# Using Web 2.0 Applications as Educational Tools for 21st Century Teaching and Learning



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### University of Houston

Houston, Texas USA

The movie that we shared at this point in our presentation is a clip from a video called, "Iowa, Did You Know?" and available here: <a href="http://youtu.be/E1JyLYphevc">http://youtu.be/E1JyLYphevc</a>

The "Iowa, Did You Know" content was developed by Dr. McLeod, with all storyboarding, design, and animation by XPLANE | Dachis Group.

- XPLANE | Dachis Group: http://www.xplane.com
- · Dr. Scott McLeod: http://www.dangerouslyirrelevant.org
- IowaFuture: <a href="http://www.iowafuture.org">http://www.iowafuture.org</a>
- School Administrators of Iowa: http://www.sai-iowa.org
- Downloadable discussion guide: <a href="http://bit.ly/ogPE9U">http://bit.ly/ogPE9U</a>

# Your cell phone...

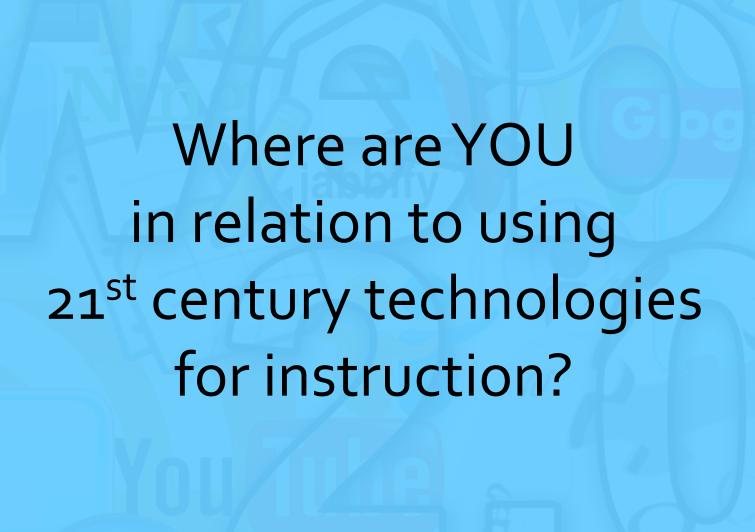


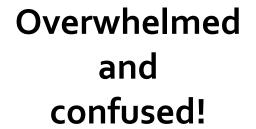
# What's your reaction?

At this point in our presentation, we asked participants to use Poll Everywhere, a free, Web 2.0 tool, to let us know what they thought about the video, "Did You Know?".

Participants used their cell phones to text their words, and the results were displayed dynamically on this PowerPoint slide.

http://www.polleverywhere.com





Catching on, but still puzzled!

Digital Immigrant, but making progress! Digital Native, I can't remember not using it!

# Where are you?

At this point in our presentation, we asked participants to use Poll Everywhere, a free, Web 2.0 tool, to let us know in which of the previous categories they were a part.

Participants used their cell phones to text a number that corresponded to a particular category, and the results were displayed dynamically on this PowerPoint slide.

