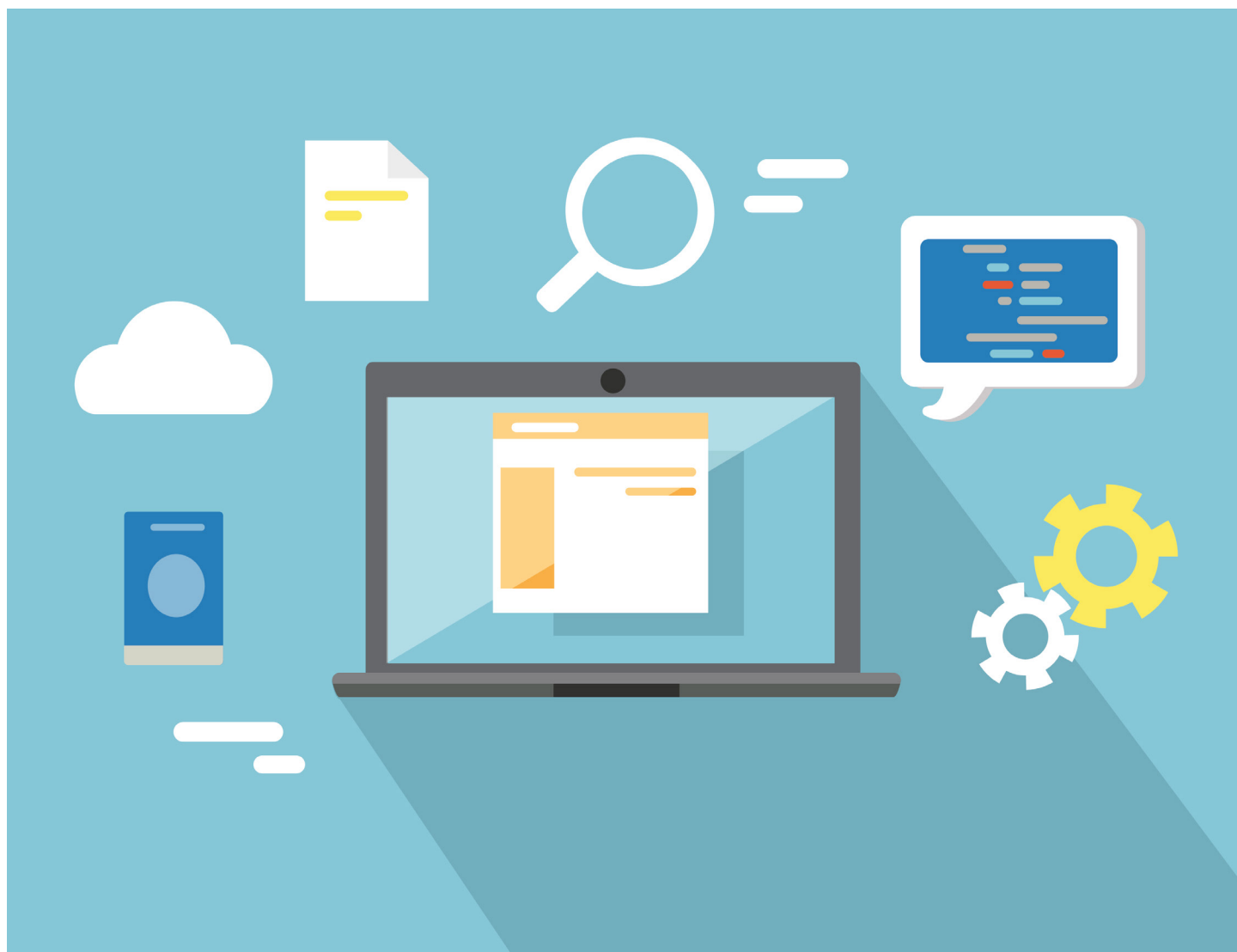


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# Preparing for the Digital Competence Framework (DCF)

July 2018



| <b>Contents</b>                                                               | <b>Page</b> |
|-------------------------------------------------------------------------------|-------------|
| <b>Introduction</b>                                                           | <b>1</b>    |
| <b>Background</b>                                                             | <b>1</b>    |
| <b>Main findings</b>                                                          | <b>3</b>    |
| <b>Recommendations</b>                                                        | <b>5</b>    |
| <b>Effective approaches to preparing for the DCF</b>                          | <b>6</b>    |
| <b>Challenges for schools in preparing for the DCF</b>                        | <b>13</b>   |
| <b>Common characteristics of successful realisation of the DCF</b>            | <b>16</b>   |
| <b>Questions for schools to consider as part of their DCF self-evaluation</b> | <b>19</b>   |
| <b>Evidence base</b>                                                          | <b>21</b>   |
| <b>Case studies of how schools are preparing for the DCF</b>                  | <b>22</b>   |
| <b>Glossary</b>                                                               | <b>63</b>   |
| <b>References</b>                                                             | <b>67</b>   |

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## Introduction

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This report is written in response to a request for advice from the Welsh Government in the Cabinet Secretary's annual remit letter to Estyn for 2017-2018. The report focuses on how schools are beginning to ensure that pupils develop their digital competence as set out in *Successful Futures* (Donaldson, 2015). The report identifies examples of innovative and interesting practice in how schools are preparing for the digital competence framework (DCF). It will provide the Welsh Government and other stakeholders with an overview of the preparation that these schools have made about a year after the DCF was made available to schools. This report covers the DCF and therefore does not address issues regarding the different information technology (IT) policy that exists post-16 or transition between them.

The report is intended for the Welsh Government, headteachers and staff in schools, and for local authorities and regional consortia. The findings of the report are based on visits to 23 schools identified as schools with 'good practice' in preparing for the DCF, seven of which are Digital Pioneer schools. During the visits, inspectors scrutinised curriculum plans, held discussions with the teacher responsible for DCF and with other teachers, senior and middle leaders, interviewed pupils, and scrutinised pupils' work. Evidence to support the report was also gathered during school inspections that took place during autumn 2017.

The report shares practice and approaches that other schools may consider emulating as part of preparing for the DCF. The report will help schools to understand their current strengths and areas for improvement, as well as understanding possible changes that need to be made within leadership or provision to realise the full potential of the DCF. The report contains self-evaluation questions that can be used by schools to monitor and review their digital competence provision.

