# Content Creation with Mobile Devices

The third trend we'll look at is that of content creation with mobile devices and how that is creating excellent learning experiences.

## Libraries Facilitating Creation

On the website for *The Atlas of New Librarianship*, R. David Lankes offers this mission statement: "The mission of librarians is to improve society through facilitating knowledge creation in their communities."[1]

"Facilitating knowledge creation" works well because it is broad enough to cover what libraries have always done, such as build collections of books and other materials, and also cover some of the newer services libraries are offering, such as publishing help, digital media labs, and makerspaces. This emphasis on creation gets at the underlying reasons for why we do what we do—so that people can create with the knowledge and information offered by library use.

## Active Creation as the Best Way to Learn

The educator John Holt once said, "Learning is not the product of teaching. Learning is the product of the activity of learners."[2] This emphasis on actively creating as the best way to learn is also found in the work of Seymour Papert, who writes about "constructionism" as a learning theory:

> From constructivist theories of psychology we take a view of learning as a reconstruction rather than as a transmission of knowledge. Then we extend the idea of manipulative materials to the idea that learning is most effective when part of an activity the learner experiences as constructing a meaningful product.[3]

One of the most helpful books for applying these ideas is called *Invent to Learn: Making, Tinkering, and Engineering in the Classroom.*[4] Based on the ideas of Papert's constructionism, it is full of practical advice for setting up environments where people can learn by creating. This is helpful information for librarians who are planning services that facilitate content creation.

## Mobile Devices for Content Creation

When the iPad first came out, there was much discussion and some criticism saying that it was only for passive consumption, like watching movies. While that is one thing it's good at, the iPad and other mobile devices have turned out to be very useful tools for content creation. There are excellent apps for creating and editing photos, videos, music, documents, spreadsheets, presentations, narrated slideshows, and more.

As you've seen in chapter 1, about natural user interfaces, human-centered ways of interacting with mobile devices are making content creation easier and more accessible. These days, you might find it easier to crop and edit a photo on your smartphone than in Photoshop on your desktop computer. Gestures for zooming in on the screen are often much easier than using a mouse.

If you are thinking about how much easier it is to edit a giant spreadsheet on your desktop computer with a large monitor, that is also true. When new tools are invented, the old ones don't go away. Instead, we have more options for different uses and devices can

be complementary to each other. Desktop computers still have their place.

When the iPad first came out there were many articles posing the question "Can the iPad be a laptop replacement?" At the time, I experimented for a few weeks by trying to use my iPad for all my work. While it was good for many things, like e-mail, Web searching, and viewing photos, it soon became frustrating when I needed to edit a wiki page that we used at work. Wikis have an editing interface involving editable regions inside the browser window that are nearly impossible to use without a mouse. However, I also realized that there were things I could do with the iPhone and iPad that I couldn't do at all with my desktop computer, like having a document scanner with me in my pocket.[5] That led me to recommend the iPad as a complementary device.

Since libraries are offering more services to facilitate creation, and creation is such a great way to learn, *and* there are so many useful and accessible creation apps, we have an opportunity to recommend some of these apps to our users.

## Types of Content Creation

So what can you easily create using mobile devices? Here are some types of content that can be created with excellent, accessible content creation apps:

- photo art and photo collages
- art images and multimedia collages
- videos
- interactive e-books
- slide presentations
- music
- designs for 3-D printing

In the previous chapter we looked at *consistent, continuous,* and *complementary* design, and those types of multi-device uses apply here as well.

Many times it makes sense to start a project on one device, then bring it to another to finish (continuous design). Other times you might use more than one device at the same time (complementary). And of course, there are many examples of apps that work well no matter which mobile device you use (consistent).

### App Smashing—Using Multiple Apps in Succession

A term that has become popular in the educational technology world, is *app smashing.* It's the use of multiple apps in succession to complete a project, often with a final product published to the Web. For example, create a comic with the ComicStrip app, bring it

into Explain Everything (narrated slideshows) to add your narration, export that as a video to publish on YouTube, then use ThingLink to create an interactive poster with hotspots that will launch the video.[6]

Often the choice of which apps to use is left to the students, selecting from a list of good possibilities provided by the teacher. Smashing apps together is a great way for students to express their creativity. To see many examples of student projects, search Twitter for the hashtag #AppSmash.

In today's mobile world, you can think of apps as a tool kit for content creation—often using more than one app and sometimes more than one device in succession.

## Examples of Creating with Mobile Apps

There are many excellent apps for different types of content creation. In this section we'll look at a few examples in order to show how natural user interfaces make it easy to create content.

Most of these examples could be used by students of any age, from elementary school children to adult learners. The ease of use benefits everyone. Sometimes a nine-year-old can pick up and use mobile apps more quickly than an adult who is used to desktop computers—mainly because they will try everything and have no fear of "breaking" the device.

