

Section 1

In recent years there has been a major growth in new digital technologies (Nutbrown, 2011). According to Kidron and Rudkin (2017) growing up in this new digital environment impacts children's learning and development. These new technologies and access to the internet can open opportunities for children that previous generations did not have. Donaldson (2015) agrees in his report he suggested that digital competence was just as important as numeracy and literacy and there should be a digital competence framework in the new curriculum for Wales for children to develop the essential skills needed for living and working in the modern world. Research shows that parents are concerned about the risks of harm to their children on the other hand research also suggests that there are benefits. The internet is a valuable tool for research. Digital technologies support collaboration and communicating, develop skills needed for the future, support children to problem solve and be critical thinkers (Donaldson, 2015). As Kidron and Rudkin (2017) acknowledge children cannot be denied access to digital technologies but they should be supported to embrace the positives and benefit from all the opportunities it has to offer, and adults should support children to minimise the risks. It is essential that children have access to digital technology from a young age as children need to develop the skills needed to navigate life in a digital world.

The United Nations Convention on the Rights of the Child UNCRC (1989) Article 17 states that children have the right to access information from the media and that it is the duty of adults to protect them from content that may cause harm.

This essay is a critical evaluation of the effectiveness of digital devices used by young children to access media content and support ICT development. It will critically compare and analyse two devices to analyse how they can support children. It will look at the benefits and the risks to young children's holistic development. The two devices to be compared are touchscreen tablets and desktop computers. Ofcom (2017) data suggests that tablets are the most widely used screen device by young children. Ofcom (2017) figures from 2010 -2017 show the number of children using desktop computers to go online in the home has fallen year on year where as other devices tablets, laptops/netbooks and mobiles have increased with tablets being the most popular. Under section 11 of the Communications Act 2003 Ofcom are responsible for the promotion of media literacy and have a duty to carry out research on issues under section 11.

Suglia et al. (2013) links high levels of media use and screen time to obesity in children. Cox et al (2012) suggest that this is because children who spend over 2 hours a day either using media or watching TV are less physically active and eat more while using media or screens. Tablets can be incorporated into outdoor activities the desktop computer cannot. If children are eating while using the computer they are distracted from satiety cues and could possibly over eat.

There is a risk that when accessing apps on a tablet that children will have negative experiences a study by Marsh et al. (2018) found that 6% of parents reported that their children had been exposed to material that was not age appropriate. Kucirkova et al. (2017) reported that parents want their children to use educational apps but they have a fear of their children viewing non age appropriate material. Alliance for Childhood (2004) acknowledge the risks involved with children having access to digital devices and the internet they recommend that children should have adult guidance and should be introduced to digital devices in a developmentally appropriate way. Yelland (2018) suggests that when using tablets adults are able to participate and sit with have discussions this supports communication and language development. With desktop computers there is not so much flexibility.

Fidler et al. (2010) suggests that young children need parental interaction when using media to support their understanding of content they suggest that touchscreens are particularly useful for increasing the educational potential by giving the parents opportunities for scaffolding the child's learning and building on their digital skills. Research by Fish et al. (2008) suggests that when using desktop computers at home parents do not engage with children this could be because as Morgan and Siraj-Blatchford (2013) point out desktop computers must be plugged in somewhere and do not have the flexibility to be moved. They also have to have a keyboard, monitor and mouse attached which limits where they can be placed, and the plugs and trailing wires can cause a trip hazard.

Marsh et al. (2018) carried out a research study on play and creativity in young children's use of apps. They found that children were able to engage in play between digital and non-digital domains by integrating the play with tablets into their everyday play. The use of apps was seen to foster imaginative and fantasy play, during observations they witnessed children engaging in all but two of Hughes (2002) play types. The play types they did not witness were rough and tumble and recapitulation play. They concluded that children who had access to tablets in the home engaged in a range of activities that promote play and creativity.