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## Background

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In January 2013, the Welsh Government established an independent ICT Steering Group to consider the future of computer science and information and communication technology (ICT) in schools in Wales. This group was asked to identify a way forward to improve ICT provision in schools. The ICT Steering Group's findings were published in September 2013 and laid out recommendations (Arthur, Crick & Hayward, 2013), including the recommendation to produce a digital competence framework with the same standing as the literacy and numeracy framework (LNF) (Welsh Government, 2013). Estyn's 'ICT at key stage 3' report (Estyn, 2014) recommended that the Welsh Government should implement a statutory framework for ICT from foundation phase to post-16 and review the National Curriculum subject orders to reflect current developments in technology.

In March 2014, the then Minister for Education and Skills asked Professor Graham Donaldson to conduct a fundamental review of curriculum and assessment arrangements in Wales. The resulting report, *Successful Futures* (Donaldson, 2015), outlines proposals for a new curriculum that builds on the strengths of Welsh education. The report identifies four purposes for the curriculum and recommends that the curriculum should be based on six Areas of Learning and Experience. It also proposes that three cross-curriculum responsibilities (literacy, numeracy and digital competence) should be embedded within the areas of learning and experience.

In October 2015, the Welsh Government published 'Qualified for Life – A curriculum for Wales – a curriculum for life' (Welsh Government, 2015a). This document sets out the steps that will be taken to achieve *Successful Futures* (Donaldson, 2015).

*Successful Futures* (Donaldson, 2015) sets out the need for a DCF. Welsh Government accepted this rationale and recommendation. A key step in the development of the DCF was identifying digital pioneer schools to lead on the creation of the framework. The involvement of digital leads from the regional consortia, along with Estyn representatives, and the advice of a quality assurance group of international experts in the field, also contributed significantly to the process. The timeframe for creating the DCF is set out below:

- June 2015 – the Minister for Education and Skills announced that a DCF should be 'fast-tracked' for availability in schools by September 2016.
- July 2015 – Digital Pioneer schools announced.
- September 2015 – work on developing the structure and content starts.
- February 2016 – following an engagement exercise, Digital Pioneers revise the DCF to reflect feedback received.
- June to July 2016 – following a second engagement exercise, Digital Pioneers revise the DCF to reflect feedback received.
- September 2016 – the DCF is available to schools and settings.

In June 2017, the Welsh Government published 'Cracking the Code: a plan to expand code clubs in every part of Wales' (Welsh Government, 2017a). It was published to increase teachers' confidence in delivering coding skills and to support progression for learners from primary to secondary and from basic programmes to the more advanced.

In September 2017, the Welsh Government published *Education in Wales: Our national mission 2017-21* (Welsh Government, 2017b). This document sets out a national mission and a timeframe to deliver a reformed and successful education system. Central to this mission is:

- ensuring that learners in Wales have relevant high-level digital skills and are digitally competent
- supporting education professionals to utilise the relevant technologies and skills to transform the digital competence of learners
- launching the digital professional learning framework and programmes for schools as learning organisations

## Main findings

### Leadership

- 1 In the schools visited, leaders manage change well and have a clear vision about how to prepare for the DCF. These leaders include staff in creating a vision for the DCF and ensure that the governing body understand fully the importance of implementing it well. They communicate their vision clearly with staff. They ensure that staff understand that leaders support the realisation of the DCF fully, and monitor its development carefully.
- 2 Many of these leaders translate their vision into a comprehensive and practical plan to drive the DCF forward and provide a clear rationale for auditing, training, resourcing, monitoring and evaluating developments. In a minority of schools, arrangements to evaluate the effectiveness of their digital plans are not fully developed.
- 3 Nearly all these leaders offer effective professional learning opportunities for staff to prepare for the DCF. They ensure that staff have the equipment and opportunities to develop the competence and confidence they need to realise the DCF. A few leaders do not have a good enough understanding of the technical issues that could impact on the school's capacity to realise the DCF fully.
- 4 Leaders say that they are unsure about when the DCF should be implemented and give this as a reason for some not realising the DCF. There is no explicit realisation date for the DCF, which suggests to some that it will be introduced at the same time as new curriculum, six years after the DCF was first made available. As a result, the DCF could lose impetus.

### Role of the digital lead

- 5 Digital leads in most schools have a thorough knowledge of the DCF. Many teachers value the enthusiasm and support of their digital lead. However, a minority of digital leads have a tendency to create a culture of dependency and troubleshoot technical problems rather than supporting teachers to develop their skills so they can fix these problems themselves. In nearly all instances, the effectiveness of the digital lead is greatest when they have the full support of senior leaders. Digital leads in secondary schools are most effective when they are members of the leadership team or are otherwise able to impact on whole-school decision making.
- 6 In the majority of secondary schools, digital leads have formed a DCF working group that includes heads of department and teachers from various departments across the school. This approach is effective because it includes a wide range of teachers and ensures that nearly all departments are engaged with the DCF and understand its impact on whole-school developments.
- 7 In most schools, the digital lead has carried out a hardware and network infrastructure audit to ensure that they are robust enough to deliver the DCF. Most

digital leads audit teachers' skills carefully to evaluate their readiness for the DCF. They use the information from the audit well to plan training, spread over a realistic timeframe. In a minority of schools, the digital lead has not audited the training needs of all teachers, is unaware of their training needs, and cannot plan fully to support staff.

- 8 In schools that have mapped the DCF across the curriculum, many digital leads have not decided yet how to address the issue of gaps in provision. Mapping of digital coverage and progression is important to ensure that pupils experience the breadth and richness of skills across the whole of the DCF framework. Unless these gaps in provision are addressed, schools are in danger of replicating current inadequate provision in ICT across the curriculum.
- 9 Too few digital leads in secondary schools have mapped the provision of the DCF across key stage 4. As a result, most secondary schools are not preparing well enough to realise the DCF in its entirety.

