

# TEACHING WITH TABLETS

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# Chapter 1

## Manipulating media

### Introduction

This chapter looks at how tablets make it easy to combine media to create shareable digital content such as movies, posters, animated characters, green screen effects or talking photos. An important aspect of digital literacy is the ability to combine media in meaningful ways, whether it is computer code, words, numbers, images, sound or video, and tablets can make it much easier to do this. Our 'Bridgecraft' case study explores the use of apps for creating purposeful digital artefacts. We will think about how the use of media can enable children to express their ideas and how it can enrich learning when it is used alongside other activities such as drama.

#### Learning Objectives

At the end of this chapter you should be able to:

- identify a number of apps for working with film, animation, images, text and sound;
- understand how these apps can be used to combine media to create a range of digital artefacts;
- use some media apps to help children express their ideas and share them with an audience.

#### Links to Teachers' Standards

The following Teachers' Standards are particularly relevant to this chapter:

TS1 Set goals that stretch and challenge pupils of all backgrounds, abilities and dispositions.

TS2 Demonstrate knowledge and understanding of how pupils learn and how this impacts on teaching.

Encourage pupils to take a responsible and conscientious attitude to their own work and study.

TS3 Have a secure knowledge of the relevant subject(s) and curriculum areas.

Foster and maintain pupils' interest in the subject, and address misunderstandings.

TS4 Promote a love of learning and children's intellectual curiosity.

Contribute to the design and provision of an engaging curriculum within the relevant subject area(s).

## Links to National Curriculum Programmes of Study

### *Key Stage 1 and Key Stage 2*

- Pupils become digitally literate – able to use, and express themselves and develop their ideas through information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.
- All pupils are responsible, competent, confident and creative users of information and communication technology.
- Pupils should be taught to use technology purposefully to create, organise, store, manipulate and retrieve digital content.
- Pupils should be taught to select, use and combine a variety of software (including internet services), on a range of digital devices, to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.

## Example from practice

*Bridgecraft: technology uniting physical and digital worlds*



In the  
classroom

### Context

Bridgewater Primary School in Northamptonshire held a curriculum enrichment week inspired by the world-building game *Minecraft*. Throughout the week, learning across the curriculum was based on the theme of helping to build an alternative *Bridgecraft* virtual world for some lost avatars. Each year group was responsible for a different element of the *Bridgecraft* world and children were challenged to produce a range of digital and physical artefacts. The ideas for using tablets outlined in the case study below were inspired by the project at Bridgewater Primary School, and are partly based on their work. We have emphasised the use of technology in order to suggest how tablets might be integrated into a similar whole-school project.

#### Learning Objectives

- to raise the profile of maths, science, art and technology through an integrated approach;
- to deepen children's thinking skills and give them opportunities to apply their knowledge to problem-solving situations;
- to help children see the relevance of maths and science in everyday life;
- to inspire the school community to work together and celebrate their learning with the local community.

### Outline

At the start of the week, an online avatar introduced the *Bridgecraft* project to the children during a whole-school assembly. She told them that her friends had lost their virtual world and asked if they could all work together to build a new world. In order to extend the games theme, the avatar explained that they would meet at the end of each day to celebrate their achievements and receive challenges that would unlock the next level. As each level was unlocked, the children received a clue or an object to help them complete the following day's challenge. In addition to the use of a games-based approach, there was an emphasis on integrating the arts with science and computing, and on using online collaboration tools to share ideas. Pairs of classes within the school were twinned – using the online networking tool *Edmodo*, so that they could share ideas – and a blog and *Twitter* feed invited participation from the wider world. At the end of the week, parents and members of the local community were invited to come into the school to explore the world of *Bridgecraft* through an exhibition of physical and digital artefacts.

A curriculum plan showing each year group's contributions to the project in computing, science and art is outlined below.