Young children need social interaction children with Autism Spectrum Disorder find it particularly difficult to communicate and interact with their peers. The development of online gaming and interactive media can positively benefit children with ASD by allowing them to communicate with others without the challenges of face to face contact (Odom et al. 2014).

The Digital Competence Framework is different to ICT and practitioners may not be digital literate themselves or not have the confidence to deliver the DCF. The DCF has been available to schools and settings since September 2016 schools have had from this date to start implementing the framework. From September 2022 all schools will be expected to be delivering digital competence on a cross curricular basis. Welsh Government (2018) acknowledge practitioners concerns and have put a range of measures in place to support them. Digital pioneer schools are encouraged to share information and help with implementation of the DCF partnership working. It is important that practitioners are digital literate because Arnott et al. (2018) suggest that if practitioners embrace digital technologies and change their practice and approaches to play it gives children more opportunities for learning and development. With training and increased confidence practitioners will be able to integrate digital devices into play and be able to deliver the Digital Competence Framework effectively.

Where Estyn have witnessed schools delivering the DCF they will identify good practice and share it on their website.

There is a range of resources available online from the Welsh Government to provide information and guidance. There are professional learning tools to help practitioners identify what skills they already possess and what areas they need to develop. There is a mapping tool to help practitioners to cross reference the DCF to current teaching. There is also a question and answers document.

Currently in the UK there are no guidelines on optimal amounts of screen use in the American Academy of Pediatrics Reid Chassiakos et al. (2016) suggest 2 hours maximum per day. The United Kingdom Chief Medical Officers Davies et al. (2019) claim that to date there is not enough conclusive scientific research evidence for UK CMO to base guidelines on, though they acknowledge that society and parents have concerns over the amount of time children spend on/using screens and online activities. To address these concerns, they make recommendations for further research in the field of screen time and its effects on children. They have also published advice for parents/carers based on current research evidence. Morgan and Siraj-Blatchford (2013) state that 3-year olds should have a maximum of 20 minutes and

8-year olds a maximum of 40 minutes at the computer to avoid the dangers associated with the use of computers including repetitive strain injuries and poor posture.

Morgan and Siraj-Blatchford (2013) argue that children can use ICT can be incorporated into outdoor play and learning in the outdoors to enhance learning there are many devices suitable for the purpose a tablet is ideal as it is portable and wireless. Yelland (2018) supports the use of tablets as they can be used to complement other resources providing children with quality learning experiences. a desktop computer would not be able to be used in the outdoors limiting it's uses. There are also health and safety issues to consider when using desktop computers in the early year's classroom.

Macintyre (2017) states that play is vital for children's development, play should be child led with intervention from practitioners only when needed. Playing collaboratively with others is also valuable to the quality of play.

Marsh et al. (2005) state that practitioners use computers mainly for play and do not scaffold children's learning or engage in sustained shared thinking. They say that practitioners have a lack of knowledge and are unable to teach and support children effectively however this research is 14 years old and as the digital environment has changed and new technologies have become available practitioners have adapted. With the introduction of the Digital Competence Framework in 2016 practitioners have a better understanding of digital literacy and how to support and develop children's digital literacy skills.

Technology is advancing at a fast pace, children need to be prepared for the future the DCF and new Welsh Curriculum supports children in acquiring the knowledge and skills for today and the future. Morgan and Siraj-Blatchford (2013) suggest that the desktop computer is becoming outdated, the keyboard and mouse are being replaced by mobile technologies and touchscreens, therefore there is very little point in teaching young children how to use them because the skills will not be of use to them in the future.

Fish et al. (2008) claim that when parents are actively involved with children while using computers children benefit from communication and collaboration. Children do not benefit from using educational programmes at home unless supported by parents research shows that parents are not actively involved in children's computer use but they watch the children or allow them to play games by themselves this offers no benefits to children.

