



# DIGITAL PLAY

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# INTRODUCTION

**Digital Play** is our response to the many people who tell us that they would like to know more about the role of digital media in the lives of the children they look after. It focuses on young children aged up to five or six and is intended to be useful for educators, students, childminders and others working with parents and caregivers at home or in early childhood education and care settings.

**Digital Play** builds on research on the use of digital media by young children and their families. We look at findings afresh and provide an overview of some of the information that's available. Our aim is to support professionals and caregivers in feeling more confident about developing strategies for integrating digital media into family life.

One of our key messages is that there are no 'right' choices that apply to everybody. We haven't provided specific recommendations for this reason - everybody's child and family is different, so hard and fast rules aren't very helpful. Nevertheless, our starting point here is based on a research-informed position that:

- Digital media and devices are central to the lives of nearly all children and caregivers in the UK.
- Used with care, digital media can provide opportunities to play, learn, communicate and be creative.
- We can lay the foundations for positive use later by thinking about digital play during early childhood.

We refer to some named apps, websites and products for children to illustrate some of the points we make. That does not mean that we endorse them. Please use your own judgement about what you want to buy or introduce to your child.

**Key words – what do we mean?**

We need to explain how we use some of the words used in Digital Play. These are listed in a glossary at the end of the document.

**Reading research**

We have aimed to provide a nuanced view of some of the issues and to present different perspectives so that readers can make up their own minds. It's useful to know where to go for more information, so we provide links to other research if you want to find out more or get alternative views.

We need to look beyond the headlines when reading reports of research. Articles in newspapers or TV programmes sometimes refer to 'research' as if all research is equally trustworthy. But just because something has been published in an academic journal doesn't mean that it's true: researchers have their own biases and beliefs. To help with navigating through some of the main types of research used in the area of children and digital media, we have included a brief summary of the main features of surveys, experiments, real-life studies and systematic reviews in Appendix A.

## Finding out more

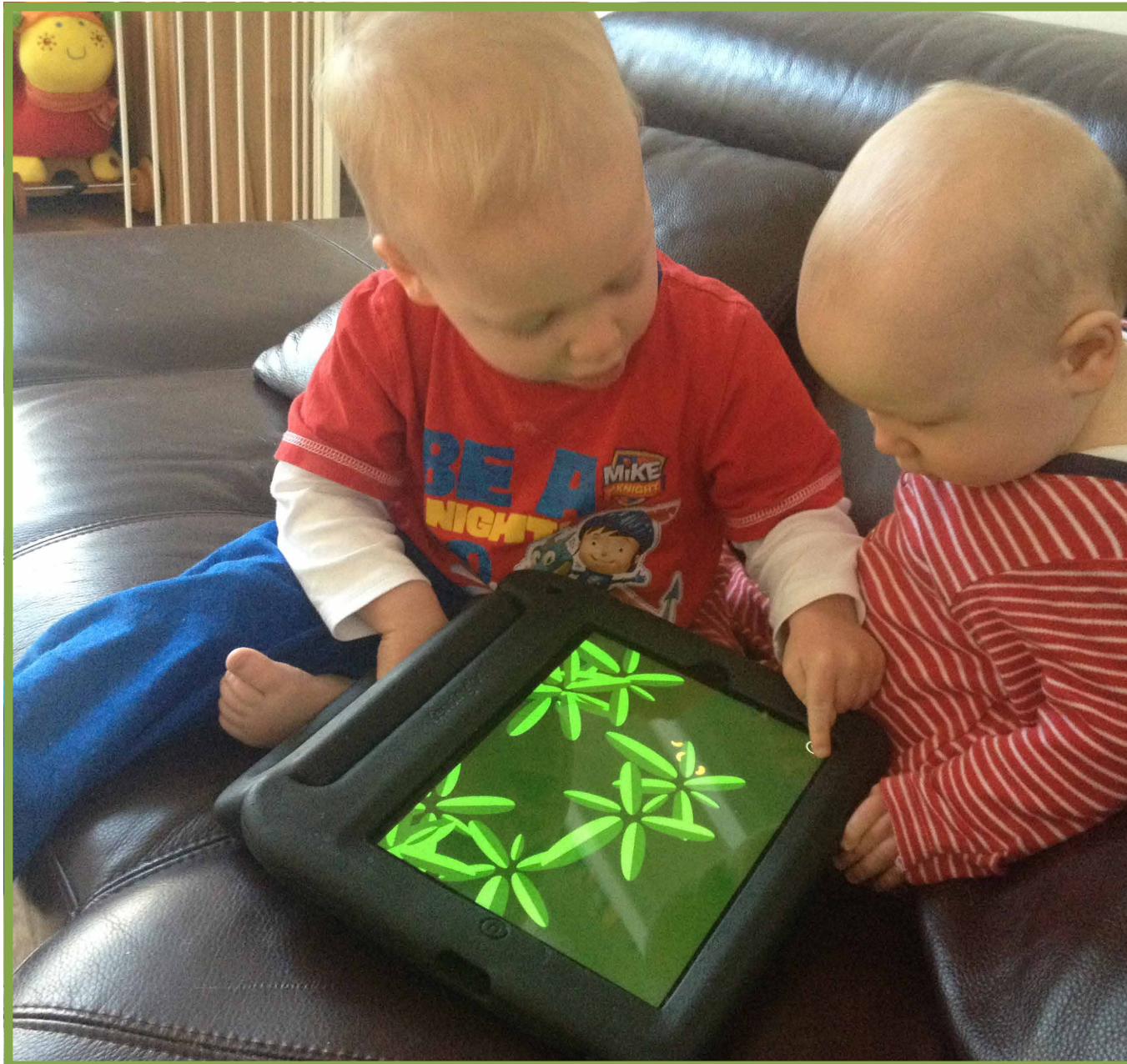
Our focus is on the situation in the UK, but we have also used research from other countries, particularly the USA, Europe and Australia, as there is still a shortage of research on how families use digital media in low- and middle-income countries. We would like to include more accounts of children's perspectives, but there's also a lack of truly child-centred research because involving very young children in research is difficult: establishing their consent is an uncertain process and children of this age may find it difficult to express their views. This means that most research is shaped by adult concerns.

There are links to extra reading if you want to dip in and find out more. When reading any accounts of research it's Important to check who's sponsored the research and what's the motive for conducting it as this can influence the results and how they're reported.

The suggestions in '*Find out more*' are usually reports or blogs that are free to download and written in parent-friendly language. '*What does the research say?*' provides links to research that provides more information. These articles tend to be written in more academic language. Unfortunately, many of these studies are published in expensive journals held by university libraries and they're not easily available to the public as they require a subscription. We have tried to focus on articles that are published in what's known as 'open access' journals. This means that the articles are available free of charge for anybody to download.

The links in '*Find out more*' and '*What does the research say?*' were live at the time that this material was produced in summer 2020, but links sometimes get disconnected. If this happens, it may be necessary to use a search engine to find an item using its title.





# 01 GROWING UP IN A DIGITAL WORLD

Most people agree that children's experiences with digital media will have an impact on their lives. Deciding what forms this impact might take isn't straightforward because it depends on a range of factors such as:

- the age of the children
- whether there are other children around
- the devices and content available to them
- the values and attitudes of the people who look after them.

Most technologies have both positive and negative features. Tablets can be useful for keeping children occupied on long journeys or in waiting rooms, but there are concerns about the apps that tempt children into making purchases or finding inappropriate content. For older children, social media may enable children to find groups of friends who share their interests, but some sites can promote antisocial views or lead to bullying.

Digital devices easily become a focus for things that we worry about. Lots of people feel that children grow up too quickly these days, or that there's not enough time for play and to enjoy being a child. Some of these worries relate to the widespread use of digital devices and time spent by children playing with them; they can lead to people feeling that they don't know how to manage these changes. There are other influences on the ways in which children grow up in the early part of the twenty-first century, but they don't always get as much attention.

These include:

- different patterns of parents' employment and what this means for childcare
- increased levels of childhood poverty
- changes in diet
- changes in family structures
- restricted options for outdoor play, whether this is because of traffic, fears about safety or a shortage of play spaces.

All children's circumstances are different and recent social, cultural, economic and political changes are complex. It's difficult to untangle them, so drawing firm conclusions about the role of digital media in this mix is not straightforward.

Caregivers may have more influence than they realise. In the same way that we have family expectations about teeth cleaning, behaviour at meals, pocket money or bedtimes we can share family expectations about the use of digital media. Most parents will feel that these expectations are more likely to be fulfilled if they can avoid creating a battleground and they're negotiated rather than imposed. Some families will want to install filters that control the sites to which their children can get access; others may prefer to discuss the risks and challenges. Some families choose to set time limits; others are more relaxed about this.

Not all parents lose sleep over their child's patterns of media use. Some have even told us that they wonder if they should be worrying more than they actually do. But the wide range of internet-connected devices and the fact that they're getting smaller make it more difficult to keep an eye on what children are doing. Price reductions mean that children are increasingly likely to have sole use of their own tablet rather than share one their parents own. When the only means of going online was using the family PC in the living room it was much easier to see what was going on than trying to keep tabs on the use of multiple smartphones and tablets.



## PAST, PRESENT AND FUTURE

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We have talked to caregivers about whether it was important for their children to learn to use digital devices from an early age as part of our research. Some felt that it was essential for children to start young. This was because they expected their children would need to use technology at school and they thought that their children would be disadvantaged if they did not have these skills by the time they were adults.

Not all caregivers took this view. Some thought that technology is changing so rapidly that anything that children learn at this stage in their lives will be out of date by the time they are adults. They think that there is nothing to be gained by an early start. Some also consider that the early years are a time for outdoor play, not looking at screens.

Whether technology is involved or not, bringing up children has always been about trying to identify the knowledge and skills they will need in their future lives and finding ways of being sure that they have the best possible start. This involves us in thinking about the past, the present and the future.

In the UK, the average age of a mother when she has her first child is nearly 29<sup>1</sup>, although some first-time mothers may be much older or younger than this. On some of our research visits we asked parents to talk about their own childhoods. Unsurprisingly, many described having limited access to technology. This is important because parents sometimes use their own experiences of being a child to guide them in making choices about bringing up their children. For instance, when it comes to behaviour, treats or what time they should go to bed, parents often think back to what happened in their own childhoods. Their decisions may be a reaction against what they experienced when they were being brought up, or they may choose to copy aspects of their upbringing in their own parenting.

In her book called *Our Babies, Ourselves*<sup>2</sup> Meredith Small says: ‘we learn how to parent by being a child’. While there’s a lot of truth in this statement, it doesn’t work as well when it comes to digital media. Many parents don’t have childhood experiences of digital media that they can use to inform their parenting. Some may have played computer games when they were younger, but they didn’t have the range of options available today. Although the World Wide Web was introduced in 1991, it wasn’t until 2005 that more than half of UK households had access to the internet and several years after that before more than half of these households had broadband. A woman who has a baby at the age of 29 in 2020 was no longer a child when the iPad first came to market in 2010. This means that we can’t look back to the choices our parents and carers made when we were young children and use those memories to guide the choices we make in the present.

For caregivers who feel uncertain about children’s digital activities, keeping up with all these changes can seem daunting. It’s not surprising, then, that the role of technologies in the lives of young children is a subject of debate and prompts strong feelings, both for and against.

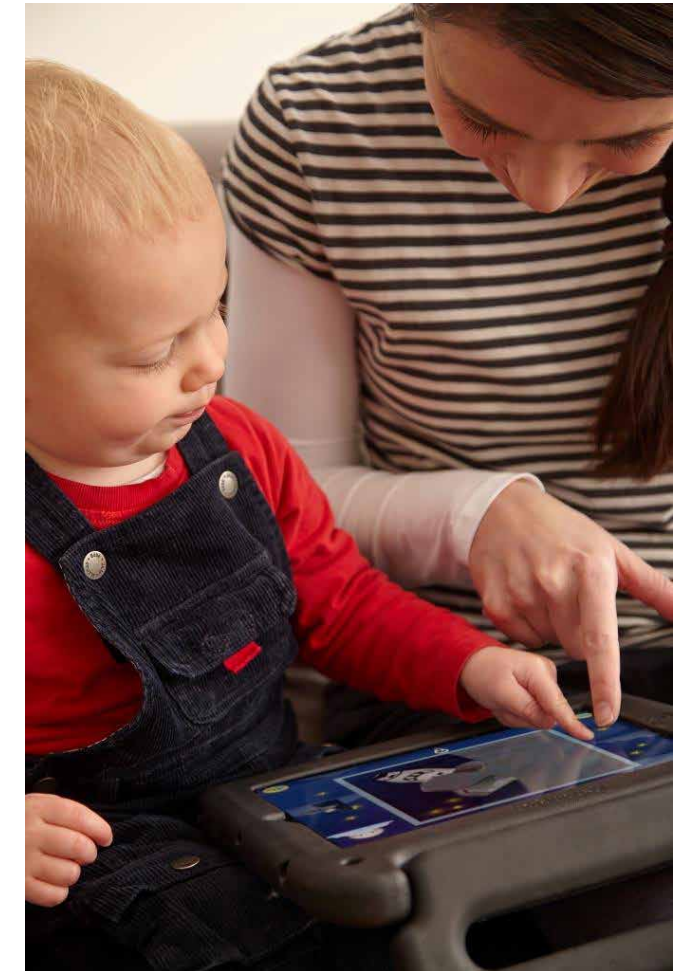
## THE MYTH OF DIGITAL NATIVES?

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The belief in an affinity between young children and technology reflected in the widespread use of the term ‘digital natives’ should be treated with caution. Marc Prensky<sup>3</sup> originally coined the term to refer to college students, but it is now applied to children of all ages as a contrast to the so-called digital immigrants, such as their parents and teachers, who have adopted technology later in life and may struggle to become relaxed about using it.

Many researchers feel that this is too simplistic, as it suggests that age is the only factor that makes a real difference to patterns of use. While it is undeniable that some children appear to have an aptitude for technology, many young children do not behave as digital natives and their play with digital games or interactive learning toys – initially at least – may be characterised by timidity or disinterest.

This may be the result of individual differences of preference or skill, or it may be a consequence of poor design. Children under the age of six who are faced with an unfamiliar website or app and are unaware of the conventions of interface design may not understand how to interact with a device unless they have additional help. So, although they are often described as ‘digital natives’, not all young children are naturally drawn to the technology.



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<sup>1</sup>According to information from the Office for National Statistics, the average age of first-time mothers in England and Wales in 2018 was 28.9 years.

<sup>2</sup>Small M. (1998) *Our Babies, Ourselves*. Anchor Books: New York.

<sup>3</sup>Prensky M. (2001) Digital natives, digital immigrants. *On the Horizon*, 9 (5) 1-6.

## FIND OUT MORE

*Smart parenting in the digital age*: this downloadable booklet (14pp) was written by Nicky Hawkins, Tamsyn Hyatt, Sonia Livingstone, Jackie Marsh, Elizabeth Milovidov, Brian O'Neill, Janice Richardson, Eszter Salamon and Anca Velicu for the European project DigilitEY in 2018.