## Curriculum plan

**Table 1.1** Curriculum plan

	Computing	Science	Art
Year 1 Theme: The Animals (Clue: strange eggs) Focus: Create animals for the world and design their habitats with help from Year 6.	Animated films. Apps: <i>PuppetPals</i> , <i>Tellagami</i> <i>iMovie</i>	Compare and contrast animals and their habitats Carnivores, herbivores and omnivores	Explore colour, shapes and textures to make prints in the style of Paul Klee.
Year 2 Theme: The Trees and Plants (Clue: a giant seed) Focus: Designing and making trees for the world. Work towards creating a large tree.	Working with images. App: <i>Phoster</i> Manipulating images of practical art. Apps: <i>Snapseed</i> , <i>BeFunky</i> , <i>Haiku Deck</i> , <i>Skitch</i> , <i>PicCollage</i>	Plant life cycles How plants grow	Abstract sculpture, batik and textiles inspired by the work of Gustav Klimt.
Year 3 Theme: The People (Clue: a selection of hats) Focus: Creating people for the world.	Creating movies. Apps: <i>iMovie trailers</i> , <i>Morfo</i> , <i>Vintagio</i> , <i>GreenScreen by Dolnk</i> , <i>ThingLink</i>	Human biology Nutrition Skeletons and muscles	Sewing and wire-modelling techniques in the style of Pablo Picasso. Creating book illustrations of characters.
Year 4 Theme: The Sounds (Clue: a piece of music) Focus: What will our world sound like? Creating instruments, recording sounds and responding to art through music.	Composing music. Apps: <i>GarageBand</i> , <i>VoiceThread</i> , <i>QuickVoice</i> Creating abstract art in response to music. App: <i>Fragment</i>	Sound and vibrations Pitch and volume Sound patterns and sources	Exploring art installations that use sound and abstract artists such as Wassily Kandinsky.
Year 5 Theme: The Buildings (Clue: a key) Focus: The challenge of designing homes for the avatars.	Researching and designing houses. Apps: <i>StreetView</i> , <i>Google Earth</i> , <i>Comic Life</i> , <i>PicCollage</i> , <i>Prezi</i> , <i>VideoScribe</i> <i>Explain Everything</i>	Sustainability Properties of materials World cultures	Creating 3D sculptures in the style of Antoni Gaudi
Year 6 Theme: The Homes and Habitats (Clue: a strange nest) Focus: Create homes and habitats for the animals.	Researching and designing animal homes and habitats. Apps: <i>Haiku Deck</i> , <i>VoiceThread</i> <i>VideoScribe</i> <i>ThingLink</i>	Habitats Animal classification systems Food chains	Clay models based on the work of Joan Miro.

We will describe how tablets and apps can be used to enhance learning across subjects in each year group.

### *Exploring eggs: Year 1*

Year 1 children focused on the animals of the virtual world and were inspired by the discovery of a nest of strange eggs. They made prints of imagined creatures in the artistic style of Paul Klee and photographed them with their tablets. They used descriptive language to develop their creatures' personas and shared their ideas as a mindmap, combining images and text using the *Popplet* app. The images were opened in the *PuppetPals* app, and children were able to 'cut out' the animals and move them around the screen using their fingers whilst recording their voices. The resulting animated puppet shows were exported and combined in *iMovie* to make a film introducing the *Bridgecraft* animals to show to parents at the end of the week, complete with added sound effects, music and credits. A talking avatar created in *Tellagami* was added to introduce the film.

### *Inspired by seeds: Year 2*

In Year 2, the impetus of a giant seed prompted work on designing and making trees and plants for the virtual world. Children walked around the local environment capturing images of plant life. These were digitally edited using a photo editor with a choice of filter effects using the apps *Snapseed* and *BeFunky*. Within these apps, children experimented with sliders and filters to alter the hue, saturation and contrast of their images in order to give the work an 'other-worldly' feel. They created names for their invented plants and trees. Some children went on to add descriptive text, choosing from a range of poster templates in the *Phoster* app; some used *PicCollage* to make an annotated collage; others used *Sketch* to add text and labels to their images. The results were combined in the slideshow app *Haiku Deck*, and embedded as a slideshow on the class blog.

### *Inventing people: Year 3*

Year 3's work was based around creating people for the virtual world. Beginning with the clue of a collection of hats, children produced group dramas based on characters who live, work or play together, thinking about their various roles and responsibilities. They filmed themselves talking in front of a *Minecraft* background, using the app *GreenScreen by DoInk*, to create an illusion of being within the game. They went on to design their characters within *Minecraft* and imported screenshots of these into the app *Morfo* to make animated talking heads. Working with *GreenScreen* techniques again, they made films of themselves interviewing their *Minecraft* characters. As an extension, some children created films in the style of silent movies using *Vintagio*, with added special effects using the app *Studio FX*. The resulting

video clips were combined in *iMovie* to make a trailer in the style of an action movie introducing the people of *Bridgecraft*.

