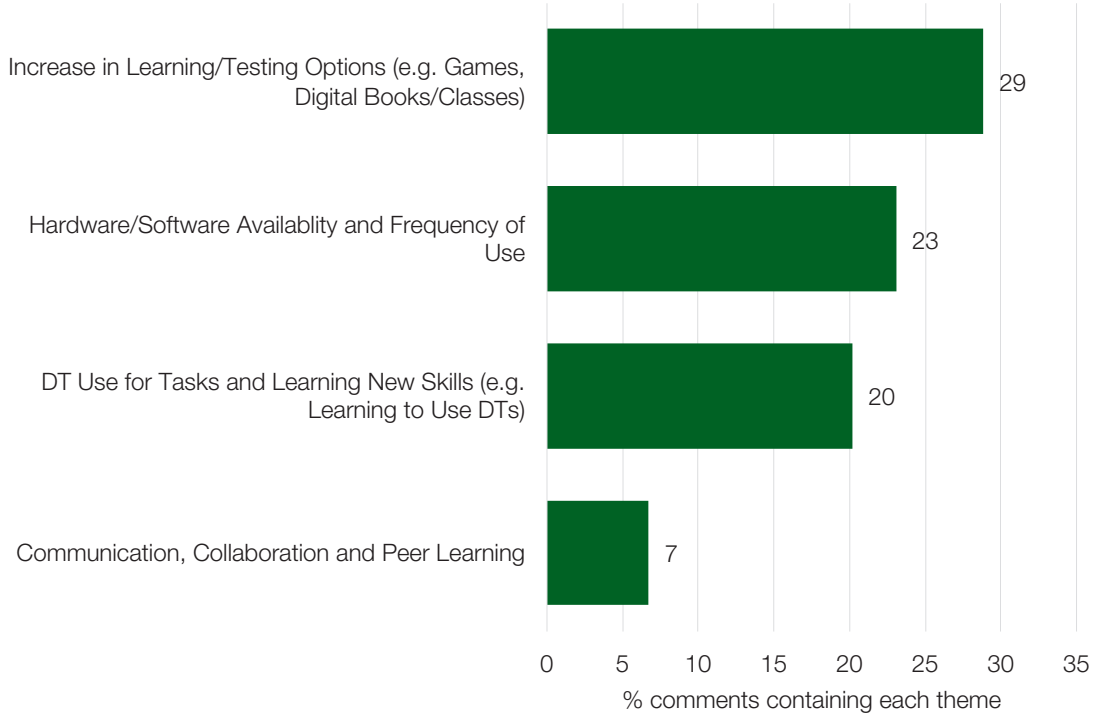
The pattern of responses at primary level was very similar to those provided to the previous question, implying that pupils would like to see more of what is already happening in their classroom in relation to the use of DTs. The most common theme was a call for increased use of DTs as a fun, alternative way to learn (present in 29% of all responses).

Figure 5.9. Themes emerging from post-primary student respondents' answers to the question **"How would you like to see Digital Technologies used in your school by students to help students learn better?"**



Note: Figures represent percentage of comments containing each theme (n=316); some comments contain more than one theme. Comments categorised under General Comments comprise the remaining percentage and are not included here.

Figure 5.10. Themes emerging from primary pupil respondents' answers to the question **"How would you like to see Digital Technologies used in your school by students to help students learn better?"**



Note: Figures represent percentage of comments containing each theme (n=88); some comments contain more than one theme. Comments categorised under General Comments comprise the remaining percentage and are not included here.

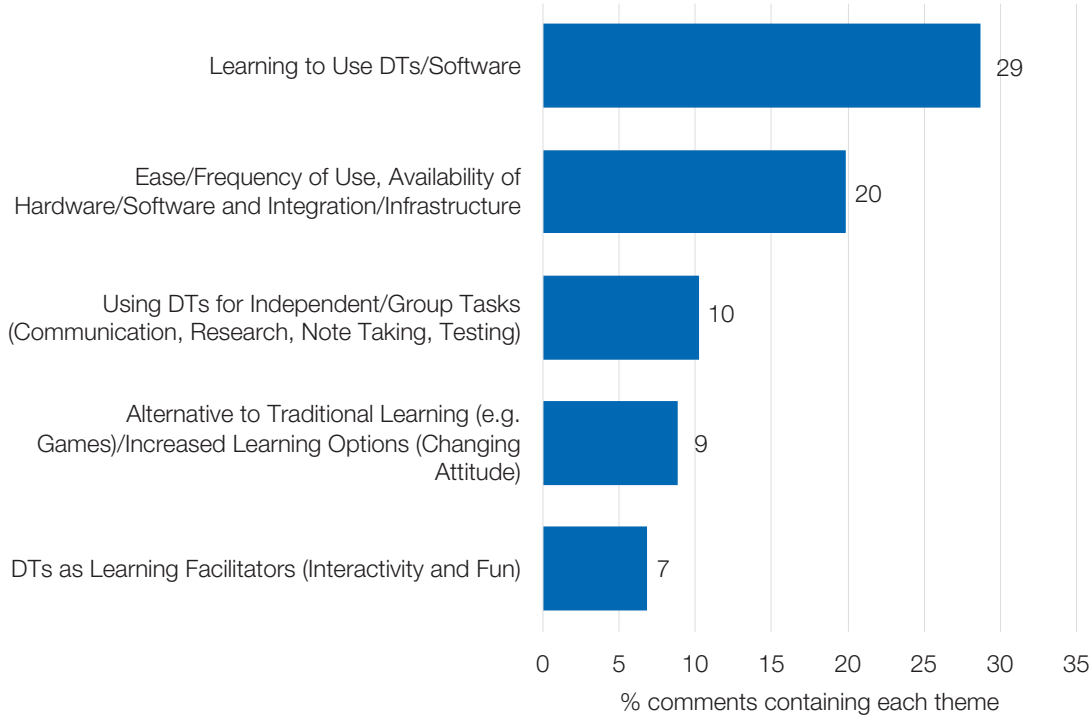
5.4.3 How would you like to see Digital Technologies used in your school by teachers to help students/pupils learn better?

The most common themes in response to this question were that students would like to have the opportunity to learn how to use applications and software (e.g., MS Teams, OneNote) more effectively and more often (present in 29% of all responses) with one respondent requesting "more coding and computer classes. (Some people don't know basic shortcuts)." One student stated that "being able to mix quiz apps with study/classwork makes classes fun and interactive and promotes better study," while another felt that teachers should research reliable websites to help with student revision as this would help them "feel safer about the information online and help us study on the go". Other students felt that teachers need to use DTs in school and classwork in a more structured way, with one student suggesting that teachers should "use the projector more instead of writing stuff on the board when they can just use their resources better." Another student stated that "teachers don't really use technology in my school."

The second most common theme to emerge among post-primary students' responses was that they would like more access to DTs and to have the opportunity to use DTs more often in classwork generally (20% of all responses). Again, several respondents suggested that incorporating their phones into classwork would be beneficial. Most of the respondents stated that students should be given DTs to use for schoolwork (e.g., tablets, Chromebooks): "I would like to be able to use the Chromebooks in class more often for researching the subject we are currently working on." However, some respondents indicated that the DT infrastructure, particularly their school's Internet connection, would need to be improved: "Improve internet, because on the days we are allowed to, it's ruined by bad wifi."

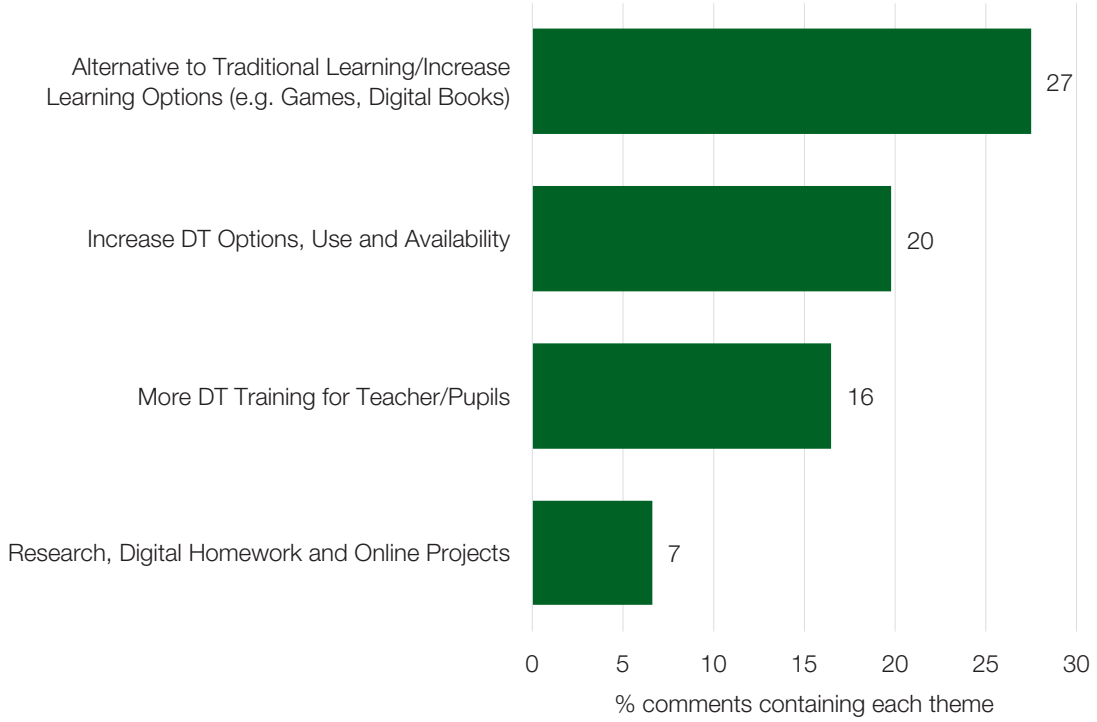
At primary level, the two most common themes were, again, using DTs as an alternative to traditional learning (27% of overall responses) and increasing the availability and use of DTs (20% of overall responses). One of the respondents felt that using DTs more would mean that "we get things done faster and better," while several others mentioned that DTs could be an effective replacement for physical textbooks and writing: "it would be great to see teachers use technology more to help pupils learn because your hands sometimes get tired and it's nice to have a break from pen and paper." Another pupil felt that increasing the diversity of apps would be beneficial: "I think in the future we could have more options for apps since we normally stick to manga high and apps like that." As with the post-primary responses, some pupils felt that they should be given devices to use for schoolwork: "I would like to see the devices available to children to take home if they do not have a device at home for projects and essays etc."

Figure 5.11. Themes emerging from post-primary student respondents' answers to the question **"How would you like to see Digital Technologies used in your school by teachers to help students learn better?"**



Note: Figures represent percentage of comments containing each theme (n=289); some comments contain more than one theme. Comments categorised under General Comments comprise the remaining percentage and are not included here.

Figure 5.12. Themes emerging from primary pupil respondents' answers to the question **"How would you like to see Digital Technologies used in your school by teachers to help students learn better?"**



Note: Figures represent percentage of comments containing each theme (n=80); some comments contain more than one theme. Comments categorised under General Comments comprise the remaining percentage and are not included here.

Overall, at both levels and across all three questions, one of the main recurring themes was that maintaining or increasing access to DTs and their frequency of use would be beneficial for schoolwork. For post-primary students, increasing opportunities to learn how to effectively use DTs was another significant theme for two of the questions, while using DTs as a fun alternative to traditional learning methods was a common theme in response to all three questions at primary level. These patterns demonstrate a high degree of consistency in terms of changes that students/pupils would like to see in respect of the use of DTs in their school.

5.5 Students'/pupils' perspectives on their competence levels with DTs

Development of the survey questions reported on in the following sections (Sections 5.5.1 to 5.5.5) was guided by *The Digital Competence Framework for Citizens (DigComp 2.2)* (Vuorikari et al., 2022), referencing the five competence areas listed in that document. These are: *information and data literacy; communication and collaboration; digital content creation; safety;* and *problem solving*. The questions developed for the Wave 2 questionnaires for students/pupils used the Conceptual Reference Model as a guide and questions were tailored to the Irish classroom setting, both in terms of the language used and their content. In these sets of closed-ended questions, respondents were asked to indicate the frequency with which they carried out certain tasks and felt comfortable or confident carrying out those tasks.

5.5.1 Information and data literacy

The questions in this section reflect the competence area of *information and data literacy,* using the DigComp 2.2 Framework as a guiding document. Respondents were asked how often they carry out certain online tasks, how easy they find these tasks, and how they feel when carrying out these tasks. The response options were presented on a frequency scale: Very Often, Often, Sometimes, Rarely, and Never.

A large majority of post-primary respondents (83%) indicated that Very often or Often they can quickly find relevant information for which they are searching, while 2% indicated that they can Never find the information they need. Almost three quarters of primary respondents (72%) reported that Very often or Often they can quickly find information relevant to their online search, with 2% indicating that they can Never find the required information while conducting an online search.

Students at post-primary level indicated high levels of confidence in knowing the best words to use when conducting an online search, with almost two thirds (63%) indicating that Very often or Often they know the best words to use. Just over half of primary respondents (54%) indicated that this was true for them.

However, there was less confidence indicated when it came to identifying false information when searching topics online. Less than half of post-primary respondents (46%) reported that they can Very often or Often identify incorrect information that they find online. Similarly, lower confidence levels are seen for primary respondents, with 38% choosing Very often or Often in response to this question. A further 15% of post-primary respondents and about one fifth of primary respondents (21%) said that they either Rarely or Never identify false information when searching topics online. Similarly, just over half (54%) of post-primary respondents and just over one third of primary respondents (36%) reported that they Very often or Often can distinguish between reliable and less reliable information.

Just over one third (34%) of post-primary respondents indicated that they Very often or Often click on links that contain information unrelated to what they expected to find, while a similar proportion (30%) said they Rarely or Never click links that are unrelated to their search. Just over one fifth of primary respondents (22%) indicated that they Very often or Often click links to information unrelated to their research topic.

Two fifths of post-primary respondents (41%) and over half of primary respondents (53%) indicated that they Rarely or Never enjoy accessing data, charts or graphs online. About one quarter of post-primary respondents (27%) and one fifth of primary respondents (20%) said that they Very often or Often enjoy reading this type of information. In addition, almost half of post-primary respondents (48%) indicated that they are Very often or Often confident in interpreting this type of information. However, confidence levels were lower for the primary respondents, with about one third (34%) choosing Very often or Often. One fifth of post-primary respondents (21%) reported that they are Rarely or Never confident when dealing with data, charts and graphs online, with lower levels of confidence reported at primary level (32% Rarely or Never confident).

Figure 5.13. Post-primary student responses to questions relating to the competence area of information and data literacy

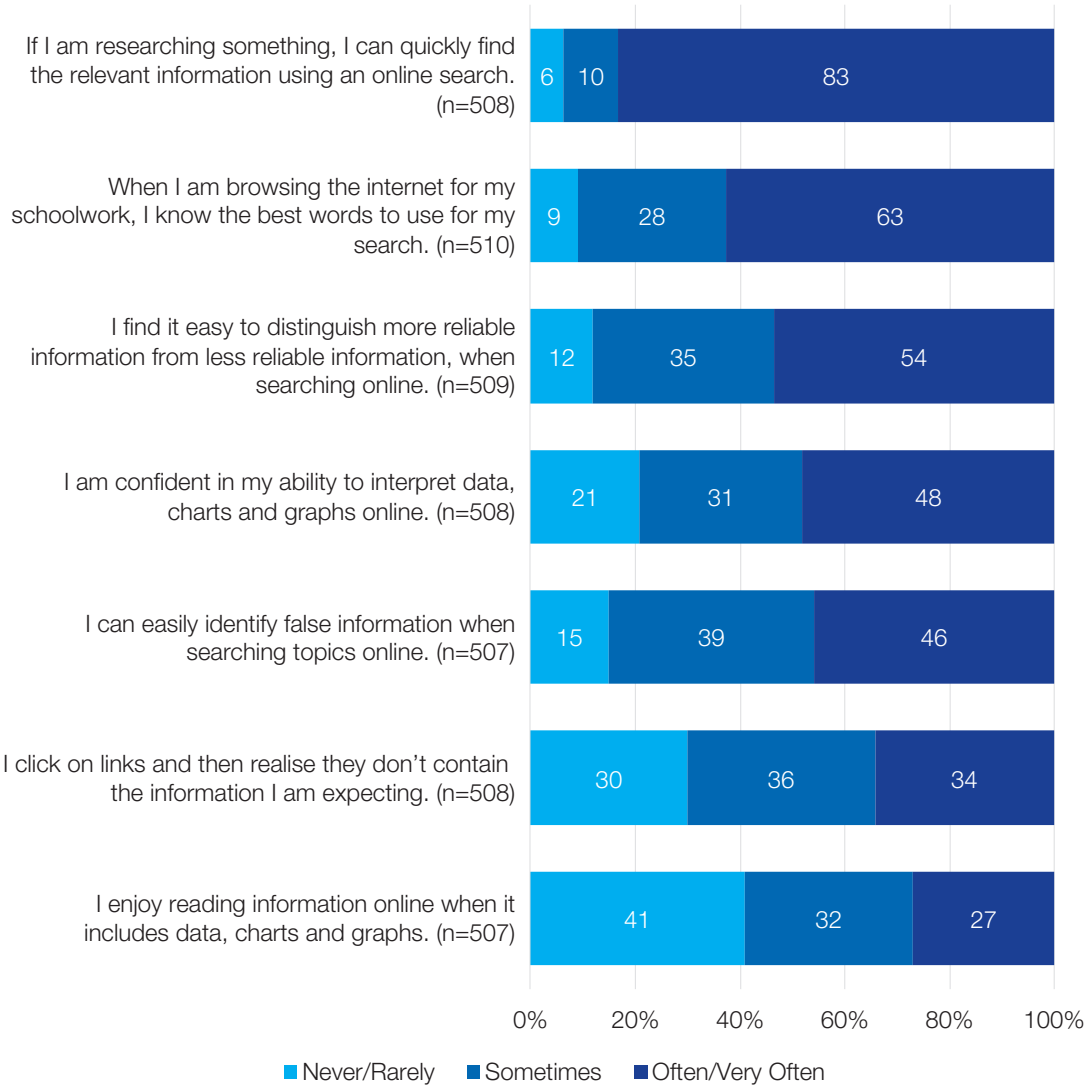
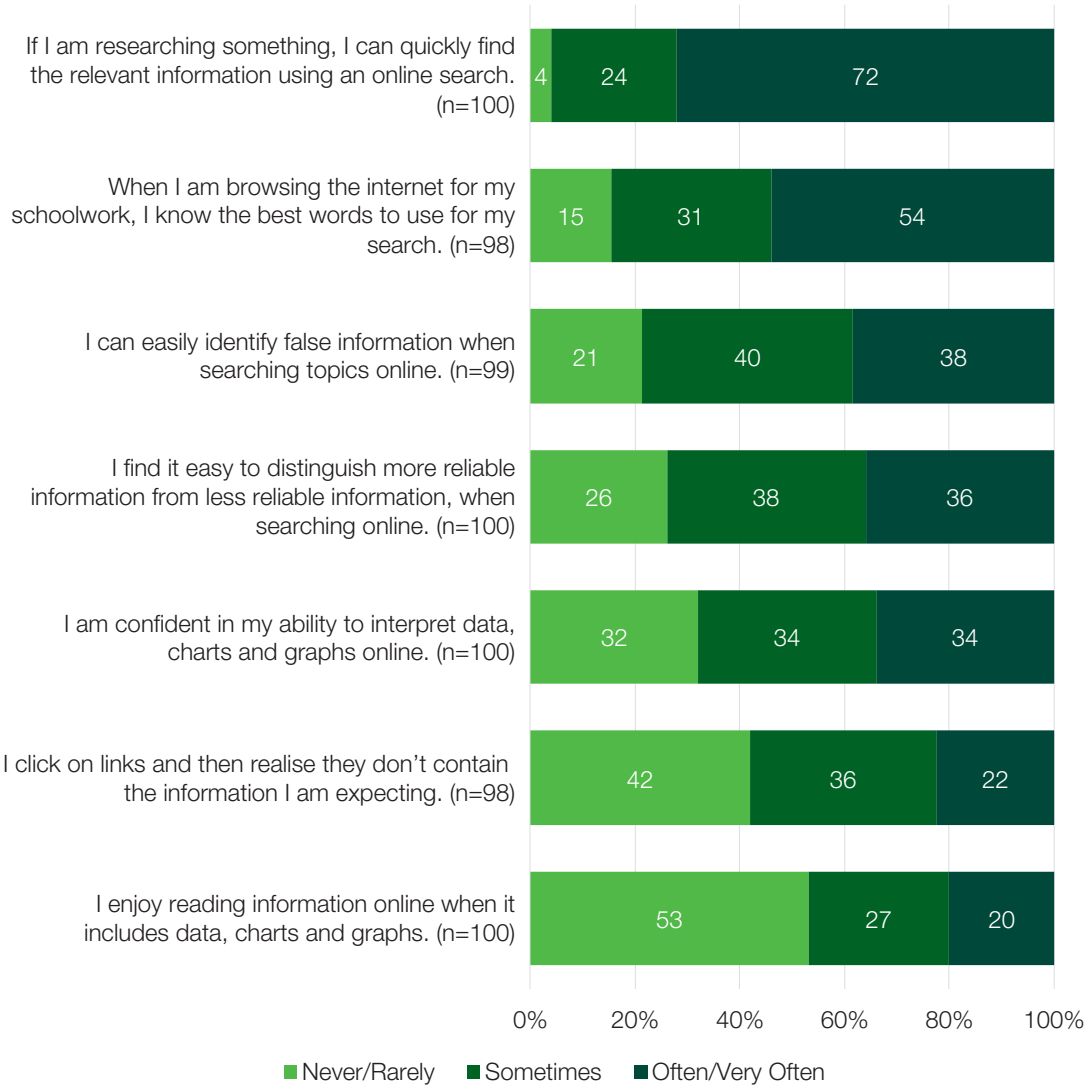


Figure 5.14. Primary pupil responses to questions relating to the competence area of information and data literacy



5.5.2 Communication and collaboration

Results reported in this section reflect the area of *communication and collaboration*, the next area of competence listed in the DigComp 2.2 Framework. Questions in this section sought to establish the degree to which survey respondents interact, collaborate, and communicate with others through the use of DTs, both socially and in the classroom setting.