The Department for Education (2019) in an attempt to engage families from disadvantaged backgrounds in supporting children's early language at literacy they will be piloting a scheme to give children free access to educational apps it has been found that children do not benefit from being left in front of a device they need adult interaction to develop speech and language. The DfE (2019) acknowledge that all screen time is not the same and that screen time has its risks and disadvantages therefore they want parents to support children to have quality interactions with digital devices. In addition to offering access to free educational apps there will also be access to parenting programmes and tips by text to educate parents on how to develop their children's literacy, numeracy and socio-emotional skills.

The Welsh Government (2015) state that they want children to benefit from full use of the internet both in school and at home however they are aware of the risks of abuse and accessing inappropriate materials they state that practitioners must have regard to the Safeguarding children: working together under the Children Act 2004. Keeping learners safe: The role we all have under the education Act 2002 sets out step's practitioners can take to raise awareness of safe internet use. The UK Council for Internet Safety (2019) published online safety guidance for practitioners outlining the risks, the need for settings policies and adhering to policies and how to report any concerns they may have.

In conclusion the Digital Competence framework equips children with the essential skills needed to succeed in an increasingly digital world. The use of touchscreen tablets can be incorporated holistically into all aspects of the curriculum. Supporting children's holistic development. Desktop computers do not offer the same opportunities as tablets and are increasingly becoming redundant therefore the use of desktop computers does not support children to develop the essential skills needed for future education and employment. For children to benefit from all the opportunities that the internet can provide everyone has to take on the responsibility of safeguarding children from the risks of harm.

Section 2

The purpose of this essay is to critically analyse an activity based on ICT for a group of young children. The activity is for a group of 6 year 1 children aged 5-6 years old. The children will work in pairs this will support the Interacting and Collaborating strand of the Digital Competence Framework (2018).

The activity is to create a simple birdfeeder using digital technology to research and record the creation of their birdfeeder.

The aim of the activity is to develop children's digital literacy following the Digital Competence Framework (2018). Digital technologies and the internet will be used to support the children's learning. By offering them the opportunities to incorporate digital technologies into their play and creative experience, this will help to develop their skills, knowledge and digital competency. Kildron and Rudkin (2017) support this as they say every interaction with the digital environment can be an opportunity to support creativity.

During big bird watch 2019 the children learnt about different species of birds and how to identify them. They learnt about how birds need to find food to survive in the winter months. The children showed concern for the birds and decided that they would like to help care for the birds during the winter months by making bird feeders for the school garden.

The children will be asked to research birdfeeders at home, they will be given some examples like using tablets, smart phones or digital cameras to take photos of birdfeeders in gardens or public areas. They could also use the internet to find photos of birdfeeders and instructions for making birdfeeders this will support the Producing strand of the Digital Competence Framework. Using text when searching for information/media. Suitable sites that can be suggested for research include rspb.org, bbc.co.uk and edenproject.com The children will be given the choice to select technology that they felt was most suitable for the purpose as Forkosh Baruch and Erstad (2018) suggest children should be able to determine how useful a digital device would be for a specific task.

Parents will be encouraged to support children to save their photos and name the file. Helping the children to understand how to share and store photos, files and information. The children can print off their photos or with support from their parents they can share the photos with the class teacher via email or through the seesaw app this would support the Interacting and Collaborating and the Producing strands of the Digital Competence Framework. The children will choose the method of sharing that they feel is the most appropriate.

This would be a good opportunity to involve parents with the children's learning. Maynard et al. (2010) suggests that Foundation Phase practitioners should encourage families to be involved in their children's learning, they should engage with parents to support children's ICT learning in school and at home. They acknowledge that parents play an important role in their children's learning. Foundation Phase learning is more effective when practitioners have strong

relationships with parents and the wider community. Developing family participation can raise the quality of the home learning environment, research shows that a quality home learning environment has a positive impact on children's academic outcomes (Siraj-Blatchford and Siraj-Blatchford, 2009).