http://www.polleverywhere.com

# Think about the last professional development session you attended



**Use Facebook** 

Use a blog





**Use Twitter** 

**Use Diigo** 





**Use Wordpress** 

Use a reader





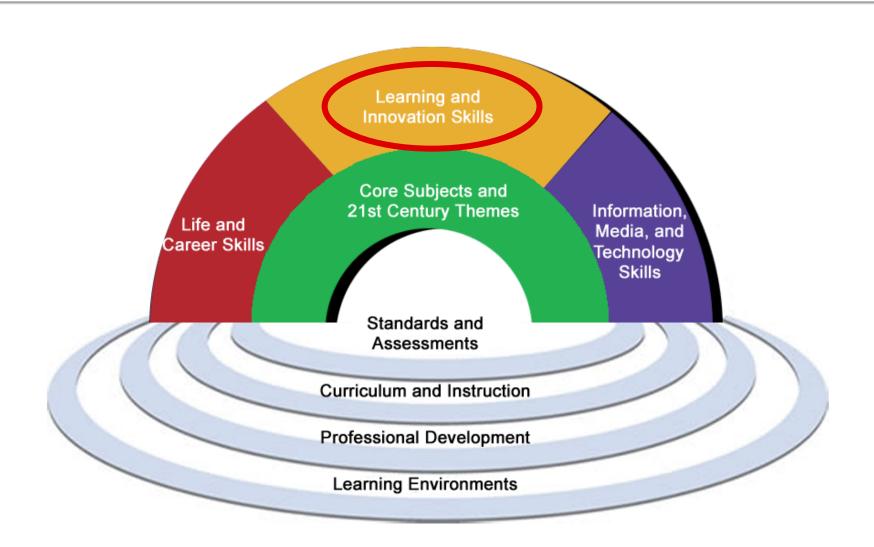








# Partnership for 21st Century Skills



# Partnership for 21st Century Skills

### Learning and Innovation Skills

- Critical Thinking and Problem Solving
- Communication
- Collaboration
- Creativity and Innovation

# 21st Century Skills

### **Critical Thinking and Problem Solving**

### Reason Effectively

Use various types of reasoning (inductive, deductive, etc.) as appropriate to the situation

### Use Systems Thinking

 Analyze how parts of a whole interact with each other to produce overall outcomes in complex systems

### Make Judgments and Decisions

- Effectively analyze and evaluate evidence, arguments, claims and beliefs
- Analyze and evaluate major alternative points of view
- Synthesize and make connections between information and arguments
- Interpret information and draw conclusions based on the best analysis
- Reflect critically on learning experiences and processes

#### Solve Problems

- Solve different kinds of non-familiar problems in both conventional and innovative ways
- Identify and ask significant questions that clarify various points of view and lead to better solutions

# 21<sup>st</sup> Century Skills

LEARNING & INNOVATION SKILLS

### Critical Thinking and Problem Solving



Literacy

OUTCOME: Use technology to graphically display data about a community or state public issue and ask questions about and pose possible solutions to the issue.

- Making complex choices and decisions
- Understanding t interconnections systems

· Exercising sound

understanding

reasoning in

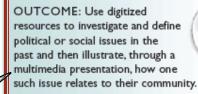
- · Identifying and significant questi clarify various be view and lead to solutions
- · Framing, analyzii synthesizing info in order to solve and answer que:

What is the "best" tool that a student could use to create this multimedia presentation?

preadsheet o

nd then by .They discuss lata as they seek Which districts nding and scores? in the schools npared with the

#### 8th Grade



EXAMPLE: Students use online databases, such as www.census.gov to determine patterns of immigration and compare these patterns with changes in the demographics of their community and school district.

OUTCOME: Working in online research groups, students research a contemporary or historic issue, post civic Literacy significant questions about alternative courses of action, and/or analyze

the information they have gathered to generate options for responding to the issue.

#### 12th Grade

OUTCOME: Using sound reasoning and relevant examples, students Financial Literacy analyze the historical evolution of a contemporary public policy issue, place it within an historical context, and use a digital publishing tool to report their work.