Figure 5.15. Post-primary student responses to questions relating to the competence area of communication and collaboration

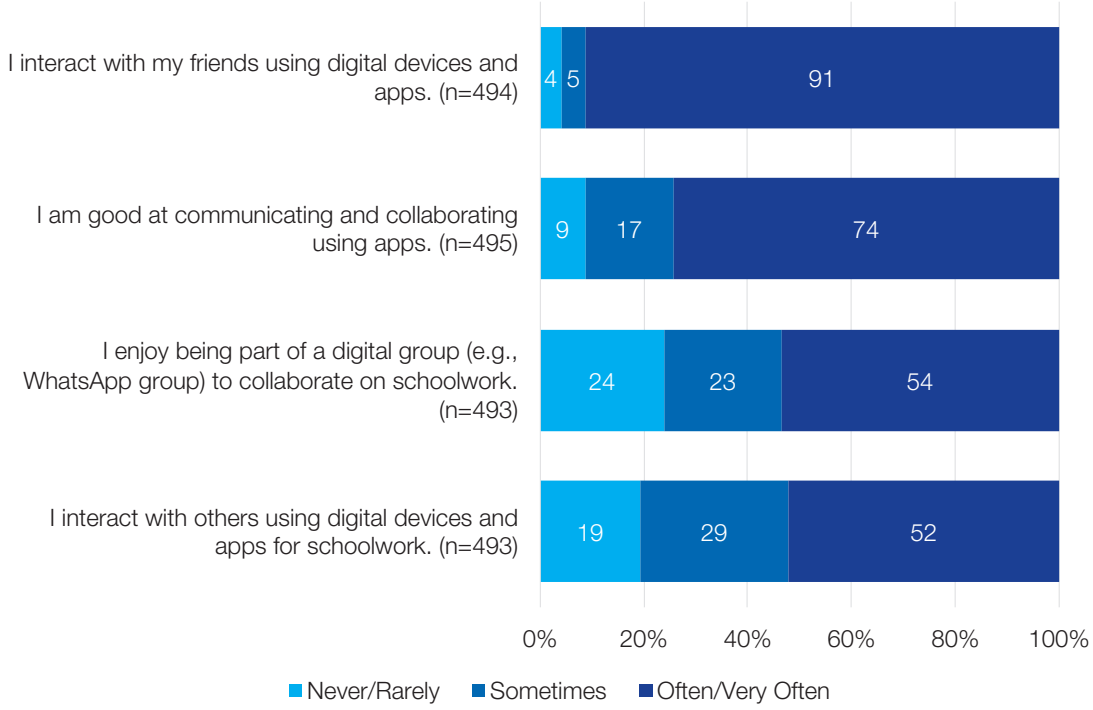
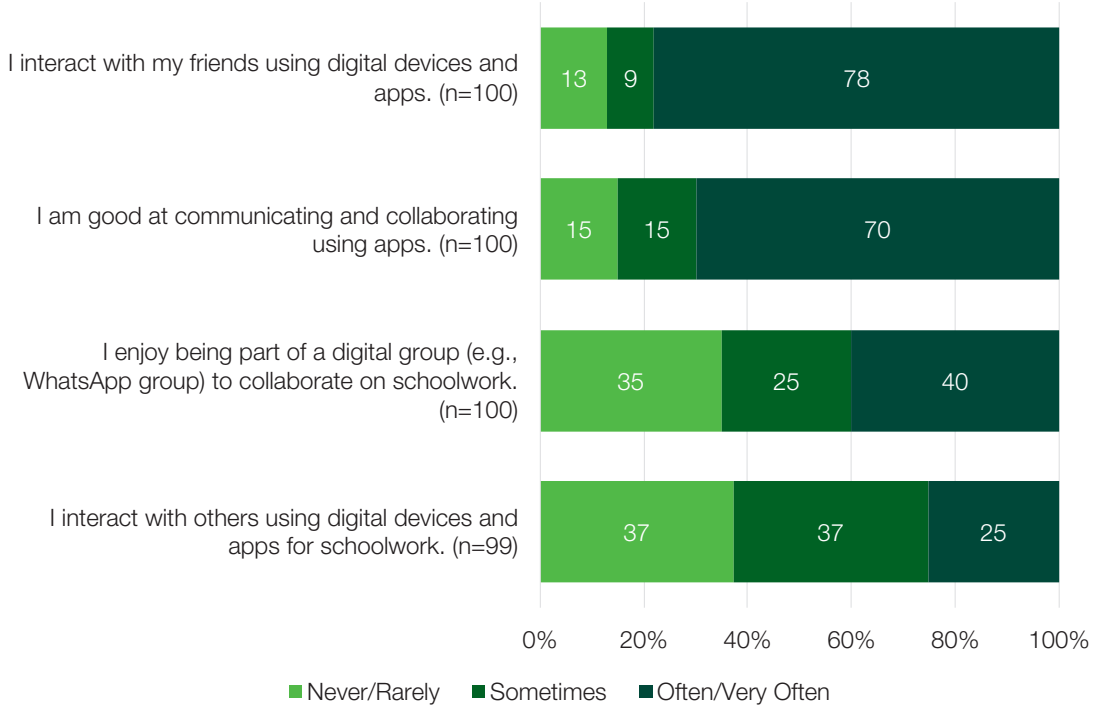


Figure 5.16. Primary pupil responses to questions relating to the competence area of communication and collaboration



A large majority of post-primary respondents (91%) reported that they Very often or Often interact with their friends using applications on digital devices, with over three quarters of primary respondents (78%) indicating

this frequency of digital communication with their friends. A small percentage of post-primary respondents (4%) and 13% of primary respondents indicated that they Rarely or Never interact with their friends in this way.

Over half of post-primary respondents (52%) indicated that they Very often or Often collaborate on schoolwork with others through the use of DTs; however, almost one fifth of post-primary respondents (19%) indicated that they Rarely or Never do so. Only about one quarter of primary respondents (25%) indicated that they Very often or Often collaborate on their schoolwork with others using DTs, with about two fifths (37%) indicating that they Rarely or Never work this way with their classmates. Over half of post-primary respondents (54%), and two fifths of primary respondents (40%) indicated that they enjoy schoolwork when they are working in collaboration with others through the use of DTs.

Almost three quarters of post-primary respondents (74%) indicated that they are Very often or Often good at communicating or collaborating using apps, with almost half (48%) choosing the Very often option. These figures indicate a high level of comfort among post-primary respondents regarding this digital competence area. This comfort is mirrored in the primary responses, with 70% of respondents indicating that they are good at these types of tasks Very often or Often.

5.5.3 Digital content creation

The next competence area in the DigComp 2.2 Framework is the area of *digital content creation*. In general, as shown in Figures 5.17 and 5.18, students' responses indicated that digital content creation is an infrequent occurrence in Irish classrooms. However, in two aspects – using programming code, and creating and editing video content – pupils at primary level were notably more likely than their post-primary counterparts to report regular engagement in content creation.

Figure 5.17. Post-primary student responses to questions relating to the competence area of digital content creation

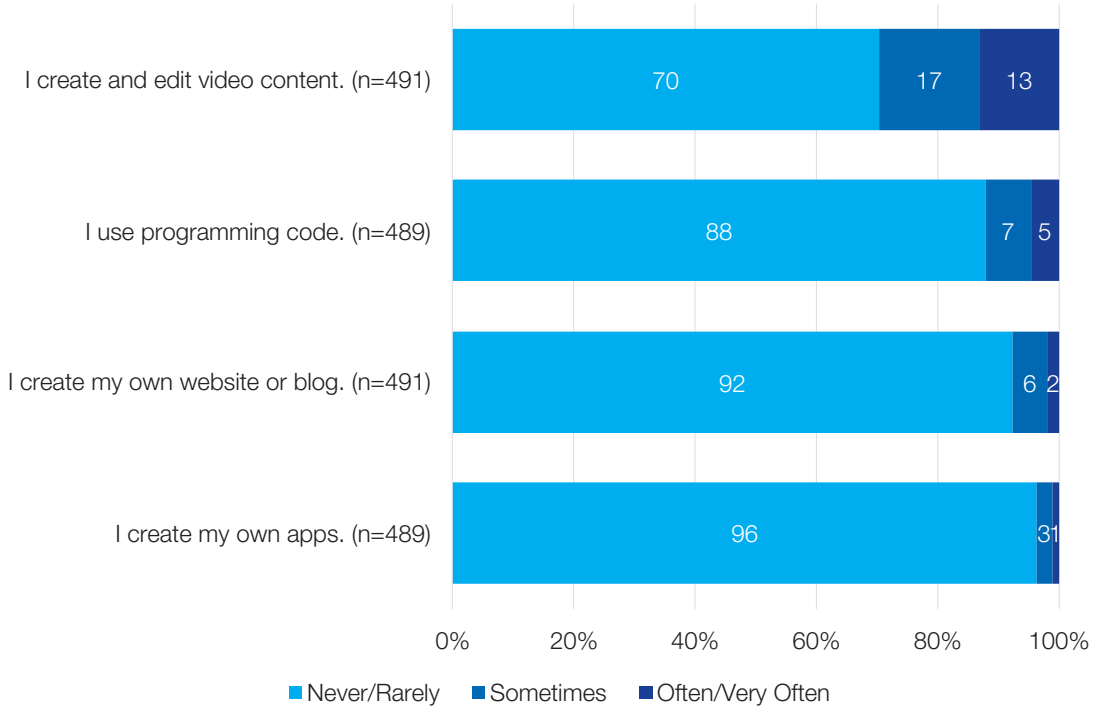
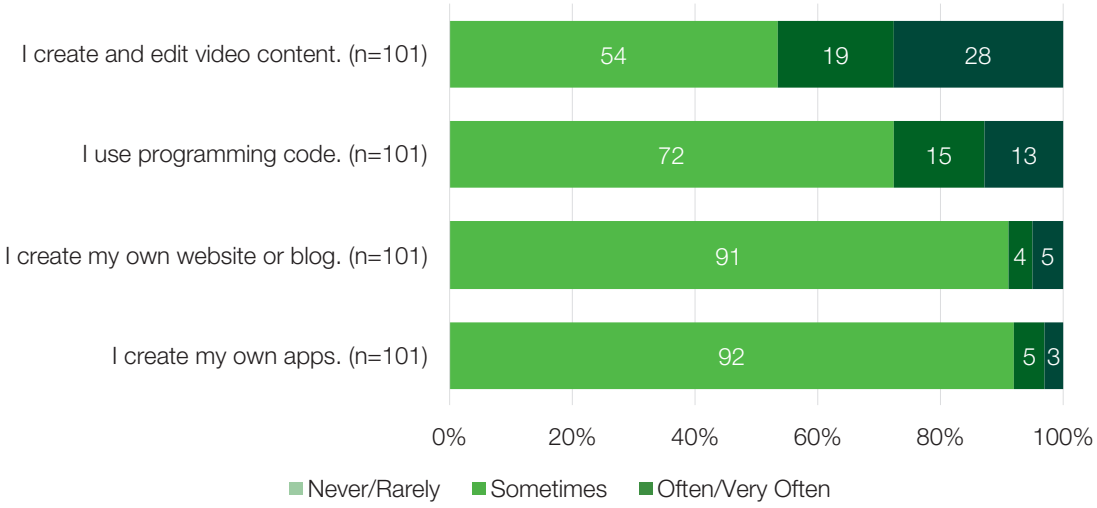


Figure 5.18. Primary pupil responses to questions relating to the competence area of digital content creation



5.5.4 Online safety and wellbeing

The issue of online safety and wellbeing is increasingly important due to the now ubiquitous nature of DTs, which allow for easy access to online content and methods of communication. *Safety* is the next competence area in the DigComp 2.2 Framework.

Figure 5.19. Post-primary student responses to questions relating to the competence area of online safety and wellbeing

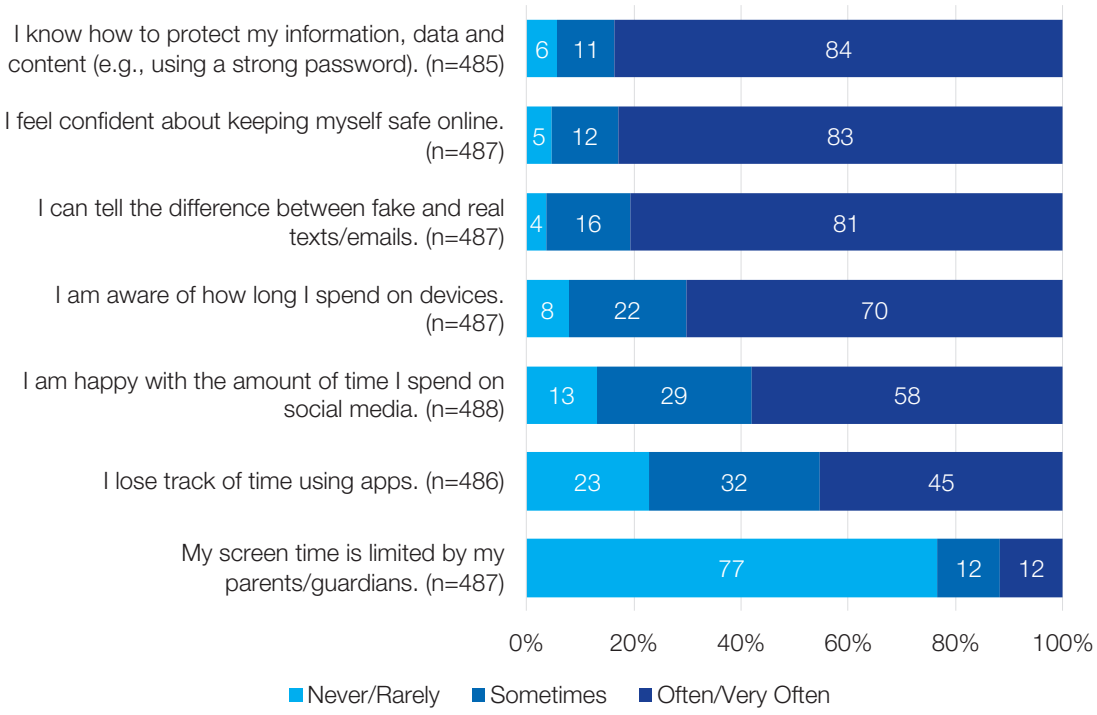
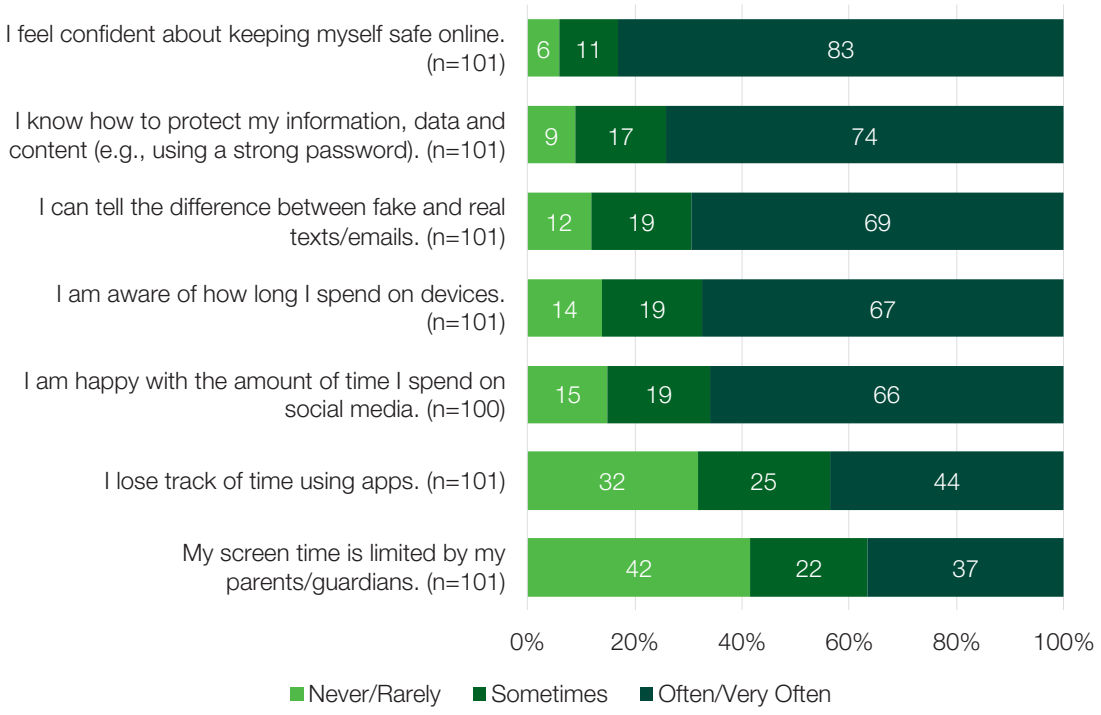


Figure 5.20. Primary pupil responses to questions relating to the competence area of online safety and wellbeing



A large majority of post-primary (83%) and primary respondents (83%) reported feeling confident Very often or Often in keeping themselves safe online. The remaining respondents indicated that they were less confident in their ability to stay safe online, with 5% of post-primary and 6% of primary respondents stating that that they Rarely or Never feel confident that they can keep themselves safe online.

A large majority of respondents indicated that they know how to protect their data online, with 84% of post-primary and 74% of primary respondents reporting that they are Very often or Often confident that they know what steps to take to ensure that their online information, data and content are kept secure. Again, a sizable minority (17% post-primary, 26% primary) indicated that they were less confident in this area of online safety.

Most respondents (81% post-primary, 69% primary) indicated that they can Often or Very often tell the difference between fake and real texts/emails. Furthermore, almost a fifth of respondents (16% post-primary, 19% primary) said that they can Sometimes distinguish between genuine and fake messages. This indicates a strong awareness of this issue among these respondents. A small minority at post-primary level (2%), and a slightly larger minority at primary level (6%), reported that they can Never tell real communications from fake ones.

The following four questions focus on health and wellbeing aspects of the *safety* competence area of the Framework. Over three quarters of post-primary respondents (77%) said that their screen time was Rarely or Never limited by their parents/guardians, while 12% reported that their screen time was Very often or Often limited. At primary level, about two fifths of respondents' (42%) screen time was Rarely or Never limited, with just over one third (37%) saying that their screen time is Very often or Often curtailed.

Over two thirds of respondents (70% post-primary, 67% primary) stated that they are Very often or Often aware of the amount of time they spend on their devices. However, a small percentage of post-primary respondents (8%) admit that they are Rarely or Never aware of the time passing, thereby losing track of time when they are using their devices. The corresponding figure for primary respondents becoming engrossed when using their devices (14%) is somewhat higher. In a related question, over three quarters of post-primary respondents (77%)

and over two thirds of primary respondents (69%) reported that they Very often, Often or Sometimes lose track of time when using online apps.

Over half of post-primary respondents (58%) and two thirds of primary respondents (66%) reported that they were Very often or Often happy with the amount of time they spend on social media platforms. About one in every seven respondents (13% post-primary; 15% primary) reported that they were Rarely or Never happy with how long they spend on social media. (This could mean that they feel they spend too much time or, on the other hand, not as much time as they would like.)

In the final question in this *safety* section, respondents were asked if they had ever taken part in an online safety course. A large majority of primary respondents (84%) indicated that they had taken part in an online safety course. However, just over half of post-primary respondents (53%) indicated that they had taken part in one of these courses. This figure might be considered low given the prevalence of and widespread access to DTs today, together with the reported absence of restriction on screen times for over three quarters of the post-primary respondents to the survey (see Figure 5.19 for more details).

