

What is digital play?

ECE resources

The concept of digital play is aimed at understanding the ways that children can play with, explore, and use digital technologies in much the same way as they do with more traditional play activities¹. It refers to all kinds of playful activities that children might choose to do using digital devices and toys. These activities might include dancing along to a song on YouTube, drawing with an app, or pretending to make calls on an old mobile phone that no longer works. Digital play might involve playing with digitally augmented toys, pets, and dolls' houses, or interacting with voice assistants in creative and playful ways, such as trying to find questions that cannot be answered or asking the voice assistant for stories and jokes. Many teachers and parents are cautious about play with screens in the early childhood context, but there is a broad array of potential opportunities for exploration and experimentation with digital activities. Screen-based technologies can also be used in conjunction with other kinds of play activities or to enable games away from the screen, such as a photo-guessing game taking photos of objects from unusual angles.

In digital play, technology experiences are integrated into a range of play activities, rather than separated from play, as is common when technologies are assumed to be tools for accessing information or for communicating ideas². The expanded view of digital play means that, far from being a sedentary activity, digital play can take place outside and with a range of active pursuits, including playing with activity trackers, guiding remote control vehicles, using walkie-talkies, or using Go-Pro cameras worn on the body while climbing to the top of the climbing frame.

When should children start to engage in digital play?

Children's abilities to interact with digital technologies change in accordance with the development of their physical, cognitive, linguistic, and social and emotional competencies³. They also depend upon the features of the design of digital media or digital devices. Importantly, infants are not able to engage in meaningful ways with screens, as they are not able to learn well from two-dimensional media, or transfer what they see to real life⁴. A range of research evidence suggests that infants and toddlers often fail to use information communicated to them through symbolic media such as images, models and video⁵, and there are quite well-established findings on the negative effects of screen use at this age for cognitive development⁶.

At around age 2 and a half, children are able to comprehend more of what they are watching, and engage more actively with screen-based technologies⁷. Older children also need to develop the fine motor skills needed for the precise movements involved in using a mouse or track pad, scrolling through pages, and pressing buttons on remote controls and phones. In order to use a games console, children need to be able to coordinate movements in both hands at the same time⁸.

Cognitive, socio-emotional, and physical development varies for each child, and some children may need additional support. While children today are often described as 'digital natives', a term assuming their natural affinity with technology, it is important to be aware that not all children are drawn to the use of technology, nor will they necessarily understand how to interact with a device without additional help⁹. This may be due to the poor design of a digital device or app, but it can also be a result of individual preferences and differences in skill development.

What kinds of digital technologies and digital media are best?

The range of digital tools and media available is constantly increasing, and children should be provided with a broad range that reflects what is used and valued in their own communities. Research has examined the quality of and impact on learning of different kinds of digital apps and digital books, which can offer teachers some guidance in selecting these forms of digital products.

Apps: Apps vary in their quality and may either support or restrict children's play and creativity. Media marketed as 'educational' should be used with caution, as many fail to integrate qualities such as challenge, fun and flexibility, and instead focus on structured, goal-oriented play¹⁰. Commercially made games, although marketed as encouraging learning through play, are often based on drill and practice, providing a form of workbook-like exercises in which children have to select the right answer. This is often assumed to be helpful in preparing children for school, but can quickly become boring and may give children the impression that learning involves filling in the blanks or putting letters or numbers in sequence¹¹. Other apps just require children to press a button or click to make something happen. This is easy for children to use and can help build confidence, but it can also encourage children to keep pressing without thinking too much about what they are doing.

The best kind of apps and technologies support children's curiosity, exploration and experimentation, enabling them to make meaning, discover for themselves, and generate their own conclusions and connections between different experiences and outcomes¹². They might involve creating stories, music, or artworks (that involve collage or drawing rather than colouring in pre-drawn outlines), or contain simple animations or video. Some research shows that children prefer creative and entertaining apps¹³. The app or task also needs to be at the right level for children, because children are found to lose focus, disengage or abandon the app, or use a trial and error approach to move to the next level, when apps are too challenging¹⁴. For two-year-olds, the most successful apps have one or two clear functions, plenty of repetition, and features to encourage adult participation¹⁵. They might relate to children's familiar daily routines, such as washing or dressing, or replicate traditional interactive games such as peek-a-boo¹⁶. However, it is also important not to restrict the selection of digital apps on the basis of children's developmental stage, because there are many products designed for adults and older children that have play value for young children, if they are provided with guidance and support¹⁷.