### Professional learning

- 10 In around half the schools visited, nearly all staff have been involved in discussing the digital plan for the school. Through their involvement, many staff are aware of the plan's content, what is involved, and the expectations of them. As a result, most teachers have positive attitudes towards preparing for the DCF and feel involved in the developments.
- 11 Teachers say that they are more confident with the content strands of 'citizenship', 'interacting and collaborating' and 'producing', than with 'data' and 'computational thinking'. This broadly reflects many teachers' knowledge and understanding of the ICT curriculum content. However, digital leads in school and in consortia consider that this assessment is optimistic and in particular they believe that teachers do not fully appreciate the breadth of the citizenship strand.
- 12 Practitioners in the foundation phase feel competent enough in most aspects of the DCF to enable them to support pupils appropriately. Practitioners in key stage 2 and above are less secure in delivering the full range of digital skills. Most teachers in special, primary, secondary and all-age schools have started to discuss how to adapt long, mid and short-term plans to incorporate the DCF into the curriculum.
- 13 Where leaders have not communicated their vision successfully enough, a few teachers do not feel involved and have negative attitudes towards the preparation for the DCF.
- 14 Centres of initial teacher education and training are beginning to equip trainee teachers with the skills that they need to deliver the breadth and range of digital skills required by the DCF. However, the development of students' skills is too variable due to their limited involvement in DCF developments, and to their lack of awareness of the weaknesses in ICT provision in schools.

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## Recommendations

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**Schools should:**

- R1 Involve all stakeholders in developing a clear vision for the DCF
- R2 Appoint a digital lead, secure the full support of senior leaders, and monitor developments regularly
- R3 Audit teachers' professional learning needs and use this information to plan training, support and guidance over a realistic timeframe
- R4 Map the DCF across the curriculum and ensure that there are no gaps in provision and sufficient progression and continuity
- R5 Carry out hardware and network infrastructure audits
- R6 Ensure that staff collaborate with others to share good practice

**Local authorities and regional consortia should:**

- R7 Support all schools to address the above recommendations
- R8 Monitor how well individual schools are progressing with the realisation of the DCF and challenge limited progress

**The Welsh Government should:**

- R9 Communicate clearly to schools the expectations for embedding the DCF, including timescales
- R10 Ensure that initial teacher education courses provide new teachers with the necessary skills to realise the DCF successfully
- R11 Improve the audit tool so that it better meets the needs of schools in assessing teachers' confidence to deliver the DCF

## Effective approaches to preparing for the DCF

### Leadership

#### Vision

- 15 In the 23 schools visited, many leaders manage change well and have a clear vision about how to prepare for the DCF. They understand the important role that realising the DCF well has in making teaching effective in order to raise standards and improve provision. Successful leaders include staff in establishing and developing the vision. They share this vision well. They do so to ensure that staff understand that leaders support the successful realisation of the DCF, and will be monitoring its realisation and development in a constructive way. In the schools visited, most teachers believe that leaders have shared their vision of the DCF effectively. Many leaders have translated their vision into a comprehensive and practical plan to drive the framework purposefully, and provide a clear rationale for auditing, training, resourcing, monitoring and evaluating its realisation.
- 16 Effective leaders consult with and include the governing body in key decisions and ensure that the governors understand fully the importance of realising the DCF. In particular, they have emphasised the importance of the DCF as part of a relevant and engaging curriculum that meets the needs of all pupils and that prepares their pupils for the world of work.
- 17 Leaders say that they are unsure about when the DCF should be implemented and give this as a reason for some not realising the DCF. There is no explicit realisation date for the DCF, which suggests to some that it will be introduced at the same time as new curriculum, six years after the DCF was first made available. As a result, the DCF could lose impetus.

#### Planning

- 18 Many schools have suitable self-evaluation processes to support the planning and realisation of the DCF. Plans to develop the DCF prioritise key developments appropriately. In many instances, these priorities are also referenced suitably in the school's improvement plan.
- 19 In many instances, leaders involve the teacher identified as the digital lead in preparing the plan. In around half the schools visited, leaders involve all staff successfully in the development process. Through this wider involvement, leaders create a whole-school approach that tends to lead to greater commitment from staff. As a result, most staff have positive attitudes about DCF developments.
- 20 The quality of these plans is generally good; they are clear and include:
  - realistic timeframes
  - clear accountability, including who does what, by when and who monitors the actions

- how and when they will audit the training needs of staff
- how and when they intend to offer training for staff and any costs likely to be incurred
- how and when they will audit the hardware and software needs
- how and when they will audit whether the network infrastructure is sufficient to deliver the DCF

- 21 A majority of leaders are starting to evaluate the effectiveness of their digital plans rigorously and to hold staff to account for developments. Where evaluation is effective, leaders arrange systematic lesson observations, scrutiny of pupils' work, talking with pupils, and scrutiny of teaching plans. Through these approaches, they identify strengths and weaknesses in standards and provision to help plan for further improvement.

### **Appointing a digital lead**

- 22 Leaders in all the schools visited have appointed a member of staff with suitable skills to undertake the role of digital lead. Many had done so as early as autumn 2016, with a few in autumn 2015. These 'early adopters' have had the benefit of more time to prepare and have been able to do so in a manageable way, supporting other staff well.
- 23 Many leaders in the schools visited ensure that the digital lead has regular opportunities to attend consortium events for digital leads so that they can develop in the role and gain valuable ideas and suggestions about how to work most effectively. The professional networks that such events facilitate often offer further support for digital leads as well as an opportunity to collaborate and learn from others.

### **Professional learning**

- 24 Effective leaders understand the importance of professional learning. They ensure that staff have the equipment and opportunities to develop the competence and confidence they need to realise the DCF. Nearly all leaders in the schools visited offer effective professional learning opportunities for staff to prepare for the DCF and address the learning needs of pupils.
- 25 Nearly all leaders in the schools that were not digital pioneers understand the benefits of joint working and collaboration between schools, learning from the expertise and experiences of the digital pioneer schools and from the consortia digital leads.
- 26 In many schools, leaders have started offering opportunities for interested pupils to learn about computer programming and coding to start preparing for the DCF. Many of these schools make effective use of pupil digital leaders to teach and support their fellow pupils and, in some instances, staff in coding clubs.

### **Resources and equipment**

- 27 Leaders stated that preparing for the DCF has required additional financial resources. Schools started from different points with their hardware, network

infrastructure and training needs and, as a result, school leaders quoted varying costs. Schools that spent over £25,000 had hardware and network infrastructure issues that needed addressing before establishing a programme of training for staff.