#### *Composing sounds: Year 4*

Year 4 began their exploration of the sounds of the *Bridgecraft* world using a selection of real instruments, together with music apps such as *GarageBand*, *Glow Tunes*, *SoundPrism*, *LoopsequeKids*, *Musyc* and *Mix Tiki*. Their music-making was inspired by the abstract artwork of Klimt, Kandinsky and Miro, and tied in with science work on sound. After choosing a piece of abstract art, children thought about three emotional responses and used these to create a soundscape. They aimed to compose short responsive pieces, thinking about how the image inspired ideas about an imagined virtual world and capturing their digital and physical music-making using the app *QuickVoice*. Alongside this, they invented a method of writing down their pieces as a readable musical score. Some children went on to record sounds from their environment, analysing the waveforms, using the app *SoundOScope*, and combining them to compose loops using the *MadPad* app. To tie in with the art theme, they created their own accompanying abstract artworks using *Fragment*. Other children continued with the theme of combining sounds and art by exploring options to ‘paint with sounds’, using the apps *Singing Fingers* and *SoundBrush*. The finished works from the class were gathered together using *VoiceThread*, which allows for narration, text and sounds to be displayed alongside images and subsequently played through as a whole piece.



**Figure 1.1** Recreating the *Bridgecraft* world in digital and physical media

#### *Designing buildings: Year 5*

In Year 5, the focus was on the buildings of *Bridgecraft*. Children were given the clue of a key and the challenge of designing homes for the lost avatars. They used *Google Earth* and *Google Maps* to visit places on their iPads and took screenshots of buildings around the world. These were combined with research into the properties of materials and presented as explanatory screencasts, with annotations and narration. Children chose from the apps *Explain Everything*, *VideoScribe* and *Shadow Puppets Edu* to present their ideas.



*Creating habitats: Year 6*

Year 6 children were given the stimulus of a strange nest and challenged to design animal homes and habitats using their knowledge of animal classification systems. They used *PicCollage* to collect images of the wildlife belonging to a particular habitat. These images were combined into a comic format, using the app *Strip Designer*. Hotspots added to these comic pages, using the app *ThingLink*, opened up excerpts of spoken narration, sound effects, explanatory text and close up images of the animals.

### Activity

Many of these examples relied on combinations of apps. This is often referred to as ‘app smashing’. Look at the list below and think about what is gained by putting two or three apps together. Create a plan to use one of these combinations in a curriculum area.

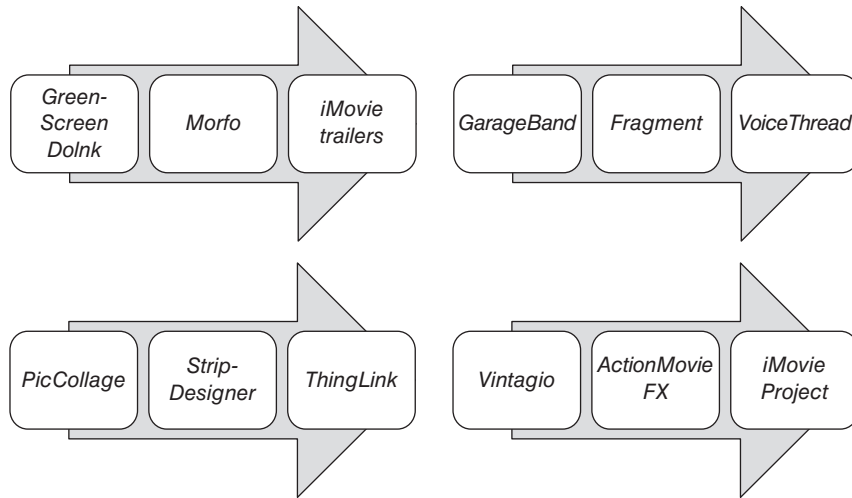


Figure 1.2 Example workflows using combinations of apps

Make a list of the more open-ended apps you currently use for manipulating media. Think of three ways in which these might be combined in pairs or trios to make a range of finished products. Reflect upon how this enhances children’s learning.