5.5.5 Digital problem solving

This final section relating to the DigComp 2.2 Framework competence areas looks at the area of *digital problem solving*.

Figure 5.21. Post-primary student responses to questions relating to the competence area of digital problem solving

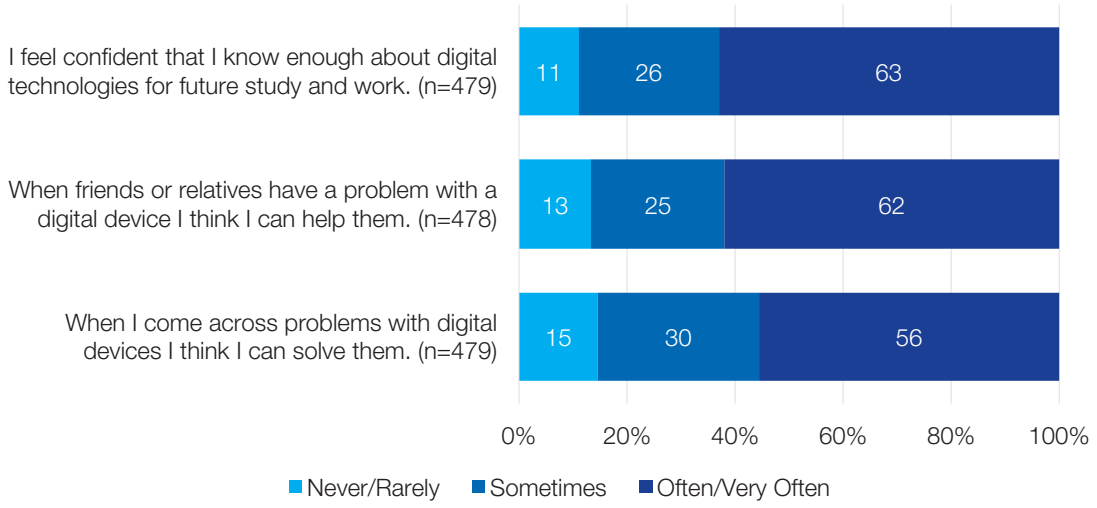
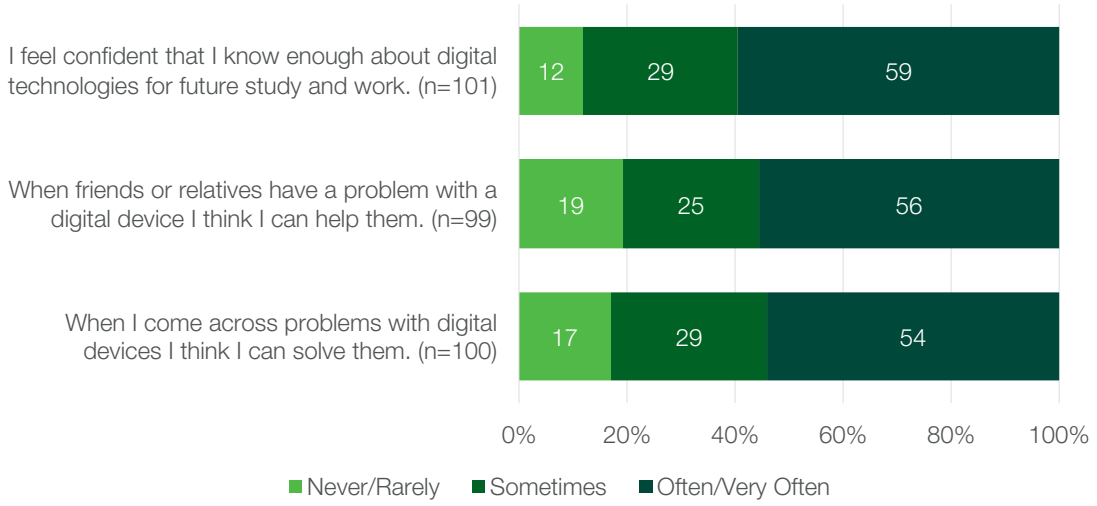


Figure 5.22. Primary pupil responses to questions relating to the competence area of digital problem solving



A majority of respondents (63% post-primary, 59% primary) reported that they Very often or Often feel confident that they have sufficient knowledge about DTs for future study and work, with about a further quarter of respondents (26% post-primary, 29% primary) indicating that they are Sometimes confident in their levels of knowledge in this area.

A large proportion of all respondents indicated that they believe that they can solve any problems with DTs they encounter. Most respondents (86% post-primary, 83% primary) indicated they Very often, Often or Sometimes think they can solve such problems. These responses show a high level of confidence among respondents in their understanding of DTs and how they work. Similar high levels of confidence were reported in dealing with DT-related problems to help friends or relatives who are experiencing difficulties using DTs (87% post-primary and 81% primary respondents responding Very often, Often or Sometimes).

5.6 PDST advisors' views on the DLF

The questionnaire completed by PDST advisors included some questions asked in an open-ended text format. These questions covered three areas: schools' priorities for implementing the DLF under *The Digital Strategy for Schools to 2027*, challenges related to implementing the DLF over the last three years, and successes related to implementing the DLF over the last three years. The survey was sent to 15 PDST DT Advisors (10 primary and five post-primary), of whom all 15 responded to all three open-response questions.

Some overarching themes emerged from the advisors' responses, which are presented in the following sections. The content of each section is related to a specific open-ended question from the survey, relating to:

- Priorities for schools implementing the DLF under *The Digital Strategy for Schools to 2027*;
- Implementing the DLF over the last 3 years: challenges and what did not work as well as expected; and
- Implementing the DLF over the last 3 years: successes and impact on schools.

5.6.1 Priorities for schools implementing the DLF under *The Digital Strategy for Schools to 2027*

PDST DT Advisors were asked what, in their view, should be the main priority for schools when implementing the DLF under the Digital Strategy for Schools to 2027. A variety of responses were given for this question, with many PDST advisors providing more than one possible priority for schools. There was no clear difference in responses between PDST advisors who worked with primary schools and those who worked with post-primary schools. While individual responses varied greatly, they tended to fall into one of two overall categories: (i) internal, school-level priorities and (ii) external support-level priorities.

5.6.1.1 Internal, school-level priorities

For internal priorities, an important focus for the respondents was the students and pupils themselves, with several respondents referring to students or pupils in some way in their answers. Two respondents answered that greater pupil collaboration should be prioritised. Another respondent said that there is a need for students to learn basic IT skills, particularly for those who have only used touch screens previously. A third respondent reported that digital portfolios could be used to create an online space "for pupils to create content, review, edit, improve and assess their work." In addition, two of the respondents discussed prioritising students' and pupils' learning outcomes when implementing Digital Learning. For one respondent, this meant that schools should re-focus their priorities: "It can happen that schools continuously focus on teachers' skills and competencies without ever really moving the focus to students." For the other respondent, this meant re-structuring how schools make decisions regarding the implementation of DTs. To elaborate, this respondent felt that the first step when implementing the DLF is to identify the area of learning they wish to improve and then decide what is required in order to develop in that area. They felt that schools would often focus on technology and how it can be integrated first, rather than the other way around.

Another priority for PDST DT Advisors was integrating and using DTs in an educational setting. One comment mentioned how the DLF can be meaningfully integrated through school initiatives and a focus on School Self-Evaluation (SSE), which in turn can lead to a seamless integration "of the DLF to complement, enhance and support other curriculum priorities." This respondent further elaborated that schools should prioritise using the DLF to support any new areas of TLA that the school chooses to focus on. The use of learning platforms was also mentioned by a respondent. According to this respondent, schools should prioritise using them consistently and getting more out of their chosen platform, as some schools are not using their platform's full capabilities. On the other hand, another respondent suggested that using digital portfolios effectively and in different ways should be prioritised, for example "as a storage space for content created, a workspace with formative feedback loop to lead to improvement and pupil led showcase space with meaningful reflection." This showcase space could then be used to display educational achievements as well as extra-curricular achievements.

Two respondents argued that schools should focus on using the DT infrastructure that is currently in place and improving upon it. One of these respondents reported that they "often see schools trying to purchase the newest hardware without making best use of what they currently have." The same respondent also suggested that schools "should start off small and set achievable goals." Related to that, another respondent argued that the knowledge and skills that were learned during the COVID-19 pandemic could be consolidated and repurposed to help with teaching, learning and assessment, for example, "continue to use the digital platform used during remote learning but use it as a digital portfolio instead."

5.6.1.2 External support-level priorities

In terms of external priorities, support for schools was suggested by several respondents as an important priority when implementing the DLF. Six PDST members mentioned support when answering this question. Three of these advisors specified that sustained support models should become the focus, rather than one-off visits. Two others felt that support should be provided to help schools with implementing their DLPs, based on the DLF, or to help with implementing the DLF more generally. The final PDST DT Advisor mentioned support in relation to professional development.

Funding was also reported by two respondents as a priority. While one of these respondents mentioned funding in general, the other discussed funding in relation to support received by the school. Specifically, any ICT-related funding that a school receives should be "spent in a way that helps them to achieve their targets of their digital learning plans, as well as making their digital learning vision a reality."

Raising awareness of the DLF was reported by two PDST DT Advisors as a possible priority. One of these PDST members stated that more work needs to be done in terms of public relations in order to raise awareness of the DLF once again. Another PDST advisor expanded on this comment by suggesting that staff turnover can result in a loss of DLF-related knowledge in schools and that seminars/webinars will be necessary to ensure new school staff are aware of the DLF. The same respondent felt that schools were receptive towards the SSE Plan at the time of implementation in 2018/19. Therefore, keeping the link between SSE update 12[34] should be a priority as it would help reduce the workload for school staff. Finally, one respondent felt that an important priority should be giving more schools the opportunity to "become involved in extended digital projects such as the Digital Portfolios project and/or similar to the SEF clusters in order to embed good practice."

5.6.2 Implementation: challenges and what did not work as well as expected

For this question, PDST DT Advisors were asked about challenges and what did not work as well as expected during the implementation of the DLF in schools over the last three years, or since they had joined the PDST Technology in Education team. A variety of responses were collected from all the advisors. Again, there were no clear differences in response between PDST advisors who worked with primary schools and those who worked with post-primary schools. However, while the other two questions elicited responses at an internal school-level and an external support-level, most responses to this question were at an internal school-level only.

One challenge reported by four of the respondents related to schools' DT infrastructure. One of the respondents specifically reported a lack of access to Wi-Fi and devices as an ongoing barrier, while two others stated that a school's location could create issues with their broadband speed, with rural schools given as an example. One of these users elaborated that many rural primary schools were waiting for network upgrades and that teachers "felt frustrated" due to these technical limitations. Another respondent cited "poor decisions when investing in infrastructure and equipment" as another challenge which could exacerbate any existing issues with a school's DT infrastructure.

The biggest challenges, reported by all the respondents, were related to school staff. Specifically, challenges relating to changing staff culture and mindsets towards DT, lack of awareness and loss of knowledge regarding DTs and any available supports, and lack of time amongst school staff were all reported as barriers. Five of the respondents directly referred to the working culture and mindset in some schools as a significant barrier

34 The Inspectorate's Evaluation Support and Research Unit have issued 15 newsletters of 'SSE Updates' for schools over the years. Update 12 carried a section on 'Digital Learning and the SSE process', detailing the alignment between the *Looking at Our Schools model (LAOS)* and the DLF. 627fc410-28d5-434d-b34e-3062a876f4d8.pdf (www.gov.ie)

to implementing DTs effectively. For one of these respondents, this manifested as issues in "Changing poor practice," while for another, it was a mismatch between the stated needs identified by school leaders and the apparent needs of the teachers. A third respondent elaborated that DTs in general were often not seen as a priority by school leaders and teachers. This would then result in a lack of communal responsibility, where only one person becomes responsible for all of the school's Digital Learning implementation rather than it being the responsibility of the entire school and, "There is a big struggle then to develop whole-staff buy-in to a digital learning plan". This respondent further stated that schools sometimes attempt to "tick as many boxes as they can when creating a plan" regardless of whether it is meaningfully enacted or not. This mindset can create difficulties when attempting to encourage schools to focus on one area or make incremental progress. Teacher buy-in was cited by another respondent as a challenge, as well as prioritisation of the DLF over other initiatives. Finally, another respondent reported school culture as a barrier to staff's ability to up-skill internally.

Around half of the PDST advisors, eight in total, cited lack of awareness and loss of knowledge in terms of DTs in general or available support as a challenge when implementing the DLF. Of these respondents, four of them felt that the knowledge deficit was due to staff turnover. This turnover in staff could lead to staff that had previously been trained or had been part of the Digital Learning Team leaving the school without passing that knowledge on to their successors. For the other respondents, schools were simply unaware of what supports were available. For example, one PDST DT Advisor reported that many schools did not know that the DLPlanning website existed: "Any schools I supported had forgotten about it or were completely unaware of it." Another respondent suggested that the COVID-19 pandemic may have contributed to this lack of knowledge and awareness, as they felt that online support is not as effective as in-person support. In addition to that, they reported that schools may be experiencing "technology and screen fatigue" since the pandemic.

Six of the respondents reported lack of time and availability of school staff to be a significant challenge in implementing the DLF. For two of the respondents, this lack of time referred specifically to the school support model, wherein each school was given a single support visit. They elaborated that there was not enough time for capacity and confidence building with the school staff and they had less time to spend with each group of teachers. One of these respondents contrasted single support visits with the sustained support model: "A number of school visits allowed for more time with the digital learning team and follow up visits helped for their plan to be embedded successfully. One day support visits could be very challenging in cases where the school did not have a plan in place or a plan that wasn't fit for purpose or working." They also reported that larger schools tended to have an advantage, in that responsibilities could be shared amongst a larger group of staff. This sharing of responsibilities was often difficult in smaller schools. Another respondent attributed this lack of time, at least in part, to an abundance of new initiatives and reported that schools can feel "overwhelmed." This "overload of initiatives being implemented" was also reported by another of the respondents. They also felt that more middle management positions would be required in order to take on these new responsibilities. Another PDST advisor reported that while plans may "look great on paper," staff are often not given the time to upskill themselves in the effective use of new digital tools.

As previously stated, the majority of respondents focused on the internal school-level for this question. However, a few points were made about the external support-level, some of which have already been discussed. Two of the respondents commented on funding. One of these respondents implied that more funding was still needed despite "the ICT grant and national funding in the area." The other respondent felt that schools should report on their funding received to date as they felt that some schools may "divert the funds for other uses." A third respondent reported that there is a need for "in-school support from technicians and instructional technologists." They clarified that these are two separate roles and that there should be a dedicated team for each school or cluster of schools. Another respondent stated that resolving IT issues was a big drain on teachers' time, implying support for the idea that a dedicated team of IT technicians should be formed.

5.6.3 Implementation: successes and impact on schools

The final open-ended question the PDST DT Advisors were asked was what, in their view, were the biggest successes with the DLF implementation process over the last three years or since they had joined the PDST Technology in Education team, and what were the biggest impacts. There was no clear difference in responses between those who worked with primary schools and those who worked with post-primary schools. As with the first question, responses generally fell into the internal school-level or external support-level categories.

An important internal school-level success identified by nine of the PDST advisors was a change in school staff culture and mindset. One respondent connected this change to professional development or upskilling by staff, which itself led to "greater buy in from teachers on the role of technology in education." Another respondent reported that observing the value of DTs in education led to a more considered approach towards teacher professional development and spending their ICT funding. For some schools, the culture is changing towards sharing responsibility for properly embedding DTs into teaching. Some of the respondents felt that the DLF "exposed schools to the benefits of digital technologies in improving teaching, learning and assessment" and was "a catalyst for schools to look at digital learning in their schools," while a few other respondents felt that school closures as a result of the COVID-19 pandemic actually led to an increase in teacher confidence with DTs and a change in staff mindset (i.e., the idea that DTs are inevitable). Two respondents reported specific programs as being instrumental in increasing school collaboration, either internally with TeachMeets during Croke Park hours, or with the wider Digital Communities of Practice and the School Excellence Fund clusters.

Several external support-level successes were identified by the participants, such as funding, accessibility, existing models and available supports. One advisor reported that while school closures may have facilitated the move to more DTs in schools, the funding received allowed schools to develop the infrastructure necessary to implement their digital plans at all. In particular, they noted that consistent funding has allowed schools to plan further ahead and develop strategies that are more long-term. In terms of accessibility, another respondent reported that the DLF "removed some of the perceived mystique around technology," which in turn made DTs as a whole more accessible to teachers. Additionally, linking the DLF implementation to existing models, such as SSE or the Looking at Our Schools (LAOS) model, was identified as beneficial for teachers and made the process easier in general.

On the other hand, many of the respondents reported that the available external support has been very successful in many ways, such as giving schools structure and focus when implementing DTs. One such response emphasised that having this focus was a key part of a school's self-improvement. Two other respondents stated that schools were now in a position to see the value of DTs in teaching, learning and assessment, which then led to engaging with the DLF and professional development in the area of DTs. In fact, many schools "saw the DLF as an achievable and supported way to do this." Another respondent felt that the DLF itself was helpful in establishing a structure for embedding DTs, for example, through the DLPlanning website. Furthermore, three respondents specified that the sustained support model was most helpful when dealing with schools on the basis that it allowed for more guidance during implementation and the planning process, and helped identify a focus and any needs the school may have had. Ongoing online support was identified as particularly helpful, as well as "bespoke school supports from dedicated advisors."

5.7 PDST DT Advisors' perspectives on teachers' levels of competence using DTs

In a similar approach to Section 5.5, development of the questions reported on in Sections 5.7.1 to 5.7.5 was guided by the Digital Competence Framework for Citizens (DigComp 2.2), referencing the five competence areas outlined in that document. As before, the five competence areas covered in the DigComp Conceptual Reference model are: *information and data literacy, communication and collaboration, digital content creation, safety* and *problem solving.* This section of the Wave 2 questionnaires for PDST advisors was developed using the Conceptual Reference model as a reference point, and statements were tailored to the Irish classroom setting, in terms of both language used and content. In these questions, respondents were asked to indicate their level of agreement with statements about teachers' use of DTs in the classroom on a scale with the options being: Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree.

5.7.1 Information and data literacy

The first question in this section asked respondents to indicate to what degree they agree with the statement: *If teachers are researching something, they can quickly find the relevant information using an online search.* Most advisors agreed, with twelve out of fifteen (80%) choosing either Strongly agree or Agree. The remaining advisors chose Neither agree nor disagree, with none disagreeing with the statement.

The next statement presented was: *When teachers are searching the Internet for information, they know the best keywords to use.* There was some ambivalence among the respondents here with about half of the PDST advisors (seven respondents) stating that they Neither agree nor disagree with this statement. A further seven respondents indicated that they Strongly agree or Agree with the statement, with one advisor choosing the Disagree option.

Responses to the next statement – *Teachers can easily identify false information when searching topics online* – indicate that PDST advisors feel this is an area where there might be room for improvement. One third (five respondents) stated that they Disagree with the statement. A further four respondents (27%) indicated that they Agree with the statement, while six respondents (40%) chose Neither agree nor disagree.

Sticking with the theme of (perceived) competence in relation to conducting online searches, the next statement presented was: *Teachers find it easy to distinguish more reliable information from less reliable information, when searching online.* Three respondents (20%) indicated that they Disagree with this statement. As was the case for the previous statement, four of the fifteen advisors (27%) agreed with this statement by choosing either Strongly agree or Agree. Just over half of respondents (54%) Neither agreed nor disagreed.

The next two statements in this section attempt to capture, in the views of the PDST DT Advisors, how teachers react to certain types of online information in the classroom. The first statement presented was: *Teachers enjoy reading information online when it includes data, charts and graphs*. A majority of advisors indicated that they thought that teachers enjoyed reading this type of information online, with nine of the fifteen respondents (60%) choosing either Strongly agree or Agree. One third (five respondents) said that they Neither agree nor disagree, while one advisor indicated that they disagreed with the statement. The same results are seen among responses to the related statement: *Teachers are confident in their ability to interpret data, charts and graphs online*. Once again, nine of the fifteen respondents (60%) chose either Strongly agree or Agree, five respondents (33%) indicated that they Neither agree nor disagree, while one respondent chose the Disagree option.

5.7.2 Communication and collaboration

Survey results reported in this section reflect the area of communication and collaboration, the next area of competence listed in the DigComp 2.2 Framework. In this section an attempt was made to establish the degree to which PDST advisors think that teachers interact, collaborate, and communicate with others through the use of DTs in their work.

The majority of PDST advisors (nine respondents or 60%) said that they Agree with the first statement in this section: *Teachers interact well with others using digital devices and apps for class work.* One third (five respondents) said they Neither agree nor disagree, while one respondent chose the Disagree option.

Two thirds of advisors (ten respondents) indicated that they Strongly agree or Agree with the statement: *Teachers enjoy being part of a digital group (e.g., WhatsApp group, Google Classroom, Microsoft Teams) to collaborate with other teachers*. A further three of the fifteen respondents (20%) indicated that they Neither agree nor disagree, while two respondents said that they Disagree with this statement.

