Digital Learning Framework Trial Evaluation:

Final Report Executive Summary

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I Title II Cosgrove, Jude III Duggan, Alice IV Shiel, Gerry, V Leahy, Margaret

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Table of Contents

This document describes the final results of the Digital Learning Framework Trial evaluation. It follows from the baseline report on the trial which was published in May, 2018. The full report is available at www.erc.ie/dlf.

Background context

In September 2017, the *Digital Learning Framework* (DLF) for primary and post-primary schools was published (DES, 2017a, b). This was followed by *Digital Planning Guidelines* and a *Planning Template* in December 2017[1]. The DLF is a tool to help schools manage the transformation of teaching and learning as a result of embedding digital technologies into practice, and has been developed to enable schools to implement elements of Ireland's national *Digital Strategy for Schools 2015-2020* (DES, 2015).

The *Digital Strategy for Schools* is organised under four themes (teaching, learning and assessment; teacher professional learning; leadership, research and policy; and ICT infrastructure). The DLF is a key component of the first of these themes.

Other resources and supports have been developed to underpin the realisation of the Digital Strategy, including exemplar videos of good practice and practical guidelines for schools on issues such as technical support. These are on the Professional Development Service for Teachers (PDST) Technology in Education website[2].

The DLF consists of standards and statements of practice and effective practice; these are organised under the two *dimensions* of Teaching and Learning and Leadership and Management. Within each of these dimensions, there are four *domains*.

- 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.

It is intended that schools focus on one domain at a time in ongoing school development and improvement activities. The structure of the DLF is aligned to the *Looking At Our School* (LAOS) framework (DES, 2016), which is used in school self-evaluation and external inspection activities[3].

[1] http://www.pdsttechnologyineducation.ie/en/Planning/Digital-Learning-Framework-and-Planning-Resources-Primary/ and http://www.pdsttechnologyineducation.ie/en/Planning/Digital-Learning-Framework-and-Planning-Resources-Post-Primary/; video exemplars are also available.

[2] http://pdsttechnologyineducation.ie/en/

[3] As a result of industrial relations (IR) issues, primary schools had been directed (since about April 2016) not to engage in the 6-step SSE (School Self-Evaluation) process. The IR issues have now been resolved.

Aims of the Digital Learning Framework trial evaluation

The Educational Research Centre (ERC) was asked by the Department of Education and Skills (DES) to conduct an independent evaluation of the Digital Learning Framework trial. The aims of the evaluation are:

1 To gather information on schools' views on the Digital Learning Framework (DLF) document in order to highlight strengths and describe potential improvements
2 To gather information from principals and teachers on the DLF trial in order to identify key strengths and challenges in its implementation
3 To explore whether key strengths and challenges vary with schools' contexts
4 To examine whether participation in the DLF trial has had any impact on teaching practices and/or whether participation has reduced perceived obstacles relating to teaching and learning in a digital context, from the perspectives of principals and teachers
5 To describe key activities, successes and challenges of schools in their work with the PDST during the trial, from the perspectives of both PDST advisors and school staff
6 To describe the learning from the DLF trial from the schools' and PDST perspectives in order to compile information that could contribute to ongoing development and implementation of the DLF.

Design of the Digital Learning Framework trial evaluation

The study involved the collection of information from school principals, digital technology liaison teachers and class teachers from participating schools during October-November 2017 (Phase 1) and again in April-May 2018 (Phase 2). Focus groups were also conducted with school staff in six schools in Phase 1, and with school staff and students/pupils in these same six schools in Phase 2. PDST advisors also took part in a focus group during Phase 2. Online surveys were administered during both phases, with some common content across phases, which allowed for some comparisons across phases.

In September 2017, the DES invited schools to apply to participate in the DLF trial. In their applications, schools indicated a first, second or third preference for the DLF domain that they wished to focus on during the DLF trial. Twenty-eight primary and two special schools[4] were selected from 176 schools that applied, and 20 post-primary schools were selected from 139 applications. In selecting schools, a balance was sought between school characteristics such as location, enrolment size, gender composition, socio-economic context, and DLF domain area.

Comparisons of the DLF trial sample with the population of primary and post-primary schools indicate that the trial schools are broadly representative in terms of location, gender composition, and socio-economic context, but have slightly larger enrolment sizes than on average nationally.

Schools that volunteered to take part in the DLF trial may have a higher propensity to embed digital technologies in their practices than schools that did not volunteer. The

[4] Two primary schools withdrew from the study in December 2017 and January 2018 due to time constraints.

sample of schools may therefore be reflective of a more positive culture towards using digital technologies than might be the case with a full national sample.

In late October 2017, management and staff from the selected DLF trial schools attended a one-day seminar and information day on the DLF trial in Croke Park, Dublin.

Table E1 shows the distribution of participating schools across DLF domains. In some cases there are low numbers of schools focusing on a particular domain. For example, just two primary schools focused on Domain 4 of the Teaching and Learning dimension. For this reason, results are not compared across domains.

Table E1. Distribution of DLF domains across the 48 DLF trial schools, primary, post-primary and overall

Domain	**Primary (N = 28)**		**Post Primary (N = 20)**		**All (N = 48)**	
	N	*% focusing on this domain*	*N*	*% focusing on this domain*	*N*	*% focusing on this domain*
Teaching and Learning						
Domain 1 Learner Outcomes	4	14.3	4	20.0	8	16.7
Domain 2 Learner Experiences	8	28.6	1	5.0	9	18.8
Domain 3 Teachers' Individual Practice	3	10.7	1	5.0	4	8.3
Domain 4 Teachers' Collective/Collaborative Practice	2	7.1	7	35.0	9	18.8
Leadership and Management						
Domain 1 Leading learning and teaching	4	14.3	2	10.0	6	12.5
Domain 2 Managing the organisation	1	3.6	3	15.0	4	8.3
Domain 3 Leading school development	4	14.3	1	5.0	5	10.4
Domain 4 Developing leadership capacity	2	7.1	1	5.0	3	8.3

Seven PDST advisors were assigned to an average of seven schools each. Their role was to guide and support the work of schools in reflecting on activities associated with their DLF domain, to identify standards within that domain that schools wish to work on, to establish a vision for each school with respect to digital technologies in their specific domain and standard(s), to support schools as they implemented changes, and to provide tailored professional development to staff involved.

Each school established a Digital Learning Team to oversee the DLF trial. During the course of the trial, it was envisaged that each school's DL Team (along with other staff, as appropriate) would receive five visits from its PDST advisor.

Staff from six schools (three primary, three post-primary) took part in focus group interviews in Phases 1 and 2. The schools cover a range of locations, enrolment sizes, socio-economic contexts and gender compositions, as well as a range of DLF domains and stages of embedding digital technologies into school practices. In Phase 2, pupils/students in five of these schools also took part in focus groups.

Online questionnaires for Phases 1 and 2 were developed by the Educational Research Centre (ERC) and reviewed and approved by some of the members of the Implementation Advisory Group for the Digital Strategy for Schools. PDF versions of the questionnaires are available at www.erc.ie/dlf.