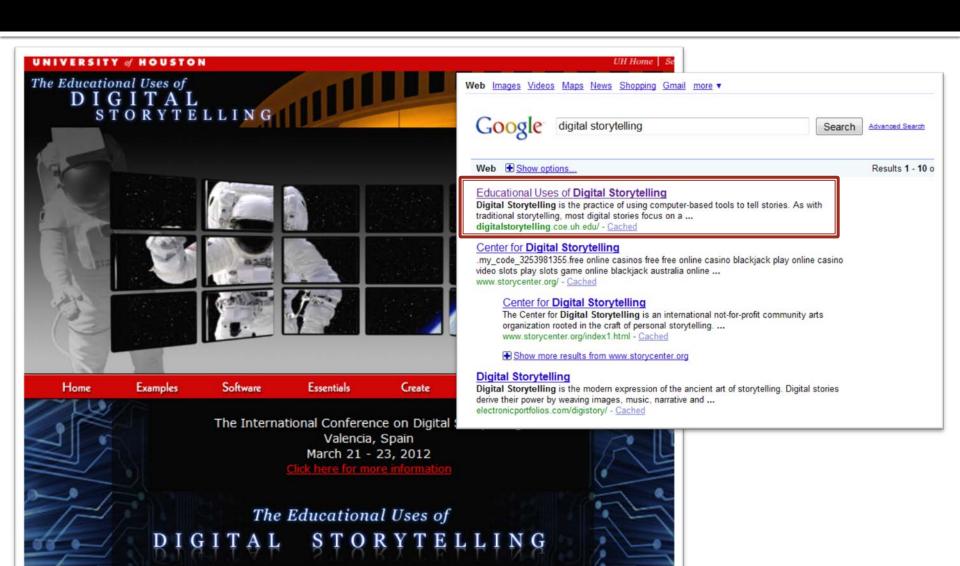
EXAMPLE: In groups, students explore how selected societies of the past used their natural resources for fuel (e.g., England's use of its forests at the beginning of the Industrial Revolution) and the economic impact of that use. Students use videoconferencing (e.g., www. skype.com) to collect information from relevant government officials about the use of corn for biofuel instead of food and analyze the environmental and economic implications of this use. Students use district-approved wikis to publish the results of their research.







# Digital Storytelling



# 21st Century Skills

### **Communication & Collaboration**

### Communicate Clearly

- Articulate thoughts and ideas effectively using oral, written and nonverbal communication skills in a variety of forms and contexts
- Listen effectively to decipher meaning, including knowledge, values, attitudes and intentions
- Use communication for a range of purposes (e.g. to inform, instruct, motivate and persuade)
- Utilize multiple media and technologies, and know how to judge their effectiveness a priori as well as assess their impact
- Communicate effectively in diverse environments (including multi-lingual)

#### Collaborate with Others

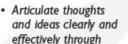
- Demonstrate ability to work effectively and respectfully with diverse teams
- Exercise flexibility and willingness to be helpful in making necessary compromises to accomplish a common goal
- Assume shared responsibility for collaborative work, and value the individual contributions made by each team member

# 21<sup>st</sup> Century Skills

LEARNING & INNOVATION SKILLS

### Communication





speaking and writing

4th Grade

OUTCOME: Research, organize and present historical information in clear, complete and effective formats.

EXAMPLE: Working in small groups, students will choose an area from their state's history. organize a storyboard on the person/place/ event, and use digital tools to create a presentation that teaches their topic to the remainder of the class.



OUTCOME: Research, organize and present information in clear, complete and effective formats.

EXAMPLE: Research information on the local implications of a global issue of concern (e.g., child poverty, hunger, homelessness). Students organize their information and a possible solution and write a persuasive letter that is to be proof-read, peer edited, and finally sent via e-mail to a local public official.

OUTCOME: Interpret, organize and present information from American history in clear, complete and effective formats to other students/ adults.

EXAMPLE: Research information on an issue relevant to an historical period (e.g., a determining factor in the outcome of the American Revolution or the inevitability of the Civil War) and organize it into a persuasive essay that is to be proof-read, peer edited, and finally written and summarized in a class blog and/or audio podcast.

#### 12th Grade

Global Awareness

OUTCOME: Analyze, synthesize, organize and present information from the social sciences in clear, complete and effective formats.

EXAMPLE: Research and use concept-mapping software to create a graphic display (i.e., Venn diagram) that compares and contrasts various major world religions in terms of foundations, beliefs, and relationship to historical and current issues.

OUTCOME: Access and evaluate information from various sources dealing with elected officials' effectiveness while in office.

EXAMPLE: Over an extended period of time, students efficiently access the voting records of different state and local officials on issues that impact their community (i.e., education and taxes) and create a digital report card of the selected official(s) using creative presentation methods such as a podcast, slideshow, Web site or district-approved blog.