In response to the statement *Teachers are good at communicating and collaborating using apps*, eleven of the fifteen advisors (73%) indicated that they Strongly agree or Agree. Two respondents chose the Disagree option, while a further two of the fifteen respondents (13%) said that they Neither agree nor disagree with the statement.

5.7.3 Digital content creation

The next competence area in the DigComp 2.2 Framework is the area of digital content creation. The larger numbers of PDST advisors disagreeing with the statements in this section indicates a view that there is some work to be done to develop teachers' skills in the field of content creation.

Responses to the first statement in this section – *Teachers know how to create and edit video content* – show that advisors have had different experiences with teachers in the schools in which they work. Most advisors (six of the fifteen respondents, or 40%) said that they Disagree with the statement. A further four advisors (27%) indicated that they Agree with the statement, with a further one third (5 respondents) choosing the Neither agree nor disagree option.

About half of the advisors (seven respondents) said that they Disagree that *Teachers know how to create audio content.* One fifth (three respondents) said that they Agree with the statement and one third (five respondents) chose the Neither agree nor disagree option.

None of the PDST advisors Strongly agreed or Agreed that *Teachers know how to create their own website or blog*. Most (nine respondents) indicated that they Disagree or Strongly disagree with the statement. The remaining six respondents chose the Neither agree nor disagree option.

Similarly, no advisors selected Strongly agree or Agree for the statement *Teachers know how to create their own apps* or for *Teachers know how to use programming code*. These responses suggest that there is some work to be done in upskilling teachers to enable them to help children in their classroom to develop competence and confidence in the use of DTs in the areas of content creation and coding.

5.7.4 Online safety and wellbeing

The first statement presented in this section was: *Teachers feel confident about keeping themselves safe online.* Two thirds of PDST advisors (ten respondents) Agreed; a further four respondents (27%) indicated that they Neither agree nor disagree with it, while one advisor chose the Disagree option for this statement.

Almost half of respondents (seven advisors) Agreed that *Teachers know how to protect their information, data and content (e.g., using a strong password).* Just over one quarter (four respondents) indicated that they Strongly

disagree or Disagree with the statement, while the remainder (four respondents) chose the Neither agree nor disagree option.

Nine of the fifteen respondents (60%) Neither agreed nor disagreed that *Teachers can tell the difference between fake and real texts/emails.* One third of advisors (five respondents) Agreed with the statement, with the remaining respondent choosing the Disagree option.

The following two statements focus on the health and wellbeing aspects of the safety competence area of the Framework. The first of these statements – *Teachers are happy with the amount of time they spend on social media* – asked the PDST advisors to give their opinion on satisfaction levels among teachers with whom they have worked in relation to time spent on social media. Most of the respondents (twelve out of fifteen; 80%) indicated that they Neither agree nor disagree with the statement. Two respondents indicated that they Disagree, while the remaining advisor chose the Agree option.

None of the advisors disagreed that *Teachers lose track of time using apps*, with most (ten out of fifteen) choosing the Neither agree nor disagree option. The remaining five respondents (33%) indicated that they Strongly agree or Agree with the statement.

Finally, respondents were asked if they knew whether or not teachers with whom they had previously worked had ever taken part in an online safety class or course [*Teachers have taken part in an online safety training class/course*]. In a deviation from the other response options in this section of the questionnaire, the response options for this statement asked about the proportions of teachers who had participated in such courses, with response options: most, some, a few, none. Over half of advisors (eight out of fifteen) said that *some* teachers in their schools had taken part in an online safety class/course. A further six out respondents (40%) indicated that *a few* teachers had attended an online safety course, and the remaining one advisor said that *most* teachers had attended this type of course.

5.7.5 Digital problem solving

The first statement presented in this section was: *Teachers feel confident that they know enough about Digital Technologies for class work*. Two fifths of respondents (six out of fifteen) indicated that they Strongly agree or Agree with this statement. One third of respondents (five out of fifteen) said that they Neither agree nor disagree, while the remaining four respondents stated that they Strongly disagree or Disagree.

Nine out of fifteen advisors (60%) indicated that they Strongly disagree or Disagree that *When teachers come across problems with digital devices they think they can solve them*. Two advisors Agreed with the statement, while the remaining four respondents said that they Neither agree nor disagree with it.

Finally, about half of the PDST advisors (seven out of fifteen) indicated that they Agree that *When colleagues have a problem with a digital device teachers think they can help them.*

5.8 Key points

The responses collected from post-primary students, primary pupils and PDST DT Advisors have provided further insight into how DTs are used in an educational setting through a mixture of open-ended and closed-ended questions. The following sections summarise the key points presented in this chapter.

5.8.1 Successful applications of DTs

In terms of how DTs have been successfully implemented in schools, post-primary students and primary pupils were asked what they liked best about how DTs are used in their school while PDST DT Advisors were asked about the biggest successes with DT implementation under the DLF. Students and pupils were also asked a series of questions to assess their own level of competence using DTs guided by DigComp 2.2. PDST advisors were asked a similar series of questions targeting their perception of teacher competence using DTs.

Post-primary students felt that DTs are easy to use and access (29% of all responses) and they like using DTs for both independent and collaborative tasks (27% of all responses). Responses for primary pupils were similar. However, the most popular response for the primary cohort was that DTs provide an alternative means of classroom learning through games and fun activities (38% of all responses). In terms of the competence areas outlined in DigComp 2.2, this cohort of post-primary students self-reported high levels of confidence and frequency of using DTs in several areas such as: searching for relevant information (83%), using keywords when browsing the Internet (63%), distinguishing between reliable and less reliable information (54%), collaborating on schoolwork with others using DTs (52%), communication and collaboration using apps (74%), keeping themselves safe online (83%), keeping their online data secure (83.5%), identifying fake emails/texts (96%), possessing sufficient knowledge of DTs for future work/study (63%), solving problems with DTs (85%) and helping others solve problems with DTs (87%). Again, primary pupil responses were largely similar, with two exceptions. When asked about collaborating with others on DTs for schoolwork, only 25% of primary pupils responded with Very often or Often (compared to 52% at post-primary level). Conversely, for the questions related to digital content creation, primary pupils tended to report greater frequency (particularly regarding video content creation and editing, where 28% of primary pupils responded Very often or Often compared to 13% at post-primary).

The PDST advisors identified a variety of successes related to the implementation of the DLF. Nine respondents felt that staff culture and mindset related to DTs had changed due to upskilling and professional development, direct observation of the value of DTs, greater sharing of responsibilities regarding embedding DTs into teaching, increased teacher confidence in DTs and programs that helped foster greater school collaboration both within and between schools. Other responses from PDST advisors indicated that the DLF allowed for greater forward planning from schools due to consistent funding and helped increase accessibility to DTs as well as providing structure, guidance and ongoing support when implementing DTs. Regarding competence with DTs, PDST advisors felt that teachers were confident in many areas such as: ability to quickly find relevant information when conducting an online search (80%), ability to read data, graphs and charts online and enjoy doing so (60%), interacting well with others using DTs for schoolwork (60%), communicating with others using DTs (73%) and keeping themselves safe online (67%).

5.8.2 Challenges of implementing DTs

Post-primary students and primary pupils were not asked any open-ended questions related to the challenges of implementing DTs in an educational setting. Nevertheless, their responses to the closed-ended questions regarding their own DT competency revealed some issues. The PDST Digital Technology Advisors were asked one question about the challenges of implementing DTs while indicating further challenges in the closed-ended questions.

Overall, this cohort of post-primary students reported high levels of confidence in four of the five *DigComp 2.2* competence areas. The one exception was in digital content creation where the majority of respondents reported that they Never create their own apps (93%), use programming code (80%), create their own website or blog (87%) and create and edit video content (55%). At primary level, the corresponding percentage of pupils was noticeably smaller than at post-primary: create their own apps (77%), use programming code (45%), create their

own website or blog (74%) and create and edit video content (40%). Nonetheless, engagement with these types of activities was still relatively low amongst this primary cohort and could indicate an area for improvement at both levels.

The PDST advisors specified several challenges related to DTs and integration of the DLF. DT infrastructure was cited as an issue, particularly lack of access to Wi-Fi and other infrastructure. Lack of awareness of available DTs or the DLF was also cited as a challenge due to, for example: staff turnover, lack of knowledge regarding available supports and the COVID-19 pandemic. Other challenges identified by the respondents were: lack of time and availability of school staff to implement DTs and the DLF (particularly for small schools), lack of funding, and a lack of technical support. All the PDST respondents reported staff culture and mindset towards DTs as a barrier due to working culture, a mismatch of needs between stated and apparent needs, lack of responsibility between school staff, a lack of meaningful decisions when creating plans and a lack of teacher buy-in. In terms of DT competence, the area respondents felt was most challenging for teachers was digital content creation where most of the responses indicate that teachers lacked knowledge in video content creation and editing (40%), audio content creation (47%) website or blog creation (60%), app creation (87%) and using programming code (73%). As with post-primary students and primary pupils, this is an area in which teachers may benefit from further support.

5.8.3 Future priorities

Post-primary students and primary pupils were asked two questions regarding future priorities related to DTs: how they would like to see DTs used by students/pupils in a school setting to aid with learning, and how they would like to see teachers use DTs to help students and pupils learn better. PDST DT Advisors were asked what schools' main priorities should be when implementing the DLF.

Amongst post-primary students, one of the more common responses for future DT use at the student level was to increase access to DTs in an educational setting (25% of all responses) by providing more devices or allowing the students to use their own mobile phones, replacing physical textbooks with digital versions that could then be accessed through the students' devices or improving DT infrastructure in schools (i.e., Wi-Fi). Suggestions to incorporate more DTs and apps into classwork were also relatively common (22% of all responses). Suggestions from post-primary students for DT use at the teacher level were similar with answers suggesting an increase in DT and app use for schoolwork being the most common (29% of all responses) while increasing access to DTs and frequency of DT use was the second most common response (20% of all responses). For primary pupils, the most common response for both the pupil and teacher levels was to use DTs as an alternative to traditional learning methods (34% at the pupil level and 31% at the teacher level), through learning games or as a replacement for physical textbooks. Similar to the post-primary cohort, primary pupils also felt that DTs should be made more available and used more frequently for schoolwork (27% of responses at the pupil level and 23% of responses at the teacher level).

Many of the PDST advisors' responses regarding priorities for the implementation of the DLF and DTs in general focussed on enhancing the learning experience for students and pupils through: greater collaboration, learning basic IT skills, digital portfolios, prioritising learning outcomes and re-structuring how decisions are made when integrating DTs. The integration and use of DTs in education was also suggested as a priority by some of the respondents by focussing on SSE, using the DLF to support new areas of TLA, using learning platforms, as well as improving upon existing infrastructure rather than developing it from the ground up and consolidating existing DT knowledge. School support was also mentioned as a priority either through developing a sustained support model or providing support to help schools implement their DLP. Finally, support through funding, as well as awareness raising amongst school staff, were also possible priorities suggested by the PDST DT Advisors.

5.8.4 Summary

The views expressed by this cohort of post-primary students and primary pupils were relatively consistent across both levels. From these responses we can see that this cohort of students and pupils are confident in their DT skills across most of the *DigComp 2.2* competencies, find DTs accessible and easy to use, and enjoy using DTs for schoolwork. According to the PDST advisors, there has been a positive shift in the mindset towards DTs amongst school staff and the implementation of the DLF has allowed for more long-term planning for schools.

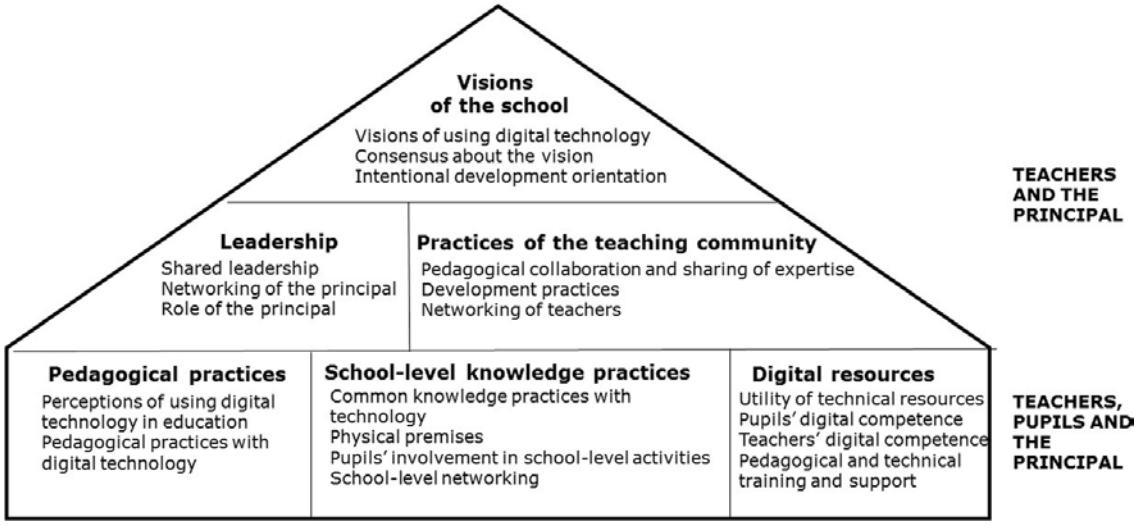
Despite these successes, the participants also identified a number of challenges related to implementing the DLF and DTs in general. Digital content creation is an area that this cohort of students and pupils engage with infrequently. PDST advisors also identified this area as a particular challenge for teachers, along with existing infrastructure, staff availability for implementation and staff culture. Future priorities for students and pupils involved increasing access to DTs, incorporating them more into schoolwork and to use them as an alternative to traditional teaching methods. Overall, the respondents to both surveys identified several successes related to the implementation of DTs and the DLF while acknowledging challenges that have arisen and suggesting possible future priorities.

Chapter 6:
Conclusions and implications

6.1 Chapter overview

In this concluding chapter, the findings of the previous chapters are organised into themes and are discussed in relation to relevant and recent research and policy. Particular reference is made to the Innovative Digital School Model (Ilomäki & Lakkala, 2018), which is used as a guiding structure for the analysis of the results emerging from the DLF Wave 2 data. This model takes a sociocultural approach to TLA and aligns with existing DT policy and strategy in Ireland, providing an appropriate paradigm for analysis of the data emerging from the Wave 2 collection. The model describes the main elements pertaining to school improvement in the use of DTs, and also provides a useful matrix through which best practices can be identified. Figure 6.1 outlines the principal elements of the model.

Figure 6.1 The innovative digital school model



Source: Ilomäki & Lakkala, 2018, p.9.

Drawing on this model, the main findings of DLF Wave 2 are discussed first in relation to school-, teacher-, and student-level considerations (Sections 6.2, 6.3, and 6.4, respectively), before looking at the resources available for DLF implementation (Section 6.5). Finally, the successes and challenges associated with DLF implementation are discussed (Sections 6.6.1 and 6.6.2).

In terms of interpretation of the results, it is important to note that there was a lower-than-desired teacher response rate and consequently, the findings of the teacher survey are not generalisable to the population of teachers. Therefore, only the qualitative results of the teacher survey are reported and are presented as indicative of the kind of response received.

6.2 School-level considerations

6.2.1 Vision and leadership

Imperative for the successful implementation of the DLF is the promotion of a culture of digital transformation within schools. Ilomäki and Lakkala (2018) underline the important role a shared vision of transformation at school level can play for continuous improvement within the school. They also emphasise the importance of a consensus at school level as to the content of that vision. Linked to this concept is the vital role of leadership. Here, the role of the principal in managing, motivating and organizing the staff in an "atmosphere for collaboration and experimentation" is discussed, alongside the opportunities for networking between principals. Another key element is shared leadership, whereby teachers are supported by the distribution of responsibility for digital transformation among several key members of staff (Ilomäki & Lakkala, 2018, p.8).

Applying this lens to the DLF evaluation Wave 2 data, PDST Digital Technology Advisors' views on the successes and impacts of the implementation of the DLF are relevant.[35] In their open-ended responses, PDST advisors reported a change in school staff culture and mindset related to DTs as a result of the implementation of the DLF. Various factors contributed to this change, including upskilling and professional development, direct observation of the value of DTs, and a greater sharing of responsibilities regarding embedding DTs into teaching. The fostering of school collaboration both within and between schools through the use of programmes also contributed to this change in mindset, according to PDST advisors.

However, a significant minority of primary level DLT leaders disagreed that there was a shared understanding among staff around what is needed to achieve the digital transformation, and there was also disagreement that staff regularly update their DT knowledge (approximately one third of responses in both instances).

If, as Ilomäki and Lakkala suggest, a shared vision is a key element of innovative digital transformation within schools, then the content of that vision must also be relevant to staff and students. The DLF outlines two dimensions for schools to focus on in their planning: (i) teaching and learning and (ii) leadership and management. However, the Wave 1 data indicated that the vast majority of primary and post-primary schools chose the teaching and learning dimension as their focus (Feerick et al., 2021), and this has not changed at Wave 2. There are some differences between the school levels in this regard, with primary/special schools often focusing on learner experiences and outcomes, while post-primary schools focused on teacher's collective practice and collaboration (see Chapter 2, Section 2.3.1 for more detail).

6.2.2 Planning

6.2.2.1 DLF planning

In the Wave 2 data, a whole-school approach to planning for the DLF was evident from DLT leaders' survey responses. Firstly, almost all schools had completed their DLP or were in the process of drafting it at the time of the Wave 2 survey (97% of primary and 96% of post-primary), highlighting a high level of commitment by schools to the DLF planning process. This is an improvement since Wave 1, at which point 93% of primary and 92% of post-primary schools had completed or were drafting their DLPs. Furthermore, leaders reported that various staff members played a significant role in determining the DT needs of the school, including teachers, the principal/deputy principal, and members of the DLT.

35 These responses are based on a total of 15 PDST members.

In relation specifically to the DLP and DLT, leaders reported that both were commonly created either by consulting (in the case of the DLP) or including (in the case of the DLT) teaching staff and others. This was the case at both education levels. Furthermore, membership of the DLT was most frequently decided through volunteering, at both education levels - highlighting a high level of engagement with DLF planning among staff in schools. Primary/special schools, however, were three times as likely as post-primary schools not to have a DLT in place at the time of the survey (17% primary/special vs 6% post-primary).

6.2.2.2 Schools' self-evaluation

Another shared responsibility at school level is the process of schools' self-evaluation (SSE) of their current level of embedding DTs in TLA. This was described extensively in Chapter 2. The DLF guidelines for SSE of current level of practice and embedding DTs serves as an important tool for self-assessment and for the planning and guidance process for schools. DLT leaders indicated that schools at primary and post-primary levels were progressing well towards extensive embedding of DTs (including embedding DTs by teachers and effectiveness of teachers' use of DTs).[36] The successful embedding of DTs within TLA has perhaps been bolstered by teachers' familiarity with DTs and a high degree of engagement with the DLF by school staff. Furthermore, schools' self-assessment of their current level of practice (i.e., statements of Effective/Highly effective practice) and current level of embedding of DTs in TLA (i.e., as Emerging, Intermediate, or Advanced) have shown improvement since Wave 1.

Post-primary schools generally reported being more developed than primary/special schools on the latter two SSE measures. Post-primary schools were more likely to indicate that they were Mostly/All at statements of Highly effective practice (21% post-primary vs 6% primary/special). Furthermore, post-primary schools were about twice as likely to indicate that they were at an Advanced/Highly advanced level in relation to embedding DTs (43% post-primary vs 21% primary/special).

The embedding of DTs into TLA within schools has of course been a key feature of the DLF from the outset. However, as time has gone on, concerns have emerged about the ways in which embedding is understood differently by teachers across the system and at different levels of education (Feerick et al., 2022). It is of note that Cosgrove et al. (2022) called for a clarification around "the standards associated with levels of Effective and Highly effective practice" under the DLF (Cosgrove et al., 2022, p. 43).

Finally, DLF leaders described the relationship between the DLF and LAOS[37] in their school most frequently as "our work on the DLF complements our current School Self-Evaluation activities and is being implemented in parallel with them" (38% primary/special and 46% post-primary). This is an important finding, as the structure of the DLF is the same as that of LAOS. SSE is an ideal means by which to improve the usage of DTs in teaching, learning and assessment. Therefore, it is appropriate that SSE activities and the DLF were reported as being implemented in tandem with each other in many schools.

6.2.2.3 ICT Infrastructure Grant

Finally, at school level, a key part of planning for schools is the approach to spending the ICT Infrastructure grant. Schools at both levels were observed to have a systematic/formal approach in determining the school's needs in relation to the grant. A significant majority (about three-quarters) of DLT leaders at both levels indicated (see Chapter 2) that they would benefit from additional guidance on how to use the ICT Infrastructure grant in order to meet the DT needs of the school.