Guidelines for interpreting the results

Table E2 describes some important features of the DLF trial and provides guidelines for the interpretation of the results. These highlight:

- The short timeline (5-6 months) for the trial, meaning that any results, particularly regarding impacts of the DLF, should be regarded as initial indications only
- The relatively small number of schools taking part (which means that results cannot be generalised to the populations of primary and post-primary schools)
- The fact that the DLF contains a total of eight domains, with each school focusing on one of the eight during the trial; this prevents conclusions being drawn about specific DLF domains
- Differences across Phases 1 and 2 in the school-level questionnaire respondents, meaning that comparisons across phases should be made cautiously
- The probability that participating teachers were more digitally literate and digitally engaged than teachers in the general population
- Low teacher response rates at Phase 2, meaning that comparisons of teacher responses across Phases 1 and 2 are limited
- The fact that the information collected through the school focus groups needs to be interpreted in the particular contexts of the six schools taking part in the focus group discussions
- The fact that views of pupils and students were collected in Phase 2 only and that it is probably too early in the overall implementation of the DLF for it to have any meaningful or widespread impact on students and pupils.

Table E2. Features of the DLF trial and caveats/guidelines for interpreting the results

Feature	Caveat/Guideline
The **timeline** for the study is **short**, with about 6 months between baseline and final evaluation.	The results should be interpreted as an **initial indication only** of how schools are using the DLF to embed digital technologies into teaching and learning or leadership and management.
The **sample is small and non-random** (i.e. schools volunteered to take part), comprising 28 primary schools (including 2 special schools) and 20 post-primary schools. The sample may therefore be biased in favour of schools with a more positive disposition towards the use of digital technologies than might be the case with a nationally representative sample.	Although broadly representative of the population of schools in the country, the **results should not be generalised to all schools**. Instead, they should be regarded as **broadly indicative** of the implementation of the DLF trial and should be understood in the **particular contexts** of the participating schools and the fact that they chose to take part.
Each school focuses on one of the eight DLF domains, i.e. each school provides a partial picture of the entire DLF. The numbers of schools focusing on each domain varies from 1 to 8 at primary level, and from 1 to 7 at post-primary level.	**Results by individual DLF domain are not reported separately**. Instead, comparisons are made at the more general level of Teaching and Learning or Leadership and Management dimensions. The **findings should not be used to draw conclusions about the implementation of individual DLF domains**.
In Phase 1, a school-level questionnaire was administered to principals while in Phase 2, it was administered to Digital Learning Team Leaders. This means that **in some cases, different members of school staff would have responded to the school-level questionnaire during Phases 1 and 2**.	**Interpretation of the comparisons** of school-level results across Phases 1 and 2 should take account of the fact that **Phase 1 and Phase 2 respondents may not be the same member of staff**.
The **teachers** responding to the teacher questionnaire and taking part in focus groups are not necessarily representative of all teachers in participating schools as they **may be more digitally literate and digitally engaged**.	Results from the teacher survey should be interpreted with respect to the likelihood that **had all teachers** in participating schools **completed a survey**, the results **might reflect lower overall levels of digital literacy and digital engagement**.
Response rates of teachers were lower during Phase 2 (45%) than during **Phase 1** (79%). It was not **possible to reliably match individual teachers'** responses **across phases**.	For **comparing changes** across Phases 1 and 2, **school-level average teacher responses** for a **limited number of measures** only are reported.
Focus groups provide rich, in-depth information; however, focus groups were conducted **in six of the 48 schools** only (3 primary and 3 post-primary), with 33 staff taking part in phase 1 and 37 staff and 34 students/pupils taking part in phase 2.	The purpose of the focus groups is to provide a **detailed contextual narrative** about the journeys of particular schools as they progress through the trial and are **not intended to be typical or representative** of the full sample of schools.
Students'/pupils' views are not included in the **baseline** phase of the trial but are included in the **follow-up** phase.	The implementation of the DLF is at the very **initial stages** where the **focus** of the work is on **planning and enabling teachers** to implement the DLF. As the DLF is rolled out nationally, the relevance of students'/pupils' opinions will increase.

Summary of findings

Findings refer to Phase 2, with comparisons to Phase 1 where appropriate. The Phase 1 findings are reported in detail in Cosgrove et al. (2018)[5].

School questionnaire respondents

- All schools except one post-primary school returned their Phase 2 school questionnaire.
- At primary level, 50% of the respondents were principals, 14% were deputy principals, 18% were ICT/DL liaison teachers, and 18% were class teachers. At post-primary level, 5% of respondents (one school) was a principal, 32% were deputy principals, 58% were ICT/DL liaison teachers, and 5% (one respondent) was a class/subject teacher.
- In Phase 1, respondents to the school questionnaire were school principals primarily because, in a large majority of schools, a DLT had not been established. Comparisons

[5] http://www.erc.ie/wp-content/uploads/2018/05/DLF-Trial-Evaluation-Interim-Report-May-2018.pdf

of school-level survey responses across Phases 1 and 2 should be mindful of these differences.

Teacher questionnaire respondents

- Teacher response rates were lower in Phase 2 (44.5% at primary and 47% at post-primary) than in Phase 1 (78% at primary and 81% at post-primary).
- In Phase 2, a large majority of post-primary teachers (97.5%) were on the DLT in the school, while 63% of teachers at primary level were on the school's DLT. This suggests that teachers who were more directly involved in the DLF trial in schools were more likely to return a teacher questionnaire.
- Caution in interpreting the teacher results is advised.
    - Response rates were considerably lower in Phase 2 than in Phase 1; also, at primary level, five of the 28 participating schools did not return any teacher questionnaires.
    - A majority of respondents were on the schools' DLTs, so the results are unlikely to represent a whole-school picture.
    - It was not possible to match individual teacher results across Phases 1 and 2, so cross-phase comparisons are made at the level of the school rather than at the level of the teacher and should be interpreted with respect to differences in teacher response rates across phases.

PDST advisors

As already noted, seven PDST advisors (three at post-primary level and four at primary level) worked on this trial. Each advisor completed a short survey for each of his or her schools during Phase 1 and Phase 2.

Focus group respondents

- In Phase 2, 13 focus groups were conducted by two researchers from the ERC (during April/May 2018). One focus group was conducted with the seven PDST advisors; the four primary level and three post-primary level advisors were interviewed as a single group.
- Seven focus groups were conducted with staff in the six schools. In one school, a second group of staff was interviewed instead of a group of pupils. In that school, the principal felt that a focus group with pupils was not relevant, as the school was focusing on a Leadership and Management domain. The number of participants in the staff focus groups ranged from three to eight. The composition of the groups varied and included members of school management, as well as members and non-members of the DL Teams. The interviews lasted an average of 42 minutes.
- Five focus groups were conducted with students and pupils (three in post-primary schools and two in primary schools). The number of participants ranged from three to nine and the interviews lasted an average of 35 minutes.