Digital books: Extensive research has explored the impact of digital texts and books on children's learning and development in comparison to traditional printed texts. However, this is an area in which it is hard to draw conclusions, as many contextual and individual differences impact on children's learning from books. Some studies show there is not much difference in learning outcomes between reading a digital or printed text, and improved learning is associated with the repeated reading of a text in either format¹⁸. Other research findings are more mixed, with most finding that printed books provoke more expansive and cognitively demanding talk^{19,20,21}, and that children show better understanding of story structure and details when reading printed books^{22,23}. An important finding is that the reading of a printed book is found to be associated with warmer interactions and child engagement²⁴, as rich interactions are likely to promote dispositions for reading in the future.

Digital books are reported to be highly engaging for both toddlers²⁵ and young children²⁶ (although one study suggests toddlers prefer printed books²⁷) leading to higher levels of attention, positive emotion and talk, and better retention of new vocabulary²⁸. Some studies find that digital books have a greater impact on emergent literacy skills²⁹, particularly texts that highlight words and letters³⁰. Digital animations are found to mediate and support children's interactions with digital books, enhancing children's self-confidence and independence as readers³¹. Compared to printed texts, digital books can elicit more commentary on illustrations³². However, interactions around digital texts are often focused on managing

behaviour and children's actions with the device³³, such as managing the number of times the child presses a sound button, or getting the child to turn the page, reducing engagement with the text itself. Both adults and children can get frustrated as the adult's attempt to read the story interferes with the child's use of other functions, such as animations³⁴.

The diverse findings in regard to digital texts may be due to differences in the kind of digital text used. Features of digital books that are associated with positive outcomes include the ability for children to control page-turning, which allows time for conversation³⁵, and minimal and integrated animations that are integral to the plot rather than distracting³⁶.

Connecting digital and non-digital play

Digital play is often mixed with and part of children's more traditional play activities³⁷. Some digital apps are linked to physical objects such as plastic or wooden blocks that enable children to engage in physical play in conjunction with the app. For example, one app encourages children to build shapes with 3D objects and watch them appear on the tablet's screen³⁸. Stop-motion animation programmes, in which children take a series of photos that are then played back as an animation, can be combined with Lego, playdough or small world set-ups, and integrate physical manipulation and visual storytelling with technological skills such as using devices and taking photos³⁹.

Children might use digital technology to support other play. For example, they might download and print off pictures of favourite media characters and use these as part of play⁴⁰. They might role-play narratives and characters they have encountered in video games or apps⁴¹. Many television programmes are supported by games, apps, magazines, trading cards and movies, which offer children many different worlds to explore, and opportunities to connect their play across different contexts⁴² and different modes of representation⁴³. Children's favourite television programmes can stimulate play with toys related to the programme and encourage children to develop their own imaginative responses and narratives. One case study of family media use found that children's use of digital apps promoted other experiences, such helping to cook the family meal, after playing on a pizza-making app⁴⁴.

Children can be encouraged to add digital experiences to their non-digital play⁴⁵. For example, they might be supported to use the camera on a phone or tablet to take pictures as part of their play and exploration, or they might like teachers to video their role play, dancing or musical performances so they can watch them back afterwards. Traditional role-play settings can also be augmented with digital props⁴⁶, such as pretend phones, digital cash registers, digital scales, or calculators.

What can children learn through digital play?