36 Embedding in this context refers to moving beyond DT integration, such that DTs are used seamlessly in all aspects of TLA to enhance the learning experiences of pupils and students.

37 Looking at Our School (School Self-Evaluation).

Corroborating this finding, DLT leaders' open-ended responses (Chapter 4) identified several areas of specific guidance which schools would like in relation to using the grant. Some schools expressed a need for advice on how to match the school's needs to available technologies, such as specific advice on meeting the needs of particular demographics within the school. Procurement and purchasing processes were an issue for other schools, with some leaders identifying a need for help with sourcing reliable, qualified, and experienced suppliers when spending their grant funds. Other schools expressed a desire for more general guidance, including advice on the suitability, longevity, and efficiencies of Digital Technologies.

6.2.3 The Impact of COVID-19 school closures

A priority for the Wave 2 data collection was to establish key changes that occurred in schools in response to the COVID-19 pandemic. The Wave 2 data reveal that the COVID-19 pandemic and ensuing school closures caused an increase in the use of DTs at school, teacher and student levels. DLT leaders' survey responses (Chapter 2) reported that post-primary schools, in contrast to primary, had many more aspects of Digital Technologies in place *before* the advent of school closures in March 2020. Following the school closures, there was a dramatic increase in the usage of DTs for teaching and learning, at both education levels. In particular, video meeting tools and cloud-based platforms were in widespread use at post-primary level after the school closures in March 2020, and in most primary level schools also.

According to the open-ended responses of DLT leaders and teachers (Chapter 4), the unique experience of the pandemic created a change in schools' usage of DTs, although the exact nature of this change varied from school to school. At both education levels, digital resources already in place (such as learning management systems) were helpful in addressing the challenges that had to be faced during the pandemic. Teachers agreed, at both levels of education, that the level of DT usage in teaching and learning had increased since the pandemic.

6.3 Teacher-level considerations

Considering the timing of this final wave in the longitudinal study in 2022, the data provide useful information about the attitudes, practices and perspectives of teachers with regard to DTs, particularly in light of the changes initiated by school closures and the pandemic.

Ilomäki and Lakkala's model identifies a number of key teacher activities that can promote digital transformation within schools. These include development practices, DT pedagogical practices, and the sharing of expertise and collaboration between teachers. In addition, two of the stated aims for the Wave 2 analysis were the identification of practices that promote DTs in knowledge creation, and an investigation into whether teachers' level of comfort with DTs had grown between Wave 1 and Wave 2.

6.3.1 Teacher collaboration and confidence with DTs

Looking firstly at collaboration and the sharing of knowledge between teachers, DLT leaders indicated that the implementation of the DLF had had a positive impact at both education levels. In particular, teaching and learning activities, the sharing of documents or resources among teachers, and decisions relating to enhancing DT infrastructure all showed large impact at both primary/special and post-primary levels. DLT leaders also indicated that a large impact was evident on collaborative practices among teachers, particularly at post-primary level.

Open-ended responses from DLT leaders identified several overarching priorities that they would like to see as key outcomes arising from the implementation of the DLF. One of these related to the possibility of collaboration

between teachers in sharing best practice in using DTs, indicating that many teachers see the potential of the DLF for increased collaboration and sharing of resources.[38]

In response to questions around the impact of COVID-19 on teaching, DLT leaders noted that systems of online collaboration were fruitfully used to pass skills to colleagues throughout the period of the pandemic. There was further agreement that the changes brought on by pandemic led to an increase in collaboration, and improved communications. Teachers at primary level emphasised DT usage for project work and homework in particular, whilst post-primary teachers highlighted an increase in the sharing of materials online.

PDST DT Advisors, in their open-ended responses, also noted the positive attitude to DTs which resulted from the COVID-19 pandemic. They noted that the enforced school closures led to increased teacher confidence in DTs and a change in staff mindset towards the use of DTs.

6.3.2 CPD

A key element of development practice in the Irish context is CPD. In their open-ended responses (Chapter 4), teachers noted that a key enabler of the DLF was the need for appropriate, practical CPD and continued support to continue to implement and embed the DLF in TLA, a view expressed by DLT leaders also. Both leaders and teachers expressed a preference for in-person support, with teachers highlighting a specific desire for practical training in apps/software by subject/level. However, DLT leaders' open-ended responses also acknowledged the benefits of the online approach.

Additionally, survey responses (Chapter 2) indicated that participation in professional learning supports at both levels over the previous two years was encouragingly high. At Wave 1, high levels of participation in CPD relating to DTs was also noted. From the Wave 2 data, two modes of professional learning in particular are worth highlighting. Approximately three-quarters of primary DLT leaders reported that their staff had attended digital learning Summer Courses, while almost four-fifths of post-primary DLT leaders reported that their staff had participated in Digital Learning webinars over the two years prior to the survey.

The value of CPD in the area of Digital Technology was underlined by schools' responses to the closures imposed by the pandemic. By the time of the pandemic, most teachers had already received training in digital teaching and learning. This was felt to be helpful in moving to remote learning and was also bolstered by the embedding of DT resources. Training received provided a solid foundation for the significant upskilling in the area of DTs that teaching during the pandemic required. Wave 2 responses from PDST DT Advisors also noted that school closures as a result of the COVID-19 pandemic led to increased teacher confidence in DTs, and a change in staff mindset towards the use of DTs.

6.3.3 Assessment

In the area of assessment, there was a sizeable impact of the implementation of the DLF on teachers' assessment practices in the majority of post-primary schools. However, the impact on teachers' assessment practices at primary/special level was low, with a majority of primary DLT leaders (65%) indicating that there was no change or minor change in this area (low impact among primary/special schools was similarly evident at Wave 1).

Furthermore, the usage of computer-based assessment tools at primary level for literacy, numeracy and other subject areas was low, at the time of the Wave 2 survey. DLT leaders' open-ended responses (Chapter 4) indicated a desire to see more use of DTs for both summative and formative assessment; a theme which was most often mentioned at primary level. Some DLT leaders noted that their school was in the very early stages

38 The other two areas mentioned were the potential for using DTs for assessment purposes, and the use of DTs as a support for inclusion.

of this process, whereas others highlighted the need for training in this area to further encourage and facilitate teachers in the use of DTs for assessment. Whilst post-primary schools were ahead of primary schools in this respect, DLT leaders at post-primary level also mentioned the need for further embedding DTs in both formative and summative assessment.

6.4 Student-level considerations

From the outset of the DLF evaluation, the perspectives and experiences of pupils and students were identified as being integral to achieving a holistic view of the implementation of the DLF. In the Wave 1 report, the gathering of pupils' and students' views was identified as a key priority for Wave 2 of the DLF evaluation.

6.4.1 Pupils' and students' views on DT usage

Pupils'/students' open-ended responses during Wave 2 (Chapter 5) suggest that students were well-disposed towards the use of DTs in the classroom. When asked what they liked best about using DTs in school, many post-primary students commented that DTs were easy to use and access, and that they liked using DTs for both independent and collaborative tasks. At primary level, pupils frequently reported that DTs provided an alternative and enjoyable means of classroom learning through games and fun activities. This finding suggests that the use of DTs with these pupils holds the potential to enhance their learning experience in a fun and engaging way.

Students were also asked about their views on future priorities related to DTs, for both themselves and their teachers. Responses again reflect a favourable view of the use of DTs in the classroom and for schoolwork. Post-primary students frequently reported that they would like increased access to DTs in the educational setting, for example by providing more devices or allowing student access to mobile phones. Post-primary students also said that they would like to incorporate more DTs and apps into classwork, as well as suggesting an increase in DT and app use by teachers for schoolwork. The most frequent response for primary pupils, for both themselves and teachers, was to use DTs as an alternative to traditional learning methods – for example, through learning games or as a replacement for physical textbooks.

6.4.2 Student inclusion – meeting the needs of students

Inclusion, identified by DLT leaders as an aspirational key outcome of the embedding of the DLF, was not assessed directly as an impact of the DLF implementation in Wave 2 (Chapter 2). However, DLT leaders were asked about their active priorities for students with Special Educational Needs and those from socio-economically disadvantaged homes and communities. In their survey responses, the use of DTs within TLA was seen by DLT leaders as a strategy that could support the inclusion of these diverse student groups. Priorities included the use of DTs to foster students' interest and engagement, and in particular to use specific DTs (such as assistive technologies) to support students with Special Educational Needs. For socio-economically disadvantaged students, a priority was the appropriate use of software applications to assess literacy and, at post-primary level in particular, to support the assessment of group learning outcomes (such as collaborative project work).

Echoing these findings, teachers' open-ended responses (Chapter 4) indicated that inclusion was also a pertinent theme for them, and that they would like to see inclusion as a key outcome arising from the embedding of DTs within TLA. Teachers viewed the embedding of the DLF as an opportunity to provide support to the inclusion work already progressing in schools through the increased use of DTs for groups with various needs,

including students with Special Educational Needs, students from diverse language backgrounds, from socially disadvantaged backgrounds, and refugees.

6.5 Resources to support DLF implementation

Throughout the baseline and Wave 1 phases of the DLF evaluation, connectivity and digital resources have been repeatedly emphasised as key enablers of DLF implementation. Similarly, Ilomäki and Lakkala (2018) include a number of digital resources and elements of infrastructure and connectivity, as well as training opportunities, as central tenets of their model. This section examines the resources available to schools and those in need of supplementation, according to responses to the Wave 2 survey.

6.5.1 Planning resources

The DLPlanning website and professional learning were two key resource supports available to DLT leaders, teachers and school staff towards supporting the DLF implementation. The DLPlanning website was well-frequented by DLT leaders and was considered to have good relevance to the DLF planning process, in particular via the Digital Learning Plan template and the Digital Learning Framework document.

6.5.2 Connectivity and DT infrastructure

Post-primary schools in Wave 2 continue to report higher levels of connectivity and DT infrastructure than primary schools. Aspects of connectivity and DT infrastructure were consistently rated lower by primary/special school DLT respondents – a trend that has been evident since the baseline phase of the DLF evaluation.

More specifically, with respect to the connectivity aspect, 70% of primary respondents at Wave 2 reported having reliable Internet access at school, while the corresponding figure at post-primary level was 88% (Chapter 2). This represents a decline since Wave 1, where it was reported that 86% of primary level schools had reliable Internet access. This finding is in contrast to developments in schools' broadband access detailed in Chapter 1, and it should be noted that this change is not reflected in the composite connectivity and infrastructure scale (Chapter 3), where no statistically significant change was observed from baseline to Wave 2, at either school level, in schools' reports of connectivity and infrastructure. The finding may indicate an increasing demand for a higher level of infrastructure and connectivity as schools progress in their embedding of DTs into everyday TLA.

At Wave 2, negative ratings of DT infrastructure by primary level DLT leaders were consistently more prevalent when compared to post-primary level (Chapter 2). Of note, important aspects related to software – such as the awareness and availability of suitable software for teaching and learning – were rated poorly at both education levels, though more so at primary level (almost two fifths of primary schools reported these as issues). Obsolescence may also be an issue in some primary/special schools, with the age and condition of computing devices being rated poorly by three in ten primary/special DLT leaders. Other infrastructural items rated negatively by primary/special leaders include the availability of an appropriate number of computing devices for all pupils, and the provision of technical support and maintenance. Teachers' responses suggest that issues related to DT infrastructure are of concern to them also.

The availability of digital tools (such as data sensors, cameras, and assistive devices) was consistently the most negatively rated item by DLT leaders at both education levels. The availability of these digital tools was rated as Poor/Fair by a majority of leaders (67% primary and 58% post-primary). There was a small improvement in these ratings since Wave 1.

Notably, the vast majority of DLT leaders indicated that their school required more funding to implement the DLP (80% of primary/special and 92.5% of post-primary DLT leaders) (Chapter 2).

Access to computing devices

In contrast to these negative reports, teachers' access to school-owned computing devices was reported to be high. A large majority of teachers at both education levels had full-time access to a school-owned computing device; whilst home access to a computing device was also common (Chapter 2). Access for *all* students to a school-owned computing device, when required, was lower than teacher access (just over half of students at both education levels). These figures are almost identical to the Wave 1 findings, indicating little change in this regard during the intervening period.

The sharing of devices between students during teaching time was highlighted in primary/special DLT leaders' responses as an issue of concern (Chapter 4). Small numbers of devices within the classroom can create problems for teaching and learning, with leaders commenting that the demand on a small number of devices resulted in a short window of time in which devices could be used effectively for teaching and learning. Indeed, primary/special teachers descriptions illustrate that access to devices is not uniform across schools, with access ranging from just one iPad per class in some schools to individual devices for all pupils in the class in others. Pupils in primary/special schools generally used devices (both laptops and iPads) either individually or as part of group work in the classroom.

DLT leaders' responses (Chapter 4) indicated that any additional funding for implementing the DLF would be primarily spent on infrastructure. Priorities for primary/special DLT leaders would be to use additional funding to acquire additional devices for pupils, the upgrading of existing devices, and the purchasing of hardware. Priorities for leaders at post-primary level for any additional funding would also be to acquire additional devices for students, for hardware for teacher use in the classroom, and for additional devices for staff. It is clear, at both levels, that additional devices for students are of crucial interest for DLT leaders, highlighting the importance of having individual devices available for students to use to increase opportunities in the classroom for DLF embedding.

Technical support and maintenance

At Wave 2, technical support provided by a mixture of internal and external services continues to be the favoured model at primary and post-primary levels. Technical support and maintenance was generally rated more highly at post-primary level than in primary/special schools, with 77% of post-primary DLT respondents rating their technical support and maintenance as Excellent, Very good or Good. This was a lower level of endorsement than the corresponding Wave 1 figure of 87%. Technical support and maintenance was consistently rated lower in primary/special schools than post-primary, however, with just over half (56%) of respondents in Wave 2 describing their technical support and maintenance as Excellent, Very good or Good. This figure is similar to Wave 1 when the corresponding figure was 53%.

DLT leaders' views on the effectiveness of technical support have not shown great change from Wave 1 to Wave 2, and the pattern of technical support being rated higher at post-primary level compared to primary persists (Chapter 2). Finally, the technical support effectiveness scale at Wave 2 shows no significant difference in the mean scores between primary and post-primary levels, and significantly, no significant difference from the mean scores at baseline.

Overall, the effectiveness of technical support does not appear to have improved over the course of the DLF evaluation at either school level.

6.5.3 Teachers' digital competence

Survey responses to the school digital leadership scale (new for Wave 2; see Chapter 2) indicated that most primary/special and post-primary schools had digitally competent staff, underpinned by a school culture of digital usage and transformation. For example, DLT leaders at both levels agreed that digital competence among staff was high and that staff agreed that using DTs was an enjoyable way to enhance TLA. Furthermore, PDST DT Advisors' responses support this view. A majority of PDST advisors (60% or more) reported that teachers were confident in many areas of DT usage, including: their ability to quickly find relevant information when conducting an online search; their ability to read data, graphs and charts online and enjoy doing so; interacting well with others using DTs for schoolwork; communicating with others using DTs; and keeping themselves safe online.

6.5.4 Pupils' and students' digital competence

Pupils and students were presented with a series of closed-response survey items that assessed their digital competence in several areas, as outlined in the first iteration of the *Digital Competence Framework for Citizens* (DigComp 2.1) (see Chapter 5). There were five main areas of assessment: information and data literacy; communication and collaboration; digital content creation; online safety and wellbeing; and digital problem solving.

In four of these five areas, a majority of primary/special and post-primary pupils and students (70% or more in all instances) reported high levels of confidence and a high frequency of using DTs in several areas, including:

- searching for relevant information (*information and data literacy*);
- communication and collaboration using apps (*communication and collaboration*);
- keeping themselves safe online, keeping their online data secure, and identifying fake emails/texts (*online safety and wellbeing*); and
- solving problems with DTs and helping others solve problems with DTs (*digital problem solving*).

Both primary and post-primary pupils and students were less engaged with activities related to the fifth area, digital content creation (such as programming, creating own apps, creating a website/blog, and creating and editing video content). However, primary/special pupils were somewhat more likely than their post-primary counterparts to respond positively to questions regarding this area of competence, especially in relation to creating and editing video content.

6.5.5 Dedicated staff time

Several items were rated by DLT leaders (Chapter 2) as being challenging to the implementation of the DLF, such as DT infrastructure and the overall timeline for implementation. However, the greatest challenge reported by schools was a lack of dedicated time for staff to implement the steps involved. Approximately two-thirds of DLT leaders – at both primary/special and post-primary levels – rated the lack of dedicated time for staff as the greatest challenge to the implementation of the DLF. This is consistent with the corresponding reports in Wave 1, suggesting that little has improved in this respect.

The responses of PDST DT Advisors support the DLT leaders' perceptions, and also provide additional useful detail as to the pertinent issues involved. About one-third of PDST respondents cited the lack of time and availability of school staff as a significant challenge in implementing the DLF. In particular, PDST respondents contrasted the *school support model* with the *sustained support model*. The former refers to a single support visit from a PDST advisor to a school, which was viewed by the PDST DT Advisors as providing an inadequate

amount of time for capacity-building and confidence-building with school staff, and as not affording enough time to spend with each group of teachers. By contrast, a sustained support model involves repeated contact between the PDST and a school, allowing a greater depth of support to schools, and facilitating greater reflection and learning among school staff.

PDST DT Advisors reported that larger schools tended to have an advantage in this regard, as responsibilities could be shared amongst a larger group of staff compared to smaller schools. It was also suggested that the lack of staff time for implementation of the DLF could be partly due to a sense within schools of being overwhelmed by an abundance of new initiatives, with a suggestion that more middle-management positions would be required to take on these new responsibilities. Finally, it was noted that school staff were often not given enough time to engage in upskilling in the effective use of new digital tools.

6.6 Summary of the DLF evaluation – successes and challenges

6.6.1 Successes

6.6.1.1 Impact of the DLF

The implementation of the DLF was seen in Wave 2 to have had a positive impact across several areas at both education levels. In particular, teaching and learning activities, the sharing of documents or resources among teachers, and decisions relating to enhancing DT infrastructure all showed a large impact at both primary/special and post-primary levels. **DLT leaders' responses indicated that a large impact was also evident on collaborative practices among teachers, particularly at post-primary level.**

In terms of the level of embedding of DTs into TLA, post-primary schools are reported as being more likely to report higher levels of effective practice and level of embedding in the SSE compared to primary and special schools. In addition, the data show that over the three waves of the DLF evaluation, the proportion of schools at the lower (Emerging) end of the scale decreased, while the proportion of schools at the upper (Advanced or Highly advanced) levels) increased. **Encouraging as this finding may be, at Wave 2 we see that a majority of schools at both levels are self-categorised at the Intermediate level, indicating substantial scope for further development in schools' embedding of DTs for TLA.**

6.6.1.2 Engagement with digital learning

It is evident from the Wave 2 data that there has been a marked increase and engagement with DT usage following implementation of the DLF in schools. Comparisons of changes from the baseline survey to Wave 2 indicate that engagement with DTs has significantly increased over time, both in primary/special schools and in post-primary schools. It appears that there has been a considerable change in the mindset of school staff towards DT usage and this has supported the embedding of DTs across multiple areas of teaching and learning. **In particular, it was noted that the switch to remote teaching and learning as a result of the COVID-19 pandemic led to increased teacher confidence in DTs, and a change in staff mindset towards the usage of DTs.**

Furthermore, evidence from the pupil and student questionnaire supports the use of DTs in the classroom and for schoolwork. **Students' responses suggest that the embedding of DTs in TLA is regarded positively by learners at both levels of education.**

6.6.1.3 Resources

The Wave 2 data indicates that both teachers and pupils/students report having high levels of competence in the areas outlined in DigComp, which is encouraging. As the new strategy *Ireland's Literacy, Numeracy and Digital Literacy Strategy 2024-2033: Every Learner from Birth to Young Adulthood* places digital literacy at its heart, it is worth noting that no direct assessment of digital literacy is currently implemented in the Irish context, in the way that studies such as the National Assessments, PIRLS, TIMSS and PISA assess competency in the areas of literacy, mathematics and science. **Consideration should be given to Ireland's participation in digital literacy assessment at student and teacher levels.**

The Wave 2 data suggest that schools generally take a systematic approach when determining their digital education needs, and that more detailed and tailored guidance regarding the use of the ICT infrastructure grant is likely to be beneficial in aiding the decision-making process of DLT leaders and school staff.

