

# Improving Critical Thinking with Interactive Mobile Tools and Apps

*If we teach today as we taught yesterday, then we rob our children of tomorrow.*—John Dewey, 1916<sup>1</sup>

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Educational philosopher John Dewey’s prophetic statement, made almost a century ago, echoes in our minds as we become teachers of students who are gaining 21st Century skills. We are part of a team of collaborating teachers and professors who are exploring both the promises and challenges involved in integrating technology into elementary classrooms. We believe the advantages of integrating interactive mobile tools (such as iPads, SmartPhones, and Tablets) and applications (apps) into social studies instruction can outweigh disadvantages.<sup>2</sup> In this article, we describe how integrating interactive mobile tools into elementary pedagogy can generate enthusiasm and critical thinking among students as they learn about the world.<sup>3</sup>

The activities described below took place over the course of six one-hour periods spanning six days. These activities address three major social studies thematic strands of the National Council for the Social Studies (NCSS)<sup>4</sup> (● **PEOPLE, PLACES, AND ENVIRONMENTS**; ● **PRODUCTION, DISTRIBUTION, AND CONSUMPTION**; AND ● **GLOBAL CONNECTIONS**) along with 21st Century Skills<sup>5</sup> and the National Education Technology Standards for Students (NETS-S),<sup>6</sup> while meeting the Common Core Standards for English Language Arts (ELA)<sup>7</sup>

## Engaging with a Book

In an elementary school in upstate New York, Laurie’s third grade students recently finished reading Dr. Seuss’s *Oh, the Places You’ll Go!* in their English Language Arts class as a start to their Read Across America Day (RAAD) activities (online at [www.nea.org](http://www.nea.org)). Students identified “streets,” “town,” “creek,” and “mountain” as “great places” they could travel in Seuss’s fictional landscape. The children talked about the fascinating aspects of travel and the modes of transportation they might use during their “reading trip” of the book.

During the next two independent work periods, students were engaged in more thorough readings of the same book in several ways. Some re-read the book with a reading buddy, while others used a SmartBoard or iPads to watch an audio

version of the book. The digital app of the book on an iPad invites students to read to themselves or use the “read-to-me” option. This initial activity gave students confidence in using the new technology in the classroom.<sup>8</sup>

With careful planning, teachers can help ensure that each child gets to use each of the devices in the room during the course of a project. For example, Laurie was aware from previous iPad and Smartboard activities that there would be a high-level of excitement and enthusiasm, so grouping students to sustain classroom management and equal access, while supporting diversity of learning, was an essential instructional strategy. She began with a reading buddies activity, grouping students in similar reading levels. A preservice teacher circled the room, visiting pairs with weaker reading skills to provide them close, additional support. Collaborative learning rules, already in place, guided students in their sharing of an iPad. With only one Smartboard in the room, Laurie created a learning station that allowed all groups to take a turn with that device.

Some children used the iPad book app to record their voices as they read a book aloud.<sup>9</sup> There are several steps in this process. First, a student flips through the (onscreen) book while listening to the voice of a narrator reading the story. Then the student reads the story aloud while recording his or her own voice on the iPad. Finally, the students can enjoy listening to their own narration as they follow along, flipping the pages. For several students, this was their favorite activity. Students then shared the books, narrated with their own voices, with the whole class.

## Exploring Location and Place with Apps

Laurie helped students attach iPads to the large Smartboard at the front of the room using a VGA adapter for the iPad. (Such hands-on activities helped students become familiar with tools that they would use later to create end-of-unit presentations.) At this point, students felt “buckled up” and ready to “go to great places” in the next activity, which would involve planning for travel to real places on Earth.

Laurie started by asking her children to share the “great places” they would like to visit. After class, and using the students’ wish list of places to go, Laurie and Chris (the collaborating college faculty) located websites about those places that were appropriate for students to visit, and made these URLs available to students in the form of Quick Response (QR) codes. Students used iPads to scan embedded QR Codes from the activity guide.



For example, one QR Code led students to the Dr. Seuss homepage ([www.seussville.com](http://www.seussville.com)) from where they used Google Earth to see maps and aerial photos showing Dr. Seuss’s (Theodor Geisel’s) childhood home town of Springfield, Massachusetts. Students typed “Mulberry Street” (a

street made famous by Dr. Seuss’s first great success in 1937, *And to Think that I Saw It on Mulberry Street*) into the search box and were introduced to the phrase “historic site.” A QR Code on the activity guide led them to a “List of National Historic Landmarks in New York” (see [en.wikipedia.org](http://en.wikipedia.org)). Students, in small groups, then explored websites about some of these places that are in their home state of New York. The most favored locations were the Erie Canal, the Adirondack Forest Preserve, Niagara Falls, and the Harriet Tubman House in Auburn. The selection of these sites revealed that some students were tapping into their prior knowledge and experiences.



