

Does the Digital Competency Framework assist pupils in becoming ethical, informed citizens of Wales and the World?

	Target	What I have done in this assignment.
Target 1	Make full use of the reading lists and acknowledge secondary sources	I have engaged with the reading list and acknowledged secondary sources where required.
Target 2	Be more explicit in links and claims that are made	I have endeavoured to be clear and detailed where claims have been made.
Target 3	Revise use of the possessive apostrophe	I have revised the use of the possessive apostrophe and believe that it has been used correctly in this essay.

Lesson study allows teachers to improve their practice and the outcomes for learners, through implementation, observation and reflection (Dudley, 2014). With the push to include digital competence throughout the curriculum, digital resources will potentially become dominant in lessons. Their use allows teachers to evidence that they are fulfilling their cross curricular responsibilities, but does this use of the DCF directly benefit the pupils? We are living in a digital world and it is important that as teachers we prepare young people for their future, but we must also ensure that children don't lose touch with the non-digital traditional ways of gaining knowledge and experiences. My research partner and I were interested to explore the potential effect created by the increased focus on digital competence in the proposed new curriculum. Digital competence is seen of equal importance to Literacy and Numeracy as set out in Successful Futures (Donaldson, 2015).

In my class the children often carry out independent research. I discussed this with my partner as I am aware that this freedom to gather knowledge and information is beneficial to children in developing their understanding when starting a new topic or exploring a theme. Our research question stemmed from this: "Does the Digital Competency Framework assist pupils in becoming ethically informed citizens of Wales and the World?". For our two classes this involved looking at how pupils engage with both digital and printed information sources.

Over the last 30 years the way we learn has changed considerably and this is down to the rise in the use of technology as a result of the internet. Computers, iPads and interactive

whiteboards are the norm in most schools; university lecture theatres are 'smart' and students take notes on laptops or tablets (Kaplanis, 2013). With the ever-evolving requirements of the twenty first century in mind, Donaldson (2015) recommended to the Welsh Government the implementation of a "Digital Competence Framework". Digital competence is now seen to hold equal importance to literacy and numeracy. Donaldson recommends that these "responsibilities" should be embedded across the curriculum and throughout all other areas of pupils' learning.

The research behind the use of ICT in schools, specifically its use in a Primary setting, provides interesting reading. There are mixed views on the benefits of ICT as a tool within education but as stated by Elston (2007, p. 67), "ICT is here to stay, and our children are going to grow and develop in a world where technology plays an important part." There does appear to be a positive link between school results and the provision of very good ICT resources (Becta, 2005, cited in Elston, 2007, p. 67).

The observed lessons took place in a Year 1 Foundation Phase setting and a Year 6 KS2 class. A study found that, generally, the Interactive Whiteboard facilitated the cross-curricular use of ICT. However, in older primary classes the internet is used widely to research a topic (Ofsted, 2005, cited in Elston, 2007, p. 68). This structure did appear to be the norm in the subject school and is how we, the researchers, implemented digital competence within the research lessons. It was felt that to use a new technique would dilute the validity of the research as a lot of the lesson would need to be used to explain and model how the resource was to be used.

The benefit to children learning from resources and not directly from the teacher are observed by Holt (1995). In his book 'How children Learn' he studies the way in which children learn to read and learn from reading. Holt (1995) refers to 'competence models – people who can do things better than he can'. Holt identifies that children become aware, as they get older, that they can actually do very little, an awareness that seems to be absent when they are small. Children can, therefore, find the knowledge and ability of an adult off-putting and it may have a negative effect on their learning if they feel that they will never have the ability to do as the adult does. So, by providing a child with the resources, whether through ICT or paper, a child can acquire learning and discuss their findings with a peer or even question a teacher when they wish to understand something further. Holt's findings and his suggestion of allowing a young child to explore something new rather than showing them what an adult knows is a constructivist approach learning (Vygotsky, 1978).

Vygotsky (1978) created the idea of social constructivism where a child learns through their interactions. This is where Holt (1995) highlights that an adult can think that they will aid a

child's learning by showing the child what they, as an adult, are able to do, with the resource. However, as they have not allowed the child time to develop an understanding of the resource, they find that a child actually learns very little and, quite possibly, almost nothing at all. Holt's (1995) approach conforms with the findings of Bruner (1978) and his provision of "scaffolding" in a child's learning. Mcleod (2019) reiterates that where an adult can provide the pupil with scaffolding steps the child is more likely to achieve the learning intention.