<http://digilitEY.eu/smartparenting/>

### *Two sides of the argument*

Different sides of some of the arguments about children and digital media are summarised in two letters. Although published several years ago, the debate remains polarised along similar lines. The first was published in the Guardian on 25th December 2016 and has the headline 'Screen-based lifestyle harms children's health'. It is signed by many academics and others with an interest in the topic.

[www.theguardian.com/education/2016/dec/25/screen-based-lifestyle-harms-health-of-children](http://www.theguardian.com/education/2016/dec/25/screen-based-lifestyle-harms-health-of-children)

Other academics wrote a response, published online on 6th January 2017, under the headline 'Screen time guidelines need to be built on evidence, not hype'. There's a long list of signatures at the bottom of the letter (including Lydia's, so this gives you an idea of her own position). There are more than a hundred comments on the letters. It can be interesting to read these, too, and to think about what you would say in response to the letters.

[www.theguardian.com/science/head-quarters/2017/jan/06/screen-time-guidelines-need-to-be-built-on-evidence-not-hype](http://www.theguardian.com/science/head-quarters/2017/jan/06/screen-time-guidelines-need-to-be-built-on-evidence-not-hype)

## WHAT DOES THE RESEARCH SAY?

Plowman L. & McPake J. (2013). Seven myths about young children and technology. *Childhood Education*, 89 (1), pp.27-33.

For those with institutional subscriptions the article is available at [www.tandfonline.com/doi/abs/10.1080/00094056.2013.757490](http://www.tandfonline.com/doi/abs/10.1080/00094056.2013.757490).

An alternative version can be downloaded from the link here: [www.academia.edu/1899143/2013.\\_Seven\\_myths\\_about\\_young\\_children\\_and\\_technology](http://www.academia.edu/1899143/2013._Seven_myths_about_young_children_and_technology)

Lydia chose the title of 'Seven myths about young children and technology' because there had been a lot of media coverage of the pros and cons of children being exposed to computers and other digital media at ever-younger ages. The evidence from research that might inform this debate was limited, and so myths about children and technology had emerged. The seven myths reflect both sides of the argument. She tried to steer a course through the positions of those who are confident about the benefits of technology in the early years and those who are more cautious.



## 02 SCREEN TIME



In the previous section we considered why children's use of digital media seems to become a focus of adults' anxieties about childhood and how it can be difficult for caregivers to make choices about the ways in which digital media can fit into family lives. These anxieties often focus on screen time. This is a way of talking about the amount of time that children spend on digital devices, particularly tablets and phones. When we come across this term, there are two main questions to ask about how it's being used in this context:

- What does 'screen' mean?
- What does 'time' mean?

Although these seem like obvious questions, many of the commentators who refer to screen time fail to break it down into these component parts. This can make it difficult to work out the focus of the concern about children's screen time.

## CHILDREN'S USE OF DIGITAL MEDIA

Figures from a report called *Children and parents: media use and attitudes* produced by Ofcom<sup>1</sup> help to set the scene. The most recent figures available are from 2019 as it takes a while to collect and analyse survey data.

The Ofcom information relating to 3- and 4-year-old children's media use in the UK shows that:

- about a quarter (24%) have their own tablet
- about a half (49%) go online using a tablet and a fifth using a mobile phone
- nearly all watch tv programmes on a television; just over a third (36%) watch tv on a tablet
- tv programmes and films on any device are viewed for nearly 13 hours a week
- more than a half (51%) watch YouTube
- two-thirds watch video on demand
- some (11%) use a smart speaker or voice assistant
- more than a third (39%) play games online, for nearly 5 hours a week

Ofcom reports the results separately for 5- to 7-year-olds. While figures relating to television viewing are broadly similar to those for 3- and 4-year-olds, more than a third (37%) of children in this age range have their own tablet. Substantially more 5- to 7-year-olds watch YouTube (64%) and play games (62%).

<sup>1</sup>The Office of Communications is the UK's communications regulator, usually known as Ofcom. As part of its remit, it provides regular research reports on children's media habits. These figures come from Ofcom (2020) *Children and parents: media use and attitudes report 2019*. Available free to download at [www.ofcom.org.uk/research-and-data/media-literacy-research/childrens](http://www.ofcom.org.uk/research-and-data/media-literacy-research/childrens).

These figures are likely to be fairly reliable because Ofcom is not promoting a specific view for or against digital media and the report is based on a survey that is broadly representative of people in the UK. The figures are roughly similar for all households, from the wealthiest to the poorest, and there is minimal difference in ownership of mobile phones or tablets for boys and girls in these age groups.

As we can see from the Ofcom data, televisions are by far the biggest source of screen time for three- and four-year-old children. And yet the concept of 'screen time' is rarely applied to television: most of the concerns that are expressed about young children's time with screens is focused on touchscreen devices.

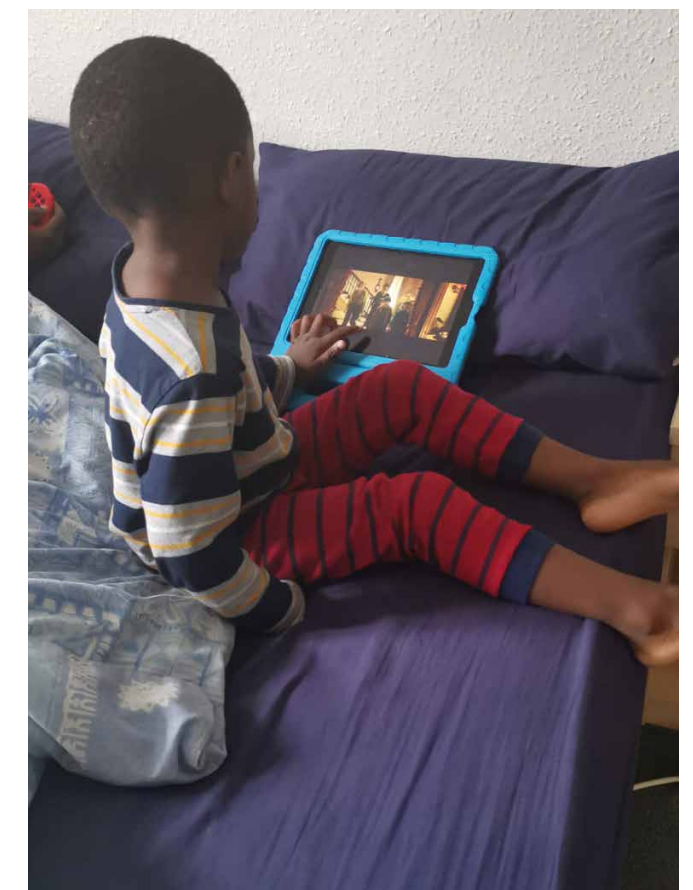
The Ofcom data shows that time spent watching television on a tv set is slowly decreasing, as children use tablets more often for viewing programmes available on tv. YouTube is a major source of content on tablets, with three- to four-year-olds mainly watching cartoons, songs and funny videos, whereas the favourite YouTube viewing for five- to seven-year-olds also includes pranks, jokes and challenges.

The use of mobile devices for viewing content and the popularity of YouTube means there's a shift away from watching programmes scheduled at a specific time to video on demand. This has led to children viewing content on their own more frequently and fewer examples of families sharing the experience by viewing together. This may lead to a reduction in conversations about what is being watched and the opportunities that this can present for supporting children's language development, as well as the pleasures of snuggling up together.

## WHAT ARE THE PARENTS' VIEWS?

Although the media suggest that there's a lot of parental anxiety about children's screen time, the figures from the Ofcom report suggest otherwise. Well over three-quarters of parents (86%) agreed with the statement 'I think my child has a good balance between screen time and doing other things', although this decreases as children get older.

However, some (12%) parents of three- to four-year-olds said that they find it hard to control their child's screen time in an earlier Ofcom study from 2018. This is a fairly small proportion, but it demonstrates that some parents of young children find managing their child's viewing habits a challenge. We know that parents find screen time more difficult to manage as children get older, too. Working out our attitudes to screen time while children are still young may help with dealing with the issue as they get older.



# WHAT COUNTS AS SCREEN TIME?

It's not that straightforward to decide what counts as screen time. If we return to the questions posed earlier about what counts as a 'screen' and what counts as 'time' we can think about this in the light of the type of information that can be obtained from surveys. For instance, survey data of the type reported above doesn't tell us whether:

- children are watching the television and playing on a tablet at the same time
- the television's on in the background but children are not actually watching it
- children are watching television or playing on touchscreen devices on their own or with a friend or member of the family

Screen time is often presented as if it's something that's undesirable but not all screens are the same as they serve different purposes. Young children like to scroll through family photos on a mobile phone; they may use a tablet to video call distant relatives, watch cartoons or play games; they may enjoy sharing nature programmes or family entertainment shows on the television with others. The screens perform different functions and we use them in different ways to do different things.

# 'MANAGING' SCREEN TIME

The American Academy of Pediatrics (AAP) gets a lot of publicity for recommending time limits on children's exposure to screens. It claims that screen time can lead to a wide variety of health risks, but perhaps it's not surprising that a group representing a medical profession (paediatrics is the branch of medicine that involves children) focuses on the dangers rather than the benefits of digital media. Their recommendations have been influential because some parents seek firm guidance in this unknown territory. The AAP's advice has changed over the years but currently it is that children under the age of five should not spend more than one hour each day exposed to screens.

Its website has the following recommendations:

- For toddlers younger than 18 to 24 months avoid digital media other than video-chatting.
- Limit screen use to one hour per day of high-quality programming for children ages two to five years. Parents should watch media with children.
- Keep family mealtimes, other family and social gatherings and children's bedrooms screen free.

Another way of thinking about this is to consider the entirety of children's experiences and behaviours over a 24-hour period rather than focus solely on screen time. This means thinking about how much sleep and physical activity children experience in addition to the sedentary behaviour associated with screen time. The World Health Organisation (WHO) has produced guidelines using this model which include no sedentary screen time (such as watching TV or playing computer games) for one-year-olds and no more than one hour daily for children aged two, three and four.

How would we judge whether the family in the scenario below has conformed to the AAP or WHO guidelines or not? It's worth thinking about this in the context of whether you think that some forms of screen time are more valuable than others.

After breakfast, Amol and the children (Josh aged one and Mia aged three) video-called his parents on the family tablet and then used his phone to look up bus times and the best route for getting to the park. Once there, Shona used her phone to video the children playing on the swings and making friends with a dog and then allowed the children to video some interesting caterpillars.

Back home that afternoon, they all gathered on the sofa to watch the video of the trip to the park on the television screen and enjoyed talking about the things they had done and what they had seen. Fascinated by the footage of the caterpillars, they searched for images on the tablet so that they could identify them and later watched a video of *The Very Hungry Caterpillar*. While Amol started to cook and Shona caught up on some emails, the children sang along to some nursery rhymes on YouTube for about 20 minutes until the food was ready. Before bedtime they watched *In the Night Garden* on the television with Shona and then listened to a story from a favourite book.

We haven't provided specific guidelines on screen time here because hard and fast rules aren't very helpful. We consider that it's not so much about the *amount* of screen time but the *content* that counts and the *circumstances* in which it's being used. We think about this further when we look at playing and learning together later.

As caregivers, we need to think about how much control over our children's activities we want to have. We want to protect them from inappropriate content and some of the risks of going online, but many also want to balance this with some of the benefits of digital play or even just the convenience of keeping our children amused while we get on with something else.

<sup>2</sup>AAP (2018) *Children and media tips from the American Academy of Pediatrics*. Available at [www.aap.org/en-us/about-the-aap/aap-press-room/news-features-and-safety-tips/Pages/Children-and-Media-Tips.aspx](http://www.aap.org/en-us/about-the-aap/aap-press-room/news-features-and-safety-tips/Pages/Children-and-Media-Tips.aspx)

<sup>3</sup>World Health Organization (2019). *Guidelines on physical activity, sedentary behaviour and sleep for children under 5 years of age*. Available at [www.who.int/publications-detail/guidelines-on-physical-activity-sedentary-behaviour-and-sleep-for-children-under-5-years-of-age](http://www.who.int/publications-detail/guidelines-on-physical-activity-sedentary-behaviour-and-sleep-for-children-under-5-years-of-age)



# WHAT ABOUT OUR OWN SCREEN TIME?

Our own behaviour is one of the biggest influences on children’s behaviour. Ofcom produces information on *Media Use and Attitudes* for adults as well as children. The report in 2018 shows that adults aged 25-34 spend an average of about 3.5 hours online daily. They also report that around a third of grown-ups say they feel cut off (34%) without the internet. But many parents are happy for their children to be entertained while they get on with household tasks. If we feel that our children are spending too much time online, then shifting some of our own screen time to when they’re in bed or creating opportunities for sharing activities might help.

We are role models for our children for many different aspects of growing up. They are likely to pick up our media habits in the same way that they copy other aspects of the way we speak and act in everyday life. Children are not slow to realise that phones and tablets absorb our time and attention and they want to be like us, but we all know that it’s not easy to reduce our own screen time or make time to involve children in our digital activities.

# LOOKING AHEAD

Devices connected to the internet are getting more commonplace and children are increasingly likely to have a tablet of their own. Some of the issues about screen time that we’ve looked at here raise the question of how much we should let the issue of screen time dominate the debates about children’s use of digital devices in a multi-screen world.

As we will consider later, the issues around screen time are different if children’s interactions are predominantly with technology that operates without screens, such as voice assistants and smart toys. In the future, concerns about technology may shift from a focus on screen time to the devices that can collect and use information about us and our children without us being aware of it. For the time being, the effect of screen time on young children is still a contested area, with strong views about the acceptable level of exposure.



# FIND OUT MORE

In the blog *Parenting for a Digital Future*, Alicia Blum-Ross discusses the American Academy of Pediatrics (AAP) guidelines on screen time:

<http://blogs.lse.ac.uk/parenting4digitalfuture/2016/10/26/when-parents-choose-screen-time/>

The Boston Children’s Hospital has produced a *Family Digital Wellness Guide* (2020). This includes tips for parents on screen use by children from infants through to teens.

