

# Power of the Mashup

Combining Essential Learning with New Technology Tools

By Suzie Boss and Jane Krauss

Throughout his 34 years of teaching, Jerome Burg has always included *Candide* in the syllabus. Burg doesn't find it hard to interest today's high school students in a work of literature first published in 1759. He presents Voltaire's classic as a rollicking adventure story—a road trip. And to keep his approach fresh, he's always on the lookout for new strategies and projects to ensure that tales like *Candide* come alive for young readers.

Burg left his own classroom last year and now helps other teachers integrate technology into the curriculum at Granada High School in Livermore, California. One new project he designed is heightening global interest in literary road trips by creating a resource that combines a new technology with a time-tested instructional approach. Google Lit Trips harnesses Google Earth as a powerhouse teaching tool for literature studies. The interactive Web-based application allows users to literally search the globe, using satellite imagery, maps, terrain, and other three-dimensional images. Burg has designed custom files so that literature students virtually travel along with a literary character, using Google Earth to explore the key locations of a story.

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Burg's experience shows what can happen when a teacher understands the power of the mashup—a hybrid application that draws from multiple sources to create something new.

Although the technology he's using is cutting edge, Burg's purpose is timeless: to help students achieve a deeper understanding of great literature. Google Earth enables him to make the information of a story more visible to students, and as a result, more "discussable." That essential learning function remains in the foreground when students go "lit tripping" around the globe.

Today's technologies—and the emerging mashups—help teachers to perform eight essential learning functions (see the sidebar that begins on this page for more discussion and examples of each). Although technologies continually evolve, these learning functions remain fairly stable:

1. Ubiquity
2. Deep Learning
3. Making Things Visible and Discussable
4. Expressing Ourselves, Sharing Ideas, Building Community
5. Collaboration
6. Research
7. Project Management
8. Reflection and Iteration

Burg and other teachers manage to keep their focus on these essential learning functions while staying alert to the potential of new technology tools. What's more, by sharing their project development process online, these innovators are also creating new communities of practice among their global colleagues.

## Essential Learning Functions

Here's an overview of eight essential—and enduring—learning functions to guide your project planning.

### 1. Ubiquity

Although ubiquity is not a learning function per se, it is an overarching and desirable quality of tools that support project-based learning. Anytime-anywhere access to information, Web-based productivity tools, and multiple communications options are especially suited to project-based learning.

*Examples:* portable computing devices, mobile phones, wireless Internet, Web-based mail and instant messaging, portable productivity with Web 2.0 applications

### 2. Deep Learning

Go beyond "filtered" information where meaning is made by others and help students find and make sense of "raw" information on the Web. Higher-order thinking is engaged when students have to analyze primary sources and digitized artifacts. They take learning deeper when they are asked to navigate, sort, organize, analyze, and make graphical representations in order to learn and express learning. Learners can interpret and make visual displays of the data they mine or collect with Web-based tools such as spreadsheets, relational databases, and chart and graph creators.

*Examples:* digitized versions of primary sources such as the American Memories Project (<http://memory.loc.gov/ammem>), or rich databases of real-time data, such as Worldometers (<http://www.worldometers.info>), with tickers continually updating data about world population, carbon emissions, hunger, and more

### 3. Making Things Visible and Discussable

A picture is worth a thousand words, and making thoughts and ideas *visible* and *sharable* is the first step in getting the conversation going. Digital tools help students conceptualize with mind maps; see things that are too big or too small or too fast or too slow for the naked eye; examine history through digital artifacts; express ideas through photography and multimedia; and conceptualize with graphical representations, modeling, animation and digital art.

*Examples:* Google Earth and other Web-based mapping sites, Web cams, photo-sharing sites, visual manipulatives, and modeling software

### 4. Expressing Ourselves, Sharing Ideas, Building Community

As the World Wide Web evolves from an information medium into a social medium, opportunities for expression continue to grow. Students using MySpace and instant messaging are accustomed to these forms of personal interaction. Imagine the

parallels in school and ways students can use the Web to express their ideas and build society around shared interests.

*Examples:* class Web sites, blogs, wikis, and virtual worlds such as Second Life; tagging Web content and sharing tags with others

## 5. Collaboration

Tools abound that help us learn and teach together. Use exchange services to find experts or fellow learners. Use shared Web applications to plan and write together. Plan virtual experiences that allow learners to “meet” across distances. Use survey tools to take the pulse of the community.

*Examples:* wikis, Google Docs & Spreadsheets, podcasts and webinars, voice-over Internet protocol services (e.g., Skype), survey tools

## 6. Research

Internet research puts information literacy to the test. Quality directories, search engines with filtering, a variety of bookmark tagging tools, and citation engines help students make sense of and organize what they need from the ever-expanding Web.