Finally, CPD emerged as a recurring theme throughout the Wave 2 data. It was clear that the variety of professional learning modes through which CPD is offered are regarded as an accessible and efficient means of providing CPD to teachers. **Teacher responses suggest a preference for DT subject/level-specific CPD, and for in-school support, to facilitate professional learning and development in this area.**

6.6.2 Challenges

6.6.2.1 Impact of the DLF

In terms of planning for the DLF, most schools are still focused on the teaching and learning elements of the DLF, and not the leadership and management strand. **This suggests that there is potential for schools to engage more fully with the whole school elements of the DLF in the future.**

6.6.2.2 Engagement with digital learning

One area where engagement has been consistently low across the three iterations of this study is in the use of DTs for assessment. At Wave 2, low usage of computer-based standardised tests in both literacy and numeracy were reported at primary level, as well as a low impact of the implementation of the DLF on teachers' assessment practices at primary level. **The untapped potential of DTs for assessment was identified as a key priority by DLT leaders, and should be addressed with appropriate, specific training and facilitation for teachers.**

6.6.2.3 Resources

PDST DT Advisors' responses noted that the implementation of the DLF provided structure, guidance and ongoing support when embedding DTs. The Wave 2 findings showed that schools were engaging with planning for the digital transformation at both levels through DLPs, the establishment of DLTs, and the SSE processes, and that engagement with these processes has improved since Wave 1. **However, on many of these measures, primary schools are not as advanced as their post-primary counterparts.** Some factors identified by PDST DT Advisors – in particular the opportunity to share responsibilities among more staff in larger schools – may partly explain why some primary schools are lagging behind post-primary schools in some areas (in particular, developing the DLT, and proceeding towards more advanced levels of embedding DTs and statements of highly effective practice.)

Some primary/special schools need additional support with progressing the formation of their school's DLP and DLT in order to develop a greater articulation of the vision for digital transformation, as well as providing

encouragement for continual digital upskilling by school staff. **In terms of embedding, supports should be focused for primary/special schools with respect to proceeding towards statements of highly effective practice and an advanced level of embedding DTs.**

In terms of infrastructure and connectivity, despite the progress made through the Schools Broadband Programme and the National Broadband Plan among other initiatives (Chapter 1), the Wave 2 data highlights persisting low levels of connectivity and DT infrastructure in some primary/special schools, which still present a significant barrier to the successful embedding of DTs. Some post-primary schools were also struggling with insufficient DT infrastructure, in particular with access to devices for students, as well as the awareness and availability of suitable software for teaching and learning. The Wave 2 longitudinal data indicated that there has been no statistically significant changes from baseline to Wave 2, at either school level, in schools' reports of connectivity and infrastructure.

In addition, the adequateness of technical support provision and maintenance is an area that continues to present challenges. While the model of technical support to schools remains consistent, no improvement in the effectiveness of the technical support has been noted between baseline and Wave 2.

The vast majority of DLT leaders indicated that their school required more funding to implement the DLP.

More and consistent resources should be directed to schools for the purchasing of additional devices for students, as well as maintenance and upgrading of existing devices, the provision of technical support, and development of infrastructure to further support the embedding of the DLF in all aspects of teaching, learning and assessment.

Another resource issue highlighted in the Wave 2 data is the lack of dedicated time available to school staff for the implementation of the DLF. This is consistent with the findings in Wave 1, when it was also the most highly rated challenge. **In order for the DLF to be implemented fully, sufficient resources need to be available for staff to be able to devote dedicated time to engage in upskilling in the effective use of new digital tools.**

6.6.3 Future considerations

DLT leaders identified several aspects that they see as key intended outcomes arising from the implementation of the DLF. Prominent among these priorities was the use of DTs as a support for inclusion. DLT leaders viewed the potential for more inclusive TLA practices through the increased use of DTs for groups with differing needs (such as students with Special Educational Needs, students from diverse language backgrounds, from socioeconomically disadvantaged backgrounds, and refugees). **The impact of the DLF on the inclusion of student groups with diverse needs should be examined in more detail in future research, including by drawing on the perspectives of those student groups.**

References

Beblavý, M., Baiocco, S., Kilhoffer, Z., Akgüç, M. & Jacquot, M. (2019). *Index of Readiness for Digital Lifelong Learning: Changing How Europeans Upgrade Their Skills*. CEPS: Brussels. https://cdn.ceps.eu/wp-content/uploads/2019/11/Index-of-Readiness-for-Digital-Lifelong-Learning.pdf

Brewer, K.R.W., & Hanif, M. (1983). *Sampling with unequal probabilities.* New York: Springer.

Butler, D., Leahy, M, Shiel, G., & Cosgrove, J. (2015). *Building towards a Learning Society: A National Digital Strategy for Schools*. Dublin: St Patrick's College and Educational Research Centre. https://www.learntechlib.org/primary/p/150177/.

Butler, D., & Leahy, M. (2022). *Baseline Report: Towards a Successor Digital Strategy for Schools to 2027*. https://assets.gov.ie/221291/2bf1c705-9aae-4356-a6b1-b0ef37fbf5a4.pdf.

Cosgrove, J., Butler, D., Leahy, M., Shiel, G., Kavanagh, L., & Creaven, A-M. (2014*). The 2013 ICT census in schools – main report*. Dublin: Educational Research Centre/St Patrick's College. http://www.erc.ie/documents/ict_cencus2013_mainreport.pdf.

Cosgrove, J., Duggan, A., Shiel, G., & Leahy, M. (2018). *Digital Learning Framework Trial Evaluation: Final Report.* Dublin: Educational Research Centre. https://www.erc.ie/wp-content/uploads/2018/10/DLF-Trial-Evaluation-Final-Report-Oct-18.pdf.

Cosgrove, J., Moran, E., Feerick, E., & Duggan, A. (2019). *Digital Learning Framework (DLF) national evaluation – starting off: Baseline report*. Dublin: Educational Research Centre. http://www.erc.ie/wp-content/uploads/2020/01/DLF-national-evaluationbaseline-report.pdf.

Cosgrove, J., Feerick, E., Moran, E., & Perkins, R. (2022). *Digital technologies in education – Ireland in the international context: Trends and implications from PISA 2012-2018.* Dublin: Educational Research Centre. https://www.erc.ie/wp-content/uploads/2022/09/DT-in-Ed-PISA-2012-to-2018-for-web.pdf

Delaney, E., McAteer, S., Delaney, M., McHugh, G. & O'Neill, B. (2023). *PIRLS 2021: Reading results for Ireland.* Dublin: Educational Research Centre. https://www.erc.ie/wp-content/uploads/2023/05/PIRLS-2021_Reading-Results-for-Ireland.pdf.

Department of Education and Skills (DES) (2008). *Investing Effectively in Information and Communications Technology in Schools, 2008-2013.* Dublin: Author. https://www.education.ie/en/Publications/Policy-Reports/Investing-Effectively-inInformation-and-Communication-Technology-in-Schools-2008-2013.pdf.

DES (2016a). *Looking At Our School 2016: A quality framework for primary schools.* Dublin: Author. https://www.education.ie/en/Publications/Inspection-Reports-Publications/Evaluation-Reports-Guidelines/Looking-at-Our-School-2016-A-Quality-Framework-for-Primary-schools.pdf

DES (2016b). *Looking At Our School 2016: A quality framework for post-primary schools.* Dublin: Author. https://www.education.ie/en/Publications/Inspection-Reports-Publications/Evaluation-Reports-Guidelines/Looking-at-Our-School-2016-A-Quality-Framework-for-Post-Primary-schools.pdf

DES (2017). *Digital Learning Framework for primary schools.* Dublin: Author. https://www.education.ie/en/Schools-Colleges/Information/Information-Communications-Technology-ICT-in-Schools/digital-learning-framework-primary.pdf

Department of Education (DoE) (2021a) *Department of Education Statement of Strategy 2021-2023*. Dublin: Author. https://www.gov.ie/pdf/?file=https://assets.gov.ie/136245/0f16238d-ce2e-4da9-8511-a871327b4e2d.pdf#page=null

DoE (2021b): *Remote teaching and learning Summary of Inspectorate research January – February 2021*. Dublin: Author. https://www.gov.ie/pdf/?file=https://assets.gov.ie/139676/187e32dd-61b9-4ff7-bdf8-c94ba93edb5c.pdf#page=null

DoE (2022). *Digital strategy for schools to 2027.* Dublin: Author. https://www.gov.ie/pdf/?file=https://assets.gov.ie/221285/6fc98405-d345-41a3-a770-c97e1a4479d3.pdf#page=null.

Donohue, B., Perkins, R., Walsh, T., O'Neill, B., Ó Duibhir, C., & Duggan, A. (2023). *Education in a Dynamic World: The performance of students in Ireland in PISA 2022.* Dublin: Educational Research Centre. https://www.erc.ie/wp-content/uploads/2023/12/B23617-Education-in-a-Dynamic-World-Report-online-1.pdf

European Commission (EC) (2020). *Digital Education Action Plan 2021-2027 Resetting education and training for the digital age*. Brussels: Author. https://education.ec.europa.eu/focus-topics/digital-education/action-plan.

EC. (2022).*The Digital Economy and Society Index (DESI)*. Brussels: Author. https://digital-strategy.ec.europa.eu/en/policies/desi.

EC (2023a). *Commission calls for massive boost in enabling digital education and providing digital skills.* 18th April 2023. Enabling digital education and providing digital skills (europa.eu).

EC (2023b). *2030 Digital Decade: Report on the state of the digital decade*. Brussels: Author. https://digital-strategy.ec.europa.eu/en/library/2023-report-state-digital-decade

Feerick, E., Cosgrove, J.,& Moran, E. (2021). *Digital Learning Framework (DLF) national evaluation: One year on – Wave 1 Repor*t. Dublin: Educational Research Centre. https://www.erc.ie/wp-content/uploads/2021/06/DLF-W1-full-report.pdf.

Feerick, E., Clerkin, A. & Cosgrove, J. (2022). Teachers' understanding of the concept of 'embedding' digital technology in education. *Irish Educational Studies*, 41(1), 27-39. https://doi.org/10.1080/03323315.2021.2022521

Ilomäki, L., & Lakkala, M. (2018) Digital technology and practices for school improvement: Innovative digital school model. *Research and Practice in Technology Enhanced Learning 13*, 25. https://telrp.springeropen.com/articles/10.1186/s41039-018-0094-8

Milosevic, T., Laffan, D., & O'Higgins-Norman, J. (2021*). KiDiCoTi: Kids' digital lives in Covid-19 times: A study on digital practices, safety and wellbeing. Key findings from Ireland*. National Anti-Bullying Research and Resource Centre (ABC), Dublin City University. https://antibullyingcentre.ie/wp-content/uploads/2021/12/Short-report_Covid_ for-media_TM_with-Author-names-1-2.pdf.

Mishra P., & Koehler M.J. (2006) Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers College Record. 108(6)*, 1017–1054. NY: Columbia University.

Mohan, G., McCoy, S., Carroll, E., Mihut, G., Lyons, S., & Mac Domhnaill, C. (2020). *Learning for all? Second-level education in Ireland during COVID-19* (ESRI Survey and Statistical Report Series Number 92). Dublin: ESRI. https://www.esri.ie/system/files/publications/SUSTAT92_3.pdf

Mullis, I.V.S., Martin, M.O., Foy, P., & Hooper, M. (2017). *PIRLS 2016: International Results in Reading*. International Association for the Evaluation of Educational Achievement (IEA). https://files.eric.ed.gov/fulltext/ED580353.pdf

Mullis, I.V.S., Martin, M.O., Foy, P., Kelly, D.L., & Fishbein, B (2020). *TIMSS 2019: International Results in Mathematics and Science*. International Association for the Evaluation of Educational Achievement (IEA). https://www.iea.nl/sites/default/files/2020-12/TIMSS%202019-International-Results-in-Mathematics-and-Science.pdf

National Advisory Council for Online Safety (2021) *Report of a National Survey of Children, their Parents and Adults regarding Online Safety*. Author. https://www.gov.ie/pdf/?file=https://assets.gov.ie/204409/b9ab5dbd-8fdc-4f97-abfc-a88afb2f6e6f.pdf#page=null.

Ombudsman for Children Office (2022) *"No filter" A survey of children's experience of the Covid-19 pandemic"*. Author. https://www.oco.ie/app/uploads/2022/04/No-Filter.pdf.

Panagiotis K., Punie, Y., & Devine, J. (2015) *Promoting Effective Digital-Age Learning: A European Framework for Digitally-Competent Educational Organisations.* European Commission.

Pfefferman D. (1996). The use of sampling weights for survey data analysis. *Statistical Methods in Medical Research, 5(3),* 239-261. DOI: https://doi.org/10.1177%2F096228029600500303

Punie, Y., editor(s), Redecker, C. (2017) *European Framework for the Digital Competence of Educators: DigCompEdu*. Luxembourg: Publications Office of the European Union. doi: 10.2760/178382 (print),10.2760/159770 (online).

Scully, D., Lehane, P., & Scully, C. (2021) 'It is no longer scary: digital learning before and during the COVID-19 pandemic in Irish secondary schools'. *Technology, Pedagogy And Education*, doi:10.1080/147593 9X.2020.1854844.

UNESCO and Microsoft (2011). *UNESCO ICT competency framework for teachers.* Paris: UNESCO. http://unesdoc.unesco.org/images/0021/002134/213475e.pdf

Vuorikari, R., Kluzer, S. & Punie, Y., DigComp 2.2: *The Digital Competence Framework for Citizens - With new examples of knowledge, skills and attitudes*, EUR 31006 EN, Publications Office of the European Union, Luxembourg, 2022, ISBN 978-92-76-48883-5, doi:10.2760/490274, JRC128415.

Appendix 1
DLF evaluation Wave 2 questionnaires

Table A1. Content of the Wave 2 questionnaire: DLT leaders
General information (roll number, number of teachers in the school, role in school, years in current school, level of qualification, age group)
When school established a Digital Learning Team (DLT), number of staff on team, frequency of DLT meetings, how DLT members were selected, groups represented on DLT
Dimension and domain of DLF that school is focusing on (Teaching and Learning/Leadership and Management), why selected
Whether school has DLP, extent and type of consultation in development of DLP, whether DLP been has been revised, items included on the DLP
Frequency of use of the DLPlanning website and ratings of aspects of the website
Current level of embedding DTs in TLA, and effectiveness of use of DTs in TLA, by teachers in the school
School's current level of effective practice (as described in the DLF), how this was identified, school's current level of embedding DTs in TLA (Emerging-highly Advanced)
Relationship between work on the DLF and SSE activities
(Primary only) – use of computer-based and paper-based standardised tests in reading and mathematics by class level
Attitudes to DTs to support TLA
Whether school uses DT-based assessment, priorities of the school to further enable DT-based assessment
Digital leadership style as applies to staff in the school
CPD initiatives in which the school has participated, and views on suitability of CPD
Follow up support from PDST TiE sought and if so, type of support, ratings of PDST resources
Reliability of Internet connection at home and at school, teacher and student access to devices
Ratings of various aspects of DTs as they relate to needs and priorities of school (infrastructure, connectivity, technical support, teacher and student knowledge/skills) (Poor –Excellent)
Provision of technical support and perceived effectiveness of technical support, how school pays for technical support
DTs in place in school before/after March 2020 (onset of COVID-19)
Items purchased using the ICT Infrastructure grant, groups/individuals consulted in deciding how grant was spent, influential factors in spending the grant, whether school requires more funding to implement the DLP
Perceived impact of DLF implementation
How school's DT usage may have changed within TLA since March 2020 (onset of COVID-19)
Active priorities for student groups: students with Special Educational Needs and disadvantaged students
Perceived challenges associated with DLF implementation

Table A2. Content of the Wave 2 questionnaire: Teachers, open-ended items only
Description of how DTs are currently embedded into TLA
Views on professional learning supports for implementing the DLF/DLP
Views on changes in how DTs are used since the onset of COVID-19
Views on enablers of the implementation of the DLF

Table A3. Content of the Wave 2 questionnaire: PDST DT Advisor Questionnaire
General information (school level, number of years on secondment)
Implementation of the DLF [open-ended]: Biggest successes, biggest challenges, main priorities under the new Digital Strategy for Schools 2021-2027
Ratings of teacher competencies under the area of information and data as outlined in the DigComp 2.2 framework
Ratings of teacher competencies under the area of communication and collaboration as outlined in the DigComp 2.2 framework
Ratings of teacher competencies under the area of digital content creation as outlined in the DigComp 2.2 framework
Ratings of teacher competencies under the area of online safety and wellbeing as outlined in the DigComp 2.2 framework
Ratings of teacher competencies under the area of digital problem solving as outlined in the DigComp 2.2 framework
Any other comments or suggestions on the DLF, or DTs in education more generally [open-ended]

Table A4. Content of the Wave 2 questionnaires: Pupil/Student Questionnaires
General information (class level/school year, gender)
Early use of DTs (when first accessed the Internet; when first used computer)
Availability and types of DTs (hardware and Internet access) used in school and at home
Frequency of use of various software and applications for learning or study
Frequency scales to explore competency in information and data as outlined in the DigComp 2.2 framework.
Frequency scales to explore competency in Communication and Collaboration as outlined in the DigComp 2.2 framework.
Frequency scales to explore competency in digital content creation as outlined in the DigComp 2.2 framework.
Frequency scales to explore competency in online safety and wellbeing as outlined in the DigComp 2.2 framework.
Frequency scales to explore competency in digital problem solving as outlined in the DigComp 2.2 framework.
What do you like best about how computers and DTs are used at your school? [open-ended]
How would you like to see computers and DTs used in your school by **pupils/students** to help students/pupils learn better? [open-ended]
How would you like to see computers and DTs used in your school by **teachers** to help students/pupils learn better? [open-ended]

Appendix 2

Table A2.1a. Scale intercorrelations: DLT, primary level								
	Attitudes to DTs - pupil learning	**Attitudes to DTs- impediments to learning**	**School digital leadership**	**Professional learning suitability**	**DT Infrastructure and connectivity**	**DT teacher and pupil engagement**	**Tech support effectiveness**	**Impact of DLF**
Attitudes to DTs - pupil learning								
Attitudes to DTs-impediments to learning	.426**							
School digital leadership	.389**	.205*						
Professional learning suitability	.323**	0.125	.474**					
DT Infrastructure and connectivity	.258**	.239**	.351**	.348**				
DT teacher and pupil engagement	.328**	0.169	.611**	.489**	.513**			
Tech support effectiveness	0.070	0.031	0.148	0.168	.527**	0.095		
Impact of DLF	.520**	0.140	.480**	.398**	.190*	.433**	-0.001	
Implementation challenges	0.161	0.129	.407**	0.128	.424**	.228*	.188*	0.149

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
Significant correlations are shaded in green

Table A2.1b. Scale intercorrelations: DLT, post-primary level

	Attitudes to DTs - student learning	Attitudes to DTs-impediments to learning	School digital leadership	Professional learning suitability	DT Infrastructure and connectivity	DT Teacher and pupil engagement	Tech support effectiveness	Impact of DLF
Attitudes to DTs - student learning								
Attitudes to DTs-impediments to learning	.356**							
School digital leadership	.362**	0.077						
Professional learning suitability	0.185	0.151	.401**					
DT Infrastructure and connectivity	0.195	0.239	0.063	-0.106				
DT teacher and pupil engagement	.359**	0.185	.530**	0.204	.432**			
Tech support effectiveness	-0.016	0.097	0.037	0.082	.364**	-0.035		
Impact of DLF	0.187	-0.032	.435**	0.135	.254*	.439**	-0.104	
Implementation challenges	0.212	0.208	0.221	0.054	0.165	.263*	.347**	0.236

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
Significant correlations are shaded in green

Table A2.2a. Primary DLT scale descriptives and reliabilities, and subgroup comparisons by enrolment size and DEIS status

Index	Primary DLT	Overall			Subgroup comparisons					
					Enrolment size				DEIS status	
		Cronbach's alpha	Mean	SD	Very small up to 60 (RefGroup)	Small 61-120	Medium 121-200	Large 201 or more	In DEIS	Not in DEIS
Attitudes to DTs - pupil learning		0.8	76.1	13.2	75.1	73.3	72.5	80.9	73.3	76.6
Attitudes to DTs-impediments to learning		0.81	58	16.1	55.3	60.9	53.1	60.6	56.5	58.3
School digital leadership		0.84	64.7	15.1	65.6	64.8	64.0	64.4	62.3	65.2
Professional learning suitability		0.85	47.2	21.3	39.7	50.0	41.0	54.0	44.2	47.8
DT Infrastructure and connectivity		0.82	49.7	18.5	46.5	52.2	49.2	50.4	45.1	50.7
DT teacher and pupil engagement		0.87	54.5	16.9	52.7	53.8	52.1	57.7	51.2	55.2
Tech support effectiveness		0.91	59.4	23.4	52.9	60.5	66.1	58.9	56.8	60.0
Impact of DLF		0.87	55.4	18.9	55.3	53.4	55.0	57.3	50.3	56.5
Implementation challenges		0.74	46.6	13.5	49.2	50.4	55.8	57.0	45.6	46.9

For all indexes, a higher score indicates a more positive outcome.
Shaded cell indicates a significant difference (p<.05).