## Discussion

We will look at ways of combining apps to facilitate media production. We will also consider the advantages of Bridgewater School’s approach, in which tablets were used alongside practical science, art and design technology, and which brought in elements of games-based learning.

### Combining apps for an effective workflow

It is evident that tablets present new challenges to teachers, and many schools are finding that it is not enough just to add devices to classrooms without careful curriculum planning and evaluation. There are concerns about schools ‘jumping on the iPad bandwagon’ (Kobie, 2011), and that tablets might end up reinforcing drill and practice learning in much the same way as interactive whiteboards propagated didactic teaching (Alberta, 2012; Nocente and Belostotski, 2009). There is a need to balance freedom and choice for learners, and to provide a guiding framework (Melhuish and

Falloon, 2010). It is clear that careful thought needs to be given as to how best to use tablets to accelerate learning.

We have seen that one of the keys to the effective use of media with tablets is the fact that a small number of open-ended apps can be combined in various ways. To give an example: animated talking faces created in *Morfo*, *PuppetPals* animations and videos made with *GreenScreen by DoInk* on iPads automatically appear in *iMovie* as editable assets. Once in *iMovie*, these assets can be combined, edited and enhanced by sound effects – with impressive results. Another example is the way in which children’s own artwork can be photographed and made into a comic strip using *Strip Designer*, and the comic then turned into an interactive image using *ThingLink*, so that characters talk when clicked and objects lead to new information.

Much can be achieved by drawing from a toolkit of apps that work together well. You might choose a video editor, a collage-maker, a screencasting tool, a sound recorder, a photo-editor, a comic format, a slideshow app and an animation tool. A goal can then be for children to become familiar with a handful of open-ended apps and to begin to make their own choices as to how to combine and use them, thereby developing more ownership over their learning.

## Choosing apps

An important aspect of our case study was the way in which the apps interacted with each other. By understanding how apps can work together, we can make the most of their particular affordances. Table 1.2 summarises the features of a number of media apps.

**Table 1.2** Media apps

App	What it does
<i>PuppetPals</i> (iOS)	Screencasting
<i>Tellagami</i> (Android or iOS)	A talking avatar
<i>iMovie</i> (iOS)	Video editing and trailers
<i>Phoster</i> (iOS)	Poster templates
<i>Snapseed</i> (Android or iOS)	Photo editing
<i>Haiku Deck</i> (iOS)	Slideshow
<i>Skitch</i> (Android or iOS)	Image annotation
<i>PicCollage</i> (Android or iOS)	Collage
<i>GarageBand</i> (iOS)	Music composition
<i>VoiceThread</i> (iOS and web)	Respond to images through sound and text
<i>Fragment</i> (iOS)	Makes images abstract
<i>Morfo</i> (iOS and Windows)	Animate talking faces

(Continued)

Table 1.2 (Continued)

App	What it does
<i>GreenScreen by Dolink</i> (iOS)	Greenscreen filming
<i>VideoScribe</i> (iOS)	Present using hand-drawn animations
<i>Strip Designer</i> (iOS)	Comic strips
<i>ThingLink</i> (Android or iOS)	Interactive images
<i>Explain Everything</i> (Android or iOS)	Screencasting
<i>Shadow Puppets Edu</i> (iOS)	Images with narration

A key idea is to evaluate what each app adds to the learning process. The SAMR (Substitution, Augmentation, Modification and Redefinition) model by Puentedura (2012) illustrates how judicious choices of apps might move learning through stages of substitution (doing the same thing in a different way), augmentation (adding something), modification (redesigning the task) through to redefinition (doing something you couldn't do before). It can be argued that at the redefinition stage, technology is helping to transform learning by focusing on higher order thinking skills. Evaluating what each app adds to the learning landscape in your own context is a useful starting point when you are making choices.

