Assessment is a critical component of quality instruction. In the current era of educational reform, however, standardized tests (with multiple-choice or true-false questions) too often become the tail that wags the instructional dog. Teachers and textbooks then deliver content for students to passively absorb before regurgitating it during testing. Such an instructional model focuses on low-level thinking skills and risks being perceived by students as boring and disconnected from their lives.

Student-centered instruction incorporating authentic assessments can provide an alternative instructional model. Student-centered instruction generally requires learners to take on alternate roles such as that of historian, advocate or op-ed writer in order to complete a project. Traditionally, the end product has been a student-created newsletter, brochure, short report, or letter to the local newspaper or a state or national official. An example, a project might have students compile and compare oral histories from veterans of World War II, Korea, Vietnam, and Desert Storm. Or students might analyze original source documents from the Birmingham civil rights riots during the 1960s to reveal differences between local and national news coverage. Instruction of this nature engages students in higher-level thinking. Research suggests that student-centered instruction leads to content acquisition equal to or better than that resulting from traditional instructional models.1

Collaborative Learning
Student-centered instruction is often both collaborative and constructivist in nature. In collaborative learning environments, students work together to clarify their current understanding and prior knowledge of a topic before identifying what additional information might be needed to complete a learning task. Both positive interdependence and individual accountability are necessary; everyone must contribute while being assessed both individually and as team members. Working in teams can be effective for learning content, social interaction, and boosting students’ attitudes toward learning.2 Even very young children can learn to interact in positive ways through active listening and by valuing one another’s contributions.3

In collaborative learning environments, group members identify the individual tasks and procedures required to complete an investigation or project, summarizing the work on a timeline that shows when each step must be completed. An ever-increasing array of Internet tools can help students tackle such projects by facilitating interaction, communication, and planning—and by allowing learners to present information effectively through multimedia products. Use of such tools can enhance motivation4 as well as provide opportunities for authentic assessment of student learning.

In this article, we describe a variety of Web 2.0 tools that we have used as teacher educators and have seen effectively used by teachers in K-12 classrooms. We explain how these tools have helped students create knowledge to meet expected social studies outcomes while working together to investigate complex themes through the application of higher-order thinking skills.

A 21st-Century Medium
There are many definitions of Web 2.0 but, in general, the term broadly describes a second generation of Internet programs and hosting services designed to facilitate creativity, collaboration, and information sharing.5 Examples of Web 2.0 tools include blogs (web logs), wikis, social networking and social bookmarking sites, and podcasts. These technology-mediated tools can provide the basis for lessons drawn from real-life situations that require to apply skills in practical reasoning, critical thinking, and research, as well as to grow in technological competencies.

In addition, strategically integrated Web-enhanced pedagogies can encourage cooperation and collaboration. The resulting student-generated products not only demonstrate mastery of pertinent knowledge, they also allow for different ways of knowing, perceiving, and thinking about things. Although these sorts of skills and competencies can be attained and assessed without the use of computers, web-based activities can encourage learners to construct and communicate knowledge in divergent,
creative ways while simultaneously allowing teachers to track and evaluate student learning as it happens.

**Timelines**

Interactive timeline programs provide the tools for creating visual displays of temporal data in scrollable horizontal or vertical timelines. Like print-based timelines, interactive timelines present chronologically ordered events or topics. However, the interactive features connect each topic to multimedia resources such as images, songs, maps, videos, and primary source documents. For example, Biography.com’s Black History timeline allows users to scroll through the timeline at their own pace using a slider bar, but they can also jump directly to any event that intrigues them, such as the Nat Turner Slave Revolt, by clicking on the image or link to learn more. Within each topic are more links to related events, people, and places. Most interactive timelines also have clickable Fast Fact pages and Quiz features for learners to check their knowledge after learning about events on the timeline.

The Digital History Home website contains a large selection of clickable timelines about social, political, and cultural events from all regions of the country. Timelines may also be used for documenting family and community traditions or for oral history projects. Some popular Web 2.0 tools that students can use to create their own interactive timelines include Dipity and Time Toast.