<https://cmch.tv/wp-content/uploads/Family-Digital-Wellness-Guide.pdf>

# WHAT DOES THE RESEARCH SAY?

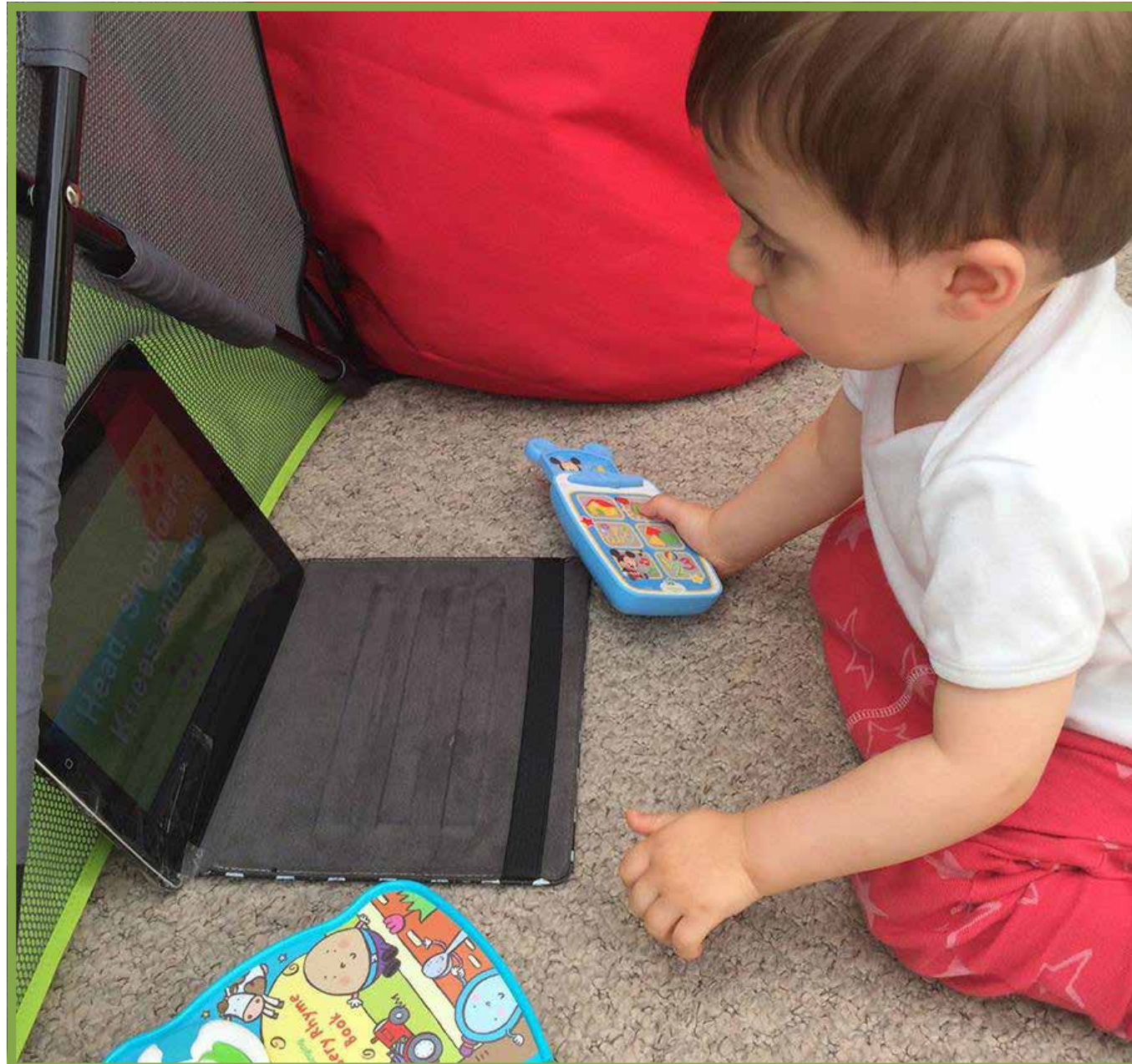
It’s difficult to prove a relationship between the amount of screen time and any negative effects experienced by children. That means firm recommendations about how much screen time is ‘safe’ for young children may be unreliable. Many of the research studies are more concerned with older children and teenagers as they tend to spend more time online, but the following commentary focuses on young children and considers the different perspectives on guidelines.

Straker L., Zabatiero J., Danby S., Thorpe K. and Edwards S. (2018) Conflicting guidelines on young children’s screen time and use of digital technology create policy and practice dilemmas. *Journal of Pediatrics* (202) 300-303. Available at [www.jpeds.com/article/S0022-3476\(18\)30912-0/fulltext](http://www.jpeds.com/article/S0022-3476(18)30912-0/fulltext)

As a demonstration of how divided opinion is on this topic, there is a riposte to this commentary followed by a letter from Straker and colleagues that responds to the alternative position:

Okely A., Tremblay M., Reilly J., Draper C. and Robinson T. (2019) Advocating for a cautious, conservative approach to screen time guidelines in young children. *Journal of Pediatrics* (207) 261-262.





## 03 DIGITAL PLAY

Section 2 looked at some of the statistics on children's use of digital media in the UK and considered the difficulties of calculating screen time when it varies across devices and depends on the context of use. We focus on play here. If we can think more clearly about the play that goes on during interactions with digital devices, then we might be able to make better judgements about the *quality* as well as the *quantity* of screen time.

Play can be defined in a multitude of ways. It is particularly complex in the context of digital play, which can range from console games with pre-defined rules, through competition against a virtual partner, to role play with a disused laptop. All of these activities can be referred to by adults and children as play. And yet, despite the importance of play in the lives of young children, debates about digital media tend to focus on what inhibits development rather than looking at the kinds of play that it can encourage or support.

## WHAT IS PLAY?

Play is considered so important for children that it is included in the United Nations Convention on the Rights of the Child. Article 31 protects 'the right of the child ... to engage in play and recreational activities appropriate to the age of the child'. There is widespread agreement that some of the defining features of play in early childhood include being freely chosen, fun and enjoyable. Other aspects are more contested: whether there's a specific goal or not, whether children play alone or in a group, and whether play is structured or messy, guided or spontaneous.

The International Play Association (IPA) provides an interpretation of what is meant by 'play' in the context of Article 31. It does not mention digital play and defines play like this:

**Children's play is any behaviour, activity or process initiated, controlled and structured by children themselves. Play is non-compulsory, driven by intrinsic motivation and undertaken for its own sake, rather than as a means to an end. It may take infinite forms, but the key characteristics of play are fun, uncertainty, challenge, flexibility, and non-productivity. While play is often considered non-essential... it is a fundamental and vital dimension of the pleasure of childhood and is an essential component of children's development.**



## WHAT IS 'DIGITAL PLAY'?

There is broad agreement on the benefits of play in the early years. Whether in the home or in an educational setting, it is generally accepted that play can:

- support the development of social skills and collaboration
- stimulate physical activity
- encourage creativity, imagination and problem solving
- contribute to a sense of wellbeing
- support trying out ideas and 'what if?' scenarios
- enable children to challenge themselves and manage their emotions.

These are features and benefits of what could be called 'traditional' play, but we will consider here the extent to which they can also apply to digital play. This may not be immediately obvious because most people associate digital play with playing games on tablets, phones and games consoles. The fact that they all use a screen leads to digital play being associated strongly with screen time. This, in turn, leads many parents and professionals to be cautious about the role of digital play in the early years. By looking beyond the issue of screen time, we may be able to view digital play differently.

There's no simple way of defining 'digital play'. Broadly speaking, it refers to children's freely chosen activities with digital devices and smart toys. In addition to play with digital toys, these activities could range from dancing along to a song on YouTube, or using an app for drawing, to pretending to talk to a distant friend or family member on a mobile phone that doesn't work any longer. Depending on the app, device or toy, digital play may include some or all of the six areas mentioned above that refer to play more generally. Problem solving, self-expression and developing the imagination can all be associated with digital play.



## EXTENDING PLAY BEYOND THE SCREEN

Concerns sometimes get expressed about the limitations of digital play. It's not unusual to talk about 'real world' activity being different from, and better than, digital activity. But many children don't think about these differences – for them, it's just 'play'.

Many people think that imaginative play is better in the real world. Children can play with physical materials like sticks and balloons nearly anywhere and they can exist as almost anything in their imagination. Wooden blocks can be used for counting, making a tower, or exploring whether they sink or float in the bath. Dolls and teddies can be babies, friends or hospital patients.

Digital interaction requires a device of some kind, so some people find it is more limiting than traditional toys. But by providing opportunities that don't exist in the real world, there can be some benefits to digital play. Children can explore floating in space, owning their own farm, exploring under the sea or creating crazy hairstyles.

There are many great apps and games designed for young children that require touchscreen devices and can provide valuable opportunities for play. There are also slightly less obvious ways of using devices with screens as part of play – such as using cameras to take photos of familiar objects from funny angles for a 'guess what it is' game.

But not all digital play needs to involve screens: play with digitally augmented soft toys, pets and dolls houses is becoming more widespread, as discussed in section 7. Apart from products sold as toys, there are other technologies at home that can provide inspiration for both play and learning. Children – and adults – can playfully interact with voice assistants by trying to find questions that can't be answered or asking for jokes. One educator took a robotic vacuum cleaner into

the nursery: watching it in motion provided much amusement, but also lots of interesting questions about how it sensed its journey and why it's not a good idea to leave small bricks on the carpet.

While screen time is often associated with indoor sedentary behaviour, digital play can take place out of doors. Children can enjoy setting playful challenges with personal activity trackers, setting up obstacle courses for remote control vehicles, playing with walkie talkies or wearing a camera attached to a chest harness to give different perspectives on the world, such as from the top of the climbing frame.

# MIXING DIGITAL AND ‘TRADITIONAL’ PLAY

All of these activities could be described as digital play but it’s not a matter of traditional play or digital play. Children are adept at mixing the two. We observed this merging of digital and pretend play when we visited a child who downloaded and printed images of characters from *Lord of the Rings* websites, stuck them onto cardboard, cut them out and then played with them alongside 3D toy figures of characters from the film. Another child made a train for her interactive talking dog from a cardboard box. A phone might be used as a platform for playing a digital game, but it could also be used in role play, such as pretending to call teddy for a chat. An app that encourages children to create a virtual tea party may also stimulate the integration of real-life cups, food and guests. The theme tune from a much-loved app or tv show can become a backdrop to a play scenario in the living room.

There are increasing numbers of products that take ‘traditional’ real-world objects such as plastic or wooden blocks and shapes that allow for physical play in conjunction with an app on a screen-based device. This can include shape recognition and coordination games by placing plastic shapes, such a square or circle, on a touchscreen device or building letters, words and shapes with three-dimensional objects and watching them appear on a linked tablet device. Some of the more explicitly educational products combine fun with the early stages of sequencing and learning to code.

So the boundaries between digital and traditional play are blurred. If we can be confident that children are getting the enormous range of benefits from play - whether it’s social skills, physical activity, creativity, problem solving, pleasure, a sense of wellbeing or challenge - then we can feel more reassured about the ways in which digital play can be a welcome addition to the range of play possibilities.

As caregivers or educators, we are used to planning the resources available to children and the experiences that they can enjoy when playing in time-honoured ways, whether it’s with water, the sandbox, the home corner or climbing equipment. It’s no different with digital play.

# FIND OUT MORE

International Play Association (2014) *Declaration on the Importance of Play*.

[http://ipaworld.org/wp-content/uploads/2015/05/IPA\\_Declaration-FINAL.pdf](http://ipaworld.org/wp-content/uploads/2015/05/IPA_Declaration-FINAL.pdf)

Edwards, S. (2018) Digital Play. *Encyclopedia of Early Childhood Development*.

[www.child-encyclopedia.com/play-based-learning/according-experts/digital-play](http://www.child-encyclopedia.com/play-based-learning/according-experts/digital-play)

This is an entry in an online encyclopedia and is free to download.

The Joan Ganz Cooney Center, a not-for-profit organisation based in the USA, asked a number of experts to predict how children’s play will change in the coming months and years due to the COVID-19 pandemic. A selection of responses is provided here.

[joanganzcooneycenter.org/2020/05/21/voices-part-4/](http://joanganzcooneycenter.org/2020/05/21/voices-part-4/)

# WHAT DOES THE RESEARCH SAY?

Marsh J., Plowman, L., Yamada-Rice, D. & Bishop, J. (2016). Digital play: A new classification. *Early Years* 36 (3) 242-253. (Subscription required.)

This journal article takes a standard framework that is often used by researchers and playworkers for looking at children’s traditional, non-digital play and investigates whether it can apply to digital play. The research was based on the study mentioned earlier: *Exploring Play and Creativity in Pre-Schoolers’ Use of Apps*. The authors found that the framework could be applied to both digital and non-digital play but identified one aspect of play that could not be accounted for by the framework: they called this ‘transgressive’ play. This occurred when children played with features of the apps that were not part of the intended design. This could include deliberately getting things wrong so that they get a funny response designed for children who accidentally make a wrong choice. ‘Rough and tumble’ play involving physical contact was one aspect found in traditional play but absent from the play with the apps in the study.

Marsh J., Plowman L., Yamada-Rice D., Bishop J., Lahmar J. & Scott, F (2018) Play and creativity in young children’s use of apps. *British Journal of Educational Technology*, 49 (5) 879–882.

(Subscription required.)

This study investigated the extent to which apps for children aged 0–5 foster play and creativity. A survey was conducted with 2000 parents of under 5s in the UK, using a random, stratified sample, and ethnographic case studies of children in six families were undertaken. Over 17 hours of video films of children using apps were analysed. Findings indicate that children of this age are using a variety of apps, some of which are not aimed at their age range. The design features of such apps can lead to the support or inhibition of play and creativity.





## 04 PLAY AND LEARNING

There is general agreement among educators that play is an important way to learn in the early years. We often hear statements such as ‘play is learning’, ‘play is a child’s work’ or ‘children learn through play’.

Young children seem to be learning all the time, so it is difficult to pin down a direct relationship between specific aspects of play and specific aspects of learning. However, play is widely accepted as contributing to a child’s physical, social, emotional, physical, cognitive (thinking), creative and communication development.

The International Play Association’s definition in the previous section says that play ‘is an essential component of children’s development’ but it doesn’t directly mention its role in learning. They emphasise that play should be ‘undertaken for its own sake, rather than as a means to an end’. This perhaps suggests that it’s mistaken to use play as a way of introducing learning and that learning is more of an incidental benefit of play rather than its purpose.

However, many apps for children include activities such as learning numbers or letters, often in the guise of play. Companies that sell children’s media often promote their products by highlighting the learning activities: they know that parents tend to feel less guilty about digital play if they can be persuaded that their child is learning at the same time.

The definition from the International Play Association also uses language such as ‘fun’, ‘uncertainty’, ‘challenge’, ‘flexibility’ and ‘pleasure’ to describe features of play. These are all words that can be associated with learning. Unfortunately, our research found that many apps fail to integrate these qualities. Structured, goal-oriented play can start to dominate at home from the time when caregivers want to ensure that children are prepared for school.

# DEVELOPMENTALLY APPROPRIATE TECHNOLOGY

Many educators talk about the concept of developmental appropriateness when discussing the relatively early stages of learning. This means choosing and using technology that's suitable for the age of the child and the stage of their development. The concept is often used for marketing interactive learning toys and games for home use as the businesses want to appeal to parents who are interested in such products as a way of accelerating their child's learning.