## Geography and Culture

The activity then expanded to a search of historical sites based on *Talking Walls*, a picture book by Margy Burns Knight, which the class has read before. The book tells the stories of 14 walls that can be found on various continents, walls that reflect various cultures and historical periods (e.g., the Great Wall of China, the Lascaux Cave, the Vietnam Veterans Memorial,

the Berlin Wall, the Canadian Museum of Civilization, and prison walls that held Nelson Mandela for so many years). Each student group searched on the Internet (using URLs vetted by Laurie and Chris) to learn more about “the great place” where a particular wall is located. Several questions to guide student research included:

1. How far is this “great place” from where you live? What unit of measurement are you using to describe the distance between your home and this place?
2. In what ways can you get to the “great place” of your choice? Choose the mode (or modes) of transportation that you would like to use.
3. What features of geography will you pass on your way to the “great place?” (For example, see the features marked on a globe, like continents, mountains, deserts, planes, forests, oceans, seas, lakes, rivers, countries, and major cities.)
4. What are some of the geographical and cultural features of the country where this wall is found?

After answering these questions with the use of a **HANDOUT** (see page 12), students created a digital presentation about the country where the wall is located. Students used Keynote on their iPads to incorporate images and text to demonstrate their learning. The presentations enabled students to construct knowledge and develop a basic, geographic understanding of a place on Earth, a place that is different from their own neighborhood. The research and presentation work spanned three classroom periods.

As Laurie had students reflect on their group presentations, she asked them to think about any connections that there might be between their lives (here in the United States) and people living in these far-away places around the world. “As a third grade class in upstate rural New York, do we have a global connection? How do we relate to or depend on far away places?”

## Production, Consumption, and Location

Having the global connection in mind, Laurie assigned a family project, calling for students to interact with parents and other family members in an enjoyable learning activity. Using a handout “We Are Global Consumers”<sup>10</sup> to record data, students found at least ten consumer goods (items of clothing, toys, foods, or any household products) in their home and took a photograph of a tag or label on each item that revealed where it was manufactured.

This activity not only built curriculum-related insights, but also engaged students in discussions with other family members and the use of digital imaging.<sup>11</sup> The home assignment provided the children with the opportunity to use different mobile tools for image collections while learning safe digital image practices (such as not posting images of people online). Children and parents collaborated to decide on their picture-taking tools. Families without image-taking devices were provided with iPads,

# Learning about a “Great Place” by Visiting a Famous Wall

**HANDOUT**

Name of the famous wall: The Great Wall of China

Country in which this wall is located: People’s Republic of China

QUESTIONS and STUDENT’S ANSWERS	URLs for RESEARCH
<p>1. What is the distance your from home to this place? (name the unit of measurement)</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<p><a href="http://www.infoplease.com/atlas">www .infoplease.com/ atlas</a> <a href="http://distancecalculator.com">distancecalculator.com</a> <a href="http://maps.google.com">maps.google.com</a></p>
<p>2. What modes of transportation do we choose for getting there?</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<p><a href="http://www.travelchinaguide.com/china_great_wall/scene">www .travelchinaguide .com/china_ great_ wall/scene</a></p>
<p>3. What features of geography do we see along the way?</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<p><a href="http://www.google.com/earth">www .google.com/earth</a></p>
<p>4. What features of geography and aspects of culture do we find in this country?</p> <hr/> <hr/> <hr/> <hr/> <hr/> <hr/>	<p><a href="http://kids.nationalgeographic.com/kids/places/find/china">kids.nationalgeographic .com/kids/ places/find/china</a></p>



which have a camera function. Some families used personal cell phones, sending images to a classroom e-mail address so that students could download the images to their iPads. The images were then used by students in projects made with various Apps, such as iMovie or Keynote.

Referring to the completed handout, “We Are Global Consumers,” students in groups took turns locating the countries where their selected products were made using traditional desk-size maps, a globe, Google Maps on desktop computers, and the Google Earth App on iPads. Students’ energy and motivation were evidently higher when they used the interactive digital map tools as opposed to maps on paper. Google map tools offered the children an exciting and powerful experience of travel to far away places and encouraged spatial thinking.<sup>12</sup> This activity took a good hour of work, given the students’ skills of using the computer, iPad Apps, and map skills.

The students created a master chart of all the countries listed on the various product labels. Students used sticky notes to label these countries on the classroom world map. By this point, students were beginning to refer with ease to the names of countries such as India, China, the Philippines, Sri Lanka, Vietnam, Cambodia, Haiti, Mexico, Honduras, Colombia, and Guatemala. Students noted that these countries “held more sticky labels on the map” than did Canada or the United States.

### **Inquiry and Discussion**

Looking at their chart and maps, students began to ask questions and make comments based on their observations. “There is no sticky label in Europe.” “There is none in Russia.” “Where [in what city or town] are things made in U.S.A.?” “Who makes the clothes we wear?” Laurie encouraged students to try to answer their own questions. Students’ inquiry led to a classroom discussion of further connections with the rest of the world.