In their pairs the children will discuss the photos, they will use the photos to represent their thinking and will plan how they will make their bird feeders and what materials they will use. The practitioner will provide a wide range of equipment including mixing bowls, spoons, chopping boards, knives scissors. As the activity is child led the children will decide what materials they would like to use through discussing their ideas with their partner and the practitioner. The practitioner will source the materials that the children have requested. An example of materials would be plastic bottles, yoghurt pots, string, pipe cleaners, pinecones, coconut shells, bird seed, lard, cereals, nuts, raisins. The practitioner must consider allergies when sourcing materials. To support Education for Sustainable Development and Global Citizenship (2008) children will be encouraged to use natural or reusable materials if children chose to use plastic bottles or yoghurt pots the practitioner will discuss how they will need to remove them later and dispose of or recycle appropriately. The activity will give the children the opportunity to investigate different materials to explore and think what works what does not, to communicate and work in collaboration with a partner to critically and creatively problem solve and gain a deeper understanding of using data to create the bird feeders this will support the Data and Conceptual thinking strand of the Digital Competence Framework.

The children will be encouraged to take photos with the class tablets at various stages of planning, creating and the finished bird feeders. Rowe and Miller (2016) suggest that there is evidence that using I pads can improve the quality of learning experiences because they support collaboration and communication, they are also useful for supporting individual learning. They will be supported to save their photos and produce a storyboard of the activity. Kucirkova and Sakr (2015) suggest that story making apps can enhance children's creativity and motivates children who may be disinterested in writing. They could add sound making it multimodal (Yelland, 2018) state that multimodal learning is essential in the 21st century. The story will be presented to the class by the Interactive Whiteboard. They can use the IWB to annotate or add drawings to their story.

The presentation will give the children an opportunity to reflect on their experience. Their critical thinking skills are developed as they identify what worked well and what could have

been done differently. It also extends communication and collaboration with the rest of the class as they can discuss their ideas with the rest of the group and discuss ways of supporting the other pairs. This supports the producing strand of the Digital Competence Framework. The use of the IWB offers alternative ways of presenting their stories to the rest of the class as Morgan and Siraj-Blatchford (2013) suggest that tablets and touchscreens engage children especially boys who may be reluctant to participate in mark making. However, research by Morgan (2010) found that children do not use IWBs in the classroom as they feel they do not have autonomy over the IWBs as they are not encouraged to engage with them or use them as play tools but they are seen as being owned by the teacher and for the teachers use only.

The activity offers children the opportunity to lead their learning. It offers them the freedom to take responsibility and have autonomy senses Montessori (cited in Isaacs, 2012) supports this type of learning as it puts children at the centre of their learning and helps children to develop into confident and independent decision makers.

Creating and thinking critically children have their own ideas they have to develop make links between ideas and develop strategies for doing things. Combining different materials and using different techniques. Reggio Emilia (cited in Pound, 2005) believed that children have an innate curiosity which drives them to investigate their world and their role in it.

The activity is based on ICT to support the child/children's digital literacy however Donaldson (2015) states that ICT should not be standalone. The activity is an holistic activity as all Foundation Phase areas of learning are developed within the activity (Welsh Government, 2017) The activity embraced the ethos of successful futures as it includes the three cross curricular elements of Literacy, numeracy and digital competence developing these skills in young children enables them to become creative and critical thinkers which are essential skills needed to thrive in the modern world (Donaldson, 2015). The activity also incorporates the Education for Sustainable Development and Global Citizenship (2008) as the children are thinking about the needs of the present and future generations, creatively thinking about caring for and protecting local wildlife, developing an awareness of the local natural environment and looking at ways of developing it for the present and future generations. The ESDGC (2008) supports the use of ICT, developing thinking skills as well as co-operation and collaboration for children to become active global citizens as it prepares children for life in the 21st century.

The Foundation Phase (2017) places an emphasis on outdoor learning and it's benefits In the past ICT could only be used within the classroom at computers so ICT could not be integrated

with outdoor learning. In recent years mobile technologies such as tablets, smart phones and digital cameras have become accessible enabling the integration of ICT into outdoor play and learning (Morgan and Siraj-Blatchford, 2013).