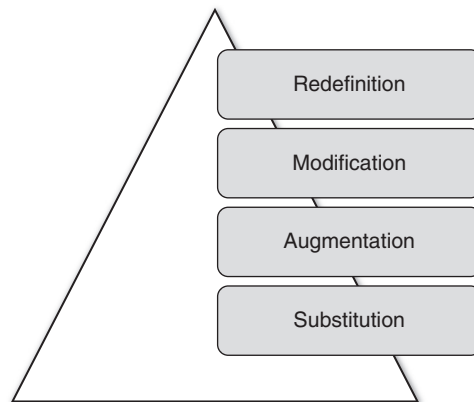


Figure 1.3 SAMR model showing the transformative potential of technology (Puentedura, 2012)

A study by Murray and Olcese (2011), looking at tablet use in schools, considered the idea of technology transforming learning by analysing apps in order to determine whether the iPad allows teachers and students *to do things in learning that could not otherwise be possible* (p43). They picked out a handful of apps which stood out for having the potential to extend learning opportunities through access to a virtual community, the effective use of media, and collaborative potential, but concluded that the majority of educational apps available at the time of writing were *out of synch with modern theories of learning* (p48), as they were narrowly focused on the consumption of content. This research highlights the importance of content creation

and collaboration as areas that can extend learning by allowing for active knowledge construction within a social context.

Think about how a visual approach that mixes sound, images, animation, film, narration and text might offer multiple ways into a topic, supporting learners who find working with text challenging and inspiring all to be creative and ambitious. Offering children alternative forms of expression can encourage them to aim to produce a digital artefact that they are proud to share.

## Collaborative game-based learning

Another feature of our case study was the way in which elements of console games were used to ‘hook’ children into learning themes, just as games designers engage their players. Console game players learn to apply increasingly complex problem-solving techniques in order to achieve goals as they progress through a game. In a similar way, the Bridgewater teachers aimed to make their learning environment more effective by beginning with simple levels to help children feel successful and giving daily feedback on progress towards the shared goal of making the virtual world. Motivation was kept high, as teams of children encountered bonus tasks, came across new characters and objects, unlocked new levels and found clues as the week progressed.

## Social learning

The approaches to using media we have described are based on the notion that children are naturally social and learn through active knowledge-building rather than having an extrinsic curriculum imposed on them, concepts developed by many learning theorists, including Piaget (1979) and Papert (1994). In line with these ideas, recent researchers have noted the advantages of students working together in multimodal environments that integrate personal and shared learning spaces, promoting social learning and allowing teachers ‘to weave more information from more sources into the classroom dialogue’ (Fisher *et al.*, 2013, p166).

In our case study, the outcome was to create a shared vision of a new virtual world for a group of lost avatars. The tablets were used to communicate children’s ideas of what this world might look like to an audience of peers and parents at the end of their enrichment week. The media manipulation apps allowed children to be digital creators in many different ways, from making a narrated slideshow presentation to creating a multimodal ebook.

Throughout the process of media making, then, children learned from and with each other, as they researched, created and shared content. The pursuit of an end goal is intrinsic to this process, as Turvey suggests: *Creativity has at its core a duality based upon the interplay between free exploration and more focused thinking as one moves towards an identified goal* (Turvey, 2006, p313).

For our children, online collaboration was a key to success. Pairs of classes from each year group were able to discuss progress towards their goals, using a private social platform provided by the app *Edmodo*. This gave them a chance to pose questions to the whole group without waiting for a turn, increasing pupil voice as they swapped strategies and posed questions for each other. Children's work in progress was also shared by mirroring their tablets onto the interactive whiteboard. These techniques streamlined the process of sharing ideas and gaining feedback, helping to keep learners focused and on track.

Children were encouraged to think about their audience from the beginning and to make decisions about the look and feel of their end products. Ideas were posted regularly onto the project blog, and each day began with a review of comments received from further afield. Having a focused theme and a known audience meant that children aimed to create work for others to see rather than for their teacher to mark, and it was noted that the immediate feedback from an authentic audience had a motivational effect, especially on the more reluctant writers.