- 28 In previous Estyn thematic reports (Estyn, 2013 and 2014), inspectors found that leaders were increasingly purchasing tablets, rather than laptops or netbooks. Leaders now choose a mixture of tablets and laptop/netbooks as they believe that, while tablets have strengths, they are not always the best tool for the job, especially when a keyboard is needed.
- 29 Around half the schools that had connectivity issues have addressed these issues and ensured that the quality of the internet connection and the school's network infrastructure is no longer a hindrance to their digital work. They have also ensured that the level of filtering and blocking of internet sites by local authorities does not hinder teaching or learning.
- 30 A minority of leaders are tackling hardware issues by allowing pupils to bring their own device (BYOD). They do so with a good understanding of the concerns of other headteachers, parents and governors regarding the possible misuse of mobile devices by pupils. As a result, these leaders have clear procedures and acceptable use policies to deal with such issues.
- 31 A growth in hardware places a strain on Wi-Fi accessibility and can cause unreliable connection. Most leaders have addressed this issue at the outset and there are examples of this in case studies seven and eight.

### Digital leads

- 32 In the majority of schools, the digital lead was previously the ICT lead and in many instances automatically became the lead for realising the DCF. However, this is not always the case and there are worthwhile examples of the digital lead coming from a non-ICT background. Leaders who chose this option give good reasons for taking this course. The chosen individual may have the interpersonal and project management skills to carry forward the work, and some leaders believe that staff might be more at ease with a non-ICT specialist providing cross-curricular advice and guidance. This is often the case in secondary schools. In most instances where this has happened, the digital lead liaises well with the ICT department.
- 33 In nearly all instances, the effectiveness of the digital lead depends significantly on whether the leadership team is fully supportive of the DCF. Digital leads in secondary schools are most effective when they are members of the leadership team or are able to impact on whole-school decision making.

### Raising awareness of the content of the DCF

- 34 In nearly all instances, digital leads have arranged raising awareness sessions for staff about the content of the DCF. Often these sessions involve sharing materials and video prepared by the Welsh Government. Sessions that offer in-school training help teachers to understand the content of each strand and prepare staff to complete an audit of their skills against the statements of the DCF.

- 35 A majority of digital leads in secondary schools ensure that heads of department co-operate to secure regular, challenging opportunities for pupils to use their digital skills in meaningful contexts across other subjects. They have started to monitor colleagues' work to ensure that they offer appropriate opportunities for pupils.
- 36 In a few examples, such as at Ysgol Bro Pedr, digital leads started developmental work with colleagues by checking whether staff are confident that they have sound basic digital skills. They have then checked whether staff have the skills required to deliver all strands of the current ICT curriculum to build upon, before starting on the DCF. Staff involved in this basic training value this peer support, which is offered in a mutually supportive environment where they can learn without fear, and no question is too basic.
- 37 In a few secondary schools, digital leads and senior leaders establish innovative ways of engaging departments across the school. Case studies 12, 13 and 14 highlight this practice.
- 38 Digital leads in most schools have a thorough knowledge of the DCF. Most know the content of the strands and elements well and use this knowledge to identify the differences between the DCF and the current expectations for the use of ICT across the curriculum.
- 39 Many digital leads use their knowledge of the content of the DCF to start upskilling themselves, targeted members of staff, or pupils in some of these new areas. Typically, these areas involve certain elements within citizenship, collaboration, and data and computational thinking. These staff and pupils are then ready to support other staff and pupils as they embark on realising the DCF.
- 40 The majority of secondary school digital leads in the schools visited have formed a DCF working group of heads of department and teachers from various departments across the school. This is effective in including a good representation of teachers and ensuring that nearly all faculties are fully engaged with preparing for the DCF. This has also successfully raised the awareness of all staff in these departments of their collegiate responsibility in embedding the DCF.

### **Auditing**

- 41 The most effective digital leads have undertaken a number of audits to help senior leaders to understand the strengths and weaknesses of the school's current readiness to realise the DCF.
- 42 Most digital leads have carried out a hardware audit in order to find out whether the school's IT hardware is fit for purpose. Where the hardware audit has identified issues, then the digital lead often works effectively with the leadership team to plan a programme of hardware purchase over two or more years.
- 43 Many digital leads have audited the network infrastructure within the school. This usually involves checking the speed of the internet delivered to the school and the speed with which it is delivered across the school and identifying anything that hinders delivery across the school. At the same time, many digital leads check whether the wireless functionality across the school is robust and dependable

enough to support the growing number of devices that depend on Wi-Fi. A few make effective use of the recent guidance produced by the Welsh Government to help with this issue.

- 44 Another key audit that many digital leads have introduced is of teacher skills. Most digital leads use the information from this audit well to plan purposeful training over a realistic time frame. However, only a few schools have used the Welsh Government [professional learning needs tool](#) (Welsh Government, 2017c) to assess teachers' confidence to deliver the content of the DCF. This is because the majority of schools report that it arrived too late for their plans or it did not identify training needs against each element of each year group well enough. As a result, proactive schools have devised their own audit tool to meet their needs.
- 45 In very small primary schools, the digital lead often knows each staff member's needs without the need to carry out a formal audit of teachers' skills. However, in nearly all primary schools, the audit has involved identifying which elements of the DCF staff are comfortable with, which they will need some support with and which are completely new to them. The majority use a simple red, amber, green (RAG) rating approach against each element of the DCF that was pertinent for them.
- 46 In secondary schools, staff often start from a lower digital skills base than their primary colleagues. This is mainly because secondary schools have not offered pupils enough well-planned opportunities to practise their current ICT skills in meaningful contexts across the curriculum. Secondary school ICT departments are generally poor in liaising with other departments and do not provide them with relevant contexts across the curriculum to apply the skills they developed in discrete ICT lessons. As a result, teachers have not often been asked to include purposeful ICT tasks in their subject area and the experience of doing this will be new for many. In these cases, the challenge for digital leads to win the hearts and minds of colleagues and to identify their training needs is therefore greater. Successful digital leads do this well.
- 47 Identifying professional learning needs for the DCF is also a challenge in special schools, as staff here have to respond to pupils' very specific and specialised individual needs. However, in nearly all special schools the digital leads do this well.
- 48 After auditing teacher training needs, nearly all digital leads plan relevant training for staff to ensure that they have the confidence and competence needed to deliver the DCF to the pupils they teach.
- 49 Many teachers in the schools visited comment on the enthusiasm and support offered by their digital lead. They speak highly of the training and the support and how this has enabled them to embrace the challenge of developing their own professional learning related to the DCF. Teachers value the advice given on how to amend planning and the discussions regarding the best ways to embed the strands into the curriculum. They respond well to the training offered on digital skills that are new to them and to the availability of the digital leads to support them.
- 50 Due to the nature and context of different schools, how digital leads plan the training differs greatly between schools and between phases. Possible approaches include how:
  - one special school has mapped the DCF over the school year for each teacher /

class and prepared training specifically for them on the skills they need – ensuring relevant and purposeful training