Table A2.2b. Post-primary DLT scale descriptives and reliabilities, and subgroup comparisons by enrolment size, DEIS status and sector

Index	Post-primary DLT	Overall			Subgroup comparisons							
					Enrolment size			DEIS status		Sector		
		Cronbach's alpha	Mean	SD	Small up to 350 (RefGroup)	Medium 351 -600	Large 601 or more	In DEIS	Not in DEIS	Community	Secondary	Vocational
Attitudes to DTs - student learning		0.82	73.3	12.3	72.5	69.5	76.5	72.1	73.6	71.6	74.9	71.1
Attitudes to DTs-impediments to learning		0.81	51.5	16.0	52.3	46.1	55.1	49.2	52.0	48.7	49.1	58.2
School digital leadership		0.84	67.5	13.9	65.7	66.4	69.3	63.4	68.4	66.5	69.4	64.0
Professional learning suitability		0.77	49.8	17.9	44.0	51.5	51.5	48.3	50.1	51.2	49.5	49.5
DT Infrastructure and connectivity		0.80	54.9	16.5	57.0	48.3	58.7	52.6	55.4	62.7	52.9	54.5
DT teacher and student engagement		0.90	59.0	15.4	60.2	59.2	58.2	56.3	59.6	57.7	60.7	56.4
Tech support effectiveness		0.91	70.4	20.1	68.9	67.3	73.3	71.8	70.1	74.4	69.3	70.2
Impact of DLF		0.84	65.8	16.7	69.7	59.8	68.0	64.3	66.2	67.7	65.1	66.2
Implementation challenges		0.81	46.7	13.7	56.6	54.2	50.9	50.2	54.0	58.6	52.6	51.4

For all indexes, a higher score indicates a more positive outcome.
There were no significant differences between any of the means each for enrolment size, DEIS status and sector.

Table A2.3a. DLT Respondents' demographic information, primary schools

Respondents' year of employment begun at current school (n=143)

Response	2012 or earlier	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020	2020-2021
Percentage	61	1.5	4	4	4	11	7	3	1.5	3.5

Age group of respondents (n=143)

Response	Over 60		50-59	40-49	30-39	25-29	Under 25
Percentage	4		23	42	32	0	0

Number of teachers in respondents' school (n=143)

Response	1-10	11-20	21-30	31+
Percentage	46	30	17	6

Respondent's educational qualifications (n=109)

Response	Cert/ Diploma	Masters/H.Dip	PhD/Ed.D	Other
Percentage	39	70	3	9

Respondents' DLT membership (n=142)

Response	DLT leader	DLT member	Not on DLT
Percentage	48	31	4

Table A2.3b. DLT Respondents' demographic information, post-primary schools

Respondents' year of employment begun at current school (n=74)

Response	2012 or earlier	2012-2013	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018	2018-2019	2019-2020
Percentage	68	7	2	2.5	7.5	5	4	2	2

Age group of respondents (n=60)

Response	Over 60	50-59	40-49	30-39	25-29	Under 25
percentage	5.5	32	35	25	0	2.5

Number of teachers in respondents' school (n=60)

Response	1-20	21-40	41-60	61-80	81-100
percentage					

Respondent's educational qualifications (n=60)

Response	Cert/Diploma	Masters/H.Dip	PhD/Ed.D	Other
percentage	45	67	4	12

Respondents' DLT membership (n=52)

Response	DLT leader	DLT member	Not on DLT
percentage	49	44	1

Junior Certificate or Junior Cycle short courses (n=74)

Response	Applied Technology	Coding	Digital Media Literacy	None
percentage	15	24.5	33	45

Leaving Certificate curricular options (n=74)

Response	Computer Science	Technology	Digital Technology-related courses during Transition Year	None
percentage	21.2	21.7	52.5	36

Figure A2.1. When schools' Digital Learning Team was established; percentages, primary and post-primary schools

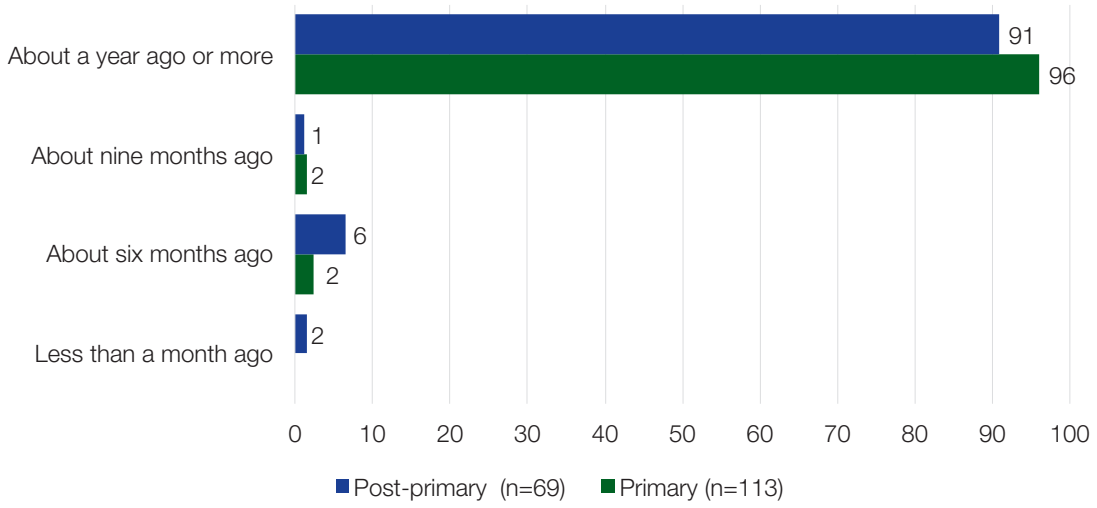


Figure A2.2a. Number of people on school's Digital Learning Team; percentages, primary schools (n=113)

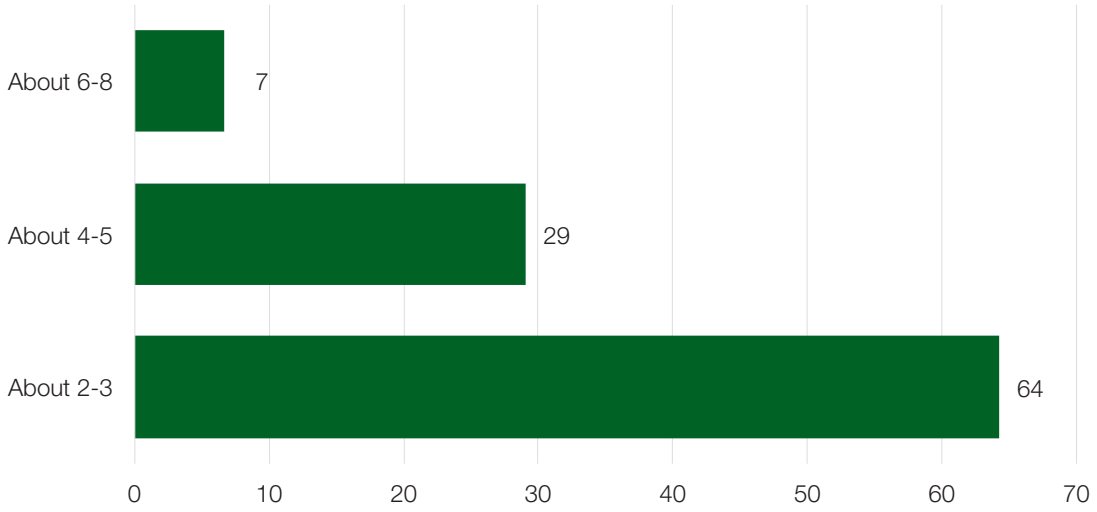


Figure A2.2b. Number of people on school's Digital Learning Team; percentages, post-primary schools (n=69)

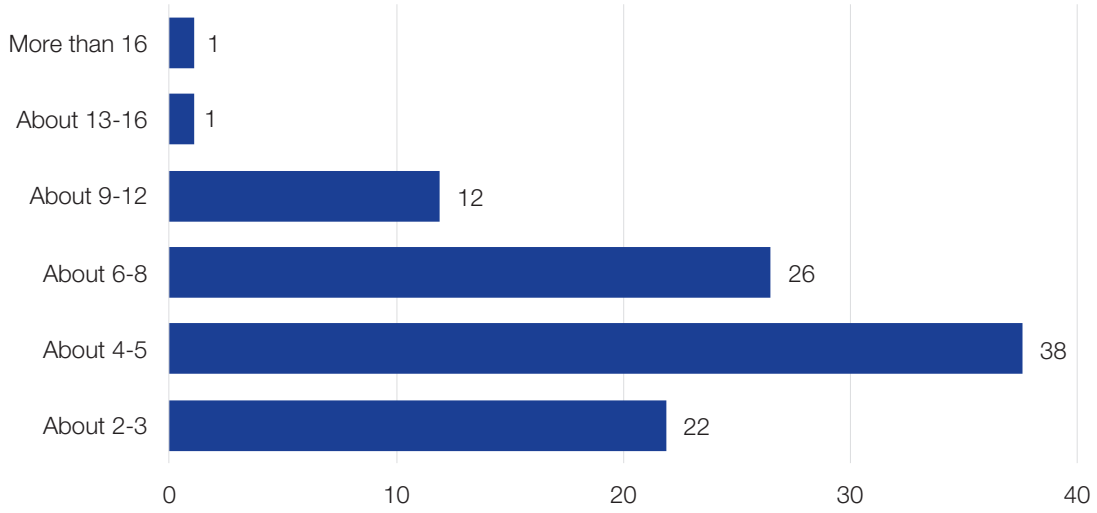


Figure A2.3. How DLT membership was decided; percentages, primary and post-primary schools

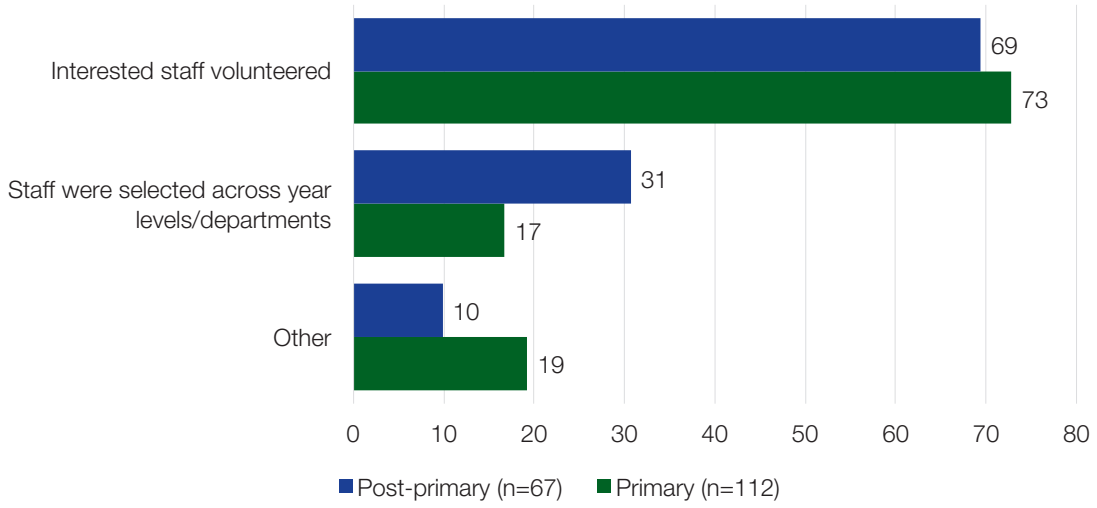


Figure A2.4. Frequency of Digital Learning Team meetings; percentages, primary and post-primary schools

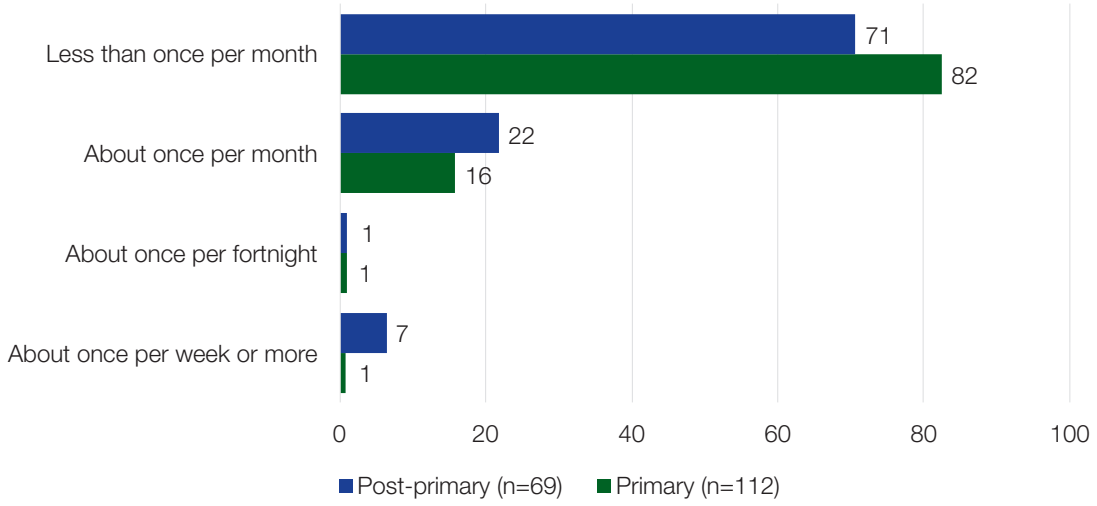


Figure A2.5. Schools' chosen dimension of focus; percentages, primary and post-primary schools

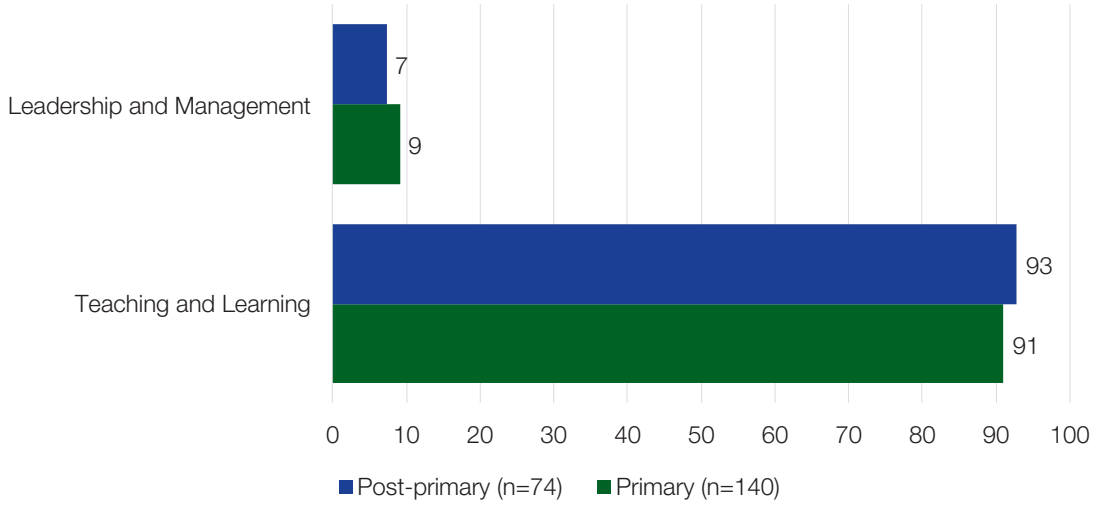


Figure A2.6a. Schools' chosen standards of focus within domain 1 (learner outcomes) of the teaching and learning dimension; percentages, primary schools (n=58)

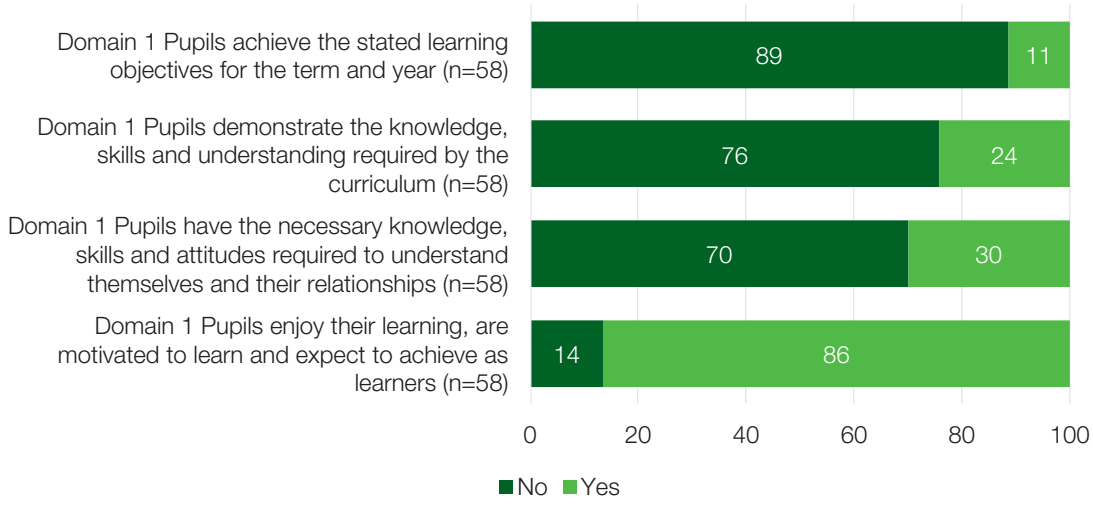


Figure A2.6b. Schools' chosen standards of focus within domain 2 (learner experiences) of the teaching and learning dimension; percentages, primary schools (n=65)

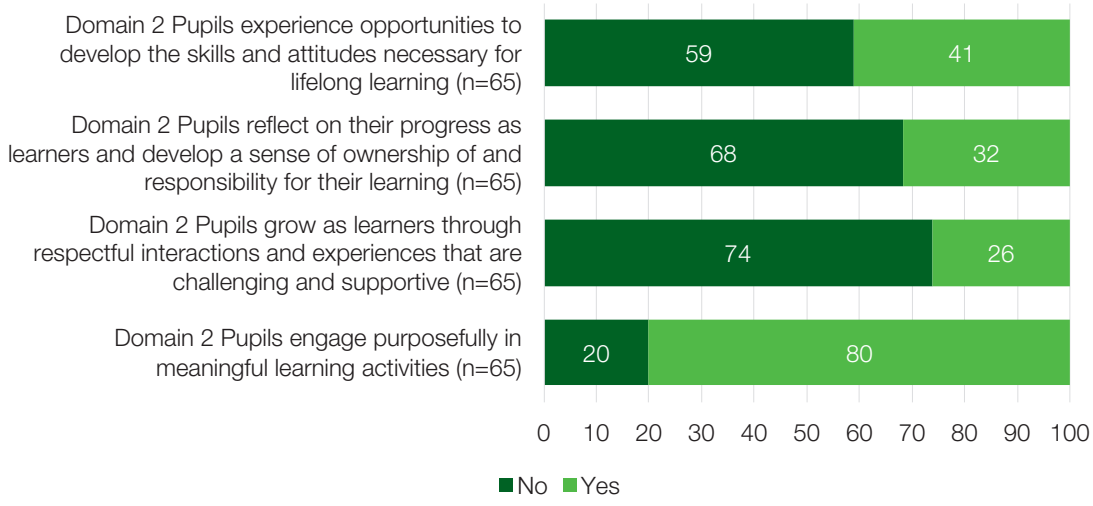


Figure A2.6c. Schools' chosen standards of focus within domain 3 (teachers' individual practice) of the teaching and learning dimension; percentages, primary schools (n=36)

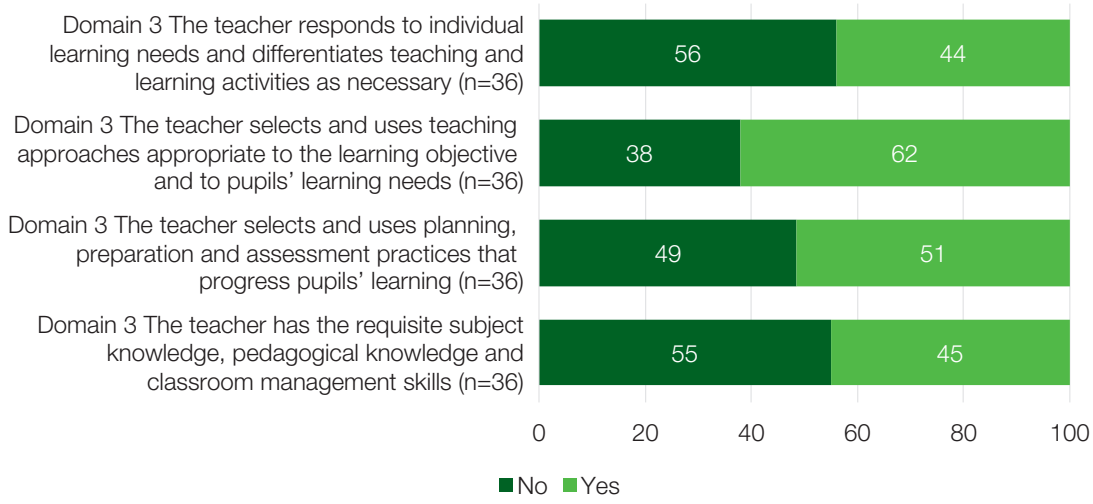


Figure A2.6d. Schools' chosen standards of focus within domain 4 (teachers' collective/collaborative practice) of the teaching and learning dimension; percentages, primary schools (n=24)