Digital play can promote a similar range of learning outcomes as those associated with more traditional play, and include problem-solving, creativity and imagination⁴⁷. Digital technologies can also provide some unique learning opportunities. For example, children can explore concepts such as floating in space or exploring under the sea, and they can be creative in new ways, such as inventing crazy hairstyles using apps on digital devices⁴⁸. A study of children's play with tablets in the United Kingdom in which children were observed interacting with tablets individually at home demonstrated that such digital play promoted a range of play types⁴⁹. There were examples of children's social and sociodramatic play, creative play, language play, exploratory play, mastery play, and fantasy play, although sociodramatic play was (perhaps unsurprisingly) less evident and rule-bound play was more prominent.

In particular, four main areas of potential learning from digital play experiences have been identified:

- operational skills for learning how to control and use technologies^{50,51,52}
- dispositional learning, such as learning to concentrate, persist and developing a sense of oneself as a competent and capable, as well as developing exploratory, inquiry-based approaches to learning⁵³
- socioemotional learning, including learning to share, communicate, and manage emotions⁵⁴
- knowledge and understanding of the world through finding out about people, places and things in the wider world, as well as understanding of the role of technology in everyday life⁵⁵

In the early years of primary school, interactive technology apps have been showed to enhance mathematical learning and promote children's engagement and collaboration⁵⁶. Digital technologies have also been shown to support children's emergent literacy, as children can create digital stories and extended narratives, and convey information and ideas to others without a need for sophisticated writing or drawing skills⁵⁷. It is thought that exposure to digital tools and technologies offers different ways of playing, thinking and orientations to learning than are possible in non-digital contexts⁵⁸. Digital technologies can help children develop the technological multiliteracies that are likely to be important in the future.

How to support digital play

An understanding of digital play can be very helpful for teachers who want to integrate digital technologies with a learning-through-play philosophy. It is important that teachers have wide-ranging aspirations for technological competencies that extend beyond developing operational skills⁵⁹. Many teachers are using digital tools to support children's learning across a range of curricular experiences and to connect with their interests and home experiences.

Much of children's learning about and through digital technology and media happens in the context of social interactions with others. In fact, research clearly shows that attentive adult involvement makes a big difference to the outcomes of children's interactions with technology. Adult involvement and interaction are consistently found to maximise children's learning from both touchscreen media and from television, while children who watch screens independently are more likely to have difficulties with attention and social interaction⁶⁰.

Look for positive opportunities for children to:

- enjoy diverse contexts for playful exploration of new technologies and media
- learn with and through digital media and technologies both independently and through sustained shared interactions with others
- have their home technology experiences acknowledged and incorporated into the early childhood setting's digital play curriculum
- play and have fun with technology, rather than focus on 'getting it right'
- have their preferences taken into consideration
- use technology in ways that involve physical activity
- develop awareness of the role of a range of technologies in home and centre life
- assess and critically evaluate digital information, software and technology

- link digital and non-digital play by engaging with a range of activities related to their digital media experiences, such as dressing up, role playing or painting pictures

It is particularly important to offer children guided interaction and support as they interact with digital media. Even though children might, for example, gain some feedback from an app, they also need the sensitive and meaningful assistance that teachers can offer in terms of their physical presence, interest, questions and suggestions. Children will not always ask for help when they need it or realise that they need it. There are many different pedagogical techniques that can be used in the context of digital play. Some examples are:

- Thinking aloud: talking about what you are doing and why. For example, you might say 'let's click on this on because...' or 'I wonder what will happen if we choose this particular action'
- Introducing new technologies into more traditional play contexts, such as showing children how to use stop-motion software (see the link in the Further Reading section) with blocks and figurines
- Inviting children to teach each other by sharing what they know about using a particular device or media
- Modelling ways of using a rich range of digital technologies in ways that are consistent with their real life functions, so children learn how to use them and their social and cultural value
- Using digital texts alongside printed texts – for example, you might read a printed version of a story and then provide the digital text for repetition and reinforcement⁶¹
- Encouraging children to slow down and reflect, especially when using media that requires children to press a button or click to make something happen, which can lead to a lack of meaningful engagement with the content⁶²
- Asking questions to develop critical awareness, such as 'Why are there so many Peppa Pig things for us to buy?' or 'Why do you need to purchase the Frozen app after watching the movie?'⁶³

Further reading

Guidance for teachers on using stop motion technology with children: www.slowmation.com

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