There are opportunities to extend the activity further. Children could observe the birds using the bird feeders. They could even set up a camera to record the birds over a longer period. They could print off a bird checklist and record the species of birds and the number of birds visiting the birdfeeders. They could create graphs to record.

The activity is child led as the children lead their learning. The activity was planned following observations of children's interests. The structure of the planning of the activity offered flexibility for the children to choose how they wanted to carry out the activity, what digital technologies they wanted to use this promoted critical thinking, experimenting and collaboration. It enabled active learning, if they encounter a problem, they are able to use their knowledge and skills to problem solve. (Piaget cited in Pound, 2005) believed that children are little scientists and learn by experimenting with materials that they need to have control over their own learning and construct knowledge for themselves. The activity enables them to have control to problem solve and be critical thinkers. The adult is not there to guide their learning but to scaffold their learning through modelling thinking, encouraging further thinking and communicating and modelling language. Child-initiated play leads to deep levels of involvement. (Veale, 2016).

Alliance for Childhood (2004) claim that the increasing use of electronic technologies by young children is causing damage and changing human biology and the ecology of our world. They state that children are spending more time in front of the screen and as a result they miss out on time in nature, first hand experiences and play and they lose the opportunity to form caring relationships with adults. They are not learning about sustainability and looking after and protecting the earth and living things. This activity is a good example of how digital literacy and technology can be used alongside the ESDGC (2008) to enhance children's learning, help them problem solve and think creatively about caring for the environment while still have meaningful interaction with peers and adults.

The activity supported communication, children are encouraged to support each other to share knowledge, it a social activity. Vygotsky (cited in Veale, 2016) emphasises the importance of social interaction as he believed that children benefit from interaction with adults and peers. His view was that adults and peers that are more knowledgeable can share their knowledge

fostering the development of knowledge and assisting them to learn new skills that without support they would not be capable of achieving. He also believed that social interaction helps to develop language.

The planning of the activity focuses on the intended outcomes of the Digital Competence Framework. It was child centred and emphasis on developing children's digital literacy skills Siraj-Blatchford et al. (2002) REPEY study found that the best outcomes are achieved through free play with focused planning as it supports sustained shared thinking. The activity supported and offered opportunities for children to interact and participate in sustained shared thinking with the teacher and their peers.

To conclude the aim of the activity was to support and develop children's literacy skills. The activity was a holistic activity based on the children's own interests. It supported children's digital literacy and developed the digital skills needed for today, for their future learning and for the world of work. It showed clear links to the current Foundation Phase curriculum, the digital competence framework and the ESDGC. It integrated digital technologies into an activity to compliment other resources offering the children a real-world learning through play experience.

Section 3

Information for parents/carers to support and safeguard children when accessing ICT.

Today's children are growing up in a digital world. Access to the digital environment provides many benefits to children's learning and development however there is also risks to children when using digital devices and accessing the internet. This leaflet aims to offer guidance to parents and signpost them to organisations and websites that can provide more information.

The UK Council for child Internet Safety have produced the 'Education for a Connected World Framework'. It is a comprehensive yet easy to read guide for parents and carers to help them to support children to be knowledgeable, responsible and safe in a digital world it can be accessed at <https://www.gov.uk/government/publications/education-for-a-connected-world>

Communication

It is important to have open, honest and regular conversations with your children to help keep them safe online. Encourage children to discuss with you what websites and apps they are accessing, who they are playing with and chatting to online. Talk to them about the benefits of using digital devices and the internet in a positive way, also talk to them about the risks and harm. Ensure that you maintain lines of communication with children as they get older. Let children know that they can always talk to you at any times with worries or concerns.

Screen time

We know that children can benefit from spending time on line but too much time can be damaging to children's health. The United Kingdom Chief Medical Officers (2019) claim that there is not currently enough conclusive research for them to publish guidelines on screen time. They advise that screen time should not impact on the quality and quantity of sleep. It should not prevent families from spending quality time together. It should not replace physical activity and time spent outdoors.