Within this piece of research, I was interested to explore whether the greater emphasis on Digital Competence was detrimental and would have negative effect on children's views of traditional resources as a source of information. Welsh (2018) believed that the depth of knowledge, counter argument and background understanding that can be provided in books will never be available through internet sources. As Welsh (2018) describes it, information found on the internet often provide no context or provenance for the facts or there is limited authentic support for the assertions they make. So, if we as teachers want to ensure that future generations are well informed citizens we must encourage both the use of books and the internet and not a dependency on one medium in isolation. We must, therefore, equip children with the knowledge to use the internet safely and responsibly. Children who use the internet in a safe learning environment benefit considerably in comparison to those that do not have this opportunity (Mitra, 2013). Mitra (2013) states that children who learn through research retain the information for longer than those who have learnt through rote learning.

The Curriculum for Wales has adopted Donaldson's (2015) "four purposes". These are seen to be both the starting point but also the aim of a school's curriculum design. The "purpose" that our research focused on was the creation of "ethical, informed citizens of Wales and the world"(Welsh Government, 2020). Specifically, within this purpose is the requirement to find, evaluate and use evidence in forming views and to engage with contemporary issues based upon knowledge and values. The research suggests that there is a huge benefit to children that explore and research to form knowledge and that Digital Competence is vitally important in this freedom to learn. The skills developed when a child reads and researches on the internet is the same as that used when using traditional methods albeit apart from physically turning a page.

The methodology used was "action research". Action research as described by Armstrong and Moore (2004, p.2) is the general term to describe the "processes of planning, transformation and evaluation which draw on insider practitioner enquiry and reflection and which focus on reducing inequalities and exclusion in education". It is believed that the greatest impact a teacher can have on a child's education are those changes made as a result of conducting collaborative enquiry (Robinson et al, 2009).

The form of action research used was a lesson study. This was chosen as it focuses on advancing a teacher's understanding of good practice and pedagogy as well as pupil progress. Lesson study achieves this by focusing on a particular aspect of a lesson, observing this and gathering data (Dudley, 2014). Typically, as was the case in this lesson study, three pupils were selected at random from a range of abilities. Lessons were then jointly planned to ensure that Digital Competence was at the core of the lesson and could be compared against an alternative, more traditional approach. These lessons were then taught by one of the researchers and observed by the other. The observer was non-participating and concentrated her attention on the three case pupils. An overt non-participating approach was used by the observer (Stickdorn et al, 2018); the class were aware that they were being observed but they did not interact with the observer during the lesson. This method was chosen as it allowed the observer to see how the pupils interacted with the resources and ensured that they didn't influence the child through questioning or discussion.

The research was conducted jointly, however, this meant that only one person could observe as the other was teaching. Potentially, therefore, there is the risk of bias by the teacher who was aware of the identity of the members of the focus group. In order to minimise the effect of any possible bias, the researchers, in their respective taught lessons, endeavoured only to communicate directly with the case pupils if they sought help or assistance.

The observers were aware of the Hawthorne Effect and that the pupils may have behaved differently as a result of being observed (Cherry, 2018). However, their observed behaviour was only part of the feedback used in the research and the other feedback came from focus group questioning. It is, therefore, believed that the Hawthorne effect will be minimal in this instance.

Both research lessons took place in the two morning sessions timetabled by the school. The case pupils were not interviewed immediately after their lesson as we did not want them to miss their breaktime as a result of participating in the focus group. The earliest opportunity for the focus group interview, was during the afternoon's assembly time. This also meant that the case pupils did not miss any of their afternoon lessons but ensured that the research lesson was fresh in the memory of the pupils (Cohen, Manion & Morrison, 2018). To reduce the stress on pupils the focus group questioning took place in a neutral school setting and the three case pupils from the class were interviewed together.

We found the inclusion of focus group questioning after the research lessons was useful in better understanding the observed behaviours. The observer in the classroom used an open but focused observation technique (Hopkins, 2014) where they simply wrote, on a blank piece of paper, everything that they observed relating to the case pupils' interaction with the

resources (Appendix 1 & 4). In the focus group interviews, both researchers were present and recording their observations. There was a structured style to the focus group questioning as predetermined questions were asked of the whole group and their responses recorded (Appendix 2 & 5).