### 21<sup>st</sup> Century Skills

**LEARNING & INNOVATION SKILLS** 

### Collaboration

Demonstrating ability

diverse teams

goal

Exercising flexibility

and willingness to

Assuming shared

responsibility for

collaborative work

be helþful in making

necessary compromises

to accomplish a common

to work effectively with



#### 4th Grade

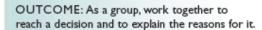
OUTCOME: As a group, work together to reach a decision and to explain the reasons for it.

EXAMPLE: Working in small groups, encourage and engage other classmates to assist with a group service-learning project. Using digital media, students demonstrate the need to raise the awareness of their classmates on an issue within their community, (e.g., students create a digital poster that persuades classmates to participate in a school fundraising project).

OUTCOME: Work as a team to assess individual and/or group work.

EXAMPLE: Using a teacher-constructed online rubric, students work in teams to review their personal performance and contributions to their team, as well as overall group performance.

#### 8th Grade



EXAMPLE: Using an open source asynchronous discussion forum such as Moodle, students discuss how to respond to a proposed state law requiring bicycle helmets and develop consensus about what the team will do. Using a word processing program, students work in pairs to author a persuasive letter either for or against the proposed law, providing sound reasons to support their position. Send the letter to the appropriate legislative official.

OUTCOME: Recognize and communicate diverse perspectives on an historical issue and demonstrate how diverse perspectives might lead to different interpretations of an issue. (Articulating thoughts and ideas clearly and effectively through speaking and writing.)

EXAMPLE: After watching videos of an historical event, students read online first-hand accounts (e.g., WWII, Korean War, Vietnam War). Students then use a collaboration listserv such as Videoconferencing for Learning to find students in other parts of the country with whom they can discuss and compare interpretations of the events. Students then summarize and reflect on their experiences in small group discussions.

#### 12th Grade

OUTCOME: Working in small groups, students will research a current issue and analyze it in terms of historical, political and economic components, various viewpoints, and potential solutions, and create a digital presentation that clearly describes all sides of the issue.

EXAMPLE: Working in small groups, students will survey favorite forms of recreation among local teens and research the local history of recreational youth facilities for teens and the potential sources of political and economic support. The information will be graphed and analyzed, and each group will create a business plan for developing a local recreation center/club for teens. The survey results, need and plan will be presented to a community group or civic association using technology tools.

OUTCOME: Working online with groups of students from other districts and/or states, students develop plans to enhance high school students' ability to use emerging technologies.

EXAMPLE: Using online surveys, virtual conferences or videoconferences, students gather information from peers who participate in virtual schooling. Students then present the results and make recommendations about how virtual schooling might be used in their own setting.

# 21st Century Skills

### **Creativity and Innovation**

### Think Creatively

- Use a wide range of idea creation techniques (such as brainstorming)
- Create new and worthwhile ideas (both incremental and radical concepts)
- Elaborate, refine, analyze and evaluate their own ideas in order to improve and maximize creative efforts

### Work Creatively with Others

- Develop, implement and communicate new ideas to others effectively
- Be open and responsive to new and diverse perspectives; incorporate group input and feedback into the work
- Demonstrate originality and inventiveness in work and understand the real world limits to adopting new ideas
- View failure as an opportunity to learn; understand that creativity and innovation is a long-term, cyclical process of small successes and frequent mistakes

### Implement Innovations

 Act on creative ideas to make a tangible and useful contribution to the field in which the innovation will occur

# 21<sup>st</sup> Century Skills

LEARNING & INNOVATION SKILLS

### Creativity and Innovation



#### 4th Grade



and communicating new

responsive to new and

diverse perspectives

· Acting on creative ideas

useful contribution to

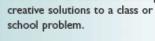
innovation occurs

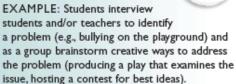
to make a tangible and

the domain in which the

ideas to others

· Being open and







#### 8th Grade

original thought and inventiveness in response to an assignment, issue or problem.