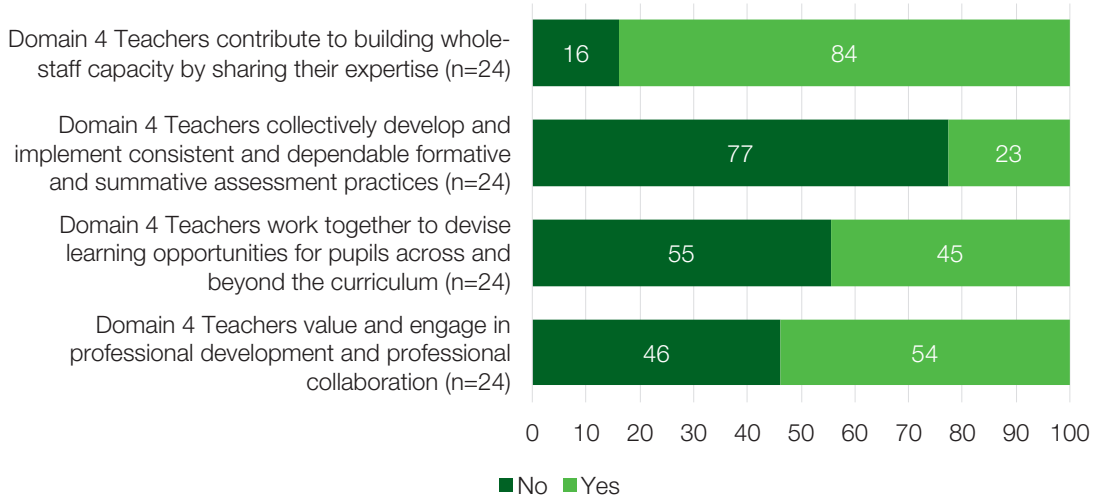


Figure A2.6e. Schools' chosen standards of focus within domain 1 (learner outcomes) of the teaching and learning dimension; percentages, post-primary schools (n=18)

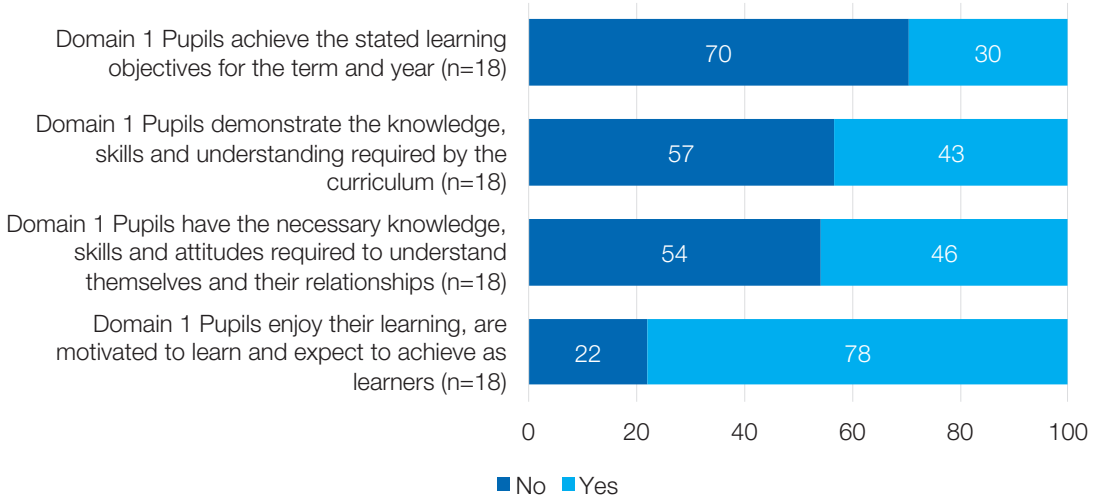


Figure A2.6f. Schools' chosen standards of focus within domain 2 (learner experiences) of the teaching and learning dimension; percentages, post-primary schools (n=65)

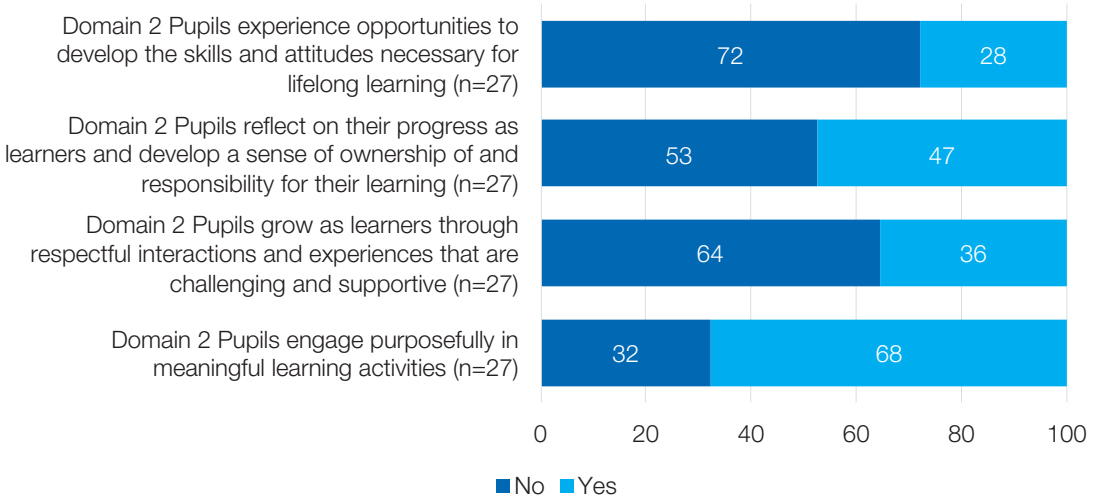


Figure A2.6g. Schools' chosen standards of focus within domain 3 (teachers' individual practice) of the teaching and learning dimension; percentages, post-primary schools (n=27)

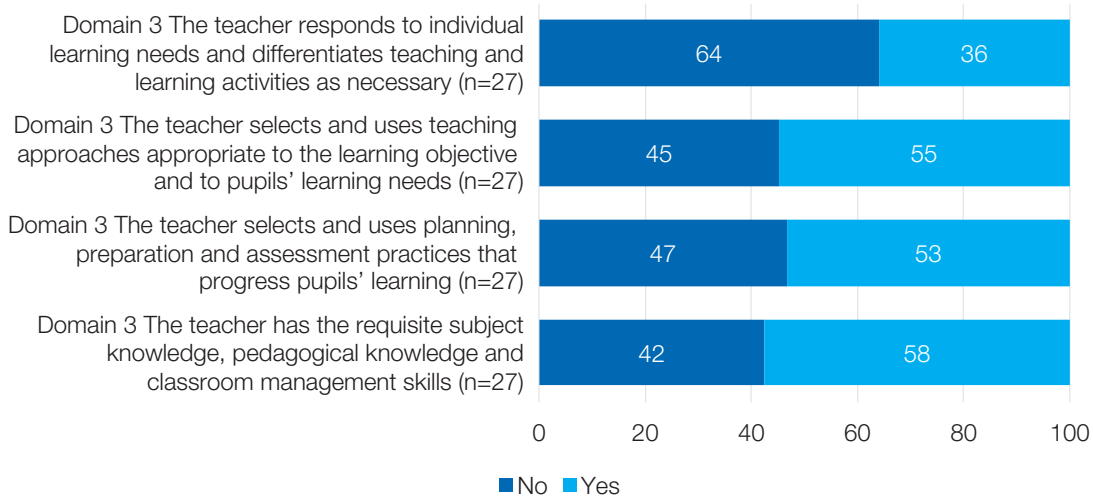


Figure A2.6h. Schools' chosen standards of focus within domain 4 (teachers' collective/collaborative practice) of the teaching and learning dimension; percentages, post-primary schools (n=39)

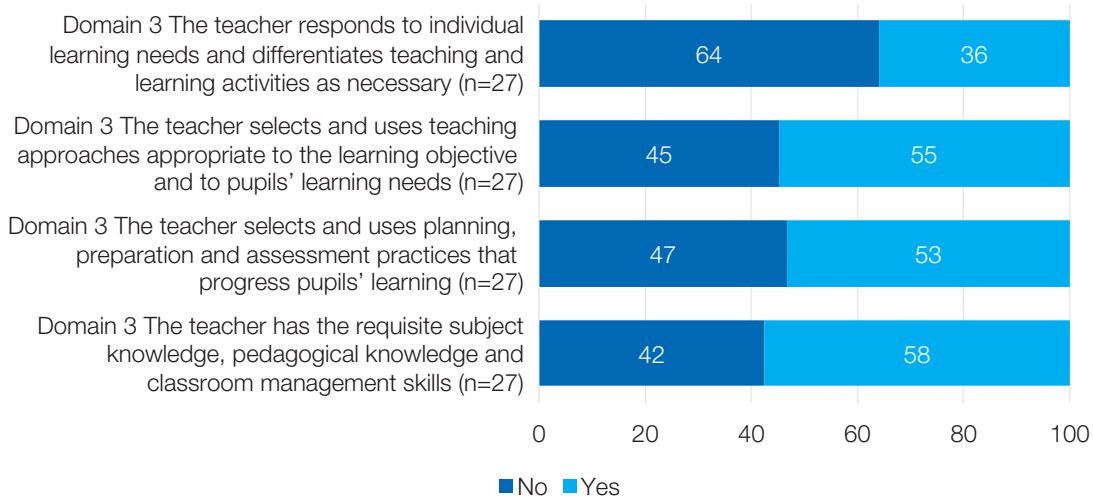


Figure A2.7a. Degree of consultation of various parties in the development of DLP; percentages, primary schools

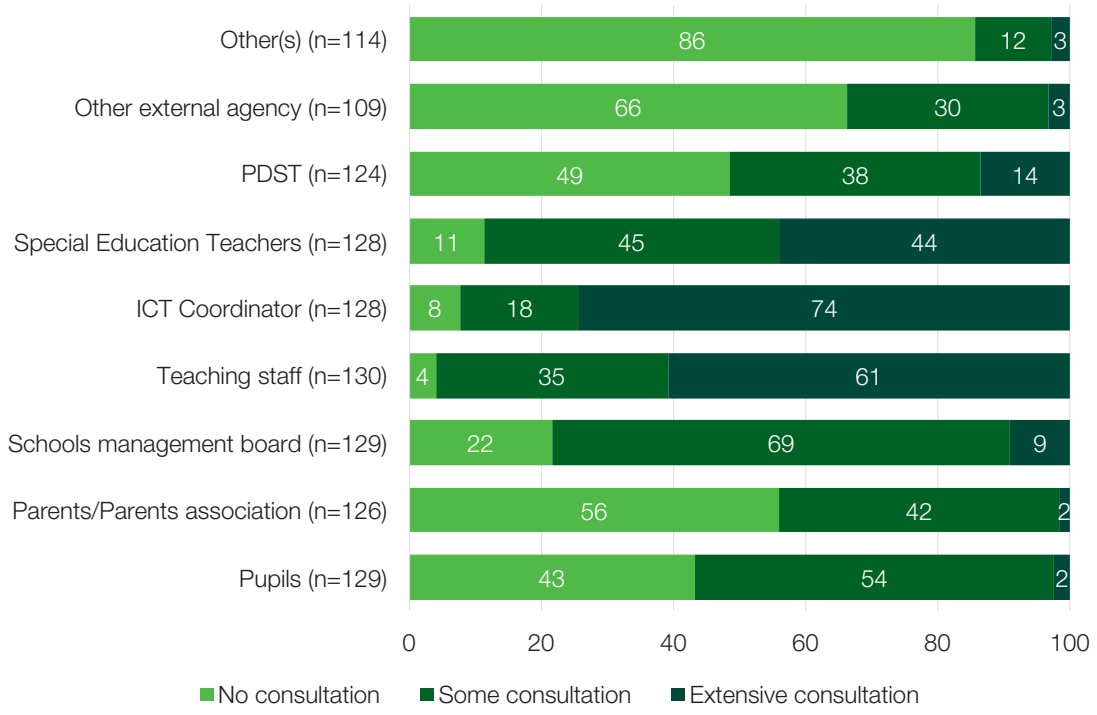


Figure A2.7b. Degree of consultation of various parties in the development of DLP; percentages, post-primary schools

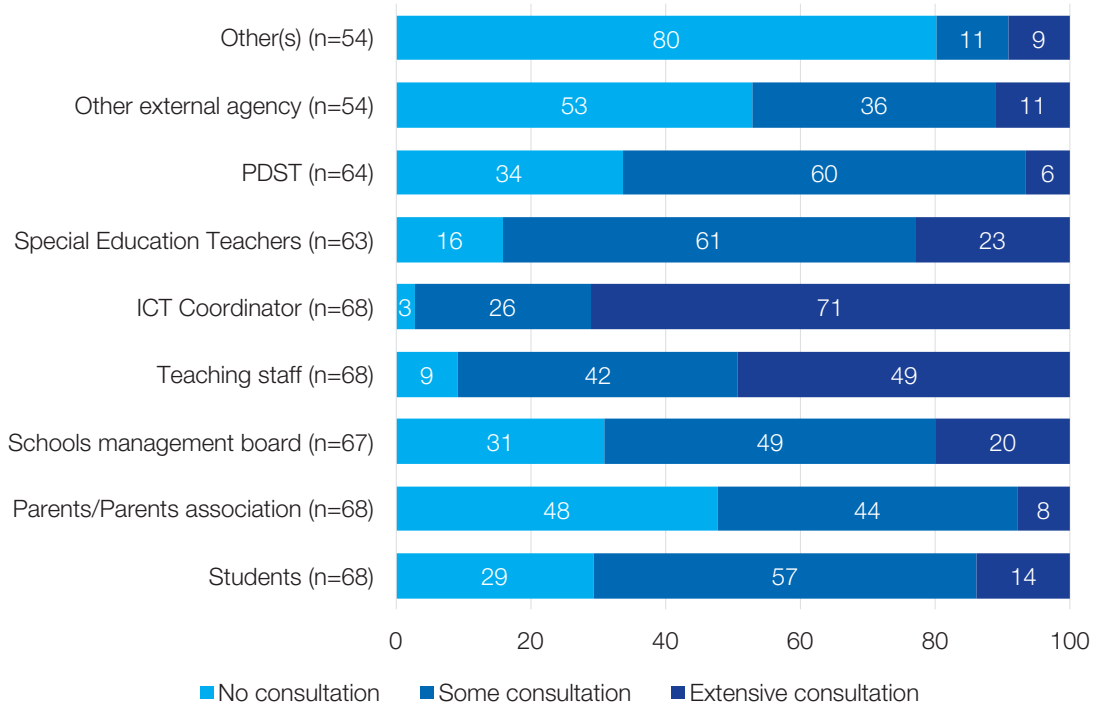


Figure A2.8. Of those respondents who indicated that their DLP had been revised, whether there had been a change in the dimension on which the school's DLP was focused; percentages, primary and post-primary schools

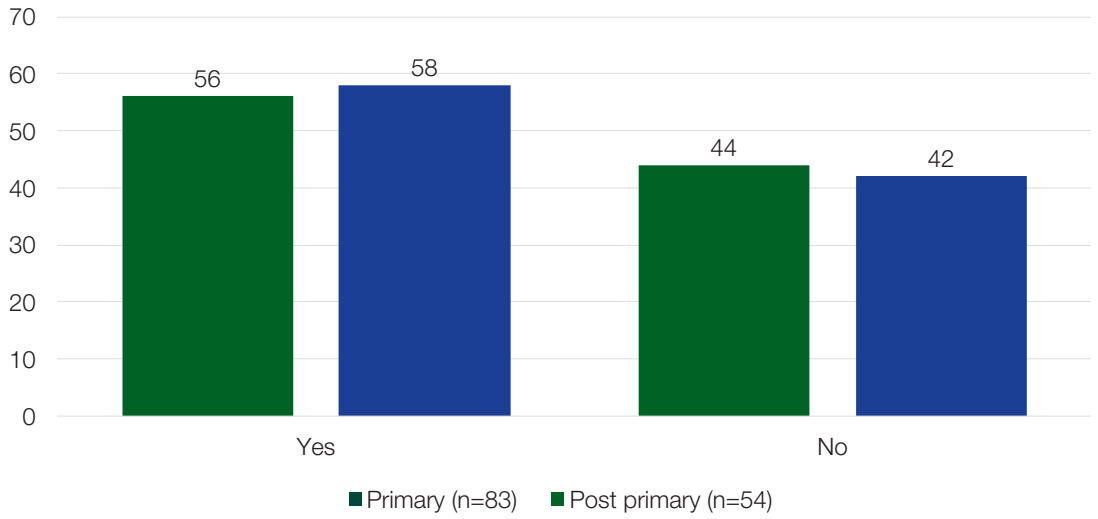


Figure A2.9. Whether the school has a member(s) of staff with a key role in guiding the pedagogical use of digital technologies, in order to support the school's DLP; percentages, primary and post-primary schools

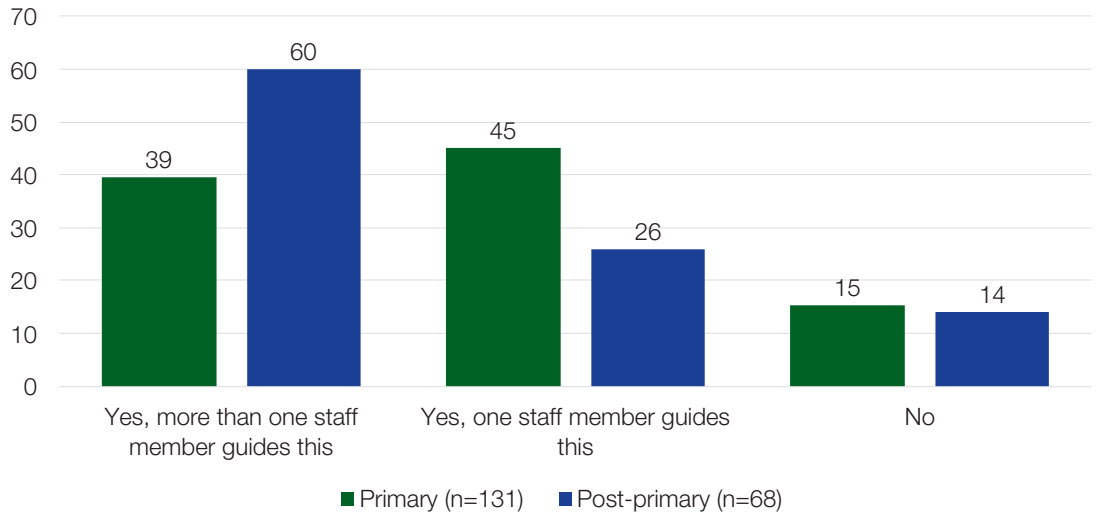
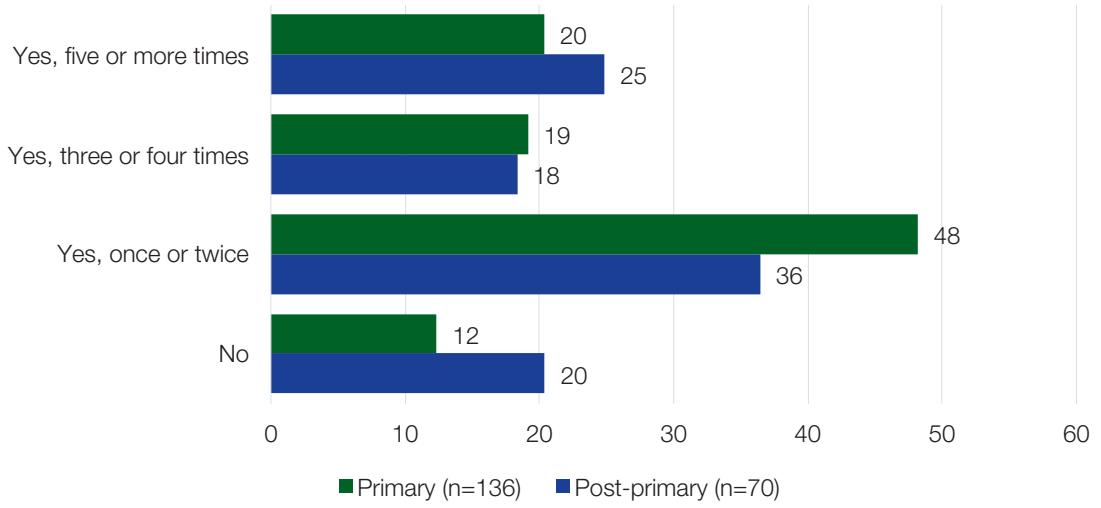


Figure A2.10. How often DLT leaders had visited the DLPlanning.ie website; percentages, primary and post-primary schools



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