- the majority of secondary digital leads have formed a working group of teachers to trial out ideas and cascade these to other members in their department / Areas of Learning and Experience (AoLE) group
- one school has formed 'triads' across the school where groups of three teachers support each other; this works well in building teacher confidence and in sustaining support over time

### **Curriculum mapping**

- 51 All digital leads in the schools visited have started working with staff to map out the DCF into the areas of the current curriculum. This mapping is especially successful in secondary schools as it is often where departments start to discuss how to embed the DCF and understand the importance of each teacher's contribution to the successful realisation of the DCF. Most teachers map sections of the DCF that they feel most relevant for them. While this mapping is developing well across key stage 3 in many cases, only a very few schools have considered doing this across key stage 4, because they prioritise examination preparation.

### **Preparing support materials**

- 52 Most digital leads produce useful support materials, including aide-memoirs, to help colleagues and pupils develop their digital skills. These can be in the form of electronic information sheets listing useful apps or websites, informative videos showing how to use various apps or software, or ideas on how to introduce the DCF into the classroom.
- 53 Many digital leads have started to introduce 'rich tasks', which incorporate digital skills as well as literacy, numeracy, thinking skills and problem-solving skills. These tasks enthuse pupils and challenge them. Some rich tasks introduce new elements of the DCF, for example collaborating via Skype in rural schools or introducing coding.

### **Readiness for realising the DCF**

- 54 As a result of the activity of digital leads and the vision of leaders, nearly all schools visited have already started to realise the DCF. The way in which digital leads have begun to realise the DCF varies, and no one way appears better than another.
- 55 In over a half of schools visited, all teachers started to realise the DCF at the same time. However, a minority of schools adopted a phased introduction, allowing the more confident staff to start first and try things out and for others to observe and follow their example later. This approach may appeal to schools who have a group of teachers who are less confident. A very few schools plan to embed one strand at a time in order to focus the training and build expertise one step at a time.
- 56 Over half the schools visited believe that they are ready to realise the DCF fully. By autumn 2018, most of the schools visited will be realising the DCF. This represents a considerable amount of work by all involved. This state of readiness also reflects that nearly 40% of the schools had identified a digital lead by autumn 2015. By autumn 2016, this had risen to nearly 80% of the schools visited.

## Teachers' understanding and opportunities for professional learning

- 57 Many staff benefit from having leaders who share their vision regarding developing the DCF clearly with them. These staff appreciate and understand that the senior management team are fully behind the successful realisation of the DCF, and will be monitoring its development in a supportive manner. In the schools visited, many teachers believe that the leaders have shared their vision regarding the DCF well. As a result of understanding the vision shared by leaders, most teachers are aware that preparing for the DCF is a priority in the school improvement plan and what that involves for the school.
- 58 In around half the schools visited, all of the staff have been involved in discussing and agreeing the digital plan for the school. Through this involvement, many staff are aware of the plan's content, what it involves and its expectations of them. As a result, most teachers in these schools have positive attitudes towards the preparation for realising the DCF and feel involved. They appreciate how the DCF covers the development of digital skills throughout compulsory schooling and that these skills are to be used in purposeful contexts across the curriculum. They believe that prioritising these digital skills prepares pupils well to deal with the benefits and hazards of technology and to keep themselves safe online, to recognise cyber bullying and to avoid identity theft. These teachers believe that the DCF is a mechanism for providing consistency in pupil experiences across Wales.
- 59 Most teachers in special schools believe that the DCF caters for learners with additional needs well. They appreciate that the DCF is broken down into small steps so that learners can progress through them at their own pace.
- 60 Generally, teachers feel more confident with the content of 'citizenship', 'interacting and collaborating' and 'producing' than with 'data and computational thinking'. This reflects many teachers' understanding of the ICT curriculum. However, discussions with digital leads in school and the consortia digital leads highlight that teachers generally do not fully appreciate the breadth of the content within the citizenship strand.
- 61 Generally, practitioners in the foundation phase feel competent enough in most aspects of the DCF to support pupils appropriately. Practitioners generally feel less competent in delivering the full range of digital skills in key stage 2 and above.
- 62 Most teachers in special, primary, secondary and all-age schools have started to discuss how to adapt long, mid and short term plans to incorporate the DCF. A few schools have started to embed elements of the DCF and reviewed their practice accordingly.
- 63 Progress in the majority of secondary schools visited in adapting planning for the DCF across the subject is developing well in key stage 3. Many secondary schools have created working groups of teachers from across departments to trial approaches out before sharing them with others in the department.

## Challenges for schools in preparing for the DCF

### Vision

- 64 A few leaders in the schools visited do not have a clear enough vision on how to prepare to realise the DCF. As a result, they have not been able to share the vision well enough with their staff. Staff therefore do not know whether the senior leadership team are fully behind the successful realisation of the DCF, or how they will be monitoring its development. In a few schools the digital lead has not been involved in creating the whole-school vision for embedding the DCF. As a result, they do not have a sense of ownership of the vision and in a very few instances are working in isolation without sufficient support.
- 65 Around half the leaders of schools that have connectivity issues have not addressed the problem or ensured that the quality of the internet connection and the school's network infrastructure does not hinder their digital work. They have not ensured that the level of filtering and blocking of internet sites by local authorities does not hinder the teaching or learning. In addition, a few leaders do not have enough understanding of the technical issues that have a major impact on the school's capacity to realise the DCF fully.
- 66 A few leaders do not understand the benefit of joint working between schools, learning from the expertise of the digital pioneer schools and the regional consortia. These leaders do not do enough to encourage staff to collaborate with others, share practice or visit good schools.