**Comics and Cartoons**

In recent years, comics, cartoon strips, and graphic novels have gained popularity as instructional resources for their potential to motivate students and promote reading skills, particularly with struggling and disengaged readers. Preservice and practicing teachers in our social studies methods courses have used interactive comic creation programs (such as Make Belief Comics, Stripcreator, and Pikikids) in the classroom to enhance the social studies curriculum, guide instruction, and engage children in the learning process. Examples of student-created comics can be found at The Comic Book Project online, an arts-based literacy and learning initiative hosted by Dark Horse Comics.

Creating a cartoon or short comic strip challenges students to summarize a story or historical event using text, illustrations, and dialogue.

Most comic creation applications include storyboards or story maps to help learners organize their thoughts and plan their comic strips. For example, Story Creator 2.0 focuses primarily on the creation of stories related to myths and legends. Students can select backgrounds and pictures from the gallery or upload their own images. They can record sounds and narration or select from a gallery of sound effects, add conversation bubbles, and compose a short story of up to six chapters. The KidsKnowit Network Funny pages provide free comics, updated weekly, for educators to download.

**Geography and Current Events**

In 2010 there was the oil spill in the Gulf of Mexico, devastating floods in China and in Pakistan, and major earthquakes in Chile and Haiti. The magnitude of such disasters when presented solely as numbers (“17 million people homeless or $43 billion in damages, equivalent to almost a quarter of Pakistan’s gross domestic product”), can be hard for students to comprehend. Images contextualize the scope and scale of such events by providing a pictorial representation of what happened. For example, explaining to students that the floods in Pakistan covered an area larger than England can help them understand that this was a disaster of enormous proportions. A map one-fifth of all the land in Pakistan submerged during the floods in August, 2010 illustrates what the floods meant to Pakistanis. Visual representations of this sort can help learners make connections between various strands of the curriculum standards by showing the interrelations between human populations, uses of technology, exploitation of resources, and the physical forces of nature.

**Keeping Up with the News**

Websites that explain news stories with the use of photographs can be helpful when teaching about current events using images.

For example, the Boston Globe’s Big Picture website is updated throughout the day with photographs featuring local, national, and international news. Other sites such as the New York Times and the Washington Post maintain weekly slideshows about current events. Images from news sites can initiate discussions about what is happening in the world, and can be a springboard for multimedia lessons about current events.
Teachers may also be interested in My Wonderful World, a National Geographic society website for integrating geographic literacy into the content areas using multimedia resources such as 2D and 3D maps, images, blogs, videos, digital games, quizzes, and awareness campaigns. Students can conduct research into cultural, environmental, and geographic issues, listen to world music, take virtual tours, and add landmarks to maps. The Wayfaring feature lets students (collaboratively or individually) create their own personalized maps and share them with other students.

**You Create the Resource**

GeoGames and PurposeGames are educational websites where teachers (or students) can create geography-themed puzzles, quizzes, and activities. For mapping activities, Google Earth offers a comprehensive collection of satellite images and maps. Starting with a view of the Earth from outer space, Google Earth users can zoom in to find any object at ground level, from their own house, to historical sites such as Stonehenge, to the U.S. Capitol. Students can annotate and save these maps, and even call up directions for a trip.

Google for Educators is a suite of digital tools for classrooms, including search engines (of websites and books), calendars, an image sharing website (Picasa), a 3D modeling program (SketchUp), blogging, and video sharing. Google Docs and Google Spreadsheets allow users to collaboratively write documents, collect them in one place, and share them with others.

**Digital storytelling**

Digital storytelling refers to the process of ordinary people utilizing digital tools to tell their own life stories through multimedia. The end product is usually a short video or a narrated slideshow about a specific topic, presented from a particular point of view.