The emphasis on developmentally appropriate technology initially seems commonsensical: nobody would advocate inappropriate technology and there is no doubt that the imposition on children of technologies designed for adults can be ill advised. For instance, desktop computers can be difficult for young children to use because they were designed as a workplace technology: their construction is designed for bigger users who can input and understand text. However, the notion of developmentally appropriate technology assumes a universal rather than an individual child and often seems to be used as a way of focusing on what children cannot or should not do rather than on what they can do.

# CHILDREN'S DEVELOPMENT AND DIGITAL MEDIA

The examples below describe changes in the areas of physical, cognitive, linguistic, and social and emotional development that can impact on a child's use of technology. But any examples of use will be influenced by the interplay of these different dimensions of growing up, as well as with the design of different types of device and different means of interaction. There is an enormous spectrum of dispositions, skills and competences within a single year of a child's life, so it is only possible to make generalised statements about some of the developmental processes that may impact on a child's interaction with technology. It is important to remember that these examples refer mainly to neurotypical children, that cognitive, emotional and physical development varies for each child, and that some children may need additional support.

**As children develop, the ability to produce precise movements (fine motor skills) enables them to use a mouse or track pad, swipe a touchscreen, scroll through pages on a website and depress the buttons on keyboards, remote controls and mobile phones, although very controlled movements may still be difficult. Using games consoles and other mobile devices becomes possible as they learn to coordinate movement in both hands at the same time. With developments in gross motor skills and whole-body movement, mobile technologies that support or encourage activity may be enjoyable for children who enjoy running, jumping and playing outside.**

**During the preschool years, children typically learn to sort and match items, to arrange objects in order of size and to understand the concepts of 'more' and 'less'. Children become increasingly able to think about sequences so they become more able to make choices from a basic menu and to understand and remember simple rules of a game. Games that involve sorting and matching skills are likely to become more suitable with these changes in cognition and increased understanding of categories such as shape and colour.**

**As children start to understand the use of symbols they can identify 'stop', 'start' and 'fast forward' controls and the icons for their favourite games and websites. They may learn how to access the phone's camera or how to call a known person. Some children are able to read or recognise simple instructions. By five, they can generally provide a spoken commentary to accompany photos or video. Children of this age may not be able to read continuous text and may be in the early stages of learning to write, so caregivers need to keep this in mind when selecting products.**

**Children of this age grow in independence, learn the purpose of rules, become more able to control their behaviour and respond to animations and characters that appeal to their sense of humor. They typically learn to take turns and cooperate with others, although they can still get frustrated when they do not get their way or cannot readily achieve success at a game or activity.**

This is a highly summarised version of some of the changes that children experience in the first few years of life. If resources are selected by caregivers and educators solely on the basis of developmental appropriateness there is a risk that what's made available to children may be too restrictive. Products that have play value but are designed for older children, or even adults, may get overlooked. As we discuss in the next section, young children who struggle with how to use certain apps or technologies are often capable of meaningful interaction if they have some guidance.

Products specifically designed for young children and described as developmentally

appropriate sometimes lack the elements that make adult technologies seem attractive: it is not unusual for a child to dismiss a plastic play tablet or mobile phone in favour of the real thing that belongs to a family member. Limiting children to the products specifically designed for play may restrict their creativity and curiosity and, as a result, inhibit their potential for learning. Though young children may still be developing their motor skills and are in the early stages of becoming literate, their interests are often much more wide-ranging and ambitious than the kinds of activities that many technologies designed for young children currently permit, particularly if their play is partnered by siblings or caregivers.



# LEARNING

Claims are sometimes made about children’s learning with digital media without really describing what is meant by ‘learning’. Although we often hear the maxim ‘play is learning’, it seems a bit vague. Aware of this omission, Lydia Plowman and her colleagues tried to work out what kinds of learning are going on when children are engaged in digital play. They have developed a framework for understanding more about learning, refining it over a number of years as they investigate children’s play and learning in different settings and with different technologies. Their research on what children have learned as a result of their early home experiences with technology shows that children have typically developed learning in six key areas by the time they start school:

- how to use tablets, televisions, mobile phones and other technologies (they call this operational learning because it’s mainly about how to operate digital devices)
- extending knowledge about and awareness of the world, by using digital content to find out about topics such as dinosaurs, numbers, castles or insects
- developing qualities that help learning, such as persistence, engagement and confidence (they call this dispositions to learn)
- developing socio-emotional learning such as sharing, communicating and managing their emotions
- developing creative, curiosity-driven and exploratory approaches
- learning about the roles of technologies in everyday life, including how they can be used to communicate with family and friends and their role in work, leisure and study.

# DESIGNED FOR LEARNING?

While design is not our main focus, a brief reference to its importance for preschool digital media is necessary. Digital devices and toys are designed to respond to the way children use them. Designers can use this interactivity to reward actions; this might mean that a child hears a clapping sound if they choose the right answer to a game, for example. Some games just require a child to press a button to get to the next screen or to make something happen. That has the benefit of being easy to use as well as giving the child a feeling of control. But we all know that children can keep clicking or pressing without thinking much about what they’re doing and it’s difficult to establish what purpose this interactivity serves. Adults can encourage children to slow down a bit, pause and reflect if this seems appropriate.

With some exceptions, many products, apps and websites marketed as educational typically draw on ways of thinking about learning that are rather narrow and outdated. Many commercially available games make reference to the power of learning through play, but they are often variants of drill and practice in which children are asked to select the ‘right’ answer or complete workbook-like exercises.

While products are improving, it is still relatively unusual to come across digital resources that actively stimulate imaginative or pretend play. As we saw in the last section, there are lots of opportunities for linking digital with non-digital play. For instance, some toys, dolls and robots can now be controlled with apps and using the camera function on phones and tablets can open up many possibilities for creative play. Combining different modes of play in this way can lead to a wider range of forms of learning.

Current educational thinking sees early learning as more than the development of cognitive processes and the accumulation of skills: it includes changes in the ways in which children

participate in the world around them, how they interact with people and objects with increased competence and independence, and an emphasis on creativity and exploration. Relationships are central to learning in the early years, so the design of products and content for young children needs to take on board how they learn, create and communicate and open up possibilities for sharing – with parents, siblings, other family members, educators and friends – as well as functioning for the independent user. This expanded way of thinking about learning is rarely seen in products designed for young children: many of the apps available to preschoolers could lead to the impression that the purpose of education is putting numbers and letters in sequence or filling in blank spaces.

Creativity is nurtured by being curious, open to the unexpected and to exploration, making connections between different reactions or experiences and using this to make meaning and see things anew. Part of this is being able to fail without giving up and being open to trying out something different. This can be a cyclical process over minutes, days or months in which children explore new possibilities, make their own discoveries and come to their own conclusions. Some toys and games – digital or not – support this process. Others may hinder it. As new forms of technology are developed and it becomes easier to provide ways to design resources and digital playthings that children can touch, feel, move around and share it may become easier to support these important areas of learning.

# FIND OUT MORE

Lego Foundation and UNICEF (2018) *Learning through play*. Free to download from [www.unicef.org/sites/default/files/2018-12/UNICEF-Lego-Foundation-Learning-through-Play.pdf](http://www.unicef.org/sites/default/files/2018-12/UNICEF-Lego-Foundation-Learning-through-Play.pdf)

Herdzina J. & Lauricella A (2020) *Media Literacy in Early Childhood Report*. Technology in Early Childhood (TEC) Center, Erikson Institute.

Free to download from [teccenter.erikson.edu/wp-content/uploads/2020/06/TEC-MediaLiteracy-Report.pdf](http://teccenter.erikson.edu/wp-content/uploads/2020/06/TEC-MediaLiteracy-Report.pdf)

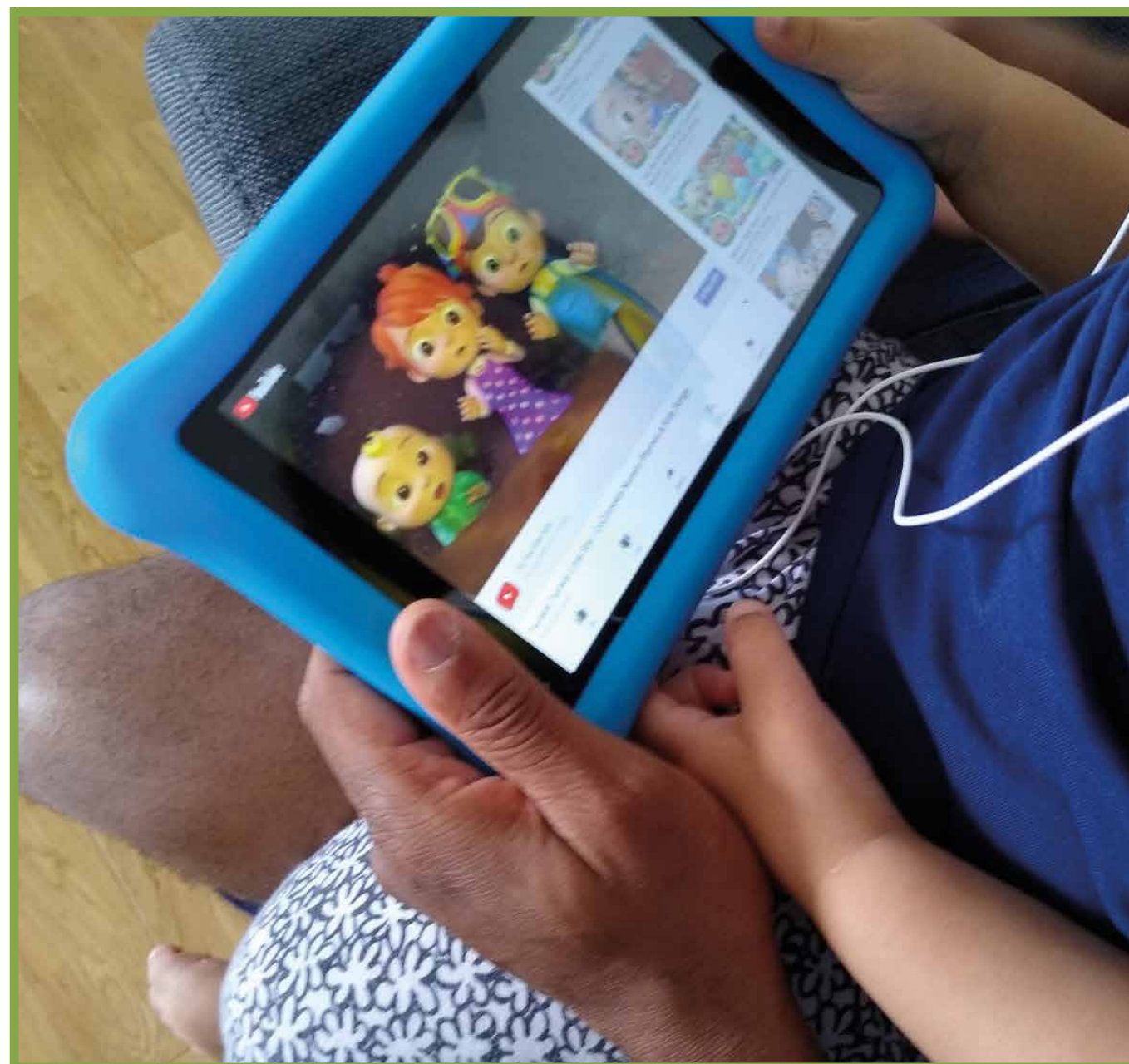
# WHAT DOES THE RESEARCH SAY?

Whitebread D et al (2017) *The role of play in children’s development: A review of the evidence*.

Free to download from [www.legofoundation.com/media/1065/play-types-development-review\\_web.pdf](http://www.legofoundation.com/media/1065/play-types-development-review_web.pdf)

Zosh J et al (2017) *Learning through play: A review of the evidence*.

Free to download from [www.legofoundation.com/media/1063/learning-through-play\\_web.pdf](http://www.legofoundation.com/media/1063/learning-through-play_web.pdf)



# 05 PLAYING AND LEARNING TOGETHER

## AT HOME

Children often engage in digital activities on their own when they're at home. Adults have busy lives and may welcome activities that children can enjoy in this way, especially if they're also developing some independence. Looking at ways of enriching play by sharing the experience can also be worthwhile. This can be a way of addressing concerns about screen time, as being on hand means that caregivers can make suggestions for 'real world' play opportunities that extend beyond the screen. But playing together is more than a mechanism for managing screen time; it's also a positive approach to enhancing digital play. When you're using a digital device together with a child, the play doesn't have to end when you put it down.

This doesn't mean promoting digital play at the expense of other forms of play. Our research shows that parents valued, and children chose, a balance of play with digital media and traditional toys and nearly all families tried to ensure a mix of physically active and imaginative play both indoors and outside. Televisions, tablets and mobile phones were ubiquitous features of their homes but, regardless of family income, each home also contained large numbers of traditional toys.

The whole point of playing together is that it should be fun for adult and child rather than a source of stress about 'getting it right'. Play is an opportunity for adult-child talk that is not simply about the daily tasks of getting things done – it's a good way for adults to get to know what their child is thinking and feeling. And although there may be times when adults hope that the child will learn something explicit from joint play, it's generally just a way of enjoying time together, whether it's in time that been put aside specially for this purpose or whether it's part of the usual daily routines.

Even in households with relatively limited access to technology, the home may provide more opportunities for children to observe and participate in authentic digital activities as well as having a broader range of devices to interact with than many preschool settings are able to offer. For instance, children do not typically have access to mobile phones in the nursery and rarely see educators using them as part of their work. Young children don't usually use phones to make calls on their own at home, but they frequently participate in conversations that have been initiated by an adult or sibling and enjoy playing games on others' phones or taking and viewing photos.

Although children may not be able to operate some of the devices they see in use at home, these authentic activities mean that they have an awareness of their function because the activities are embedded in family members' day-to-day lives. Researchers have identified<sup>1</sup> four dimensions of family life that make a difference to children's digital play:

- parents' attitudes towards digital technologies and playthings
- their ideas about how children learn and their own role in this process
- family practices
- individual differences between children.

Children don't always need an adult to join in. They might choose to play and learn on their own, or with another child. Sometimes children want to play on their own, choose what they want to play with and where they want to be. This independent play is important. So when we think about playing and learning together, we still need to consider the individual child, what they will enjoy and what will work best for them.

<sup>1</sup>Stephen C., Stevenson O. and Adey C. (2013) Young children engaging with technologies at home: the influence of family context. *Journal of Early Childhood Research* 11 (2) 149-164.



# WHAT PARENTS AND CAREGIVERS DO

In 2016, the Joan Ganz Cooney Center published the results of research on the role of digital games in family life.<sup>2</sup> This was based on a survey of nearly 700 parents in the USA whose four- to 13-year-old children play video games. There were five categories of what parents could be doing while their children were playing games:

- coaching children
- explaining the game
- playing with them
- watching them play
- doing chores

The results show us that it’s perfectly normal to get on with chores and jobs that need doing around the house while a child is happy to play on their own: more than three-quarters of parents said that they did this on a daily or weekly basis. By contrast, a fifth of parents claimed to coach their children, or use the game as an educational opportunity. This suggests that it’s unrealistic to expect parents to spend a lot of one-to-one time with their child while they’re playing games.