Throughout this study only qualitative data was collected. Qualitative research attempts to make sense of and interpret the meaning of things in their natural setting (Denzin and Lincoln, 1994). We collected data of this sort as we were interested in the behaviour and opinions of the pupils when using different types of resources. Specifically, we wanted to know how they felt the use of digital resources compared to physical resources, and their perception of the merits and limitations of both.

The six children that formed the two focus groups (three children from the Foundation Phase class and three children from the KS2 class) were selected at random from the ability groups. Prior to the random selection the names of the children in each class were split into three ability levels with one child being selected from each group. As researchers, we were not looking at how ability might affect the engagement with the resources, but we did want to try and gather data that represented the class as a whole.



Figure 1. Gibbs' reflective cycle (The University of Edinburgh, 2019)

As researchers we chose to use one of the most famous reflection models (The University of Edinburgh, 2019), Gibbs Reflective Model, to analyse and reflect on the data collected from the two lesson studies and associated focus group interviews. Developing the work of Kolb's Learning Cycle, Gibbs' Reflective Cycle (Gibbs, 1988), encourages teachers to work systematically through six stages, initially focusing on the past and what happened and then going on to establish how and what can we learn from this to improve our practice in the future. The two reflective cycles can be found in Appendix 3 and Appendix 6.

There are ethical considerations that must be taken into account when conducting research in a classroom and looking at the BERA Guidelines (2018). They are as follows: consent, transparency, right to withdraw, incentives, harm arising from participation in research, privacy and data storage and disclosure. An ethics form was completed and submitted to the Yr Athrofa Ethics Committee prior to the research taking place and the research was found to have a low ethical risk. A consent form was sent home with pupils and only those pupils that returned the consent form could be observed and could form part of the focus group interview. Pupils were made aware before and during the interview that they had the right to withdraw at any time.

Lesson 1 took place in a KS2 class, where I taught, and my research partner observed. The three pupils were observed (Appendix 1) as they analysed information given to them on either a website, using an iPad or by studying printed newspaper articles. As the children read from the resources, they recorded their findings into a Fact File, which consisted of two pre-prepared tables allowing the pupils to input their findings. The three children are referred to as Pupils 1(N), 2(J) and 3(M).

The observer noticed that pupils 1(N) & 2(J), those who were initially given the iPads, appeared to engage more quickly with the task than pupil 3(M) who was given the paper resources. Pupil 3(M) took time to engage with the task, but the observer noted that once they did engage, they were more easily distracted than Pupils 1(N) & 2(J) who were using the iPads. After 20 minutes the pupils swapped resources and the observer noticed that Pupil 3(M) engaged instantly with the iPad and remained focused and on task for the 20 minutes. Pupils 1(N) & 2(J) reacted similarly to the paper resources as Pupil 3(M) had initially; they engaged but the paper resource did not hold their attention like the online resources had earlier in the lesson (Appendix 1).

Different children gained different levels and amounts of information during the 40 minutes spent carrying out the research. One child gained more from the paper resource, after they had used the iPad, and another gained more from the iPad initially. This information is purely for reference and does not provide the basis for any conclusions drawn from this research. It was decided in planning stages, to focus on the behaviour observed in the classroom and the opinions of the pupils rather than trying to quantify the work produced by the pupil. If we had been basing our research on two classes of the same age, being taught the same lesson and being given the same task it would have been beneficial to use quantifiable data as we could have directly compared the results of the two classes. However, in this instance we were interested in the opinions of the pupils on the use of digital resources compared to paper resources and whether they felt they benefitted more from one or the other.

Whilst questioning the focus group, it became apparent that although the pupils had an opinion on which resource they preferred using, they didn't have a particularly strong view either way. The biggest factor appeared to be the type of information the resource gave rather than the way they used a resource. The pupils believed that the iPad would have been less enjoyable and less beneficial to their learning if they had had to share with another student. The pupils felt the freedom to use the iPad as they wished allowed them to gain from this type of resource.

The pupils found that paper resources in colour are more engaging than those in black and white. Despite the observed behaviours, none of the case pupils said that they found the paper resources difficult to engage with. The pupils enjoyed having limited time with a resource and having the option to use both types of resource, again none of the pupils said that they wished to only use one resource, they merely preferred one over the other. Interestingly, the middle ability child was the one that enjoyed using the paper resource the most (Appendix 2) despite being more distracted when using the paper resource compared to the iPad (Appendix 1).