One student asked, “If most of these products were produced in other countries, how do they get to the stores in our town?” Laurie responded, “They must have traveled a long distance to get here.” Recalling the earlier activity, students listed different modes of transportation; the products could have traveled by the truck, train, boat, or the airplane. Then she asked students to estimate what percentage of these products are made in the United States, based on data from their collection of labels. Then the class performed a similar calculation for percent of products made in Canada.

Another student asked, “Why are so many of these things made in other countries?” The class ended with students asking more questions. One student asked, “What will workers do if they are not happy about low wages?” Another asked, “Why aren’t there any factories in our town for my parents to have a job?” Laurie encouraged students to keep these questions in mind. In the following week, she would start a new unit of study in which students would learn key economic terms and concepts to help them answer these questions and understand global connection in different ways.



Robert Scoble/commons.wikimedia.org

Factory workers perform final testing of computer drives in China, 2008.

### **Creating a iMovie as an Assessment**

Students demonstrated new knowledge and communicated conclusions by creating movies. With the help of university collaborators, students learned to operate media technology using the iMovie app for iPads. Depending on their varied digital skills, some students needed one hour while others needed a few days to complete their projects. Students gathered information from different sources: websites, classroom literature, and even individual writings and classroom conversations, to create their final presentation product. As students outlined their productions on paper, they wrote with a purpose—their peers would be their audience.

Laurie used the students’ iMovie presentation as an assessment to evaluate students’ communication skills, knowledge of geographic and economic terms used in previous activities, and global awareness.

### **Teachers Reflect**

The goal of our collaboration was to help children realize that they are local, national, and global citizens—all at once. Such a goal requires us to challenge our ethnocentrism and develop multiple perspectives to view global connections. It also requires a curriculum that improves students’ critical thinking skills and global understanding. The use of computer-based technology as

a tool for research, communication, and reporting strengthens these skills through classroom instruction and student engagement. We did not sacrifice the engagement of critical thinking and understanding of global connections simply for the sake of using technologies. This inquiry learning experience revealed that, when students are curious and encouraged to ask questions, they are able to ask powerful and complex questions. They are able to draw inferences through their observation and investigation. Their understanding of the world deepened and their global awareness increased as became evident in their final presentations.

The digital tools helped students develop important new digital literacy skills as they moved away from a mono-modal print text to integrate images and sound into a multimodal composition that they created. Designing digital products (using iMovie on the iPad) enabled students to learn revision through digital editing.

Surely, much of the content of this unit could be implemented without computers or mobile touch technologies. For example, a world map and globe are always available in every classroom. Teachers and children can use pushpins or sticky notes to illustrate the cluster of the places to demonstrate the global connections around the world. We believe, however, that the use of mobile technologies kept diverse learners engaged, and integrating interactive mobile tools helped our “digital natives” improve their critical thinking and digital literacy.<sup>13</sup>

At the completion of the activities, we asked students for anonymous feedback on the activities in this unit. They enjoyed the social studies activity using the digital tools. The following comments are only a few examples of the student feedback. “Thank you for helping us make movies and letting us write our work on computers.” “I couldn’t wait to see my movie.” “I enjoyed the movie because we worked very hard.” “That movie was the best movie I have ever saw [seen]. I can’t wait to do it again.” “My parents are proud of our group movie project.” Such comments reinforce our commitment to engaging learners with 21st century tools.

The students had not realized that, as a small group of students in a rural community, they actually have so many global connections. Their awareness was clearly reflected through their digital productions. We don’t believe that a few lessons are sufficient to help children develop their global awareness. We agreed, however, it is never too soon to develop children’s

knowledge of geographic, cultural, and economic concepts that are necessary for global citizens. 🌍

#### Notes

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2. Bernard Robin, “Digital Storytelling: A Powerful Technology Tool for the 21st Century Classroom,” *Theory Into Practice* 47 (July 2008): 220–228.
3. Karen Swan and Darlene Unger, “Uses and Effects of Mobile Computing Devices in K-8 Classrooms,” *Journal of Research and Technology in Education* 38, no. 1 (2005), 99–112.
4. National Council for the Social Studies, *National Curriculum Standards for Social Studies: A Framework for Teaching, Learning, and Assessment* (Silver Spring, MD: NCSS, 2010).
5. Partnership for 21st Century Skills, [www.p21.org/about-us/p21-framework](http://www.p21.org/about-us/p21-framework).
6. International Society for Technology Education, “National Education Technology Standards for Students,” [www.iste.org/standards/standards-for-students](http://www.iste.org/standards/standards-for-students).
7. “English Language Arts Standards: Common Core,” [www.corestandards.org/ELA-Literacy](http://www.corestandards.org/ELA-Literacy).
8. Apps in this article (accessible for iPads, smartphones, or Android based tablets) included QR Code Creators, QR code Readers, Dr. Seuss audio book *Oh the Places You’ll Go*, Apple’s iMovie for iPad, and Apple’s Keynote for iPad. Send questions about the use of these apps to author [chris.widdall@kortland.edu](mailto:chris.widdall@kortland.edu).
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