At the same time, beware of stereotypes that depict older adults as afraid of technology and young people as early adopters. There are college students who are luddites and baby boomers who embrace and use all the new mobile devices and apps. So it's good to keep an open mind.

By the way, I have not included examples for preschool and early age elementary children because that could be the topic of a whole separate report—it's a huge area and not the focus of this report. These examples are mostly useful for ages eight and up.

If you work with university students and professors, mobile apps like these can be used in university settings as part of advanced learning projects, even if the example discussed here is with elementary school children. It's also good for all of us to be aware of the experiences younger students are having with apps before they enter universities so you can understand their background and expectations.

We'll look at examples for creating the following types of content:

- visual arts
- text and multimedia
- music and sound
- designs for 3-D printing

### Visual Arts

*CREATIVE CODING WITH PHOTOGRAPHY FOR ART*

iPad ArtRoom is one of the best websites available for learning about creative uses of iPads in art classrooms. Created by Cathy Hunt, a visual art teacher at St. Hilda's school on the Gold Coast in Australia, this site is "about mixing paint with pixels, and traditional with technology for art making." Here's an example from the "Art Apps & Ideas" section of her site.

*iPad ArtRoom*
www.ipadartroom.com

In a project called "Creative Coding: Painting with Light," Cathy Hunt and another teacher partnered to create cross-curricular lessons for science, math, technology, and the arts, where students created "light paintings."[7] They did this by programming a Sphero robotic ball to move with the colored light turned on and recording the trail with the Slow Shutter Cam app.

Working in teams, the students learned to create code that designates shapes for the Sphero ball to roll in, such as squares, triangles, or zig zags. They also coded the balls to change colors. Once they had their code working, they used the "light trail" mode of Slow Shutter Cam to create light paintings of the trail left by their balls.

*Sphero robotic ball*
www.sphero.com/sphero

*Slow Shutter Cam*
https://itunes.apple.com/en/app/slow-shutter-cam/id357404131?mt=8

Here's what Hunt said about learning outcomes:

> One of the great things about this kind of task is hearing the student conversations as their teams engage with experimental ways of working, estimating and making predictions, jumping between the Sphero ball, their code and photographic equipment. Hypotheses are developed and tested, with many decisions emerging through trial and error. Problems are solved on the go and success develops through an iterative process and effective collaboration. And best of all, the "fails" happen over and over again, leading to some really fulfilling moments when the desired outcome is achieved.[8]

Learn about the details, see photos of the artwork, and hear from the students in a video included with her post "Creative Coding: Light Painting with Sphero." This is a good example of a multi-device ecosystem using natural user interfaces to enable better learning.

*Video about light painting project*
https://youtu.be/1NbLRiL1Mbw

Cathy Hunt is also the author of two excellent, free multi-touch iBooks, full of art projects with the iPad. Download them from the iBooks store and read them on a Mac or iOS device.[9]

*AUDIO AND VIDEO CONTENT CREATION FOR THE VISUALLY IMPAIRED*

You may think it's not possible for blind or visually impaired people to create videos, but think again. It's quite possible, due to the accessibility features of Apple's iMovie. Blind students are working both on their own and in collaboration with others to create video content.

To learn just how this process works, get the free e-book *Creating in All Senses: Expression for the Visually Impaired*, by Daniela Rubio, a digital media accessibility consultant and an Apple Distinguished Educator.[10] You can download it from the iBooks store and read it on a Mac or iOS device.

In this concise book with embedded video demos, Rubio shows educators how the basics of VoiceOver work to enable the use of iMovie and GarageBand. One recommended app for learning the basics is LookTel VoiceOver Tutorial. It's a fun game-based way to learn the basics of VoiceOver for iOS.

*LookTel VoiceOver Tutorial*
www.looktel.com/vo-tutorial

This technology gives visually impaired people the ability to collaborate with each other and with sighted people to create videos, presentations, music, and podcasts. Rubio highlights effective ways that teachers can communicate with blind students by learning the basics of important features in VoiceOver, both for iOS devices and the Mac.

### Text and Multimedia

*CREATING INTERACTIVE E-BOOKS*

A very popular app that makes it easy to create interactive e-books is Book Creator, available for both Android and iPad. You can create a book that includes text, drawings, photos, narration, music, and video.

Export your book as EPUB or as PDF. You can submit your book to Apple's iBooks store or the Google Play store. To see examples of books created with this app, visit the Pinterest board of the developer.

Educators are using this app in many different ways.[11] For example:

- to create a digital journal or lab book
- to build literacy and creative skills
- to write fan fiction
- to create collaborative books
- in app smashing

For some very interesting ideas for using this app, see "4 (More) Compelling Reasons to Use Book Creator in the Classroom." You'll see examples of students collaborating with others around the world, good ways to document and record learning progress, app-smashing projects, and using Book Creator with special needs students.

### MULTIMEDIA STORYTELLING

Explain Everything is a widely used multimedia storytelling tool in classrooms at all levels. It's available for both Android and iOS and is easy to use. It's an interactive whiteboard with screencasting built in. It's often used by students to demonstrate and apply their knowledge across a wide range of subjects.