Digital contexts of participating schools

- Both DLT leaders and teachers rated eight aspects of DT infrastructure and four aspects of DT engagement (of teachers and learners) on a scale ranging from Excellent to Poor. At primary level, a comparison of Phase 2 and Phase 1 responses

indicates that there has been a significant improvement in respondents' perceptions of DT infrastructure and DT engagement. There are no significant differences between Phases 1 and 2 at post-primary level on measures of DT infrastructure, although post-primary teachers' responses are indicative of significant improvements in levels of DT engagement across phases.

- These findings are challenging to interpret because the school-level questionnaire was directed to principals during Phase 1, and to DLT leaders at Phase 2. Also, the response rates for teachers were lower in Phase 1 than in Phase 2. Further, the ratings of DT infrastructure and DT engagement are subjective, and it is probable that, over the course of the trial, with increased understanding of how to use DT, respondents' appreciation of the effective use of DT and/or their engagement with DT improved. However, some of the improvements in these ratings at primary level can be directly attributed to efforts in a small number of schools to improve broadband connectivity and/or complete the purchase of new devices with the ICT infrastructure grant.

Digital teaching and learning practices

- At Phase 2, teachers were asked to indicate the frequency with which they had their students/pupils engage in a range of 16 activities using DT.
- At primary level, DTs were mainly used by pupils to find information, practice routine procedures, create knowledge, and work collaboratively with other pupils in the school. Primary pupils were less likely to use DTs to work with data/spreadsheets, use social networks, collaborate with others from outside of the school, create or use simulations, or submit homework.
- At post-primary level DTs were used by students mainly to find information, practice routine procedures, analyse and create knowledge, work collaboratively, and submit homework. Students were less likely to use DTs to work with others outside of the school, to use data logging tools, or to use or create simulations.
- Comparisons of teachers' responses to these 16 items with data on the same items from teachers who took part in the 2013 ICT Census in Schools (Cosgrove et al., 2014a, b) indicate that there have been very substantial increases in the percentages of teachers engaging their pupils/students in a majority of the 16 activities. On some items, the percentages of teachers reporting that they engaged their learners in these activities increased by between 30 and 60 percentage points. At both primary and post-primary levels, teachers who returned a DLF trial questionnaire at Phase 2 reported that they had their pupils use DTs to give peer-to-peer feedback, to collaborate, and to analyse and create information, substantially more frequently than those in the 2013 ICT Census. At post-primary level, large increases were also observed in frequencies with which students published work online, worked with spreadsheets/databases, and submitted homework.
- These increases (in comparison to the 2013 ICT Census) represent a positive finding; however, they should be interpreted with respect to differences in the samples of the two studies. The 2013 Census sample was nationally representative, while the samples of teachers taking part in the DLF trial are likely to be in schools that are more positively disposed towards DT.

DLT leaders' and teachers' views on the DLF document, Digital Learning Planning Guidelines and other resources

- Similar views emerged in the focus groups at both Phases 1 and 2. This section summarises the main findings from Phase 2.
- At both primary and post-primary levels, relatively frequent use was made of the DLF document, Digital Learning Planning Guidelines (DLPG) and planning template: between 74% and 90% of DLT leaders, and between 55% and 82% of teachers reported using these once a month or more often in the course of the DLF trial.
- Use of/reference to the exemplar videos on the PDST Technology in Education website was somewhat less frequent: about two-fifths of DLT leaders, and about one-third of teachers, Rarely or Never used them. Commentary from the focus groups with school staff suggests that some teachers were not aware of the exemplar videos.
- At both primary and post-primary levels, overall views of these resources were positive.
- At primary level, between 63% and 89% of DLT leaders rated these four resources as resources as Excellent, Very good or Good, while between 7% and 18.5% rated them as Fair or Poor. At post-primary level, between 68% and 95% of DLT leaders rated these four resources as resources as Excellent, Very good or Good, while between 5% and 16% rated them as Fair or Poor.
- At primary level, between 63% and 74% of teachers rated these four resources as resources as Excellent, Very good or Good, while between 6% and 23% rated them as Fair or Poor. At post-primary level, between 56% and 81% of teachers rated these four resources as resources as Excellent, Very good or Good, while between 7% and 20.5% rated them as Fair or Poor.
- Respondents were asked about overall length and layout, language and terminology, content and wording of the DLF domain on which the school was focused, content/wording of the statements of practice for the DLF domain on which the school was focused, and the fit of the DLF within the school's broader planning and development work.
    - Broadly speaking, views on these specific aspects of the DLF document were quite positive. For example, the percentages of DLT leaders rating the length and layout of the DLF as Excellent or Very good were 50% at primary level and 63% at post-primary level. The corresponding percentages reported by teachers were 36% and 54%, respectively.
    - However, specific comments from some respondents (21% of DLT leaders at primary level and 15% of DLT leaders at post-primary level; 11% of teachers at primary level and 4% of teachers at post-primary level) indicate that they had difficulties with the wording, terminology or length of the DLF.
- In the focus groups, some teachers and PDST advisors commented on what they perceived to be forced divisions between dimensions (Teaching and Learning, Leadership and Management) and domains (Learner Experiences and Teachers' Individual/Collaborative Practice). That is, they felt that the DLF does not reflect the interdependencies between these areas, and the reality of schools' experiences.
- The challenge of 'unpacking' the DLF domains and translating them into practice was mentioned by DLT Leaders and teachers in the questionnaires, as well as by the PDST

advisors and teachers in the focus groups. Advisors noted that this process involves a degree of flexibility and freedom, and a high level of teacher agency/autonomy that is outside the norm in many schools, making it difficult for teachers to engage with the document without the advisors' reassurance. Teachers noted the time-consuming nature of this process and considered the support of the PDST advisors to be essential for its completion.

- In the focus groups, PDST advisors and teachers said they found it difficult to translate the DLF document into practical actions. The addition of practical or concrete examples to the document was recommended by both groups.
- The PDST advisors also considered linkages between SSE and the DLF. The Leadership and Management dimension is not currently a focus of SSE, so some advisors felt that this should be the main focus of the DLF trial. However, other advisors felt that by focusing on Teaching and Learning, a certain level of infrastructure is assumed, and this might not exist in all schools. Therefore the Leadership and Management dimension was considered a means by which schools could use the DLF to address infrastructural issues. Teachers in one of the focus groups also expressed this view.
- Both the PDST advisors and the school staff generally expressed positive views about the fact that the structure of the DLF matched that of the LAOS framework.
- Ratings (from Excellent to Poor) on various aspects of the Digital Learning Planning Guidelines (DLPG) were provided by 82% of primary DLT leaders and 84% of post-primary DLT leaders, and by about four in five teachers. Respondents were asked about overall length and layout, language and terminology, and usefulness. They were also asked to rate each section of the Guidelines. Approximately 50-60% of DLT leaders' and teachers' ratings were Excellent/Very good.
- In Phase 2, there were no statistically significant differences in DLT leaders' or teachers' ratings of the DLF or the DLPG across primary and post-primary levels; nor did ratings vary significantly across 'Teaching and Learning' and 'Leadership and Management' schools.
- The rate of missing responses on ratings of the DLPG and the sparse commentary on this document in both the questionnaires and focus groups suggest that a substantial minority of respondents did not refer to the DLPG, or, if they did, it was not in depth. This may partly be because the DLPG became available after the beginning of the DLF trial, at around the time of PDST advisors' second visits to schools.