Sometimes there’s also a role for an adult (or another child) to support the child’s play and learning. As we discussed earlier, it can be difficult to tell play and learning apart for young children as play is widely accepted as a contributor to a child’s physical, social, emotional, physical, cognitive (thinking), creative and communication development. If caregivers can make opportunities – just some of the time – to play together, it can help a child to:

- get the most out of their play
- learn new things
- balance playing independently and with others
- gain the confidence to try something out

- move on to something new, perhaps with greater challenge
- enjoy playing and learning together.

This support is worthwhile whether this is digital or traditional play. This is where the idea of *guided interaction* comes in, as it can be a helpful way of thinking about playing and learning together.

<sup>2</sup>The two-page infographic is available at <http://www.joanganzcooneycenter.org/wp-content/uploads/2016/12/JGCC-DGFL-3.pdf>.

# GUIDED INTERACTION

Children sometimes need support from others who are familiar with what the child is already able to do and understand as they can interact with them to develop new ways of doing and understanding things. Young children don’t always ask for help when they need it. Adults, including parents, grandparents and caregivers, can support children as they learn and play, but sisters, brothers and friends may also be able to help.

We refer to this as *guided interaction*.

Guided interaction can be particularly important when children are interacting with digital media. Some games and apps can provide some feedback, but this may not go much beyond collecting stars, finding hidden hotspots, receiving a spoken ‘well done’ or playing at different levels. Some apps incorporate the following features as ways of supporting children:

- demonstrating how to do something
- explaining and instructing
- monitoring how the child is getting on

- offering feedback
- prompting the child to explore
- asking questions.

Technology has developed a lot in recent years, but it is still not yet sensitive enough to provide tailored feedback for an individual child. Nothing exists so far that comes even close to providing the finely tuned response that children need. It’s not just a matter of providing these forms of feedback – important as they are – but also a smile, a hand on the shoulder, an admiring glance or encouraging words at just the right moment. This kind of support cannot be screen-based because it relies on touch, gesture and the spoken word.

As the term suggests, guided interaction is about ways of guiding children’s interactions with a range of digital devices. Guided interaction encompasses the sensitive, in-the-moment assistance that adults can provide, such as showing interest, asking questions, making suggestions and being physically present. Here’s some examples of the ways in which this support can be provided directly:

Demonstrating	showing how to frame a photo modelling how to use a stylus on a phone or tablet
Sharing enjoyment	giving a high five for a child’s success joining in laughter at funny hairstyles created in an app game
Emotional support	making a sad face when something doesn’t work as planned encouraging another go
Instructing	explaining how to scroll down telling the child where to position the cursor
Managing	providing other resources that complement the on-screen activity setting up a suitable game at the right level
Prompting	suggesting ways to make connections between what’s on screen and the child’s own experiences

These forms of guided interaction generally take place face to face, but adults have many demands on their time that can make extensive one-on-one support for children difficult. This led to us thinking about the ways in which activities that are more remote in terms of time and space can also guide interaction, albeit indirectly. This form of guided interaction can include creating an environment conducive to playing and learning, planning activities that take place before or after interacting with screen content and being aware of the ways in which adults' own use of technology can provide opportunities for children's learning through watching and imitation. None of these require the physical presence of another person, but they can all, in their own ways, provide support for the child's play and learning.

These examples show that adults and other more able partners, such as grandparents and older siblings, can have a critical role in developing children's learning through play with digital media. This support is not restricted to instructing a child in how to use a particular device. It can also mean providing sensitive assistance in ways that adults often do instinctively: showing interest, asking questions, making suggestions, or being physically present.

We talked about the ways in which we can be role models in section 2. This doesn't just apply to how much time we spend looking at our phones: children also learn by watching and imitation. If we involve children in some of the things we do routinely online – checking the weather, looking up directions, booking train tickets, ordering the shopping or finding a recipe – these are also ways of providing support for learning. These interactions can provide children with a sense of purpose and opportunities to talk as well as developing know-how about the ways in which the internet can help us to find out things as well as entertain us.

It may help to think of three main forms of support:

- **physical support** such as helping the child to hold the device, move to the next page, or select an action spot on the screen
- **thinking support** such as helping the child to learn new words, make decisions, remember something that's happened earlier or predict what may happen next
- **emotional support** such as offering praise, providing encouragement to stick at something, dealing with frustration or tiredness.

We generally provide these forms of support naturally and it shouldn't be necessary to make an effort to do this. However, having an awareness of the ways in which we are supporting digital play can be valuable as there may be specific times when we need to step in or vary the kind of support we offer.

Some ideas for supporting a child's digital play include:

- **Sharing your experience:** Choose things that you both like doing so you can enjoy sharing time when you can.
- **Talk about what you're doing and why:** Think aloud when you play. 'Let's click on this one because...' or 'We've got two choices here. Which one is best?' Encourage your child to think about what will happen next if they choose a particular action or element of the game.
- **Involve other members of the family:** Older brothers and sisters may love being the teacher and showing them what to do. Grandparents may enjoy the opportunity to share the experience and spend some time on a one-to-one activity with their grandchild.
- **Aim for a mix of activities at and away from the device:** such as dressing up, singing songs or painting pictures relating to the game they've been playing.

## EXTENDING PLAY: CONNECTING DIGITAL AND NON-DIGITAL PLAY

There are many apps that offer powerful opportunities to link children's digital and non-digital experiences. These often benefit from (and sometimes need) adult support. For example:

- Camera: Learning how to use the camera on your phone or tablet to take pictures is a valuable skill. Looking at a picture together provides the chance to talk about it and the people, places or things in it.
- Camera: Creating your own stop-motion animation using Lego or PlayDoh can be a fun and creative activity. (Watch a tutorial on YouTube to see how to do this.)
- Video: If children are having fun dressing up, playing shops, or singing a song, you can capture some of the action in a video clip. Children love watching themselves afterwards.
- Set up a video call, perhaps with your child's friend. The children could show each other a picture they've painted or a new toy.
- Use Google Earth ([www.google.co.uk/intl/en\\_uk/earth/](http://www.google.co.uk/intl/en_uk/earth/)) to find a place nearby that the child knows well and look at it from different angles using Google Streetview. Work out different ways of walking there and then try one of them out. Or you could find where a family member lives, or where you're planning to go on holiday, and explore the area remotely.

We can also introduce children to some of the many digital devices in the world beyond our homes. When out and about, you could:

- talk about the screen at bus stops that tells us which buses are due
- point out bar codes on products that we buy in shops and look at how these are used at the till
- check how far you've walked if you have a fitness tracker or your phone tracks how many steps have been taken
- see how near you need to stand to a door to make it open automatically.

As in the earlier examples using video and photos, the adult's role is vital. Caregivers can:

- invite children to help choose the activity
- help them to prepare and think through what they're going to do
- offer guidance during the activity
- help children to reflect on their experiences afterwards.



*with your kids* is a 22-page booklet produced by the Joan Ganz Cooney Center in the U.S. It was published in 2014 but includes practical tips on choosing apps, playing games together and extending activities beyond screen play.

[joanganzcooneycenter.org/wp-content/uploads/2015/08/jgcc\\_familytimewithapps.pdf](http://joanganzcooneycenter.org/wp-content/uploads/2015/08/jgcc_familytimewithapps.pdf)

LEGO Foundation (2019) *What we mean by playful parenting in the early years*. The LEGO Foundation, Denmark.

[www.legofoundation.com/media/1695/what-we-mean-by-playful-parenting-in-the-early-years.pdf](http://www.legofoundation.com/media/1695/what-we-mean-by-playful-parenting-in-the-early-years.pdf)

## WHAT DOES THE RESEARCH SAY?

Marsh, J., Plowman, L., Yamada-Rice, D. et al (2015) *Exploring Play and Creativity in Pre-Schoolers' Use of Apps: A guide for parents*. Sheffield: University of Sheffield. [http://www.techandplay.org/reports/TAP\\_Parents\\_Report.pdf](http://www.techandplay.org/reports/TAP_Parents_Report.pdf)

This guide is 12 pages in length. It provides a summary of a project led by Jackie Marsh at the University of Sheffield. The project was about play with apps and the guide is written to help parents get the most out of playing apps with their children. There is an interesting diagram on page 4 that lists all the things that the children in the survey could do on their own. There's also some ideas on how to choose apps.

There is also a 20-page version for Early Years practitioners: [http://www.techandplay.org/reports/TAP\\_Early\\_Years\\_Report.pdf](http://www.techandplay.org/reports/TAP_Early_Years_Report.pdf)

Griffith S & Arnold D (2019) Home learning in the new mobile age: parent-child interactions during joint play with educational apps in the US. *Journal of Children and Media*, 13 (1) 1-19. (Subscription required.)

Plowman L & Stephen C (2007) Guided interaction in preschool settings. *Journal of Computer Assisted Learning* 23 (1) 14-21. doi.org/10.1111/j.1365-2729.2007.00194.x (Subscription required.)

The concept of guided interaction was originally set out in 2007. The idea has been refined over the years, but this sets out the basic principles.



# 06 CHOOSING APPS

There are many thousands of toys, apps, games and storybooks on the market. New products appear every day and it can be hard to know where to start when making decisions about which ones are suitable for your children. We focus on apps here because so many families have tablets and the apps are usually free or low cost. Parents tend to prefer apps to online browsing because they are seen as more self-contained, and therefore safer, with less chance of children straying into inappropriate content. Being able to play in many different locations - at home, at a friend's house, on a train, in a waiting room or in a car - is also a plus point for many caregivers.

## WHY ARE APPS SO POPULAR?

Apart from watching television, apps are still the main form of media entertainment for young children in the home and are a hugely popular pastime for children. Part of the appeal is that they are played on mobile devices such as phones and tablets that can store a wide range of apps. Most digital devices now include a means of sensing whereabouts (by using a satellite-based global positioning system - GPS) and movement (by using accelerometers), as well as cameras and voice recording functions. This means that apps can lead to many play possibilities and take many forms:

- access to a very wide range of video content that is free to view and can be generated and uploaded by anybody, from individuals to media corporations
- games, which are often explicitly educational in orientation
- open content designed to encourage children to create animations, stories, photos, video or drawing, and
- interactive storybooks that can be enjoyed in read-aloud mode or with a more experienced reading partner.

YouTube, or YouTube Kids, is by far the most popular app for children in the UK with 45% of three- and four-year-olds and 70% of five- to seven-year-olds using it, usually on a mobile device such as a tablet.<sup>1</sup> In a study conducted by Jackie Marsh and colleagues in the summer of 2018, the favourite content on YouTube for nought- to seven-year-olds was, in order of popularity, videos of play and toys, nursery rhymes, tv-related and funny videos (equal) and animal videos. Their survey indicated that 80% of children from nought to seven use the standard version of YouTube and 59% view YouTube Kids. (See p.7 and p.14 in *Social Media, Television and Children* - details at the end of this section for more information.)

## WHY FAMILIES DOWNLOAD APPS

A study by Jackie Marsh and colleagues focused on young children's creative play with apps. It included a survey of 2000 parents in households that had a tablet (the study did not include families without a tablet) and included a question about their reasons for downloading apps. One thousand participating families included a child aged up to two and another thousand included a child aged three to five. The two top reasons that parents gave for downloading apps had almost equal weighting: they were to support the child's learning and to encourage play and creativity. There was little difference between the two age ranges and whether the child was a boy or a girl. (See *Exploring Play and Creativity in Pre-Schoolers' Use of Apps* - details at the end of this section for more information.)

## WHICH APPS ENCOURAGE LEARNING?

As we touched on in section 4, the apps, games and websites that are promoted as 'educational' are not always the best ones for supporting learning. The fact that they're interactive doesn't necessarily mean that they're good: sometimes they are little more than screen-based versions of an old-fashioned workbook with its right and wrong answers. Children may enjoy these products for a while as they like getting feedback when they get things right but there's a risk that they'll become bored quite quickly. It's as well to be wary of claims made about educational benefits unless they're backed up by research that explains what type of learning was being studied, how many children were involved, how the learning was assessed and whether they went back to check whether the learning had stuck with the children over a period of several months.

<sup>1</sup>Ofcom (2019) *Children and parents: media use and attitudes report 2018*. Ofcom: London. [ofcom.org.uk/research-and-data/media-literacy-research/childrens](https://www.ofcom.org.uk/research-and-data/media-literacy-research/childrens).



# WHICH APPS ENCOURAGE PLAY AND CREATIVITY?

Many schemes for evaluating apps, like this one from the Department for Education, focus on learning. That can be very useful for educators working in early learning centres. But, as we mentioned above, parents are equally interested in encouraging play and creativity and children may find learning through play more engaging in this age range.

The authors of *Exploring Play and Creativity in Pre-Schoolers' Use of Apps* make suggestions about what to look for in an app if you want to encourage play and creativity. They include features that enable children to create:

- stories, perhaps by taking photographs or creating drawings and adding simple text
- music, using the sounds of real or made-up instruments
- drawings and paintings that go beyond colouring in pre-set outlines
- simple animations or video
- simple games
- collages with photos, stickers and drawings
- scenarios or backdrops, such as drawing an animal to go in a zoo

# CHOOSING THE RIGHT APP

Choosing an app needs the same kind of thought and care that we put into buying anything else for children. Before you download an app, there are lots of ways to see if it might be suitable for your family. The App Store, Google Play and other stores provide useful information about the products that they sell. You can see screen shots, a description of what happens in the app, age ratings and reviews. Rather than relying only on the star ratings, try reading the user reviews and the privacy policy to check whether the app collects personal information.

Children tend to favour one particular app that they become familiar with, much in the same way that they have favourite books. It's worth trying to encourage your child to play with a range of games and apps to develop curiosity and extend creative thinking. Open-ended games that become progressively more challenging and encourage children to explore and have fun are more likely to establish a love of learning.

## How much?

Free apps are not always the best choice. An app that appears to be free often contains adverts that the player has to view before they can progress. Some use in-app purchasing which lets a child play for a while and then asks for payment if they want to continue. This can lead to frustration as young children don't understand how this works and why they can't continue a game or collect more prizes. The cost of these in-app purchases can increase quickly, so it's wise to switch off in-app purchases in the 'settings' menu on the device.

Caregivers have limited budgets and don't want to spend money if they can get apps for free, but sometimes it makes more sense to spend a small amount of money if it means an app won't contain adverts or demands for payment. However, it's worth exploring free apps created by not-for-profit organisations such as the BBC and some charities.