*Examples:* ASK for Kids (<http://www.askforkids.com>), social bookmarking (e.g., Del.icio.us, <http://www.del.icio.us.com>), Citation Machine (<http://citationmachine.net>)

## 7. Project Management

Projects require students to manage time, work, sources, feedback from others, drafts, and products. A simple folder on the district server or a workspace in the school’s learning management system may suffice, but consider Web-based homepages or desktops that give students a space to work and associated tools (calendars, to-do lists) to help them plan and organize. They can get to their homepage from anywhere at any time.

*Examples:* Netvibes (<http://www.netvibes.com>), Protopage (<http://www.protopage.com>), Google IG (<http://www.google.com/ig>)

## 8. Reflection and Iteration

Deep learning happens when you examine your ideas from all sides and from other points of view. Reconsidering and reshaping ideas to bring them to high polish is the difference between yeoman and masterful work. Tools that support reflection and iterative development give learners the opportunity to shape and revise their work, and expose it to the critical feedback of others.

*Examples:* blogs (<http://www.blogger.com>, <http://www.livejournal.com>, many other free blog services) and wikis (<http://www.wikispaces.com>)

*The preceding is an excerpt from the authors’ upcoming book Reinventing Project-Based Learning: Your Field Guide to Real-World Projects in the Digital Age, to be published by ISTE in November 2007.*

## A World of Ideas

Burg came up with the idea for Google Lit Trips after first seeing Google Earth. Like most new users, he started by plotting his own home address. He watched the globe rotate and the perspective zoom in to a bird’s eye view of his street. Next he inserted the address for his daughter’s home and watched as he virtually “flew” from California to Washington, zooming in on her rooftop. It didn’t take long before ideas for classroom use of the tool began to percolate. He imagined what students could learn from traveling alongside literary characters, gathering new information and making connections all along the way.

As an experiment, Burg decided to plot the travels of *Candide* himself. He was amazed to discover that the 3D global tour offered him fresh insights into the story—even after teaching it for 30 years. He saw all kinds of possibilities for adding information that students would discover while plotting out a story on a Google Earth file.

For Burg, it wasn’t the slick new technology that caught his attention, but rather how it would allow him to extend the reach of his proven teaching strategies. In other words, to do what he was already doing—only better. As he explains, “I’m interested in visual literacy and bringing in all the senses. I like to three-dimensionalize the story, putting kids in the middle and not just at the periphery of the story.” That’s exactly what Google Earth would help him accomplish.

Before long, he was creating lit trips about *The Grapes of Wrath*, incorporating video footage of an actual dust storm, and Elie Wiesel’s *Night*, about a teenager’s survival of

the Holocaust. With a more traditional approach, Burg might have used a handout to suggest that students research certain locations or events to help them understand the context of a piece of literature. But with Google Earth, students could actively zoom into the landscape and get closer to the characters’ experiences. The 3D images make for powerful visual learning, and often open new conversations. When students watched a video clip about a Depression-era storm as part of their *Grapes of Wrath* lit trip, for instance, they expressed amazement at the size of an approaching dust cloud. Without that imagery—and the dialogue that it generated—they may not have gained the same visceral understanding of the dust bowl crisis.

Listening to students’ conversations about what they were reading, seeing, and thinking while on their literary road trips reinforced Burg’s belief in the value of the approach. “I knew it was good, but reactions from students confirmed my suspicions that there was a real hook here.”

Burg created the Google Lit Trips Web site to capture what he was doing and share his new idea with other educators. The attractive site—complete with an appealing user interface built with iWeb, and

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author portraits and passport stamps as graphic elements—includes downloadable KMZ files (Google’s file format) that supplement specific works of literature. When students are reading a selected text, they use the files to go online and track

literary characters, “flying” via Google Earth from one location to the next. When students reach placemarks for key destinations in a featured story, they can click on the supplementary

information embedded in the file. Video clips, links to online references, music recordings, photographs, and other resources make for a multidimensional learning experience. “Students are marinating in the environment of the story,” Burg explained in a podcast interview about the project with Steve Hargadon on *The Infinite Thinking Machine*.

What’s more, the features of Google Earth enable students to create their own meaning. For example, a teacher might introduce the Lit Trip approach with a KMZ file he has created. After students get familiar with the tool, he might then have them create their own KMZ file, using the placemark features of Google Earth to customize their learning experience. One student might choose to use numbered placemarks to show locations in the order they appear in the plot. Another might use color-coded markers to sort locations for a particular reason.

The visual information they add to a map opens new opportunities to talk about why certain locations are important to them and their understanding of the story.

### Repurposing a Classroom Irritant

On the other side of the globe at Eaglehawk Secondary College (serving students in years 7–10), Australian history teacher David Fagg has created another mashup of technology and learning function. He has repurposed those ubiquitous MP3 mobile devices typically used for listening to music to help students actively explore history by doing their own fieldwork and creating their own

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analysis of the past. The iHistory Podcast Project describes the work and captures students’ reflections about their learning experience.