In the free e-book *Explain Everything Lesson Ideas*, there are six lesson plans for using this app in the classroom, two for ages five to eleven, two for ages twelve to fourteen, and two for ages fourteen to eighteen.[12] For example, in a math lesson for eight- to nine-year-olds,

students develop examples, sketch visual models, write a script for narration, and add captions to show their understanding of equivalent fractions. They screencast and present their solutions using the app.[13]

It's worth reading through these and other examples to learn more about creative uses of Explain Everything and similar apps.

## Music and Sound

An excellent example of content creation in the area of music and sound is described by Darryl Bedford in *Can You See Sound? Adventures in Film and Animation,* available for free from Apple's iBookstore.[14] He is an Apple Distinguished Educator and an art teacher at Oak Lodge School for the Deaf in London. He also works with neighboring mainstream schools and develops approaches that work with all ages (five through nineteen).

In this short e-book, he describes lessons that allow deaf students to create visualizations for music and sound. Students learn to create visualizations from the vibrations they feel and from their own voices and also study the science of sound with visual waveforms. For example, the iPhone app Soundbeam can visualize a student's voice. They also work with apps like Waves and Soundscape 2 to create beautiful visual patterns from sounds and music. For another project, the students create animations and flip books and create their own homemade musical instruments, then make videos of them with various apps. These lessons are appropriate not only for deaf students, but for anyone.

Here is what Bedford says about the results:

My story will hopefully inspire you to try some of the suggested activities, adapting them to your own curriculum. Almost any theme or concept can be animated. Your students can demonstrate their understanding of subject matter by transforming concepts into new forms. This process highlights Bloom's higher-order thinking skills, with creation being the highest order, involving a transformation of knowledge in order to communicate understanding through a new medium.[15]

The iBook *Can You See Sound?* includes several embedded videos. If you don't have access to the book

(it's free and can be viewed on a Mac or an iPad), try watching his introductory video on YouTube.

### 3-D Printing

3-D printing is another area with some excellent, fun creation apps. Autodesk offers several apps for different aspects of creating 3-D objects. One app that's useful for beginners is 123D Sculpt+, available for Android and iOS. The app makes it easy to design a 3-D animal or creature that can be brought to life with a 3-D printer. You can start with designs that are included in the app for modification or start from scratch. You draw stick figure skeletons and use the touchscreen to sculpt the body on top of it. You can then add photos, colors, or patterns as paint to your object.

For a sample lesson plan designed for a first-grade class that can be modified for any age, see Caitlin Boyce-Brejcha's "3D Digifab Lesson Plan: Sculpting Adjectives." The lesson has students create a 3-D animal with the app, describe it using five adjectives, and view the creations of their peers with a QR code reader. This lesson assumes you don't have access to print the design, so instead students share screenshots of their work.

If you don't have access to a 3-D printer, services such as Shapeways and Sculpteo let you upload your design and get your object printed and shipped.

For more ideas and plans for 3-D printing, see the YouTube channel Maker's Muse. This is a great source of project ideas, many of them appropriate for teenagers or university students, such as "Turn Your Head into a Zombie Candy Bowl."

If you want to learn more about 3-D printing, you might turn to your local makerspace (in a library or other location) because many of them offer workshops. For example, see Open Source Classroom's Makerspace in Bloomington, Illinois. It offers 3-D design workshops and 3-D literacy for educators. If you're in the Boston area, take a look at Artisan's Asylum in Somerville, Massachusetts, for a large number of interesting classes.

## Summary

I hope that after learning about these examples, you can see how content creation is getting easier with mobile devices. Natural user interfaces like touchscreens and VoiceOver are making it easier for people of all ages and abilities to use these devices.

Using multiple devices and multiple apps together, as we saw with app smashing, is becoming quite common.[16] Multi-device experiences with information that syncs between devices via the cloud is becoming the norm. We are less stuck within the ecosystem of one platform since many of the best apps are cross-platform and sync between devices.

Learning by creating is on the rise, and mobile devices can be a big part of this trend. In summary:

- People learn very well by creating.
- Libraries are facilitating content creation.
- Mobile interfaces are making it easier to create content.
- Children are learning to create with the latest mobile apps.

There are some good opportunities for libraries to facilitate learning by content creation in our communities—by using and recommending mobile technologies and by becoming experts for our communities.

We'll look at those ideas in the next chapter, along with lists of resources for learning more.

## Notes

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4. Silva Libow Martinez and Gary S. Stager, *Invent to Learn: Making, Tinkering, and Engineering in the Classroom* (Torrance, CA: Constructing Modern Knowledge Press, 2013), www.inventtolearn.com.
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6. "Why App Smash?" Learning and iPads, April 19, 2014, http://ipad4schools.org/2014/04/19/ why-app-smash.
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15. Ibid., 6.
16. "Why App Smash?"