## Age range

You should also look at the age range of a product. In the UK, the system for rating the suitability of games is called PEGI. This looks at aspects such as the language used, whether there's any violence and if the content is scary. For legal reasons, children's digital products are usually rated as PEGI 3 (meaning suitable for 3+), even if they are actually designed for younger children. You will know best what your child can cope with, but apps rated above PEGI 3 are not usually suitable for young children.

Some products can be personalised, by using information about the person playing with them. This might mean taking a photo or sharing your location. In many cases, this will engage your child and allow them to get a lot out of a game. However, you may wish to check the privacy policy or data protection policy of a product before you download and use it.

Once you've downloaded a new app, you have the chance to explore it so you can be sure it's right for you. In particular, you can look at the area for parents if there is one. If you can take time to explore a new product before showing it to your child, you will be able to support them as they figure it out.

# ADVICE ON CHOOSING APPS

The UK government has given a quality mark to six apps that an independent educational panel believes have good educational value for two- to five-year-olds. These are found on the *Hungry Little Minds* website, alongside other ideas for non-digital games and activities. They also provide guidance on choosing other educational apps using what they call the FEED test:

Fun	Will your child enjoy the app? Will it keep their attention?
Educational	Is there a clear educational aim? Do you know what your child will learn? Will it keep them learning and allow them to progress?
Engaging	Will it help your child if they get stuck? Will it give them feedback and let them know when they've got challenges right?
Design	Is it attractive and easy to use? Is it inclusive and does it avoid gender and racial stereotypes? Can an adult change the settings? Is it safe, with links to the internet and adverts protected behind a parental gate?

Another source of app reviews is the National Literacy Trust. Their website is useful but, like *Hungry Little Minds*, its focus is on apps that might help with reading, writing and communication. Natalia Kucirkova, Karen Littleton and Teresa Cremin provide a list of what they call 'engagement features' in apps that support these areas. They suggest that apps should have at least two of the following features:

Lots of fun	The app is fun and makes children feel included and empowered, through the response of the screen, e.g. touches/tapping/swiping etc.
Play together	The app allows the child to play with others, either in person or virtually.
Interactive	The app has goals, rules and gives clear feedback or encouragement when the child engages with it. These goals and rules can be adjusted to suit the child.
Loads to do	The app gives children different activities, characters and stories to be involved with.
Creative	The app lets children use their imagination, make new stories or change what is happening.
Make it your own	The app can be changed to relate to the child, such as adding voices and pictures or by creating their own characters.

There are also review websites looking at products for D/deaf, hearing impaired, blind and partially sighted children. Charities and research organisations such as the National Deaf Children’s Society have produced lists of suitable apps, including ones that support learning British Sign Language.

One of the most comprehensive review sites is provided by the American organisation Common Sense Media. This has a section on learning differences and special needs. It also provides ways of searching by age range, topics of interest, the device you have, the skills it’s designed to build (such as collaboration or creativity) and whether it’s ‘free to try’, free or paid for. It includes television programmes, movies and books as well as apps. Apps are given a star rating (five as the best) and are assessed for educational value, ease of play, and other categories for content. A nice feature is that the reviews include ideas for ‘families to talk about’.

Having an awareness of how apps and other products support play and learning can help us to make judgements about quality. Whether for play or learning, the digital media best suited to the needs of children provide challenge, delight, enchantment, play value, and adventure. They should be compelling, encourage creativity, develop curiosity, be suitable for repeated re-use, and be accessible for all children. Sometimes we want them to promote collaboration with others, sometimes we want them to be suitable for independent play.

## FIND OUT MORE

Department for Education (2019) *Educational criteria for early years apps*: Evaluation of communication, language and literacy apps. Reference DfE 00158-2019. Free to download at [assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/822086/Educational\\_criteria.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/822086/Educational_criteria.pdf)

The Department for Education in England has produced a guide for evaluating educational apps. This is focused on apps designed to help with communication, language and literacy. It is mainly aimed at their expert panel of evaluators and is more detailed than most parents will require. The categories that it uses are educational content, support for learning, engagement, interaction and design and four sets of criteria are provided for each one, from unsatisfactory through to excellent quality.

Marsh, J., Law, L., Lahmar, J. et al. (2019) *Social Media, Television and Children*,. Sheffield: University of Sheffield. Free to download at [www.stac-study.org/parents-carers](http://www.stac-study.org/parents-carers)

Marsh, J., Plowman, L., Yamada-Rice, D., Bishop, J. et al (2015) *Exploring Play and Creativity in Pre-Schoolers’ Use of Apps: A guide for parents* (12pp). Free to download at [www.techandplay.org](http://www.techandplay.org)

The National Literacy Trust website has a page on ‘engagement features’ in language and literacy apps at [literacyapps.literacytrust.org.uk/how-to-choose-apps/](https://literacyapps.literacytrust.org.uk/how-to-choose-apps/)

The *Hungry Little Minds* website is available at [hungrylittleminds.campaign.gov.uk/](http://hungrylittleminds.campaign.gov.uk/)

The English Department for Education has provided further information for parents on using apps at home (dated November 2019) at [www.gov.uk/government/publications/early-years-apps-pilot-home-learning-environment/home-learning-environment-early-years-apps-parent-guidance](https://www.gov.uk/government/publications/early-years-apps-pilot-home-learning-environment/home-learning-environment-early-years-apps-parent-guidance)

Reviews by Common Sense Media can be found at [www.commonsensemedia.org/reviews](https://www.commonsensemedia.org/reviews).

The criteria that they use to guide their ratings system can be found here: [www.commonsensemedia.org/about-us/our-mission/about-our-ratings#privacy-evaluation](https://www.commonsensemedia.org/about-us/our-mission/about-our-ratings#privacy-evaluation)

A Good App Guide can be found at [www.goodplayguide.com/good-app-guide/](http://www.goodplayguide.com/good-app-guide/). This has a wide-ranging set of reviews, although the evaluation criteria are not made available.

### Apps for children with additional support needs

An excellent source of information for children with additional support needs who could benefit from assistive technology is at [www.callscotland.org.uk/Home/](http://www.callscotland.org.uk/Home/) This site includes a range of downloadable leaflets on apps to support children with complex communication support needs, dyslexia, dyscalculia and physical and visual difficulties.

The National Deaf Children’s Society list of apps can be found at [www.ndcs.org.uk/family-support/technology-and-products/apps\\_for\\_deaf\\_young\\_people/apps\\_for\\_deaf\\_young\\_people/early\\_skills\\_apps.html](http://www.ndcs.org.uk/family-support/technology-and-products/apps_for_deaf_young_people/apps_for_deaf_young_people/early_skills_apps.html)

Paths to Literacy provides a list of apps to support early learning for children who are blind or visually impaired: [www.pathstoliteracy.org/blog/138-apps-early-learning](http://www.pathstoliteracy.org/blog/138-apps-early-learning)

The Common Sense Media guide for children with learning differences and special needs includes sections on communication, social interaction, organisation, reading and writing, maths and motor skills: [www.commonsensemedia.org/guide/special-needs](https://www.commonsensemedia.org/guide/special-needs)

## WHAT DOES THE RESEARCH SAY?

Rvachew S. (2016) *Technology in Early Childhood Education*. There are several essays in this section of the online Encyclopedia of Early Child Development that may be of interest, including *Learning in the Digital Age: Putting Education Back in Educational Apps for Young Children* by Jennifer M. Zosh, Kathy Hirsh-Pasek, Roberta Michnick Golinkoff and Julia Parish-Morris.

Free to download at [www.child-encyclopedia.com/sites/default/files/dossiers-complets/en/technology-in-early-childhood-education.pdf](http://www.child-encyclopedia.com/sites/default/files/dossiers-complets/en/technology-in-early-childhood-education.pdf)





## 07 DIGITAL TOYS

Less than twenty-five years ago, computers were rarely seen in the home, email was a new way of communicating and no one had heard of Google. Now, the internet is part of daily life for shopping, working, video calls, watching movies and tv. When the internet consisted of millions of screens connected together through computers it was fairly easy to understand that information could be moved between them. The screens were visible, so we knew that this could happen. We could usually tell when a child was using the internet because they needed to use a mouse or a touchscreen or a keyboard to get access to it through their digital device.

Now, the Internet of Things is becoming much more widespread. As its name suggests, it connects objects, devices and gadgets – in other words, things. We're not as aware as we used to be of the ways in which the internet can carry information because it doesn't have to depend on screens any more. The computers that make up the Internet of Things can be tiny and hidden in everyday objects. Many of the devices that are part of the Internet of Things don't have screens at all. Hands-free voice assistants such as Amazon Echo and Google Home are small devices that use voice to control phone calls, music, lighting and thermostats and can be used to create shopping lists and relay traffic updates, the weather forecast and many other kinds of information. There's no need for a screen as the device recognises the command voice and responds with the spoken word, not text.

For now, those that want to can generally restrict children's access to smartphones, tablets and computers. But as the Internet of Things becomes more widespread – including through connected toys – we won't have this level of control. It will be difficult for us to know if something is connected to the internet because there won't be any visible signs to tell us this and so it will be more difficult to safeguard children from inappropriate content and contact.



## EMERGENT TECHNOLOGIES

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The boundaries between digital and traditional toys are beginning to blur as technology moves from the predominantly screen-based devices we've looked at so far – such as tablets and mobile phones – to digital toys. Until now, the presence of a screen has been our main clue that a toy is digital, but as more toys contain invisible sensors and microprocessor chips their digital nature may no longer be apparent, even if the toy initially requires setting up with a smartphone or tablet.

The report on *Social Media, Television and Children* mentioned in the previous section points to the growing presence of some of the newer technologies in children's lives. For example, according to the survey undertaken for the study, 25% of children aged eight to seven have access to virtual reality products, 30% have access to a smart toy and just over a third have access to a voice assistant. According to Ofcom, more than a quarter (27%) of children use these voice assistants, or smart speakers, in 2019, almost double the number using them in 2018.



## DIGITAL TOYS

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Digital play is often associated with video games on games consoles, virtual reality headsets, tablets and mobile phones. But while we refer to interacting with these devices as 'play', we don't usually refer to these games and associated devices as 'toys'. Games tend to be rule-based, often with specific goals; toys are generally considered to be more versatile, as it's the child who decides how to integrate the toy into play activities.

Action figures, animals, construction blocks, vehicles, soft toys and dolls are all available in traditional or digital form, as are small-scale replicas such as garages, houses, farms and other play worlds. One of the key differences at the moment is probably speech. While toys have had the capacity for some simple spoken phrases for decades, the development of voice recognition and speech technology has led to more life-like exchanges that can lead children to believe that they are interacting with a toy or doll that can communicate with them as if it's 'real'.

## INTERNET-CONNECTED TOYS

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Digital toys are often described as 'smart' or 'connected'. For now, the main distinction is that 'smart' digital toys incorporate technology such as artificial intelligence (AI) to enable the toy to adapt its responses to the individual child, giving the impression of a personal relationship. They are not necessarily linked to the internet.

But in the same way that computers are connected with each other to send and receive email, some toys can also connect to the internet and send and receive data. Sometimes known as the Internet of Toys, the connected toys include dolls, animals, robots, action figures and wearable products which can constantly generate data on when, where, and how often children are interacting with them. They collect data using cameras, sensors, microphones and voice recognition software and can record, store and send information on location, time, movement and conversations over the internet. This collection and transmission of data may be invisible, so adults and children may not be aware that this is happening.

The Internet of Toys has therefore led to concerns about privacy, trust and security that we haven't needed to think about in the past when children were playing with products that seem as innocent as toys. We may be concerned about its durability and how much it costs when we buy a traditional toy but we haven't needed to think about needing to read the terms and conditions of use. However, consumer organisations and government agencies are beginning to advise that this may be necessary and that purchasers of connected toys, and the children who play with them, should have some awareness of what data can be sent by a toy and how it can be used by the business that receives it.

These are some of the concerns, but there are also some benefits. Toys that don't need a screen can be more versatile and less cumbersome as children can move around with them and interact with them in different ways. Screen-based play may seem two-dimensional by comparison with traditional toys that can be thrown, squeezed or hugged, or with the pretend play often found with household objects such as pots and pans. The possibilities for play may seem greater if there's more potential to merge digital and non-digital playthings, especially if the full-body engagement associated with physical play is supported.

The availability of digital toys has led to questions about whether the digital features change the types of play in which children engage. Some features mean that play can be different: children generally play with traditional toys in the here and now, whereas some connected toys can support play partners in different locations. Sometimes we hear of concerns that digital toys may close down opportunities for imaginative and more open-ended play. However, research suggests that children exercise their creativity by overriding the digital features of toys or find other ways to subvert the intended patterns of use, thus overcoming these perceived limitations. Known as hybrid play, research also reports examples of children combining non-digital items such as cardboard boxes and conventional dolls with toys such as digital pets. There is a widely held view that children do not differentiate between digital and non-digital toys in the ways that adults do.



# THE FUTURE OF DIGITAL TOYS

There is currently no evidence to suggest that digital toys are either beneficial or detrimental to child-led imaginative play, although there are concerns about data privacy. Children will continue to make their own choices, integrating digital toys into their play but unlikely to cease playing with traditional toys in the foreseeable future.

As educators and parents, we should be thinking about the implications for digital play and learning when the technology is no longer clearly visible because these changes are happening fast. However advanced the technology becomes, there is still a role for adults in extending children’s play. As caregivers, we can try to keep in mind that children need:

- a balance of doing things on their own, and playing and learning with another person
- a balance between digital and traditional real-world play.

It will become easier to design digital toys that children can touch, feel, move around and share as new forms of technology such as speech and gesture recognition are developed. This may lead to more imaginative, physical and exploratory play and a merging of children’s virtual and real-world play.

# FIND OUT MORE

*IoT*oys are here to stay, and it’s time we moved beyond media panics and hype

[blogs.lse.ac.uk/parenting4digitalfuture/2019/07/03/iotoys-are-here-to-stay-media-panics-and-hype/](https://blogs.lse.ac.uk/parenting4digitalfuture/2019/07/03/iotoys-are-here-to-stay-media-panics-and-hype/)

Giovanna Mascheroni and Donell Holloway (2019) explain why we need to consider the social context and consequences of children’s use of internet-connected toys and devices.

*Parenting with Alexa while the family is at home*

[joanganzcooneycenter.org/2020/05/01/parenting-with-alexa-while-the-family-is-at-home/](https://joanganzcooneycenter.org/2020/05/01/parenting-with-alexa-while-the-family-is-at-home/)

Erin Beneteau (2020) discusses potential uses for voice assistants such as the Amazon Echo or Google Home.

## What does the research say?

Manches, A., Duncan P., Plowman L. & Sabeti S. (2015) Three questions about the Internet of Things and children. *TechTrends* 59 (1) 76-83. (Subscription required.)

Dating from 2015, this looks at toys such as Activision Skylanders and Disney Infinity to consider how the data generated by playing with toys such as these can reveal details of children’s everyday lives and to what extent children, and their parents, are aware of what the technology can do.