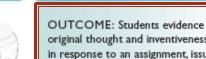
EXAMPLE: Students choose an historical figure (e.g., Abraham Lincoln, Sojourner Truth) and create an original story, play, poem or piece of art that captures/conveys a key aspect of that person's life history.

#### 12th Grade

OUTCOME: Students invent an original piece of work that can be published or presented online.

Literacy

EXAMPLE: Working in teams, students create a simulation, role play, or webquest that covers a current social or political issue being covered in the news (e.g., global warming, poverty, global economy) or an historic event (American Revolution, Civil War, WWII). The finished products can be packaged, presented and/or donated to a local school, with an accompanying group analysis and reflection on the most innovative and creative elements in each of the products.





### 21st Century Skills Map

#### CREATED IN COOPERATION WITH THE NATIONAL COUNCIL FOR THE SOCIAL STUDIES

This 21st Century Skills Map is the result of hundreds of hours of research, development and feedback from educators and business leaders across the nation. The Partnership has issued this map for the core subject of Social Studies. This tool is available at www.2 I stcenturyskills.org.

The Partnership advocates for the integration of 21st Century Skills into K-12 education so that students can advance their learning in core academic subjects.

The Partnership has forged alliances with key national organizations that represent the core academic subjects, including Social Studies, English, Math, Science and Geography. As a result of these collaborations, the Partnership has developed this map to illustrate the intersection between 21st Century Skills and Social Studies. The maps will enable educators, administrators and policymakers to gain concrete examples of how 21st Century Skills can be integrated into core subjects.



# 21st Century Skills Maps

These 21st Century Skills Maps are each the result of hundreds of hours of research, development and feedback from educators and business leaders across the nation.

- 21st Century Skills World Languages Map
   Designed in cooperation with the American Council on the Teaching of Foreign Languages (ACTFL)
- 21st Century Skills Arts Map
   Designed in cooperation with the nation's arts educators
- 21st Century Skills Geography Map
   Designed in cooperation with the National Council for Geographic Education (NCGE).
- <u>21st Century Skills Science Map</u> Designed in cooperation with the National Science Teachers Association (NSTA).
- 21st Century Skills Social Studies Map
   Created in cooperation with the National Council for the Social Studies (NCSS).
- 21st Century Skills English Map
   Designed in cooperation with the National Teachers of English (NCTE).

# Instead of thinking about the tools...

Think about what you want to do...

Communicate?

Think critically?

Reflect?

Design something?

Collaborate?

Solve a problem?

Present?

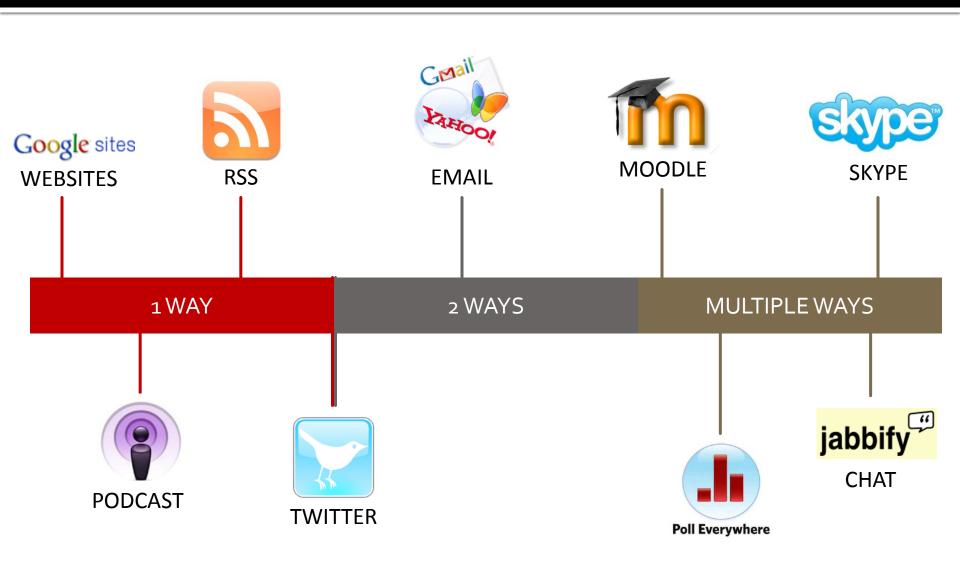
# Our Model for 21<sup>st</sup> Century Learning and Innovation Tools