Time spent by DLT leaders, teachers and PDST advisors working on the DLF trial

- DLT leaders, teachers and PDST advisors were asked to estimate the total time spent working on the DLF trial (covering the six-month period from November 2017 to May 2018). Total amounts of time reported by the three groups are similar on average across primary and post-primary levels, although there is a lot of variation across individual schools.
- On average, primary level DLT leaders reported spending 29 hours working on the DLF trial in their school, and post-primary DLT leaders reported spending an average of 27 hours.

- At primary level, 16% of respondents spent 16 hours or less on the programme, while 37% spent 33 hours or more. The corresponding percentages at post-primary level are 30% and 52%.
- On average at primary level, teachers spent 17 hours working on the DLF trial, and at post-primary level, an average of 18 hours was spent.
- At primary level, one third of DLT leaders spent 8 hours or less on the programme, while 28% spent 25 hours or more. The corresponding percentages at post-primary level are 29% and 29%.
- PDST advisors spent about 33 hours on average per primary school and 32 hours on average per post-primary school. This time estimate includes preparatory work, five school visits, and follow-up work. At primary level, 55% of schools' visit programmes took between 9 and 24 hours in total, 25% took 25-32 hours, and 20% took 33 or more hours. At post-primary level, the corresponding percentages are 7%, 57% and 36%, respectively.

Implementation of the DLF programme

- DLT leaders in a majority of participating schools (71% at primary level and 68% at post-primary level) reported that the DLF trial programme formed part of a one-year or multi-year plan. In 29% of schools at primary level and 32% of schools at post-primary level, the DLF trial programme was at or nearing completion in April-May 2018 (i.e. six months after the beginning of the trial).
- DLT leaders and teachers were asked about the nature of the DLF trial programme in their school, in terms of (i) its focus on pupil-/student-level skills/competencies and (ii) on elements of the programme that related to teachers, management and infrastructure. Their responses indicate that more emphasis was placed on teachers' needs than on pupil/student competencies.
- At primary level, the focus of the DLF programmes were primarily on teachers' digital literacy in general; development of teachers' skills in using specific apps or software; teachers' collaborative and team work; and use of digital technologies for assessment. There was also a moderate to high focus at primary level on pupils' digital literacy, collaborative and team work, literacy skills, and critical thinking and analysis.
- The areas of focus of post-primary schools' DLF programmes were quite similar to those at primary level. Programmes tended to focus on teachers' digital literacy in general; teachers' collaborative and team work; and making improvements to the sharing of teaching documents and resources (cloud- or server-based). Again similar to primary level, there was a moderate to high level of focus on students' digital literacy, collaborative and team work, and critical thinking and analysis.
- There were very few significant differences in terms of level of focus of various aspects of the schools' DLF programmes across 'Teaching and Learning' and 'Leadership and Management' schools. This suggests that, regardless of the dimension that the schools were working on during the DLF trial, they were engaging in activities across a broad range of elements.
- Levels of engagement with schools' DLF programmes by ICT/DL liaison teachers, class teachers, PDST advisors and students/pupils was reported by DLT leaders as being medium to high at both primary and post-primary levels. For example, at primary level, engagement of teachers was described as high by 68% of respondents and

engagement of pupils was described as high by 56% of DLT leaders (with a further 24% of these groups being rated as having medium engagement). At post-primary level, engagement of teachers was described as medium to high by 89.5% of DLT leaders and engagement of students was described as medium to high by 63%.

- A large majority of DLT leaders (88% at primary level and 89% at post-primary level) reported that the DLF complemented existing SSE activities in the area of teaching and learning. Comments on using the DLF as part of SSE activities were made by 15 of the 48 DLT leaders, and 11 of these were positive in tone (the remainder were neutral or descriptive).

The PDST advisor support programme

- Visits took place between November 7, 2017 and June 11, 2018 in primary schools, and between November 6, 2017 and May 11, 2018 in post-primary schools. On average, 20 weeks elapsed between the first and last visit to each primary school, and 21.5 weeks elapsed between the first and last visit to each post-primary school.
- At primary level, almost all schools (93%) received five visits from their PDST advisor. At post-primary level, 40% of schools received five visits, 35% of schools received four, and 25% of schools received three. Reasons for schools receiving fewer than five visits varied (e.g. agreement between the school and PDST advisor that fewer meetings were sufficient; scheduling difficulties; injury of one post-primary PDST advisor towards the end of the trial).
- At primary level, on average, 3-4 members of staff attended the first two meetings, and this increased to an average of 10-12 staff during visits 3, 4 and 5. At post-primary level, an average of 5-6 members of staff attended the first two meetings, and this increased slightly to an average of 8-10 staff during visits 3, 4 and 5. This pattern presumably relates to the involvement of more teachers in the visits as the DLF trial programme progressed.
- PDST advisors and DLT leaders were asked to indicate which among a list of 12 activities formed a part of each school visit. Broadly speaking, the reports of PDST advisors and DLT leaders are consistent with one another.
- Their responses show a clear progression:
    - unpacking or analysing the DLF, creating a shared vision of digital learning, and creating tools to gather evidence during visits 1 and 2
    - analysing the evidence and creating the Digital Learning Plan during visit 3
    - reviewing the Plan, reviewing goals and targets, and reviewing progress during visits 4 and 5.
- Professional learning or training sessions were provided during visits 3, 4 and/or 5, rather than during earlier visits. Based on PDST advisors' reports, a significantly higher number of professional learning/training (PLT) sessions was provided at primary level than at post-primary level. However, number of PLT sessions did not vary by schools' level of practice or level of DT infrastructure at Phase 1. The trial evaluation did not gather information on the content or focus of PLT sessions provided by the PDST advisors.
- Staff in five out of six focus group schools gave very positive feedback about working with the PDST advisors, and considered their support to be vital to the planning and implementation of the DLF trial.

- Staff valued the objective perspective that advisors brought to their schools, as well as the insights and suggestions that they were able to provide from their work with other schools. Their involvement helped to maintain staff motivation to meet deadlines and also provided reassurance when necessary.