Education-related digital stories, usually 2 to 10 minutes long, may contain a mixture of digital elements such as images, music, narration, video, or animation. Personal narratives or short reports can be constructed with tools such as podcasts, or with image-sharing websites such as Photobucket and Snapfish. For creating digital stories with students, a useful starting point is the Center for Digital Storytelling, which features an extensive gallery of digital stories, a digital storytelling “cookbook” for those new to digital storymaking, and newsletters about upcoming workshops. Digital storytelling tools are frequently used for creating oral histories, as described at the Oral History Association’s website.

**Quizzes and Surveys**

Text-oriented assessments such as quizzes and surveys are useful for measuring readiness skills and academic language levels, as well as for pinpointing learning disabilities or general content knowledge about a topic. Creating these text-oriented assessments is made easier with interactive programs such as Survey Monkey and Zoomerang. These programs allow users to create multiple choice, short answer, and essay questions, or to design questions with pop-up menus where an answer can be selected from a list of available choices. Ready-made, customizable questionnaire templates and built-in capabilities for providing comments and feedback are also available. Data collected from surveys is easily sorted, and results can be analyzed in a variety of ways.

**Online Portfolios**

Using Web 2.0 tools such as Wikispaces or PBWorks, teachers or students can collaboratively assemble online portfolios that contain collections of relevant resources such as links to stories, quotations, contemporary and historical sources, as well as links to online image libraries, educational games, simulations, maps, government documents, and databases. Such portfolios generally take the form of blogs or wikis.

A blog is an online journal created and updated by the author. Blogs can be public, private, or shared only with invited members.

Wikis are collaborative online spaces where several people edit and collaborate on documents and projects. Eduwikis and Teaching with Primary Sources are two well-designed examples of collaborative spaces for sharing information. Educators can follow developments related to technology and Web 2.0 use in educational settings at EduBlog and BloggedK12.

Such portfolios can also help students share their best work with other students or present it to the teacher for formal, end-of-unit evaluations. Teachers can also track the progress of individual students and plan instruction based on needs identified through reviewing students’ portfolios.

For teachers, electronic portfolios in the form of wikis or blogs can be used to keep handouts, slideshows, worksheets and other curricular materials. Teachers can use their blog or wiki as a secure means for disseminating materials to students as well as a safe place to back up such materials.

**Museum Box**

Examining various perspectives concerning historical events is at the heart of relevant, meaningful social studies inquiry. Inquiry-based learning starts with learners’ questions: What
was life like during Prohibition? How were Jews treated in Germany in the 1930’s? What caused the Dust Bowl? Students can conduct historical research into their own questions by collecting evidence about a topic (including images of artifacts) and compiling what they find in a “virtual file cabinet” using Museum Box. Artifacts can be assembled into a virtual “cube” with clickable sides as part of a final project. Source materials can include text, documents, videos, images, slide shows, sound files, website links. Students can use Museum Box individually or collaboratively to build an argument, describe an event, create a time capsule, or prepare for a debate.

Preparing to Use an Internet Tool
Teaching the merit of Web 2.0 tools according to at least four key criteria: legality, safety, privacy, and copyright, functionality, academic integrity, and pedagogical utility.

For educators, issues of online safety and privacy must be addressed first. Appropriate security measures, such as content filters, are required safeguards in some schools. At times, however, searching with key words and phrases relevant to a topic can trigger filtering software to block access to relevant educational materials. Additionally, many districts deny student access to video-sharing sites such as You Tube, and to social networking sites like Facebook and Myspace. Teachers must make sure that a website is safe for children and also functions well within the school’s computer environment (hardware, security filters, and network capabilities) before assigning students to visit that site.

Privacy and Copyright
If students are creating digital content to post on the Internet, then privacy rights must be upheld. Photographs that students take of themselves or each other must not be posted on websites that can be accessed by the general public. Students’ images or their full names must never appear online without permission forms (as provided by the principal) first being signed by students and their parents.

If students were to copy published material and post it online for public access, then issues related to copyright would be a concern. For example, if a student scans an image out of a book and posts it online, that may be a copyright violation. For learning about copyright issues, we recommend Cyberbee for younger students, and a site by Hall Davidson for older students and teachers.