Keeping Active

Physical activity is essential for healthy development (UKCMO, 2019). According to The Children's Play Policy Forum (2019) 80% of 5-15year olds are not physically active enough to stay healthy. 30% of children are obese when they leave primary school and 10% of children are affected by mental health problems. This is because children are no longer playing outdoors, they are missing out on play in an environment that supports their growth and development. Instead they spend most of their free time indoors using technology and social media. This technology and social media use is replacing first hand experiences and taking away children's freedom to explore, discover, take calculated and learn from their mistakes. Consider ways of balancing digital use with physical activities.

Set family rules

As a family include everyone in deciding rules and boundaries for the use of digital devices and the internet. Ensure that children's voices are heard, and their views are taken into consideration. The rules need to be clear on what children can and cannot do online. The NSPCC and O2 have a family online agreement template that you can download and fill in together.

Be a good role model

Reflect on your own use of digital technology, do you spend a lot of time online yourself? Think about your own use of social media. Are you sharing information safely yourself? Think about your own online behaviour. Do you always behave towards others online as you should?

Set a good example and encourage sensible sharing of information and respectful online behaviour.

Follow the family rules yourself.

Cyber bullying

Ofcom (2015) state that online bullying is less likely than being bullied in person however Bullying.co.uk (No date) state that there are many forms of online bullying and it is a major issue with 56% of young people saying they have been bullied online. Talk to children about what is and is not acceptable behaviour. Make children aware of the signs and assure them that they can talk to you if they feel that they are the victim of online bullying.

There are currently no laws on cyberbullying however it could be considered a criminal offence under the Protection from Harassment Act 1997.

Parental controls and content filters

Use parental controls and filters to prevent access to inappropriate material, to prevent children downloading unsuitable apps and to prevent in app purchases.

Use parental controls both at home and on devices used away from the home. Look at age guidance's when downloading and allowing children access to apps.

Internetmatters.org has step by step guides of how to set parental controls on all internet providers, devices and entertainment services.

Visit bullying.co.uk
for advice and
support on dealing
with bullying

Keeping safe when using chat rooms

Talk to children about the dangers of chat rooms and signs to look out for. Set safety rules for the use of chat rooms.

Danger signs

- Someone pressurising you to give out your address or phone number
- Someone asking you to keep your conversations secret
- Someone tells you, you will get in trouble if you tell someone else
- Someone asking you to meet them in secret.
- Someone sending you inappropriate images
- Someone asking you to share images or use a webcam to do things that you are uncomfortable with.

Safety rules

- Do not use your real name
- Do not tell anyone which school you attend
- Do not give out your address or phone number
- Do not agree to meet anyone
- Do not agree to do anything that you are uncomfortable with
- Tell an adult if someone makes inappropriate suggestions or asks you to do something that you are uncomfortable with.

Digital footprint and online reputation

A digital footprint is created when data is collected or created online. Once this data is online it is permanent and anyone can search and access this information now or in the future. It is important that children understand that what they share can become public even if they think they are sharing it privately with friends there is the risk that friends will share their private information making it public. Talk to children about the implications on their future education and employment.

Further advice and guidance

For advice and guidance on any aspects of online safety Phone the free 02 and NSPCC helpline on 0808 800 5002 

If you have any concerns about something your child has witnessed online or you have concerns about someone behaving inappropriately towards a child it must be reported to the police and the Child exploitation and online protection centre at www.ceop.police.uk

Useful websites

<https://www.nspcc.org.uk/preventing-abuse/keeping-children-safe/online-safety/>

<https://www.gov.uk/government/publications/child-safety-online-a-practical-guide-for-parents-and-carers/child-safety-online-a-practical-guide-for-parents-and-carers-whose-children-are-using-social-media>

https://www.internetmatters.org/?gclid=EAlaIQobChMIgsb66rfZ4AIVSrHtCh05tw4WEAAYASAAEgLMBvD_BwE

<https://www.childnet.com/>

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