Changes in levels of practice between Phases 1 and 2

- PDST advisors were asked to rate schools' level of practice based on the statements of effective/highly effective practice of the domain and standard(s) that the school was focusing on for the DLF trial. This rating was made at both baseline (November-December 2017) and towards the end of the trial (April-May 2018) on an eight-point scale:
    - 1: all below statements of effective practice
    - 2: mostly below statements of effective practice
    - 3: partly below/partly at statements of effective practice
    - 4: mostly at statements of effective practice
    - 5: all at statements of effective practice
    - 6: partly at statements of highly effective practice
    - 7: mostly at statements of highly effective practice
    - 8: all at statements of highly effective practice.
- At Phase 1, over 90% of schools at both primary and post-primary levels received a rating of 3 or lower on this index, i.e. almost all schools were rated as partly, mostly, or all below levels of effective practice.
- Over the course of the trial, the effective practice index score increased by an average of 1.96 points at primary level and an average of 1.74 points at post-primary level. These increases are statistically significant and may be regarded as substantial in size, given the short overall timeline for the trial.
- At primary level, the index score of 25% of schools increased by one point, 32% increase by two points, and 36% increased by three points. No change was observed in two schools (7%).
- At post-primary level, the index score of 37% of schools increased by one point, 37% increase by two points, and 21% increased by three points. No change was observed in one school (5%).
- The increase in the level of practice score was similar across primary and post-primary in both dimensions, i.e. there was no significant difference in the change in scores across 'Teaching and Learning' and 'Leadership and Management' schools.

Comparisons of ratings of effective practice by DLT leaders and PDST advisors

- DLT leaders also provided an index score of level of practice for Phase 2 (but not for Phase 1), and their scores were compared to those provided by PDST advisors. At both primary and post-primary levels, the ratings of DLT leaders tended to be higher than those of PDST advisors, and there was variation in the magnitude of the difference between schools' and advisors' ratings (ranging from -3 to +4 points).
- While both ratings are valid in that they are made on the basis of knowledge about the school's DT contexts and practices, and familiarity with the DLF document, the amount of variation in the ratings suggests that school staff and PDST advisors are using different criteria to assign these ratings.

Changes in teaching, learning, management and infrastructure

- DLT leaders and teachers were asked to rate a range of ten teaching, learning, management and infrastructural items in terms of the level of change that they had observed over the course of the DLF trial (on a scale ranging from Significant change to No change). Reports of DLT leaders and teachers are generally consistent with one another.
- At primary level, 64-75% of DLT leaders reported significant or moderate changes in teaching and learning activities during class time, collaborative practices among teachers, and pupils' interest and engagement in learning activities. In contrast, only 25% of respondents indicated that there had been a significant or moderate change in pupils' learning or homework activities.
- At post-primary level, 74-95% of DLT leaders reported significant or moderate changes in emphasis on use of digital technologies in school policies or guidelines, collaborative practices among teachers, teaching and learning activities during class time, students' interest and engagement in learning activities, decisions relating to enhancing digital technology infrastructure, sharing of documents or resources among teachers, and decisions relating to enhancing broadband connectivity/Wi-Fi connectivity or reliability.
- Levels of perceived change in these ten areas did not differ significantly across 'Teaching and Learning' and 'Leadership and Management' schools. This suggests that, regardless of the dimension that schools focused on during the DLF trial, changes occurred across a range of areas.
- Increased collaboration among staff was mentioned in all six focus groups, making it the most frequently-cited positive impact of participating in the DLF trial. It was characterised by improved communication and increased sharing of knowledge and resources among staff.
- Staff in all six of the focus group schools noted an increase in staff motivation and openness to engage with DT as a result of taking part in the DLF trial. Teachers in five out six focus groups reported feeling more confident to integrate DT in their practice. They also perceived an enhancement of the student experience since participating in the DLF trial, which further increased their motivation as teachers.

Successes of the DLF trial

- The perceived overall level of success of the trial was generally high.
    - DLT leaders: At primary level, 100% of respondents rated the trial as highly or moderately successful. At post-primary level, 95% reported that it had been highly or moderately successful.
    - Teachers: 87% of primary teachers and 71% of post-primary teachers described the DLF trial as highly or moderately successful.
    - PDST advisors: 96% of primary and 90% of post-primary schools' trials were rated as highly or moderately successful.
    - There is general consistency with the views of PDST advisors and DLT leaders in terms of the perceived overall success of the trial.
- DLT leaders, teachers and PDST advisors rated 11 aspects of programme implementation in terms of whether they viewed them as essential, important or not important for the success of the programme.

- Across all three respondent groups and at both primary and post-primary schools, a majority of respondents rated all or almost all items as essential. The results show that a range of conditions and supports (e.g. PDST support; school planning and leadership from school management; opportunity for discussion, collaboration and professional development; and engagement of school staff) are required in order for the DLF programme to be implemented successfully. Participants in the focus groups with school staff also expressed the view that a range of conditions are necessary to support the implementation of the DLF. They emphasised the importance of PDST support, time for planning and collaboration and support from management.
- Comments in the questionnaires from DLT leaders and teachers at both primary and post-primary levels indicate that schools viewed the tailored and sustained support of PDST advisors as critical to the success of the DLF programme. Similarly, in the focus groups, teachers and PDST advisors expressed the view that the potential of the DLF to enable change is dependent on the provision of appropriate, tailored and sustained professional learning/training.
- Some advisors worked with schools to develop internal structures for peer-led professional learning, in order to sustain the successes of the DLF trial. In three out of six staff focus groups, peer-delivered professional learning/mentoring was mentioned as an especially effective form of collaboration, as it allowed staff to draw on their shared experiences and knowledge of their own school's context.
- PDST advisors' questionnaire commentary highlights the importance of good communication and collaboration (among themselves as a group, between them and school staff, and among school staff in individual schools). They also mentioned practical aspects of implementing the programmes, e.g. development of a clear vision and achievable targets by each school, the involvement of the digital learning liaison teacher, and having staff released to attend PDST meetings and training.
- The focus group with the PDST advisors provided further insights into their perceptions of the factors influencing the success of the DLF trial. Two aspects of planning were considered crucial. The first was the time spent by the PDST advisors working as a group and individually before visiting schools. The second was the development of a Digital Learning vision in each school through a systematic process of identifying an end point and then working backwards to ascertain what was needed to achieve that end point.
- PDST advisors noted a high volume of communication between them and the schools between visits, and acknowledged the high value of the effective use of shared online (cloud-based) folders of tools and resources.
- In the staff focus groups, leadership within schools was considered an important influence on the success of the DLF trial; leading by example and committing to a process of incremental change were considered features of a leadership style that would support successful implementation. Similarly, the PDST advisors expressed the view that endorsement and support from the principal and/or school management were instrumental to the success of the programme.