Additionally, issues related to online ownership and copyright must be addressed, particularly if students will be generating their own digital content. For copyright issues, we recommend Cyberbee for younger students, and a site by Hall Davidson for older students and teachers.

The websites we have recommended here (see the sections “You Create the Resource” and “Digital Storytelling”) enable teachers to create a safe Internet environment where students can post their work for a school audience only. Such a closed Internet environment answers many privacy and copyright concerns.

Academic Integrity
Usually, teachers should provide a short list of recommended websites for students to use when researching a topic or using a web-based tool. If you invite students to search freely for materials on the Internet, then “thinking critically about web-based resources” must be part of the lesson itself. During such a lesson, the teacher would provide guidance in how to judge the quality of any material that students have located. This mature guidance is especially important in the elementary and middle grades. The Internet is full of false, misleading, fanciful, and outdated information—websites that all too often appear among the top findings provided by a search engine. There are reliable websites detailing what educators need to know to determine a website’s validity and reading level.

Pedagogical Utility
What do the best educational Web 2.0 tools have in common? They require students to weave together social studies themes and strands by demonstrating competency that extends beyond mere recall and comprehension of basic content. When students create digital projects, they can be challenged to use knowledge by working at higher cognitive levels. Performance-driven, authentic assessments, when aligned with instructional objectives and core standards, can facilitate purposeful, powerful social studies learning in today’s elementary classroom.

Notes
6. Privacy laws vary from state to state, so it is important to acquire permission forms from your principal, and have parents sign them, before the images or full names of students might be made available to the public in any medium, including online postings.
10. See note 9.

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Websites Discussed in this Article

BAWARE Web Site Evaluation form
www.unm.edu/~jbrink/resources/BAWARE/BAWARE.htm

Biography.com’s Black History Month Timeline
www.biography.com/blackhistory/black-history-timeline.jsp

Blogged K-12
www.blogged.com/directory/education

Boston Globe’s The Big Picture
www.boston.com/bigpicture

Center for Digital Storytelling
www.storycenter.org/index1.html

Comic Book Project
www.comicbookproject.org

Copyright and Fair Use Guidelines for Teachers
www.halldavidson.net/copyright_chart.pdf

CyberBee
www.cyberbee.com

Darkhorse Comics
www.darkhorse.com

Digital History Home
www.digitalhistory.uh.edu

Dipity
www.dipity.com

Edublog
edublogs.org

EduWikis
eduwikius.wikispaces.com

Facebook
www.facebook.com

GeoGames
www.reachtheworld.org/geogames/index.html

Google Docs
www.google.com

Google Earth
www.google.com/earth/index.html

Google for Educators
www.google.com/educators/index.html

Google SketchUp
sketchup.google.com

Google Spreadsheets
www.google.com

KidsKnowIt Network
www.kidsknowit.com/educational-comics/index.php

Make Belief Comix
www.makebeliefscomix.com

Museum Box
museumbox.e2bn.org

Myspace
www.myspace.com

My Wonderful World
www.mywonderfulworld.org/gaw.html

New York Times Week in Review

Oral History Association
www.oralhistory.org

PBworks
pbworks.com

PhotoBucket
photobucket.com

Picasa
picasa.google.com

Pikikids
www.pikikids.com

PurposeGames online
www.purposegames.com

Snapfish
www.snapfish.com/snapfish/welcome

Storycreator 2.0 Myths & Legends
myths.e2bn.org/create/tool527-new--story-creator-2--beta.html

Stripcreator
www.stripcreator.com

Survey Monkey
www.surveymonkey.com

Teaching with Primary Sources
iu12tps.wikispaces.com

TimeToast
www.timetoast.com

Washington Post Multimedia
www.washingtonpost.com/wp-dyn/content/photo

Wikispaces
www.wikispaces.com

You Tube
www.youtube.com

Zoomerang
www.zoomerang.com