### Planning

- 67 A few leaders have not produced a digital plan that prioritises developments for their school or have not included preparing for the DCF as a priority in the school's improvement plan. As a result, leaders in these schools cannot evaluate the effectiveness of their strategy or their digital plans or hold staff responsible for developments. A lack of strategy or of purposeful plan also inhibits the effectiveness of governors to evaluate the provision and measure progress.
- 68 A few leaders prepared their vision and plan for realising the DCF without involving the digital lead or the rest of the staff in the process. Without this broader involvement, leaders do not create a whole-school approach that staff can understand and buy into. As a result, in these instances staff have negative attitudes towards the preparation for the DCF.
- 69 Where plans are not good enough, the following shortcomings are often evident:
- arrangements for how and when they will audit whether the network infrastructure is sufficient to meet the needs of delivering the DCF are not identified
  - timeframes are vague and do not specify checkpoints to review whether milestones/achievements have been met
  - arrangements for monitoring and evaluation are unclear

- staff training needs have not been identified
- training arrangements or plans are too vague
- arrangements for how and when they will audit the software and hardware needs are too vague

- 70 Generally, while secondary schools are planning for the introduction of the DCF into key stage 3 well, only a very few have started to address how they will do so in key stage 4. Most digital leaders believe that one obvious solution would be to review the current Digital Literacy element of the Welsh Baccalaureate Qualification.
- 71 Too few leaders evaluate the effectiveness of their digital plans with enough rigour to hold staff responsible for developments. Where evaluation is not effective, leaders do not arrange systematic lesson observations, scrutiny of pupils' work, talking with pupils to gain their views, or checking of teaching plans. As a result, they do not have a clear enough understanding of the strengths and weaknesses of provision or of standards.

### Digital leads

- 72 Although all leaders in the schools visited have appointed a digital lead, not all digital leads have job descriptions or ones that are clear enough. As a result, expectations of individuals are not specific enough for digital leads to be held to account or to be supported. A few leaders did not appoint digital leads soon enough. In a very few instances, it was the autumn term 2017 before this step was taken, a year after the DCF was made available. Leaders in these schools have lost valuable time where digital leads and teachers could familiarise themselves with the framework. As a result, these digital leads' understanding of the DCF is not as developed as for those who started much sooner. In very few cases, leaders do not support digital leads well enough. Where the digital lead is not a member of the leadership team, they sometimes feel that they do not have the authority to address difficult issues, such as equipment issues or concerns about the quality of provision.
- 73 In a minority of schools, the digital lead has not audited the training needs of all teachers. As a result, many of these digital leads are unaware of the training needs of these staff members. This is an important weakness as a lack of training to build teacher confidence and competence can hamper the successful realisation of the DCF significantly. A few digital leads used an audit tool provided by an external consultant. However, these audits were not always entirely based on the DCF. As a result, while these were generally appropriate, they were of limited use in relation to the DCF.
- 74 In a very few schools the digital lead has not audited whether there is enough hardware, or whether the school network infrastructure is sufficiently robust to deliver the DCF. This too is an important weakness as deficiencies in hardware or network infrastructure can hamper the successful realisation of the DCF.
- 75 While, nearly all digital leads in schools visited have started to realise the DCF across the school, this is not the case in all schools. In these schools, the digital lead has not made best use of the time schools have had to prepare to realise the DCF. The readiness of such schools for the DCF is adequate at best. A few digital leads are not proactive enough and have not yet involved teachers in discussing how to

plan activities and lessons. A very few digital leads in secondary schools have not ensured that heads of departments co-operate to ensure that pupils have challenging opportunities to use their digital skills across subjects. They have not started to monitor colleagues' work to ensure that these opportunities are offered.

- 76 In the majority of schools that have mapped the DCF across the curriculum, digital leads have not yet decided how to address the issue of gaps in provision. This is an issue that schools need to resolve to ensure that pupils experience the breadth and richness of skills in the DCF. Unless schools address this gap in provision, they could be at risk of replicating current issues of poor provision in ICT across the curriculum as key elements are often left out. Too few digital leads have started to map the provision of the DCF across key stage 4 in particular. As a result, most secondary schools are not preparing well to realise the DCF in its entirety.
- 77 In a few schools, digital leads have not started to prepare for the DCF well enough. They do not offer opportunities for pupils and staff in computer programming and coding. Pupils are not trained as digital leaders to teach and support their fellow pupils and, in some instances, staff. A few digital leads do not value the opportunities to visit digital pioneer schools, or consortia training events. As a result, they do not have opportunities to see emerging good practice, to evaluate what they learnt, or to network. A minority of digital leads create an ethos of dependency on their expertise among staff. As a result, they end up troubleshooting, fixing digital issues and problems in classrooms, rather than enabling teachers to develop these skills themselves.

### Teachers' understanding and opportunities for professional learning

- 78 In a very few schools, teachers do not understand that offering rich opportunities for pupils to use digital skills has a positive impact on teaching and learning, by motivating and engaging pupils. These teachers and support staff do not make good use of digital skills to engage and enthuse pupils. Teachers in these schools are generally less confident in delivering the full range of digital skills in key stage 2 and above.
- 79 A very few special and primary schools have not started to discuss how to adapt long, mid and short term plans to incorporate the DCF. These schools have not started to implement elements of the DCF or reviewed their practice accordingly.
- 80 Teachers in the minority of special and primary schools have not started to offer pupils enough well-planned opportunities to practise their digital skills in meaningful contexts across the curriculum.
- 81 Centres of initial teacher education and training are beginning to equip trainee teachers with the skills that they need to deliver the breadth and range of digital skills required by the DCF. However, the development of students' skills is too variable due to their limited involvement in DCF developments, and to their lack of awareness of the weaknesses in ICT provision in schools.
- 82 A few teachers do not feel involved in the process of preparing for the DCF and have negative attitudes towards the preparation for realising the DCF. These teachers believe that insufficient time is given to staff to implement new initiatives and that too many initiatives are brought in.