Challenges associated with the DLF trial

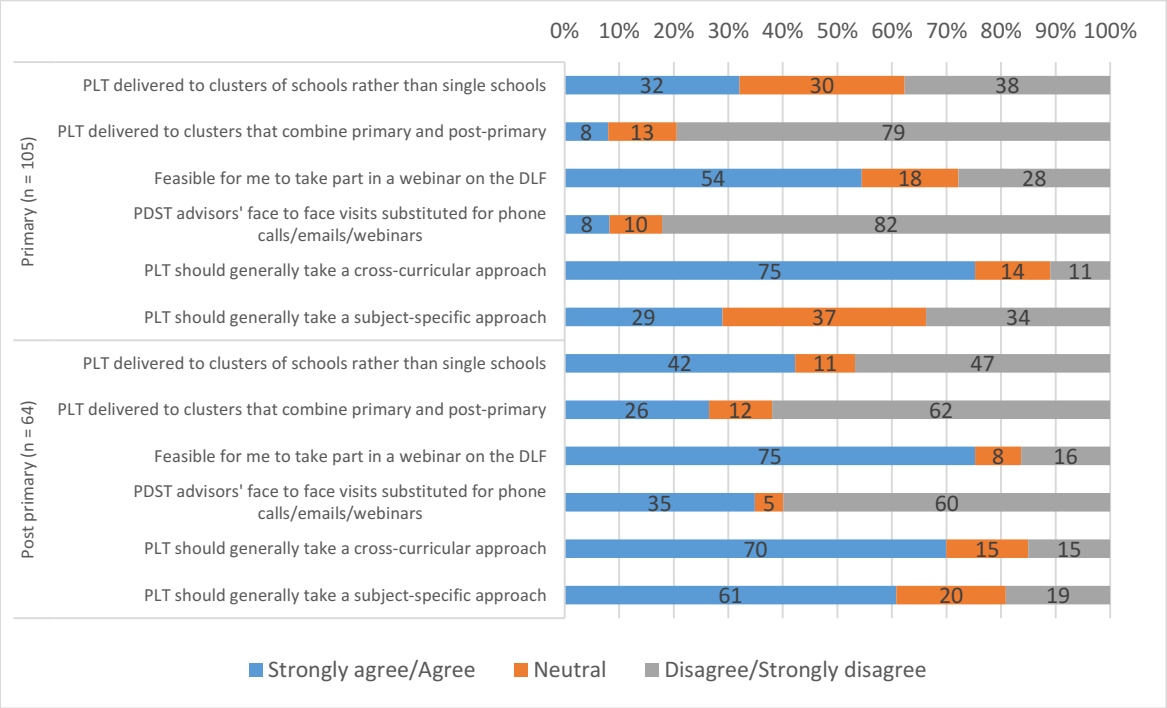
- DLT leaders, teachers and PDST advisors were asked to rate how challenging a range of 10 issues were in implementing the DLF trial programme in their school.
- The two key challenges that were most frequently and most consistently identified by all three respondent groups related to the time required to develop and implement changes and improvements, and DT infrastructure (hardware and connectivity). Variations in teachers' digital competence and attitudes towards DT, and perceived lack of support and leadership from school management, also emerged as relatively common challenges.
- There was considerable variability in what respondents regarded as challenging, indicating that a lot of challenges are highly context-specific. For example, equal percentages of primary school DLT leaders indicated that sharing the learning of the Digital Learning Team across all staff in the school was highly/moderately challenging (50%) and somewhat/not at all challenging (50%), and almost equal percentages of post-primary school DLT leaders indicated that staff culture and attitudes towards digital technologies leading to difficulties in 'buy-in' to the programme was highly/moderately challenging (53%) and somewhat/not at all challenging (47%).
- The findings from focus groups with teachers and PDST advisors reflect those from the questionnaires, in that the most frequently identified challenges related to time and infrastructure; technical support was also a strong theme in the focus groups.
    - The short timeframe for the DLF trial, competing demands on staff time and a lack of substitute cover were cited by PDST advisors and teachers as challenges to the planning and implementation of schools' DL plans. Consequently, some advisors and schools extended the timeframes for implementation of the DL plans.
    - Teachers noted a lack of dedicated time for them to upskill and share their expertise with their peers as a challenge to embracing collaborative practice.
    - Teachers in three out of six focus groups described problems with infrastructure in their schools (insufficient number of devices; unreliable devices; poor connectivity). Such problems were considered significant barriers to fully embedding DT in teaching and learning.
    - Inadequate technical support was mentioned in four out of six focus groups with teachers. In most schools, one or more members of staff provides *ad hoc* technical support on a voluntary basis, which was considered unfair and unsustainable. The cost of external, professional technical support was considered a barrier to engaging with such support.

Looking to the future: national rollout of the DLF

- In all six staff focus groups, participants discussed their views on the sustainability and future implementation of the DLF. They mentioned several factors that they considered necessary for successful national rollout: leadership from the DES, the support provided by the PDST advisors, the provision of technical support, the provision of training and adequate time for teachers to engage, and the acknowledgment of the variability of schools' digital contexts.

- In the questionnaire, teachers were asked to what extent they agreed or disagreed with six statements about professional learning/training (PLT). Their responses (Figure E1) are relevant to planning the national rollout of the DLF.

Figure E1. Primary and post-primary teachers' levels of agreement/disagreement with six statements about professional learning/training (PLT) for the DLF



- At primary level:
  - there were mixed views on facilitating professional learning across clusters of schools rather than single schools: 32% agreed with clustering, while 38% disagreed
  - 79% disagreed with the clustering of primary and post-primary schools together for PLT
  - 54% agreed that it would be feasible for them to attend a webinar (while 28% disagreed)
  - 82% disagreed that PDST advisor visits could be substituted for phone calls, emails or webinars
  - 75% agreed that PLT should generally take a cross-curricular approach, while 29% agreed that it should generally be subject-specific.
- At post-primary level:
  - there were also mixed views on facilitating professional learning across clusters of schools: 42% agreed with clustering, while 47% disagreed
  - 62% disagreed with the clustering of primary and post-primary schools together for PLT
  - 75% agreed that it would be feasible for them to attend a webinar
  - 60% disagreed and 35% agreed that PDST advisor visits could be substituted for phone calls, emails or webinars
  - 61% agreed that PLT should generally take a cross-curricular approach, while 70% agreed that it should be subject-specific.

- In the focus group, PDST advisors expressed the view that creating clusters of schools for the delivery of technical and professional support would be essential, despite the fact that this is not common practice and would likely involve logistical difficulties.
- PDST advisors felt that the DES should acknowledge the challenges faced by schools due to the variation in existing technical supports. They also felt that schools could benefit from guidance on the purchase of DT devices and that (publicly-funded) schools should be protected against (corporate) marketing pressures.
- PDST advisors cited two examples from other countries (UK and USA), where a distinction is drawn between the complementary roles of a DT technician and a DT co-ordinator/coach. The technician provides technical support and the coach/co-ordinator is a strategic leader of using DT to enhance pedagogical practice. The advisors felt that both of these roles, assigned to different individuals rather than combined, would be important for the successful rollout of the DLF.