The focus group questioning could have been altered to give quantitative results, however as previously stated we didn't feel this would have been any more beneficial in this instance as we were not comparing two like classes or lessons. To improve the quality of our results we would have liked to have had the opportunity to observe and question the whole class. We felt that the opinions of three pupils, on one day, researching a very specific topic may not provide us with a fair representation or provide conclusive results and evidence.

Lesson 2 took place in a Foundation Phase class with my research partner teaching the class while I observed. The three pupils were observed (Appendix 4) as they sat on the carpet. The pupils watched and were questioned on a video and then they went to the tables and studied a book with a member of the teaching staff. All comments by the children were recorded by a member of staff onto a pre prepared worksheet. All names have been redacted and the case pupils are referred to as Pupil 1(E), 2(A) or 3(L).

The observer noticed that all the case pupils enjoyed the activity and were focused when watching the video but only Pupil 1(E) offered an answer to the questioning during the video. When the video stopped all three case pupils were keen to give their opinion on where they would like to live: Pupil 1(E) in the jungle, Pupil 2(A) on the sea and Pupil 3(L) on the sea. However, none of the observed pupils gave answers to any of the more focused questions that evidenced their learning or understanding.

When the class moved to their tables a member of staff read a book to the pupils. Each group selected different books that appealed to them, so all groups received different inputs. The three case pupils sat at different tables as the class is seated according to ability. Pupil 3(L) displayed very different characteristics at his table compared to Pupils 1(E) and 2(A). Pupil

3(L) initially rushed to get to the table so that he could be as close to the teacher and the book as possible. The child was then engaged throughout the task in both the reading and associated questioning. This behaviour was quite different to Pupils 1(E) & 2(A) who both struggled to stay engaged while the book was being read. Pupil 2(A) did become more engaged when the focus turned from the book to the sheet, as the child was interested to look at and talk about the pictures. When returning to the carpet Pupil 3(L) remained the most engaged and raised his hand to answer all three questions that were put to the class by the teacher. Pupil 2(A) was disengaged, and Pupil 1(E) offered an answer to only one of the questions.

During the focus group questioning (Appendix 5) Pupil 3(L) was keen to tell us that he had enjoyed the pictures in the books and this was in line with what had been observed. Again, in line with the observed behaviour, Pupils 1(E) and 2(A) enjoyed the video. Pupil 1(E) specifically liked the voices and images generated by the video and Pupil 2(A) enjoyed the amount of information and facts. When the pupils were asked if there was anything they would like to have had added to the lesson, Pupil 3(L), who was observed as the most engaged, said nothing needed to be added as he had enjoyed the lesson. Whereas, Pupils 1(E) and 2(A), who struggled to engage with the book task, both said that they would have enjoyed an interactive task. Pupil 2(A) suggested a running game to match the type of house called out by the teacher to the correct picture and Pupil 1(E) suggested building types of houses from Lego. Pupil 2(A) then agreed that this would be a good idea too.

Lesson 2 involved a lot of listening by the children and not that much activity apart from responding to questioning. Pupil 3(L) enjoyed this style of lesson, however, Pupils 1(E) and 2(A) were eager to play a more active role (Appendix 5). To improve this lesson further a greater variety of resources in both digital and paper form could have been provided and more freedom to explore could have been given to the pupils. The reason that the more controlled and restricted format was taken for this lesson was that we wanted the pupils to have equal exposure to the two resources to help us evaluate their learning from the different types.

As with the KS2 class we could have given the children tests after they had used each resource to see which one allowed them to retain most knowledge. But as stated previously we were more interested in the child's attitudes to the learning rather than quantifying learning.

Across the six case pupils it was evident that they enjoy doing research, of varied levels, and finding out new things. Therefore, suggesting that the pupils enjoy their development as "ethically informed citizens of Wales and the World" (Donaldson, 2015). The pupils had mixed opinions on whether they preferred to use digital media or paper resources (Appendix 2 & 5) with two pupils from each class preferring the digital media. The older pupils, in Lesson 1,

appreciated and enjoyed the opportunity to work with both types of media and said that that is how they would all choose to work in the future, despite having a preferred media.