## Common characteristics of successful realisation of the DCF

### Leaders

- Define clearly the **vision and strategic direction** for the school; this vision evolves as the school reviews its progress in realising the DCF
- Establish **professional values and behaviours** among staff to support continuous improvement and effective team work
- Establish and maintain a culture where **improving standards and wellbeing** for all pupils is the main priority
- Make **improving the provision for and the teaching of digital skills** a key process that contributes to improving standards in digital skills
- Deliver a **digital competence framework / curriculum** that fully **meets the needs of all pupils**
- Sustain a consistent focus on improving pupils' **digital** skills, including higher-order thinking, problem solving and reasoning skills
- Make sure that **professional learning** opportunities for staff improve the quality of provision and standards of digital skills for pupils
- Make all staff, especially those in management roles, **accountable** for successful realisation of the DCF
- Make sure that **self-evaluation** outcomes derive from **first-hand evidence** and are **linked closely to school improvement priorities**
- Provide **governors** with clear, understandable and honest analyses of how well the school is performing and encourage them to challenge underperformance

|                         | Starting the journey                     | Making progress                                                                                                                                                               | Building momentum                                                                                                                                                                                                                      | Sustaining progress                                                                                                                      |
|-------------------------|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Strategic vision</b> | Establish a vision for realising the DCF | All staff and the school community understand the school's vision and aims. Leaders review the vision and strategic direction to ensure that it supports further improvement. | All staff and the school community develop the school's vision for continuous improvement and know their roles in achieving the vision. They review the vision and strategic direction to ensure that it supports further improvement. | The school continues with the vision and strategic direction to ensure that it sustains high standards and supports further improvement. |

|                                                                                    | <b>Starting the journey</b>                                                                                                                                                                 | <b>Making progress</b>                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Building momentum</b>                                                                                                                                                                                                                                                                                                                                                                                                | <b>Sustaining progress</b>                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Developing the role of the digital lead and other leaders within the school</b> | <p>Establish a clear management structure to support the DCF.</p> <p>Appoint a digital lead who has the full support of the senior management team.</p>                                     | <p>Develop the role of the digital lead and ensure that audits of hardware, network infrastructure and teacher skills are carried out. Ensure that the information from these audits inform planning for improvements and the training for staff.</p> <p>Distribute leadership opportunities and ensure that staff in these roles understand specifically what they are accountable for and have the skills to fulfil these duties.</p> | <p>The role of the digital lead, and distributed leadership, is well established and consistently successful in raising standards in the provision for and the teaching of digital skills. As a result, the school is ready to realise the DCF.</p> <p>All leaders clearly understand their responsibilities in relation to the provision of opportunities to develop digital skills and pupils' digital standards.</p> | <p>The role of the digital lead and distributed leadership is well established and highly successful in raising standards in the provision for and the teaching of digital skills.</p> <p>Leaders often help to improve systems beyond their own schools.</p>                                                                                                                                      |
| <b>Improving teaching of digital skills</b>                                        | <p>Set up systems to analyse self-evaluation information regarding the realisation of the DCF.</p> <p>Ensure that all staff understand what good teaching of digital skills looks like.</p> | <p>Embed systems to analyse self-evaluation information about the realisation of the DCF. Involve staff in this process.</p> <p>Ensure that all staff apply the good teaching of digital skills in lessons.</p>                                                                                                                                                                                                                         | <p>Systems to analyse self-evaluation information about the realisation of the DCF are effective. All staff in leadership positions are involved and make valuable contributions to this work.</p> <p>All teachers have a secure understanding of what constitutes good or excellent teaching of digital skills and most lessons are good or better.</p>                                                                | <p>Arrangements to analyse self-evaluation information about the realisation of the DCF are consistently effective and reliable. Aspects of this work fully devolved.</p> <p>The quality of teaching digital skills is consistently good and often excellent. As a result, nearly all pupils make particularly good progress and achieve very high standards.</p>                                  |
| <b>Developing a digital curriculum to meet the needs of all pupils</b>             | <p>Ensure that the curriculum and provision for digital skills meet the requirements of the DCF.</p> <p>Improve pupils' digital skills.</p>                                                 | <p>Ensure that the digital curriculum meets the requirements of the DCF and matches the needs and interests of all pupils, enabling them to make sound progress.</p> <p>Sustain the focus on improving pupils' digital and independent learning skills.</p>                                                                                                                                                                             | <p>Ensure that the curriculum and provision for digital skills support high levels of engagement in learning and help all pupils to make good progress.</p> <p>All staff have a strong understanding of how to develop pupils' digital and independent learning skills to a high level.</p>                                                                                                                             | <p>Ensure that the curriculum and provision for digital skills are highly engaging and support all pupils to make consistent high progress. Aspects of this provision may be worthy of replication in other schools and the school shares its good practice effectively.</p> <p>All staff are highly successful in developing pupils' literacy, numeracy, ICT and independent learning skills.</p> |

|                                         | <b>Starting the journey</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Making progress</b>                                                                                                                                                                                                                                                                                                                                             | <b>Building momentum</b>                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Sustaining progress</b>                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Professional learning</b>            | <p>Following an audit of staff's skills, establish professional learning arrangements to:</p> <ul style="list-style-type: none"> <li>• provide specific support for staff, including relevant and interesting digital skills in their teaching</li> <li>• provide specific support to enable staff to support the school to reach improvement goals</li> <li>• use CPD to establish and maintain high expectations in relation to the provision of digital skills for pupils</li> </ul> <p>Begin to develop opportunities for staff to contribute to working groups to focus on the realisation of the DCF.</p> | <p>Continue to broaden development opportunities for staff to engage in professional learning to improve their own practice and raise standards for pupils.</p> <p>Working groups begin to contribute successfully to the realisation of the DCF and its planning across the curriculum. They begin to engage with external partners to develop good practice.</p> | <p>CPD arrangements are effective in improving the quality of digital provision. They support improved provision for pupils consistently.</p> <p>Many staff engage in enquiry and reflection to improve teaching and learning of digital skills with good practice shared across the school. Teachers regularly network with colleagues in other schools to raise standards of teaching, learning and wellbeing through the DCF.</p> | <p>Arrangements for the CPD of all staff are highly effective and support a culture of continuous improvement of digital skills at the school.</p> <p>All staff engage regularly in effective professional learning individually or as part of a working group. They engage in research, coaching or mentoring activity to improve their own and others' professional practice in the use of the DCF.</p> |
| <b>Utilising pupils' digital skills</b> | <p>Establish arrangements to take account of and consider using the digital skills of pupils to train their peers and staff.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p>Further develop arrangements and training to use the digital skills of pupils to train their peers and staff.</p>                                                                                                                                                                                                                                               | <p>The use of the digital skills of pupils to train their peers and staff is influential and an established part of realising the DCF.</p>                                                                                                                                                                                                                                                                                           | <p>The use of the digital skills of pupils to train their peers and staff has a regular and positive impact on raising standards of provision, learning and wellbeing.</p>                                                                                                                                                                                                                                |

## Questions for schools to consider as part of their DCF self-evaluation

As a starting point for planning for the DCF, schools can use the following questions as part of their self-evaluation:

### Leadership

- 1 Do we have a clear vision, created and agreed by all staff, for the way we plan for the DCF? Have we shared this vision and ensured the governing body understand the importance of realising the DCF?
- 2 Have we translated this vision into a comprehensive and practical plan to drive the initiative forward, and provide a clear rationale for auditing, training, resourcing, monitoring and evaluating?
- 3 Have we appointed a digital lead and do all staff understand that the lead has the full support of the leadership team? How will we monitor the progress in realising the DCF across the school?