Students' and pupils' views on DT

- Some of the themes from the focus groups with students/pupils are not directly related to the DLF. However, they provide valuable insights into young people's perspectives on DT in education and learning.
- Students' and pupils' descriptions of their experiences of DT in school varied considerably across the five focus groups (e.g. in terms of the programmes/applications used; frequency of use). They use a variety of programmes and applications for classwork and homework, including Google Classroom/Schoology (multi-app, cloud-based learning management systems), Screencastify (screen video recorder), YouTube, Book Creator (multimedia document editor), Khan Academy (online Maths app), Scratch (programming language for creating interactive stories and games) and Quizlet (general learning and revision tool).
- Students/pupils in three out of five schools described using DT for individual and group projects. It is difficult to ascertain the level of collaborative work being done as the group work tended to involve the division of projects into separate tasks and their allocation to individuals.
- In two post-primary schools, students noted an increase in the use of DT during the DLF trial period. They also observed the impact that teachers' levels of confidence and competence with DT can have on their learning experiences.
- Students and pupils in three out of five focus groups (one primary and two post-primary schools) described problems with DT infrastructure in their schools (slow, unreliable devices; underuse of devices; shortage of devices). These reflect some of the issues raised by school staff and PDST advisors.
- Students and pupils demonstrated a critical understanding of the role of DT in education and in their lives more generally, identifying several benefits and limitations.
- The benefits identified by students and pupils are listed below:
    - DT enables fast, easy access to large volumes of information
    - Learning can be more interesting and engaging with the use of DT

    - DT can enable a feeling of greater independent learning
    - Digital storage of information is convenient (this benefit was exclusively identified by post-primary students and was related to the weight of their school books)
    - Competence and confidence in the use of DT was considered a valuable life skill.
- The limitations identified by students and pupils may be summarised as follows:
    - DT does not guarantee enhanced learning. Pupils at primary level identified certain tasks which they felt were not enhanced by the use of DT (e.g. repetitive tasks like learning spellings). Post-primary students were of the view that the manner in which DT is used determines whether or not learning is enhanced.
    - Good teaching need not be reliant on the use of DT.
    - Some students learn better when listening to a teacher.
    - Using DT can make it easier to become distracted from the topic/task of interest due to ease of access to large volumes of information, social media apps and students using their personal devices in class.
- Concerns were also raised about internet safety, inappropriate content, privacy, and targeted advertising at both primary and post-primary levels.
- Students and pupils were asked to imagine how DT would be used in an ideal school. In four out of six focus groups, students/pupils expressed a desire for individual digital devices for each learner. They also suggested ideas for incorporating DT into a range of subjects e.g. the use of teleconferencing to help with learning languages or learning about other cultures; the use of 3D printing for Technical Graphics or Design and Communication Graphics.
- In two post-primary schools, students offered their opinions on the education system in a more general sense. They perceived a disproportionate emphasis on knowledge and exams in the education system, and believed that different skills (e.g. communication, DT competency) are more important. They favoured a system of continuous assessment and examinations based on critical thinking and opinion. They also expressed a preference for paper-based examinations, rather than computer-based. They suggested that systemic change is required in order to fully embed DT in education.

Implications

Overall, the DLF trial was considered a success from the perspectives of DLT leaders, teachers and PDST advisors. There is evidence of improvement in embedding DT in teaching, learning and assessment in the short six-month trial period, and this occurred irrespective of the DLF domain on which schools focused. These improvements were evident in the statistically significant increases in PDST advisors' ratings of effective practice across Phases 1 and 2, in the descriptive information from the surveys, and in the qualitative information emerging from the focus group interviews with school staff and PDST advisors. The DLF document and related resources were also viewed positively. For example, participants were generally positive about the common structure of the DLF and the LAOS framework.

Seven themes or issues emerge very consistently throughout this evaluation. We consider these here in terms of their implications for national rollout of the DLF programme. They are:

- DLF document, Digital Learning Planning Guidelines, and other DLF resources
- Time
- PDST support and Professional learning
- Technical support and maintenance
- Infrastructure
- Measuring and evaluating progress
- Students' and pupils' views on DT.

DLF document, Digital Learning Planning Guidelines (DLPG) and other DLF resources

The results suggest that the following points need to be considered in enhancing the DLF document, DLPG and other resources.

- Development of schematic information such as an infographic or diagram that illustrates the DLF process from beginning to end, and which cross-references the various tools and resources that are available to assist with the different stages of this process.
- Undertaking a review of the DLF with the aim of supporting the reader more in the interpretation of technical (DT-related) terms, for example by providing explicit linkage to examples.
- Including a practical 'how-to' description of the process of unpacking individual DLF domains in the DLPG.
- Elaborating on the examples provided in the DLPG to include a range that covers all eight domains (currently, the DLPG uses illustrative examples from two of the eight).
- Providing a short section offering specific and practical guidance to schools that may be early in the process of embedding DT (i.e. beginning to work towards a level of effective practice), some of which may also be smaller schools.

Through its planning work in the national roll-out of the DLF, the PDST has already addressed the first four of the five points above and the authors commend their work and effort. The www.dlplanning.ie website brings all of the resources into one place and includes tools to assist schools in obtaining a quick overview of the DLF process, such as a Gantt chart that describes the steps. The booklet provided to schools during the seminars planned for national roll-out (*Using the Digital Learning Framework to Embed Digital Technologies*) provides a user-friendly, structured set of steps and exercises to assist schools in the process of implementing the DLF and developing their Digital Learning Plans. The DLPG will be supported with the addition of more case studies that illustrate all domains on www.dlplanning.ie during 2019, and this web resource will also include evidence-gathering tools that cover all eight DLF domains.

However, it is the view of the authors that the development of further guidance and resources may be necessary to support (smaller) schools which are early in the process of embedding DTs. Solutions or further guidance may emerge in the course of the seminars that are planned for the national roll-out of the DLF, in response to the identification of issues and how best to address them.

Time

The Department of Education and Skills has acknowledged the importance of this work, but needs also to recognise the time it requires by providing supports or further guidance on time management for meetings, planning and professional development/training. In turn, schools will benefit from building in planning time for implementing the DLF within their overall school development and planning process, for example during Croke Park hours or staff meetings (where DT/DL could feature on the meeting agenda).

PDST support and Professional learning/training

There was a very strong consensus that the PDST support was essential for the implementation of the DLF trial. On average, PDST advisors spent a little over 30 hours working with each school assigned to them over the six-month DLF trial period. It is highly unlikely that the level of support provided by the PDST during the DLF trial is sustainable in the context of national rollout, although PDST support should remain a core component of PLT for the DLF. Overall, professional learning should be viewed in a systemic way, with PDST support occurring alongside other forms of PLT such as peer-to-peer learning, online resources (e.g. webinars) and collaboration among staff across clusters of schools and across subject departments in post-primary schools. Within a systemic view of professional learning, schools play an active role in identifying and meeting their own professional learning needs and goals. The

There is also a strategic leadership role to be played by the Department in streamlining the rollout of professional learning/training across multiple players (e.g., the NCCA, Colleges of Education) and across various national initiatives and developments.

Technical support

Further work is needed to identify cost-effective, efficient models and solutions to providing equitable technical support to schools. Technical support had previously been identified as a key challenge in the 2013 ICT Census of Schools (Cosgrove et al., 2014a, b). In response to this, the Digital Strategy provides for a review of Technical Support provision in schools.

From the perspectives of school staff and PDST advisors, technical support, ideally, will be provided by technicians, leaving schools' DLT leaders freer to focus on the strategic leadership of DT, in order to enable schools to develop a culture in which teachers can more effectively embed DT in teaching, learning and assessment.