Marsh, J. (2017). The internet of toys: A posthuman and multimodal analysis of connected play. *Teachers College Record*, 119 (12), 1-32. (Subscription required.)

This focuses on an exploration of the role and nature of play in young children’s use of toys that connect physical and digital domains.



# 08 STAYING SAFE: PREPARE, SHARE AND BE AWARE

Ofcom<sup>1</sup> reports that about three-quarters (78%) of parents of 3- and 4-year-olds feel that they know enough to help their child to stay safe online. Nearly two-thirds (62%) of parents have sought advice on this, with the main sources being the child's school and their family and friends. However, there is some ambivalence about the value of going online: just less than half (43%) of the parents of 3- and 4-year-olds believe that the benefits of the internet outweigh any risks for their child, with a quarter (25%) disagreeing with this statement.

<sup>1</sup>Ofcom (2020). *Children and parents: Media use and attitudes report 2019*.

## PERSONAL DATA

As mentioned in the previous section, some toys and devices such as voice assistants can present challenges to keeping children safe. Many adults find it difficult to understand what the risks are and how they could deal with them, so it's not surprising that this is a difficult concept for young children to grasp. It's also difficult to get a balance between raising awareness of some of the risks without worrying them unduly. This is particularly difficult when it's not clear for adults or children whether they are connected to the internet. It's easy to forget about the presence of a voice assistant in the kitchen or living room, for example, but it will be quietly listening to what is said, ready to respond to the command word that activates it.

The growth of sales of internet-connected toys mentioned in section 7 means that issues of personal data are increasingly relevant for this age group in a way that they weren't before. Internet-connected toys use a variety of sensors and recording devices to collect, use and share data over the internet. The toys are marketed for a range of benign purposes, such as encouraging physical activity, supporting learning and providing a means to message friends and parents, or even track lost children.

The flow of data from a central server to the toys in children's living rooms and bedrooms may create exciting new possibilities for personalisation: it can mean that a toy knows a child's name and when it's their birthday, for instance. Some products that look like a cuddly teddy bear can even take your temperature and measure your heart rate, then send the information to a doctor. But this data flow is two-way: it depends on capturing data from children and their families so that it can be analysed and passed back. While some of this data is given willingly, some may be disclosed unwittingly. If families don't know when they've provided data to businesses it can lead to

concerns about privacy and security as well as questions about who is capturing this data and how it is being used.

Although consumer organisations and the popular media have raised concerns about privacy and security, parents may underestimate the dangers, not realising that information about their child's activity, location, actions and speech can be captured, stored, shared and sold on. Ofcom reports that about a quarter (26%) of parents of 3- and 4-year-olds worry about companies collecting information about what their child is doing online.

## WHAT CAN WE DO?

Safeguarding means protecting from harm. In talking about internet-connected toys in this way, we have to be careful that we don't tip into scaremongering and transfer some of the panics about screen time to internet-connected toys. In any case, these toys represent only a small proportion of children's online time and caregivers currently tend to be more worried about their children seeing inappropriate content rather than disclosing personal data.

Whether playing with an internet-connected toy or a screen-based device, how can we make sure young children stay safe? For screen-based products, caregivers could consider:

- keeping devices where you can see them
- showing your child how to search for appropriate sites
- finding out which parental controls are available and activating those that seem appropriate for your situation
- introducing your child to the importance of keeping safe from a young age so that they become confident internet users who can make their own decisions
- making sure that you know who your child is communicating with
- taking some time to select apps and sites that seem suitable based on what you know about your child.

For internet-connected toys:

- looking at the information on data privacy. Work out which data will be collected by the toy and how it will be used – and make sure that you feel comfortable with this.



## THREE STEPS: PREPARE, SHARE AND BE AWARE

As technology develops, the issues relating to safeguarding will change. It's impossible to keep up with every new device or app on the market, but it is possible to build confidence in dealing with changes. The Ofcom survey suggests that just a fifth of parents have looked for advice on websites about how to stay safe online. This may be because caregivers don't know where to source this information, so a list of some useful websites that carry up-to-date information is provided at the end of this section. There are many simple things that can be done to keep children safe online, summed up by three easy-to-remember steps we can take when integrating digital play into family life: prepare, share and be aware. These steps help us to safeguard our children, but they also help us to ensure that we're providing a positive environment for play and learning.

**Prepare** means finding some time to get familiar with a product, thinking about whether it has unique features compared with existing play resources and thinking about how it mixes with the other activities that children enjoy. **Share** can apply to the caregiver – whether they are actively involved in the child's play or whether there's other ways to provide support – but it can also apply to finding opportunities for children to enjoy playing together. **Be aware** means keeping track of what's available and what might work well, but it also means having awareness of any risks relating to the ways in which some devices now capture data about children and their movements.

As we said at the beginning, every child and every family is different. That means that it's difficult to identify hard and fast rules about digital play. But if we were going to extract some of the main points from the previous sections, they could be summarised in the following suggestions:

### Prepare

- Start early – very young children are growing up with digital devices around them, so it's worth thinking through your views on their encounters with these devices at an early stage.
- Be prepared to shift your views as your child gets older and as new products become available.
- Once your child is at a suitable age, start to negotiate family guidelines by setting boundaries if this makes you more comfortable. These may be about place or time of day for digital play, rather than a period of time.
- In the same way that we don't restrict children to one form of play at a time, we don't need to partition off digital play as a separate activity. Think about ways in which you can extend your child's play beyond the screen, perhaps by introducing household objects for counting and sorting, providing art materials, or finding a link with outdoor play.

### Share

- Spend time with your child and join in the activity when circumstances are right – playing together can lead to many opportunities for fun and enjoyment as well as learning together. Encourage your child to choose activities and take some control.
- Ask your child to show you what they've enjoyed if they've been playing on their own.
- Share your own screen time with your child when it's appropriate, so that they can see some of the many ways in which digital devices can be used for leisure and information.
- Use video call functions on phones and tablets to communicate with family and friends: your child can show them a new toy or something interesting they've found on a walk, a grandparent could share a storybook, or friends can play dress-up.

## YOU'RE THE EXPERT ON YOUR OWN SITUATION

All caregivers want to bring up happy and healthy children. Many aspects of digital play are no different from other forms of play. Thinking about how to support and extend a child's digital play should not be a source of worry as it is something that most caregivers do naturally. How we keep children safe may be more of a challenge. Although many adults feel that it's not a concern when children are just three or four, we know that starting early can make things easier later on and lay the foundations for children being able to take some responsibility to protect themselves.

Children grow up fast and it seems as if technology is changing all the time. Whether you have the main responsibility for the child in your care or not, you know the child and the context in which you care for them. Our aim here has been to enable you to develop confidence so that you can make choices that seem right for your circumstances. This will include making choices about when to play alongside a child and when to step back as well as selecting suitable activities and digital content.

### Be aware

- Use review sites and friends' recommendations to identify products and apps that provide quality content and are likely to appeal to your child.
- Encourage creativity by seeking out apps and products that can encourage imaginative play.
- Check out some of the warning signs: does the app include advertising? Does it have in-app purchases? What data is being collected by internet-connected devices?

As we have seen, most parents are broadly happy with how their young children access and use technology. Some parents express concerns about the perceived downsides, such as too much screen time, inappropriate content, reduced time outdoors and less active play. While a challenge for some, these issues are generally surmountable although they may require some investment of time to identify alternative, equally attractive, pastimes.



## FIND OUT MORE

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Office of the Children's Commissioner for England (2018) *Who knows what about me?* Free to download at [www.childrenscommissioner.gov.uk/publication/who-knows-what-about-me/](http://www.childrenscommissioner.gov.uk/publication/who-knows-what-about-me/)

*Who knows what about me?* is a report by the Children's Commissioner on the collection and sharing of data about children. The report calls on companies producing apps, toys and other products aimed at children to be transparent about how they capture information about children and how it is used. It also calls for a statutory duty of care between the major technology companies and children who use their apps and sites.

A list of UK-based websites that provide useful advice on helping children stay safe include: Childnet [www.childnet.com/](http://www.childnet.com/)

Get Safe Online [www.getsafeonline.org/safeguarding-children/](http://www.getsafeonline.org/safeguarding-children/)

Internet Matters [www.internetmatters.org/](http://www.internetmatters.org/)

This includes step-by-step guides for setting up the right controls and privacy settings on commonly used networks, gadgets, apps and sites

NSPCC Net Aware [www.net-aware.org.uk/#](http://www.net-aware.org.uk/#)

This site is a guide to popular social networks and apps. It explains what each app does, how to sign up, and whether it keeps your child's information private.

Thinkuknow [www.thinkuknow.co.uk/](http://www.thinkuknow.co.uk/)

This is organized by different age ranges as well as whether the person seeking information is a caregiver, a member of the children's workforce or a child.

Vodafone Digital Parenting [www.vodafone.com/content/digital-parenting.html](http://www.vodafone.com/content/digital-parenting.html)

UK Safer Internet Centre [www.saferinternet.org.uk/advice-centre/parents-and-carers](http://www.saferinternet.org.uk/advice-centre/parents-and-carers)

Here's a few good places to start when you're looking for ideas in the future. All of them are based in the USA as we don't have equivalent centres in the UK. Resources from some of these sites have been suggested in previous sections.

Common Sense Media [www.commonsensemedia.org/](http://www.commonsensemedia.org/)

This is an independent not-for-profit organisation that aims to provide unbiased information on children's media and technology.

Fred Rogers Center [www.fredrogerscenter.org/initiatives/digital-media-learning/](http://www.fredrogerscenter.org/initiatives/digital-media-learning/)

This not-for-profit organisation focuses on early learning. Fred Rogers was a popular presenter of an American television show for preschool children.

'The Center is dedicated to helping children and adults thrive in the digital age, and ensuring that technology use complements children's social interactions, play, and other activities with the caring friends and family in their lives.'

Joan Ganz Cooney Center [www.joanganzcooneycenter.org/](http://www.joanganzcooneycenter.org/)

This centre was set up by Joan Ganz Cooney, the founder of Sesame Street. It is a not-for-profit independent research lab that focuses on the challenges of educating children in a rapidly changing media landscape. It is a useful source of research reports and family-friendly publications.

Vroom [www.joinvroom.org/](http://www.joinvroom.org/)

This site doesn't focus on digital media but on parenting more generally. It is funded by the Bezos Family Foundation (Jeff Bezos is the founder of Amazon) to support caregivers in what they call 'brain building moments' through talking and playing. It is based on science that suggests that brain development is most rapid in the first five years of a child's life. The site includes lots of resources suitable for parents and caregivers.

### What does the research say?

Livingstone, S. (2019) *Online safety across the generations*. Free to view at [blogs.lse.ac.uk/parenting4digitalfuture/2019/08/07/online-safety-across-the-generations/](http://blogs.lse.ac.uk/parenting4digitalfuture/2019/08/07/online-safety-across-the-generations/)

Smahel D. et al (2020). *EU Kids Online 2020*. Free to download at [www.lse.ac.uk/media-and-communications/research/research-projects/eu-kids-online/eu-kids-online-2020](http://www.lse.ac.uk/media-and-communications/research/research-projects/eu-kids-online/eu-kids-online-2020)

This uses a survey of children aged between 9 and 16 in 19 European countries to report on the risks and opportunities presented by the internet. The children who are surveyed are older than the ones we consider here, so their patterns of use will be different.

# POSTSCRIPT: DIGITAL PLAY AND THE COVID-19 PANDEMIC

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This document was finalised just as the Covid-19 pandemic took hold of the world in ways that had previously been unimaginable. As we go to press, the situation is unresolved. Countless people have died, many countries are still in lockdown and many thousands of people are suffering from the continuing effects of the virus. The pandemic will impact on us and our future lives for an unpredictable time and in unknown ways.

While of little significance compared to this impact, the public perception of digital media in the UK – both for children and for adults – has changed in ways that may prove to be irreversible. Video calls have been used to conduct business, but they have also been a lifeline for people who have been isolated at home. This has been an enlightening form of connection for many older people and their families who have been unable to meet in person. Families have celebrated birthdays, enjoyed quizzes and games, joined choirs, or followed exercise routines together and online.

Many parents have been using digital media to teach children at home who are no longer able to attend school or an early childhood centre. Some have had online resources made available by teachers and educators; others have been grateful for web content provided by broadcasters. Life under lockdown has fundamentally altered how all of us work and relax as many people have made use of digital media in ways that they had not previously contemplated. These dramatically changed conditions have led to many of us, including children, spending far more time online than we did previously. This has forced some rethinking and the usual expressions of concern about children and digital media – particularly screen time – have diminished. There is no doubt that a greater reliance on digital media has highlighted digital inequalities: not all children are able to benefit from online play and learning. Their families may not have broadband or tablet devices or access to public libraries. But, for some families, digital media have provided a means to develop community and to create connections across families, friends and neighbourhoods.



# GLOSSARY

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## App

Short for ‘application’, an app is software designed to be downloaded and installed on a mobile device such as a tablet, smartphone or watch. A large range of apps is available, usually from an online app store, which may be free or paid for. Apps include games, online shops, sources of up-to-date information, such as the weather or train times, and services that provide music and videos.

## Caregivers

*Digital Play* is designed for educators, parents, health workers, childminders, play workers, students interested in children’s early years and others who look after children. We sometimes use the word ‘caregivers’ to include all of these roles.

## Children

There are lots of ways of defining ‘children’, depending on whether it’s for legal, health, educational or other reasons. The cut-off point can be 11, becoming a teenager at 13 or the start of adulthood at 18 - this varies in different countries. *Digital Play* focuses on young children under the age of six as this covers the period before and just after children start school in Scotland.

We sometimes refer to ‘your child’ but this should be interpreted as meaning the child or children that you care for, whether this is in a family or in a professional context.

## Digital devices

We use the term ‘digital devices’ fairly frequently as it saves listing all the different types of products in many homes. This includes tablets, smartphones, laptops and other computers used for leisure, work or study but it also includes activity trackers, digital cameras, voice assistants and internet-connected, or ‘smart’, toys.

## Digital media

We use ‘digital media’ to mean the content that is viewed, read, heard, played or created on digital devices. This could include apps, games, photos, websites, interactive stories, songs, messaging, blogs and video.

## Digital play

There’s no simple way of defining ‘digital play’. Broadly speaking, it refers to activities that young children choose to do using digital devices and toys.

## Early years

This term is often used by educators to mean children in the age range from birth to six, although this can vary.

## Interactivity

Digital devices and toys are designed to respond to the way children use them: by moving their fingers, clicking, swiping, pressing and scrolling can generate verbal responses or move a toy in a particular direction. Voice assistants, and some digital toys, also react to spoken commands. This interactivity can be very engaging for young children. It allows them to feel in control and enables them to explore how something can respond to what they do.

## Interface

This is the point at which a user interacts with a digital device. For screen-based devices, this could be via a keyboard, a trackpad, a mouse or the screen itself. For devices or toys that don’t have a screen, the interface can take many different forms and is typically the point or surface through which a user activates a response.