### Digital lead

- 4 How will I carry out a hardware and network infrastructure audit to ensure they are sufficiently robust to deliver the DCF?
- 5 How will I audit teachers' skills thoroughly enough to evaluate their readiness to realise the DCF and use the information to plan training over a realistic timeframe? How will I ensure that all staff are trained and supported to realise the DCF?
- 6 How will I monitor that all staff are engaged in preparing to develop pupils' digital competence skills and realise the DCF?
- 7 How will I bring teachers together to map the DCF across the curriculum, monitor the development and address the issue of gaps in provision

### Professional learning

- 8 Are teachers encouraged to be innovative in their planning? For example:
  - do teachers relate pupils learning to their local / Welsh context whenever possible?
  - are the topics taught and the rich tasks used relevant to pupils and current?
  - is teaching responsive and flexible?
  - do teachers respond to local, national or global issues, for example cyber-attacks or sexting?
  - do pupils have opportunities to develop their work or ideas for a real-life context, developing the value of their work?

- do teachers use technology creatively to support learning and broaden pupils' understanding by widening their experiences to include an international dimension where relevant?
- 9 How will we ensure that we as teachers have high expectations of all pupils, including the more able?
- 10 Do pupils lead their learning? How will we gain an understanding of what pupils enjoy or dislike about implementing their digital competence skills in lessons? How will we ensure that pupils will be involved in what and how they learn using their digital competence skills?

## Evidence base

The findings and recommendations in this report draw on visits to 23 schools, discussions with the digital lead in each of the four consortia, and an online questionnaire completed by teachers in the schools visited. The schools selected for visits were identified, through inspection and discussion with digital leads of the consortia, as having made good progress in their realisation of the DCF. Of the 23 schools, seven were Digital Pioneer schools that had been involved in the creation of the DCF.

When visiting these schools, inspectors:

- held discussions with members of the leadership team
- discussed with the digital lead how the realisation of the DCF had been planned and delivered
- met with groups of pupils with their work
- met with teachers to discuss how well the DCF had been implemented in their school and encouraged them to complete an online questionnaire
- reviewed curriculum mapping and planning documents along the school improvement plan or digital plan

### List of the schools visited

Bassaleg School, Newport  
 Blackwood Comprehensive School, Caerphilly  
 Bodringallt Primary School, Rhondda Cynon Taf  
 Cornist Park School, Flint  
 Malpas Court Primary School  
 Portfield School, Pembrokeshire  
 Presteigne Primary School, Powys  
 Radyr Comprehensive School, Cardiff  
 Sofrydd Primary School, Blaenau Gwent  
 St Nicholas Church in Wales Primary School, Vale of Glamorgan  
 Whitestone Primary School, Swansea  
 Ynysowen Community Primary School, Rhondda Cynon Taf  
 Ysgol Gynradd Bethel, Gwynedd  
 Ysgol Bro Pedr, Ceredigion  
 Ysgol Bryn Elan, Conwy  
 Ysgol Comins Coch, Ceredigion  
 Ysgol Dolafon, Powys  
 Ysgol Gymraeg y Fenni, Monmouthshire  
 Ysgol Hafod Lon, Gwynedd  
 Ysgol Penmaes, Powys  
 Ysgol Pennant, Powys  
 Ysgol Gyfun Rhydywaun, Rhondda Cynon Taf  
 Ysgol Syr Hugh Owen, Gwynedd

## Case studies of how schools are preparing for the DCF

These case studies include contributions from special, primary, secondary and all age schools across Wales that represent the range of:

- size
- levels of social deprivation
- language medium
- location, for example rural or urban

The case studies are shared so that other schools can use them as a catalyst for realising the DCF in their own schools.

We make no reference to commercial packages unless they are available as part of Hwb, the Welsh Government's all-Wales learning platform.

| Case study                                                                                                              | Sector                               |
|-------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| <a href="#">1 Our digital journey as a special needs school</a>                                                         | Special                              |
| <a href="#">2 Our digital journey as a small rural primary school</a>                                                   | Primary                              |
| <a href="#">3 Our digital journey as a primary school</a>                                                               | Primary                              |
| <a href="#">4 Our digital journey as a secondary school</a>                                                             | Secondary                            |
| <a href="#">5 Creating a whole-school vision</a>                                                                        | Secondary                            |
| <a href="#">6 The importance of audits as a starting point for our digital journey</a>                                  | Secondary                            |
| <a href="#">7 Overcoming network infrastructure issues in a primary school</a>                                          | Primary                              |
| <a href="#">8 Overcoming network infrastructure issues in a secondary school</a>                                        | Secondary                            |
| <a href="#">9 Overcoming hardware issues in a secondary school – Bring Your Own Device (BOYD)</a>                       | Secondary                            |
| <a href="#">10 The role of the digital lead in a primary school</a>                                                     | Primary                              |
| <a href="#">11 The role of a digital lead in an all-age school</a>                                                      | All age school                       |
| <a href="#">12 Establishing learning triads as part of professional learning strategy</a>                               | All age school                       |
| <a href="#">13 Developing a cross-departmental DCF work plan</a>                                                        | Secondary                            |
| <a href="#">14 Planning lessons across departments to incorporate the DCF in a secondary school</a>                     | Secondary                            |
| <a href="#">15 Developing the 'citizenship' strand of the DCF by using pupil voice</a>                                  | Primary                              |
| <a href="#">16 Developing computational thinking with primary pupils</a>                                                | Primary                              |
| <a href="#">17 Developing computational thinking in a secondary school</a>                                              | Secondary                            |
| <a href="#">18 Developing the digital skills of pupils with additional learning needs through cross curricular work</a> | Complex needs learning resource base |