The DES has established an Expert Group to deliver on the key Digital Strategy objective of technical support solutions. The Expert Group (Technical Support Solutions for Schools) will identify and evaluate technical support options in consultation with the relevant stakeholders, including management bodies, in order to develop a model of technical support that will meet the varying needs in the system. It is envisaged that the outcome of this work will provide recommendations for the implementation of technical supports to meet the needs of schools. It is expected that this Expert Group will consider the findings of this DLF trial amongst the evidence that it reviews; in particular, the views of the DLF trial participants.

Infrastructure

As noted above (under implications regarding the DLF document and other resources), schools that are very early in the process of embedding DT into teaching, learning and assessment may benefit from specific and practical guidance relating to DT infrastructure (devices and/or connectivity).

In addition, schools may benefit from additional guidance or support to:

- Identify and plan for progressive development in infrastructural elements of DT
- Develop awareness of and resistance to corporate marketing pressures in the purchase of DT.

Measuring and evaluating progress

For the DLF to achieve its aims, the Department needs to clarify what levels of effective and highly effective practice might look like and promote a shared understanding of their meaning, perhaps by illustrating them 'in action' in a range of examples. Without a shared understanding of effective and highly effective practice, monitoring the implementation of the DLF would be problematic.

Students' and pupils' views on DT

As the rollout of the DLF progresses, further information on the views of learners should be gathered. It is the view of the authors that the most efficient way to gather this information is within Ireland's existing national and international educational assessment programmes, i.e. as part of the forthcoming cycles of the Programme for International Student Assessment (PISA 2021, post-primary), national assessments (2020, primary), and the 2021 cycle of the Progress in International Reading Literacy Study (PIRLS, primary). With respect to PISA, the international project consortium intends to develop and enhance the student ICT questionnaire component for 2021. Nationally, Ireland can add to this component with specific, tailored questions. A similar strategy may be applied to the PIRLS pupil questionnaire.

Research and design implications

The findings of this evaluation have a number of research and design implications which, if adopted, have logistic, administrative and data management consequences.

It is recommended that the evaluation of the national rollout of the DLF should occur within an overall longitudinal framework that covers a minimum period of two years.

The study should ensure to include:

- Reliable information on the progress of schools in their levels of practice in embedding DT
- The ways in which the DLF was used to facilitate change
- A mechanism to incorporate learners' views on DT in learning and assessment through, for example, triangulation with national and international assessment programmes
- The gathering of detailed information on how the DLF is linked with SSE efforts in individual schools

- The collection of information on the nature of professional learning that occurs throughout the process.

Furthermore, in order to enable the interpretation of progress over time, the study design should include a consideration of the following:

- If progress is to be evaluated, measures of level of practice at baseline (as suggested by the statements in the DLF) should be provided by schools and PDST advisors with follow-up measures of progress from at least two time points
- In order to interpret progress in context, a mechanism to record and document schools' DT infrastructure is needed
- Similarly, a mechanism for gathering of information on schools' current technical support arrangements would be helpful to understand progress over time.

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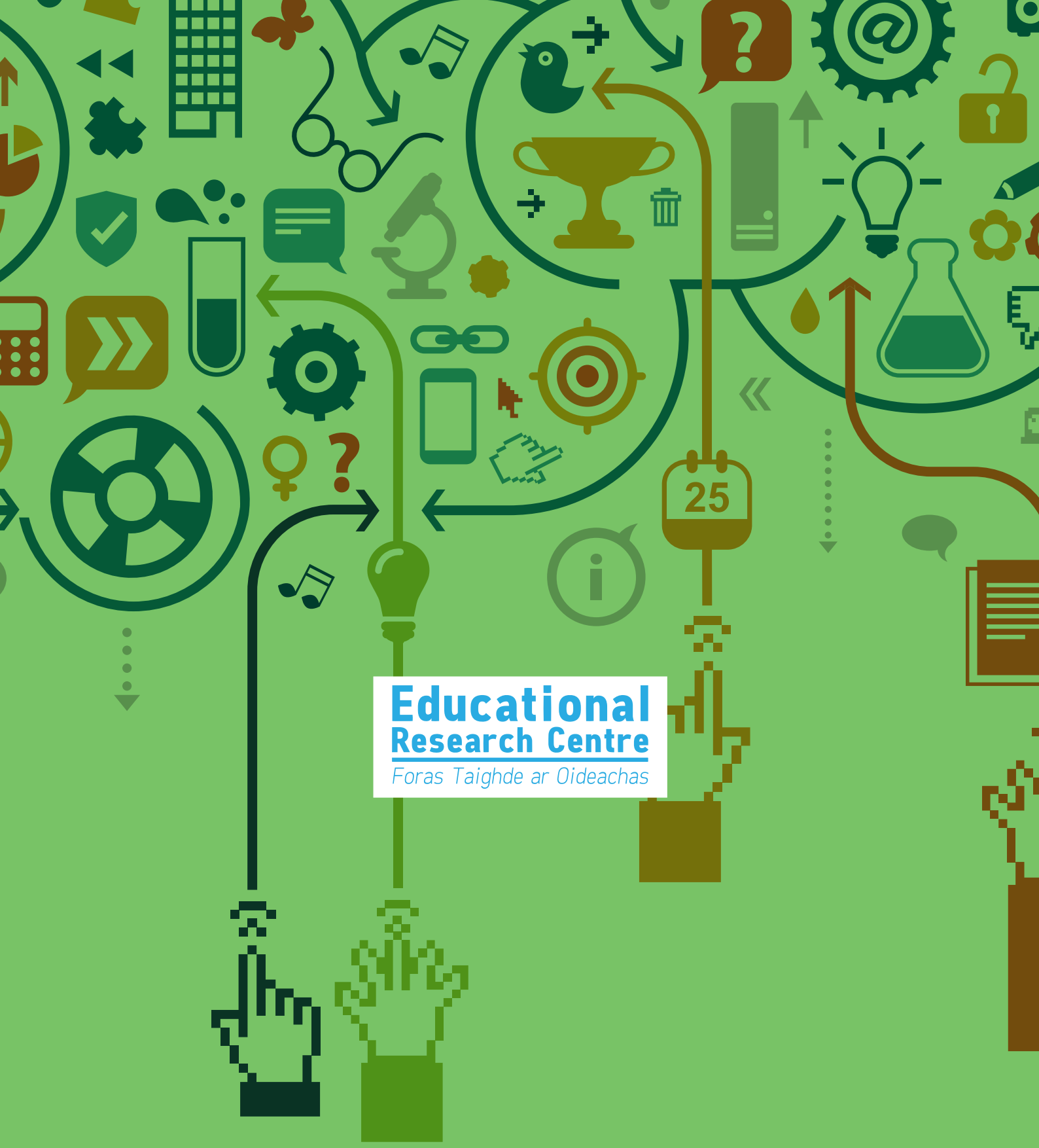

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