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When Fagg launched the project, he knew that students were more experienced than he as users of mobile technologies. "Currently, I own no TV, no mobile phone, and no MP3 player, so how did I come to be doing this project?" he blogs. He was inspired by a situation many other teachers will recognize: "I wanted to subvert the use of MP3 players in my classroom. Instead of the endless rigmarole of confiscation, I wanted to integrate them into learning."

Key to his success was Fagg's determination to stay focused on essential learning activities, with technology playing a supporting role. He wanted students to actively investigate history, doing fieldwork to ask and answer questions about a local historical site in the community of Bendigo. Doing the primary research of a historian was a new role for most students, and many needed instruction, encouragement, and practice to be successful. But using MP3 players and digital cameras was familiar territory, requiring little instructional time. By combining historical fieldwork with podcasting, he was building new skills onto a platform students already understood.

The iHistory Project offered students an engaging opportunity to gather, analyze, and present information they discovered about historical sites and events in Australian history. Fagg designed the project as a collaborative effort, with students organized into teams of historians to create podcasts about topics such as the role of convicts in Australia's past. Students knew that their products would have an authentic audience. Their own peers in Australia would be learning about history from listening to their podcasts.

What's more, social studies students from a Missouri middle school would be listening and commenting as part of their global learning experience.

Student reflections about the project turned up some unanticipated benefits. For example, many students said they liked being able to replay podcasts to match their learning needs and speeds, without having to ask the teacher to go back over information they didn't understand the first time. Podcasts seemed to appeal to aural learners in a way that surpassed traditional lectures or reading. They liked creating their own multimedia content and stayed highly motivated throughout the project. Getting responses from international listeners provided authentic feedback. Repeatedly, students remarked, "This is a better way of learning."

### The Read-Write-Share Web

Thanks to the viral nature of the Web, new ideas for classroom-ready technology projects are spreading rapidly. That means teachers have more opportunities to come together online to offer improvements, share strategies and enhancements, and work more collaboratively to develop improved versions of promising projects. Today's innovative teachers have the

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chance to work more like open source software developers and less like isolated curriculum writers.

Burg, a member of the first Google Educator Academy, decided to launch the Google Lit Trips Web site to share his new project idea with colleagues. He started by collaborating with Matthew Hart, a fellow teacher at Granada High. Each developed a few lit trips, took their Web site live, and hoped other educators might find the site and submit their own trips or suggestions for enhancements.

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Then, technology maven Will Richardson highlighted Google Lit Trips in a presentation and on his blog, and visits to Burg's Web site skyrocketed—from a few hundred to more than 3,000 in a week, and then more than 13,000 in a month. An international community of practice began to take shape, starting with a P.G. Wodehouse lit trip contributed by Hetty Litjens of The Netherlands. The site has continued to grow, with new titles for elementary and middle school readers, and even higher education literature students.

To respond to this wave of interest, Burg added "Lit Trip Tips" to the Web site to foster effective practice, and began gathering more promising approaches and spinoffs. Over time, this community is likely to build criteria and processes for developing excellent Lit Trips that exemplify best practices in teaching literature.

Similarly, the iHistory Podcast Project has generated wide attention. Fagg has expanded his project blog with reflections from teachers and students, and has written a case study about his experience.

Both Burg and Fagg are good examples of teachers willing to take a classroom experiment public, inviting feedback from colleagues to help improve on project design. By archiving their projects and all the related artifacts, they have contributed useful resources to the professional community.

### Focus on What's Essential

With all this experimentation underway, how should you decide which technology enhancements make sense for you and your students? Or if you're the pioneering type, what's the best way to design a technology-rich project of your own?

Unlike the quickly evolving tools themselves, essential learning functions are **stable**.

Start with the essential learning functions technology can deliver for a learning project.

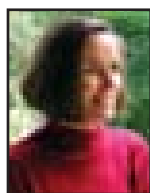
Unlike the quickly evolving tools themselves, essential learning functions are stable. In project-based learning, having the functional ability to make things visible and discussable or to foster collaboration will always be important, even as the tools change. Once you identify a function you need (such as Burg's need to make the literary landscape something students could "see" to appreciate), you can find an assortment of tools to choose from—with more arriving tomorrow—to meet that function.

### Resources

Google Lit Trips: <http://www.googlelittrips.com>  
The iHistory Podcast Project: <http://ihistory.wordpress.com>

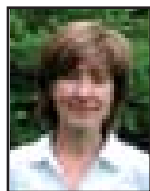
The Infinite Thinking Machine podcast interview with Burg: <http://www.infinithinking.org/2007/03/great-mashup-mapping-literary-journeys.html>

Reinventing PBL, Suzie Boss' and Jane Krauss' blog: <http://reinventingpbl.blogspot.com>  
Weblogg-ed, Will Richardson's ed tech blog: <http://weblogg-ed.com>



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