## Touchscreen devices

These are devices where interaction is by touching and swiping the screen rather than via a keyboard or other input device, such as a mouse. Tablets, such as iPads, and smartphones are touchscreen devices but their portability means that they are also known as mobile devices.

## Video on demand

Instead of watching television and films when they are broadcast, they can be viewed ‘on demand’ at any time by streaming the content through a set-top box, television, tablet or personal computer. This is usually through a subscription service. ‘Streaming’ means that the content is being provided continuously, whereas ‘downloading’ means that an entire file is received before starting to view.

## Voice assistants

Also known as ‘smart speakers’ or ‘voice-activated speakers’, these devices typically look like a small, freestanding loudspeaker. They use voice recognition to interpret and respond to commands and questions.

# APPENDIX: READING RESEARCH

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We have tried to get a balance here between making reference to studies that are openly available so that they can be followed up by anybody and studies that may be more academic in style. Reports and articles for the general public usually have the benefit of being a bit more readable and easier to understand. However, studies that are reported in academic journals are usually subject to 'peer review'. This means that the design of the research study and the conclusions that the authors come to are subject to scrutiny from other academics working in the same field. This may make them a more reliable source of information than articles in newspapers, although this is not guaranteed.

## Surveys

Although they don't tell the whole story, surveys can provide a useful baseline for noting trends and informing debate, especially when they are supplemented with more detailed case studies. For instance, the results of surveys conducted by Ofcom<sup>1</sup> are a very useful source of data in the UK. However, surveys need to be interpreted with care. Although most surveys involve large numbers of respondents, that isn't always the case and it doesn't necessarily mean that the claims are true. How did the researchers get the responses? Sometimes they use telephone interviews, sometimes they use members of the public who have been recruited – and paid – for this purpose. Sometimes respondents may give what they think is a 'correct' answer to questions.

## Experiments and randomised controlled trials

Studies that are designed as randomised controlled trials are often considered the gold standard for research because they use an experimental approach that allocates people at random to different groups. Sometimes neither the participants nor the researchers are aware of which group they are in. These trials are usually based on medical approaches that test the value of a specific treatment or drug. An intervention may be introduced to one group but not to another in an attempt to control for different influences. However, this approach doesn't take fully into account the day-to-day realities of family life because differences between families can't easily be controlled.

For instance, how would you conduct a study into the effects of watching television? Even if you could find enough families *without* a TV for comparative purposes, you couldn't control for all the other variables – the things that make one family different from another. For instance, how much is streaming used? What counts as 'watching' television? Does that include programmes on laptops and tablets? What about doing some online shopping or sending text messages while 'watching' television? Does that include watching TV with other family members? Not having a television is fairly unusual, so how typical are the families without a television these days?

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Even if we could control variables like these and get a number of roughly similar families, how would you look at the effects over time? The children involved might also be watching TV at friends' houses or with their grandparents. Looking at the effects of digital media isn't the same as designing trials for new drugs where participants are matched as far as possible. Some get the drug and some don't. The ones who don't get the new drug get a placebo – they don't know if they've got the drug or not. And in 'double blind' trials, the researchers don't know which ones have got the drugs either – all the families are pre-coded. It's not possible to organise a trial on the effects of television or computers in this way.

## Real life studies

Studies that look at real families in natural situations without interfering in what they would usually do are sometimes known as real life studies. They might give us a more realistic view of family life but all situations get changed by the presence of a researcher. Studies like this tend to be much smaller in scale – it wouldn't be possible to include thousands of families because it would need too many researchers. This leads to questions about how much you can generalise from a fairly small number of participants.

## Systematic reviews

Systematic reviews are often used in the medical field. Where there are lots of studies on a particular disease or drug it can be helpful to go through all of them systematically to see if patterns emerge. The authors don't do new research but gather together studies which fulfil certain quality criteria. However, these can be difficult to achieve in the area of children's uses of digital media because so many conditions can vary: the definitions used, or the age of the children, or the types of media they're accessing.

If you are interested in learning more about what counts as research evidence, you could look at *Engaging with evidence*, published by the Institute for Effective Education in March 2019<sup>2</sup>. This is written mainly to support teachers weighing up evidence about different types of education, but it is a useful source of information.

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<sup>1</sup>Ofcom (the Office of Communications) is a government-approved organisation that oversees the regulation of television and communications technologies. They conduct regular surveys to provide information on new developments, including internet use by children and families.

<sup>2</sup>Institute for Effective Education (2019) *Engaging with evidence*. York: Institute for Effective Education. Free to download from [the-iee.org.uk/what-we-do/engaging-with-evidence/](https://the-iee.org.uk/what-we-do/engaging-with-evidence/)



# ACKNOWLEDGEMENTS

This resource is based on an eight-week online course funded by the Economic and Social Research Council to make research findings accessible. The content was originated by Lydia Plowman with important contributions from Freda O'Brien (Playbase), Lesley Reid (NHS Lothian) and Valentina Andries, Ben Fletcher-Watson, Juliet Hancock and Andrew Manches (all University of Edinburgh). The course was created for online delivery by Playbase Training, Edinburgh and evaluated by a team from the University of Edinburgh.

The aim of the online course was to support parents, and those working with them, such as childminders, health professionals and playworkers, to understand the positive differences that can be made to children's play in a digital world and to encourage them to feel confident about developing their own strategies for integrating digital media into family life. The evaluation showed that the course met students' expectations in relation to learning on this topic and participants reported changes in attitudes to digital play and subsequent shifts in family practices.

This document is the result of funding from a Knowledge Exchange and Impact grant provided by the College of Arts, Humanities and Social Sciences at the University of Edinburgh to enable Lydia Plowman to revise and update the original course materials to create a downloadable resource for a wider audience.

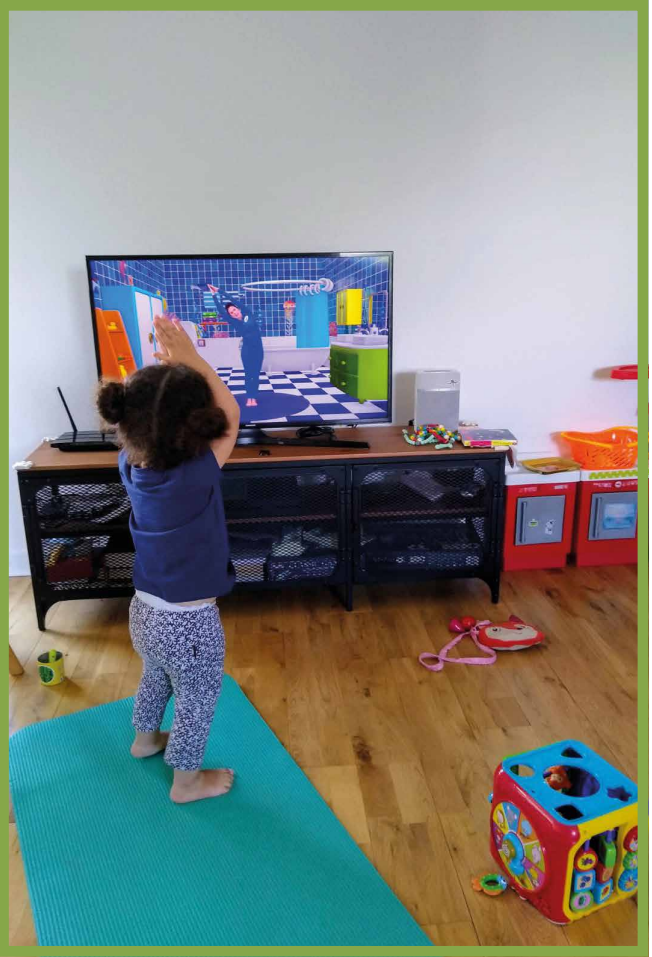
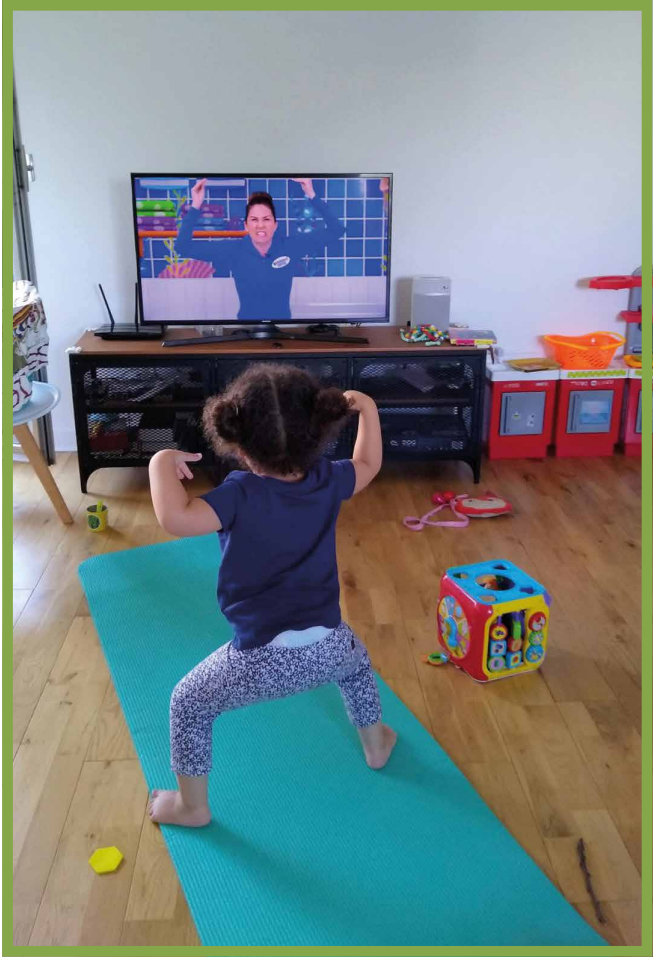
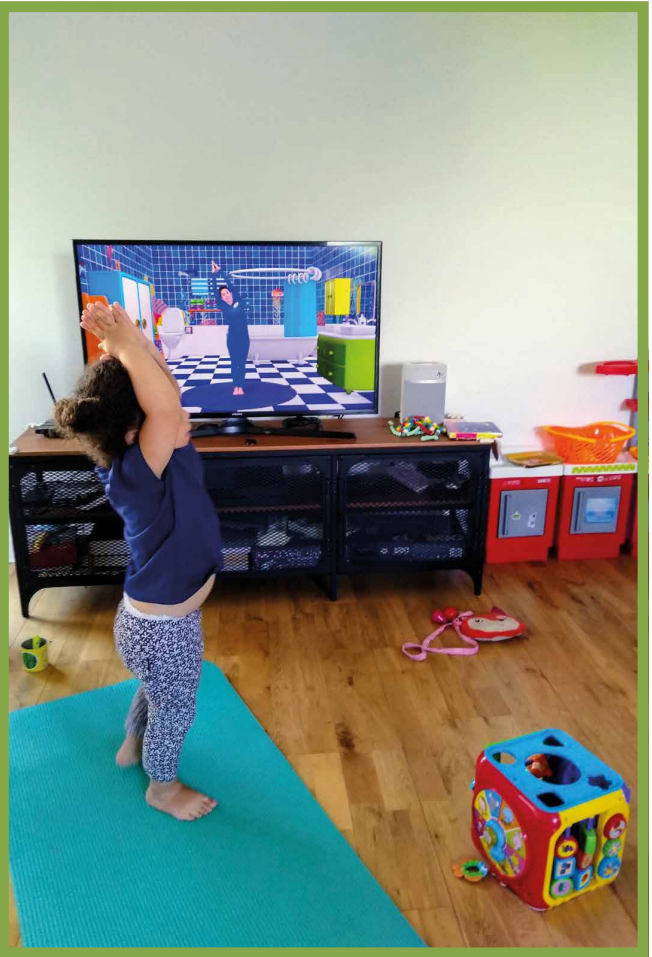
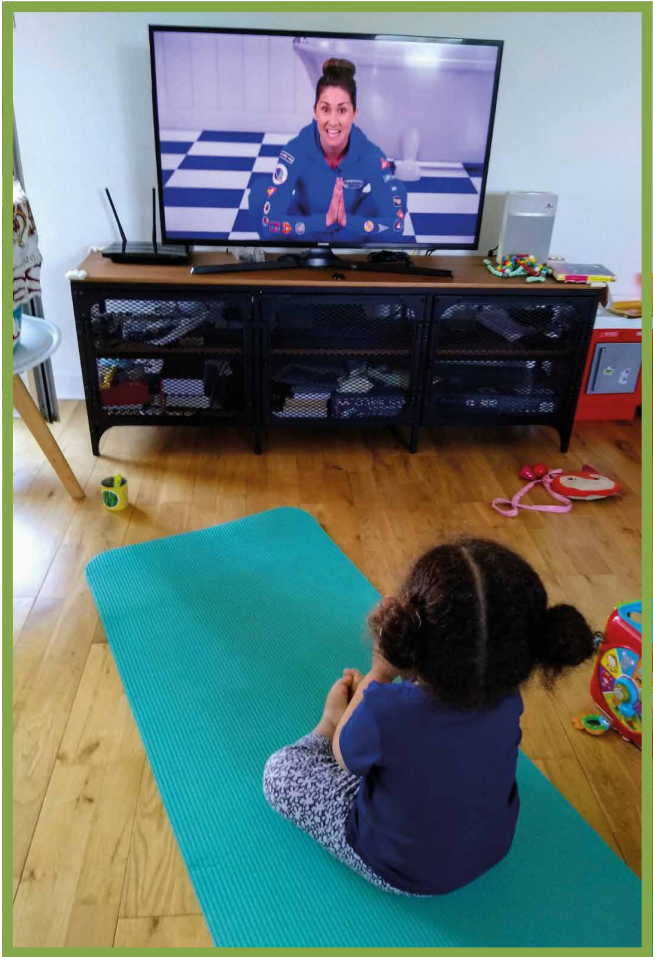
With warm thanks to Sabina Savadova, to the families who provided photos of their children and to those who participated in the research studies.

# ABOUT THE AUTHOR



Lydia Plowman is Professor of Education at the University of Edinburgh, a Fellow of the UK's Academy of Social Sciences and Associate Director of the Scottish Graduate School of Social Science. Earlier in her career, she enjoyed eight years' experience as a classroom teacher but for more than 20 years her research has focused on young children playing and learning with digital media, particularly at home. As well as involving children as active participants in research, she aims to involve family members and educators in such a way that we can gain insights into their practices, values and attitudes and understand more about the ways in which technology is integrated into young children's lives.

More information is available at [www.ed.ac.uk/profile/lydia-plowman](http://www.ed.ac.uk/profile/lydia-plowman) and the website for the Centre for Research in Digital Education at the University of Edinburgh at [www.de.ed.ac.uk/children-technology](http://www.de.ed.ac.uk/children-technology).



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