The younger pupils, in Lesson 2, had much stronger views on their preferred media. The pupils (Pupils 1(E) & 2(A)) who were less engaged in the books expressed an interest in being more active, so potentially they may have had different opinions of the two types of media if the books had been used before the video. Perhaps their ability to concentrate was exhausted by the second part of the lesson. This suggests a potential limitation of the data gathered in Lesson 2; the case pupils were all 5 years of age and research suggests that a child of this age can concentrate for somewhere between 4 and 20 minutes (Harris O'Hanlon, 2013). In contrast to this theory, Pupil 3(L), the least able of the case pupils, did not appear to struggle with concentration during the second part of the lesson.

There was a mixed response from the two classes as to which resource they preferred. It was the middle ability Pupil 2(J) and the lower ability Pupil 3(L) that preferred the traditional resources, so there doesn't appear to be a clear link between preferred resource and ability level. This suggests a blended learning approach, a mix of online learning and traditional classroom techniques (Meehan, 2018), is a suitable approach in the classrooms within the researcher's school. This allows all children to engage in the lesson even if they prefer one type of learning resource and is complimentary to the pedagogical principle "Good teaching and learning regularly reinforces Cross-curriculum Responsibilities, including literacy, numeracy and digital competence, and provides opportunities to practise them" (Donaldson, 2015). The Welsh Government (2019) agree that literacy and digital competence need to be integrated throughout the school curriculum as these responsibilities are needed for pupils to "participate successfully and confidently in the modern world" Welsh Government (2019) thus enabling them to become "ethical, informed citizens of Wales and the World" (Welsh Government, 2020).

The research also found that the children in Lesson 1 were more open to both resources compared to the children in Lesson 2. Autonomous learning, where a pupil takes control of their own learning (Evans, 2015) appears to be the standout difference in the two lessons. The adult's role changes between the two lessons; in the first the teacher was a "moderator" whereas in the second lesson the teacher was an "instructor" (Cicerchia, n.d.). Lesson 1 allowed pupils to explore the information given to them whereas Lesson 2 provided a directed and focused route which the pupils were to follow, all the time guided by an adult.

The findings of the research lessons and focus group interviews suggest that the Digital Competency Framework (DCF) does assist pupils in becoming ethical, informed citizens of Wales and the World. The observations and focus group questioning suggested that pupils

enjoy the use of mixed resources within the classroom. The mix of resources and media creates interest and variety to the classroom and should enrich pupils learning (Sargent, 2018). Therefore, by making the DCF as important as literacy and numeracy and encouraging its use across the curriculum (Donaldson, 2015) it allows for a blended learning approach in the primary school classrooms of Wales. This use of blended learning facilitates autonomous learning which “is the future of education” (Furman, 2017). Gershon (2014) suggests that by allowing pupils to be independent in their learning we, their teachers, facilitate their ability to think independently throughout their lives.

The effective use of resources for independent learning by pupils requires the teacher to provide a framework on which a pupil can structure their learning. Both research lessons provided scaffolding (Bruner, 1978) for the pupils to use to build their learning. The pupils were given a framework to reduce the cognitive load and allow them to access the learning efficiently (Riches, 2018). Without the scaffolding provided in the lessons, the resources would have produced a great deal of information, but the pupils would not have had the structure in place to facilitate the decoding, analysis and retention of the information given.

In my future practice, I will offer a range of media and resource types in the classroom. I will endeavour to use a blended approach whenever possible as this research has shown that children learn differently. They should all be encouraged to use a variety of media to develop their learning and support both the inclusion of the DCF and literacy across the curriculum (Donaldson, 2015). I will also encourage my pupils to develop their skills as autonomous learners and this is strongly supported by effective implementation of the DCF.

To improve the quality of the evidence in favour of using the DCF to create “ethically informed citizens” (Welsh Government, 2020), I would like to observe its use in more classrooms, across more age groups and over a longer period. Further research could explore the actual quantifiable output by pupils when using a blended approach to their learning, which in turn would produce quantitative results that can be analysed in more depth. Further analysis of primary school pupils use of the internet at home could develop this study. To ensure a pupil is truly “ethically informed” (Welsh Government, 2020), further research could be carried out into whether a pupil understands where the information they are reading comes from; have they checked that the resource is reliable? The resources given in these research lessons had been selected by the teacher, however if free reign of the internet had been given, would the information used by the pupils have been legitimate? Further to this it would be beneficial to see if pupils can carry the skills learnt in a controlled and structured classroom environment (selecting information, decoding and checking the validity of the resource) into a personal and domestic environment with free use of the internet.

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