## STEM to STEAM

The Bridgewater week also aimed to integrate science, computing and the arts, aligning with the STEM to STEAM movement's belief that an injection of the arts can add value to science, technology, engineering and maths, and that learning within all five subjects can be empowered by building on the natural overlaps between these subjects (Robelen, 2011; Burnard and Hennessey, 2006). Many researchers suggest that a cross-disciplinary approach uniting science and the arts fosters innovative thinking by drawing from the flexible perspectives and risk-taking associated with art-making. They suggest that such an approach has the potential to positively affect both our teaching and learning practices in schools and our economic competitiveness in the wider world (Platz, 2007; Freedman and Stuhr, 2004; Bequette and Bequette, 2012).

In our experience, the combination of creative arts, design technology and practical science paved the way for more personalised learning, and helped children to make connections across subjects as they worked towards a creative goal. Rather than always working in a digital environment, their physical artwork, drama role-plays or musical compositions were often used as the basis for a digital product. As an example of this process, ideas about the scientific process of plant growth were represented through animations based on original drawings.

The use of tablets meant that children could save photos of their own artwork and science investigations in the camera roll, alongside images from the internet and screenshots from apps. They could then draw from this personal bank of resources to make new media. Think about the benefits of children being able to research information in a form they find accessible, return to it in their own time and

review it at their own pace. They can build up knowledge of a topic through a combination of listening, reading and viewing, and then remix media to convey their ideas in a final piece.

Your role as a teacher, when children are negotiating individual learning routes in this way, is to help them to see connections and areas of interest within a subject, and capture their thinking processes – using technology – so that you can help them make decisions about next steps. For example, you could use tablets to explore and structure ideas through mindmapping apps such as *Popplet*. Or, to take this idea further, you could make a physical 3D mindmap using circles and real objects on the floor to be shared as an image on a working wall, perhaps alongside drawings, photos, vocabulary and Quick Response (QR) codes pointing to relevant digital content. Be reassured that even the youngest children will be keen to explore alongside you and there is often no need to introduce new apps in a formal way; the idea of playful exploring or ‘tinkering’ is a key aspect of computational thinking. Finding out what apps and tablets can do is as intuitive to today’s children as playing with modelling clay, and you need to bear in mind that not only is this technology part of their lives right now, it will be integral to their futures.

Allowing digital and physical ways of working, and for the arts and the sciences to complement each other as we have suggested, can deepen understanding of individual subjects. As Edelson puts it:

*Authentic activities provide learners with the motivation to acquire new knowledge, a perspective for incorporating new knowledge into their existing knowledge, and an opportunity to apply their knowledge.*

(Edelson *et al.*, 1999, p393)

And thinking about the wider learning context, linking creation and consumption – so that children produce digital products based on themes they have chosen to research – builds both media literacy and digital literacy. As independent creators, children learn to evaluate what each medium has to offer, and the process of making sharpens their critical awareness of the information they consume, making them more media-savvy. The end result we are aiming for is a generation of thoughtful and literate digital citizens.

### Activity

Look at the list of media apps in Table 1.2 and identify three ways in which they might be used to facilitate art meeting science in the primary curriculum. An example might be to make a *Haiku Deck* slideshow based on outdoor art, using natural objects illustrating the concepts of sun and shadows. Think about your role in making the most of the learning opportunities.

## Summary and Key Points

We have looked at how manipulating media, using tablets, can put children in control of pursuing their passions and sharing their creations. Our case study illustrated how elements of games-based learning might add challenge and structure to a classroom project, and placed a firm emphasis on children working together to achieve their goals. We also considered how physical art, music and drama might go hand in hand with the use of tablets, and how the creative subjects, science and technology can work in unison to amplify learning.

We have suggested that the media capabilities of tablets have the potential to support different modes of learning and that this versatility supports learners of all abilities. Tablets support anytime, anywhere learning and, when integrated with curriculum subjects in a purposeful way, they can extend learning beyond the classroom to informal learning contexts outside school. In addition, the process of engaging with media production can deepen children's awareness of the role of media in society and develop their critical understanding.

## Reflective Questions

To what extent does the idea of integrating the STEM subjects fit with your existing practice? Can you see added value in including the arts to move from STEM to STEAM?

What do you think are the main benefits of organising a whole school enrichment week? What are the advantages of using tablets to support whole school activities?

Our case study used tablets for pairs of classes to share their learning. Can you see ways in which this might enhance your own teaching and identify the first steps needed to implement this approach?

## Useful Links

### *Bridgewater Primary STEAM week*

<https://showyou.com/v/y-jecVKxBrp1A/bridgewater-primary-steam-week> (accessed 20 December 2014).

### *Tablets for learning: using Android apps in the classroom*

[https://slp.somerset.gov.uk/cypd/elim/somersetict/Computing\\_Curriculum\\_Primary/iPads%20and%20Tablets/Android%20apps%20for%20learning%20Dec%202013.pdf](https://slp.somerset.gov.uk/cypd/elim/somersetict/Computing_Curriculum_Primary/iPads%20and%20Tablets/Android%20apps%20for%20learning%20Dec%202013.pdf) (accessed 20 December 2014).

A useful set of multimedia apps for Android devices.

### *Northampton Inspire*

<http://mypad.northampton.ac.uk/inspire> (accessed 20 December 2014).

A primary teacher network exploring the creative use of technology across the primary curriculum and looking at the theme of STEM to STEAM.

### *Apps 4 Primary Schools*

[www.apps4primaryschools.co.uk](http://www.apps4primaryschools.co.uk) (accessed 20 December 2014).

A site aimed at teachers looking for educational apps for preschool, Early Years, special educational needs and Key Stages 1 and 2. Filterable by age and subject and platform.



### *Pinterest collection*

[www.pinterest.com/helencaldwel](http://www.pinterest.com/helencaldwel) (accessed 20 December 2014).

A large collection of online resources and apps for teaching with digital technology, including iPads for maths, iPads for Key Stages 1 and 2, apps for EYFS/Key Stage 1, apps for literacy, apps for computing and STEM to STEAM.

## App List for the Chapter

*PicCollage, iBrainstorm, Popplet, VideoScribe, Strip Designer, Morfo, GreenScreen by DoInk, Haiku Deck, Snapguide, PixnTell, iMovie, Phoster, GarageBand, ThingLink, Snapseed, BeFunky, VoiceThread, PuppetPals, Tellagami, Sketch, QuickVoice, SoundPrism, SoundOScope, LoopsequeKids, Mix Tiki, Falling Stars, Glow Tunes, MadPad, SoundBrush, SingingFingers, VoiceThread, Vintagio, Studio FX, Explain Everything, Google Earth, Google Maps, Edmodo, Fragment, Musyc, Shadow Puppets Edu.*

## Further Reading

### *The Visual in Learning and Creativity: A Review of the Literature*

[www.creativitycultureeducation.org/wp-content/uploads/the-visual-in-learning-and-creativity-92.pdf](http://www.creativitycultureeducation.org/wp-content/uploads/the-visual-in-learning-and-creativity-92.pdf) (accessed 20 December 2014).

A report for Creative Partnerships from Carey Jewitt at the Institute of Education, University of London.

### *Games-based experiences for learning*

[www.futurelab.org.uk/resources/games-based-experiences-learning](http://www.futurelab.org.uk/resources/games-based-experiences-learning) (accessed 20 December 2014).

A report from Futurelab at NFER discussing digital games and learning, and suggesting a set of design principles for planning games-based learning experiences.

### *STEAM case studies*

<http://stemtosteam.org/case-studies> (accessed 20 December 2014).

A site exploring the concept of integrating subjects through STEAM with case studies of these ideas in practice across education sectors.

### *iPad Art Room*

[www.ipadartroom.com](http://www.ipadartroom.com) (accessed 20 December 2014).

Resources and ideas for using the SAMR Model to merge traditional art making with the use of tablets. There are two ebooks by Cathy Hunt to download, *Lessons, Apps and Ideas for the iPad in Visual Art* and *App-struction: Technology Enhanced Art Education*, an in-depth exploration of a creative, multimedia lesson. These books form part of the 'One Best Thing' collection of over 100 free ebooks written by Apple Distinguished Educators.

### *Deploying and managing iOS devices in the classroom*

<https://slp.somerset.gov.uk/cypd/elim/somersetict/appleblog/eLIM%20Genius%20Bar%20Documents/Deploying%20and%20Managing%20iOS%20Devices.pdf> (accessed 20 December 2014).

A practical guide to options for charging and syncing a set of iPads and how to buy and license apps for schools from eLIM Somerset.

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