- Critical Thinking and Problem Solving
- Communication
- Collaboration
- Creativity and Innovation
- Presentation
- Reflection and Feedback

### **Communication Tools**



### **Communication Tools**





# How Poll Everywhere Works

#### 1. Ask a question

Create polls with our simple poll editor

#### 2. The audience votes

via mobile phone or on the web

#### 3. Show results

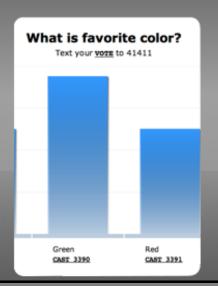
Charts update live in PowerPoint or your browser as people vote

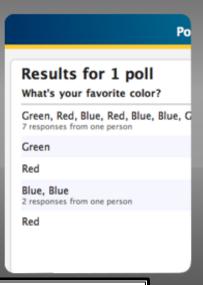
#### 4. Generate reports

Analyze the results or publish to the web







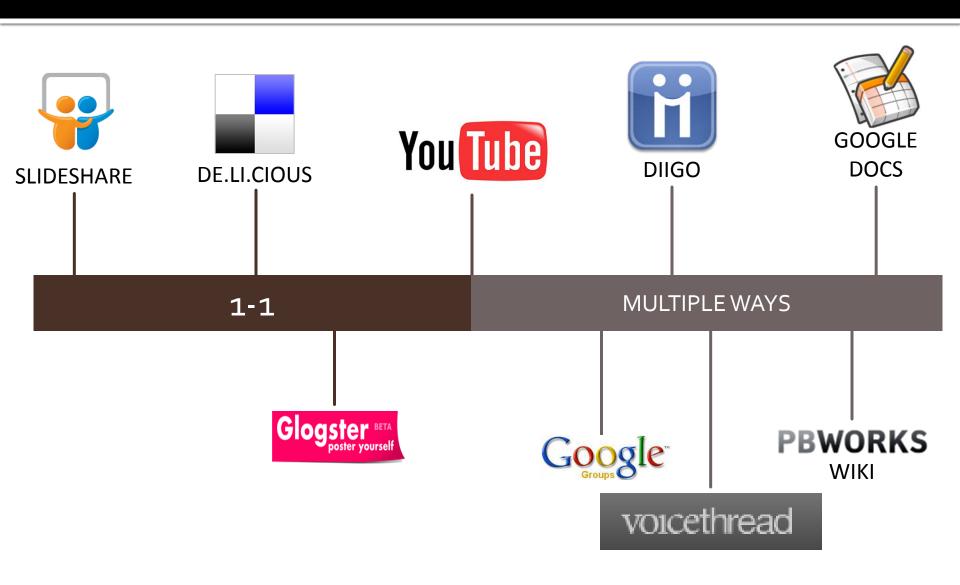


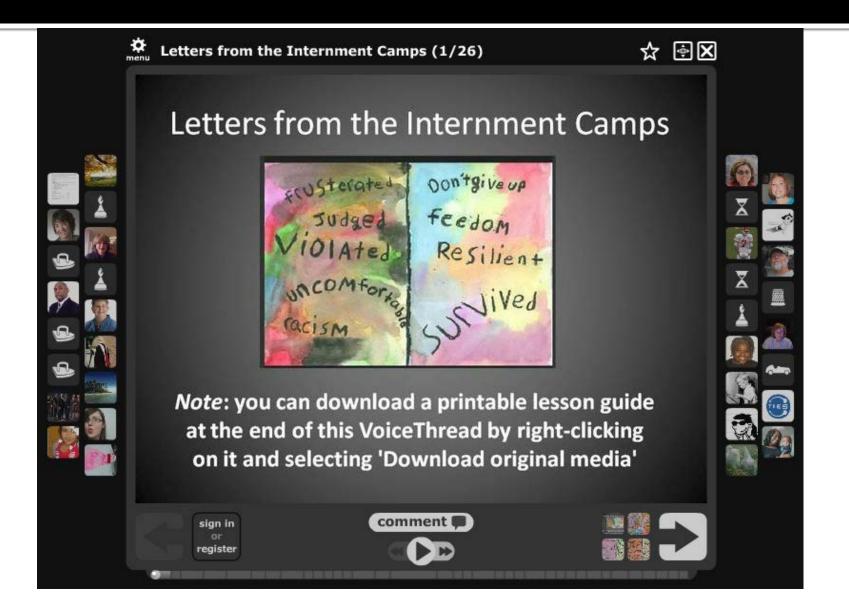
http://www.polleverywhere.com

### **Collaboration Tools**



### **Collaboration Tools**





### Collab



#### Letters from the Internment Camps

### Developed by Gail Desler (Technology Services) and Halerin Ferrier (Prairie Elementary School)

#### Elk Grove Unified School District

#### ISTE NETS Standards Addressed:

- Creativity and Innovation: Students demonstrate creative thinking, construct knowledge, and develop innovative products using technology.
- Communication and Collaboration: Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others.
- Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.
- Digital Citizenship: Students understand human, cultural, societal issues related to technology and practice legal and ethical behavior.

**Guiding Question:** How can writing, art, and technology combine to help develop a culture of 'change writers' and to promote resiliency and tolerance within and beyond an elementary school site?

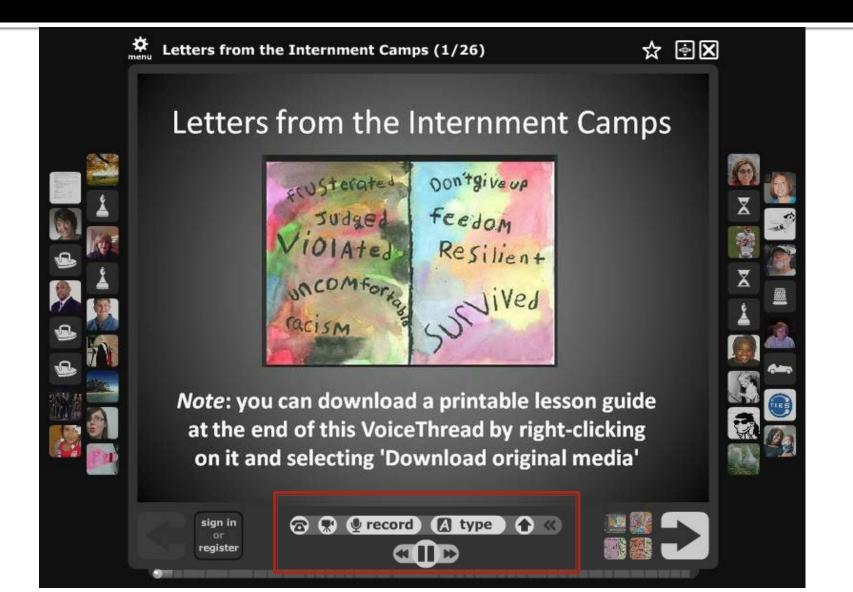
**Background Information:** Almost every state in the nation mandates teaching about issues of intolerance. Yet textbooks and other in-print materials are rarely effective in transforming the hearts and actions of student learners. Fortunately, interactive technologies such as VoiceThread offer potentially transforming opportunities for engaging students in shared conversations about discrimination, exclusion, and the forced removal of any group of people and for connecting students with the living voices of those who have experienced or witnessed intolerance and social injustice first hand. A major focus of the *Letters from the Internment Camps* lesson is to provide students with real-life models of how ordinary people find the strength to overcome and to learn from injustices.

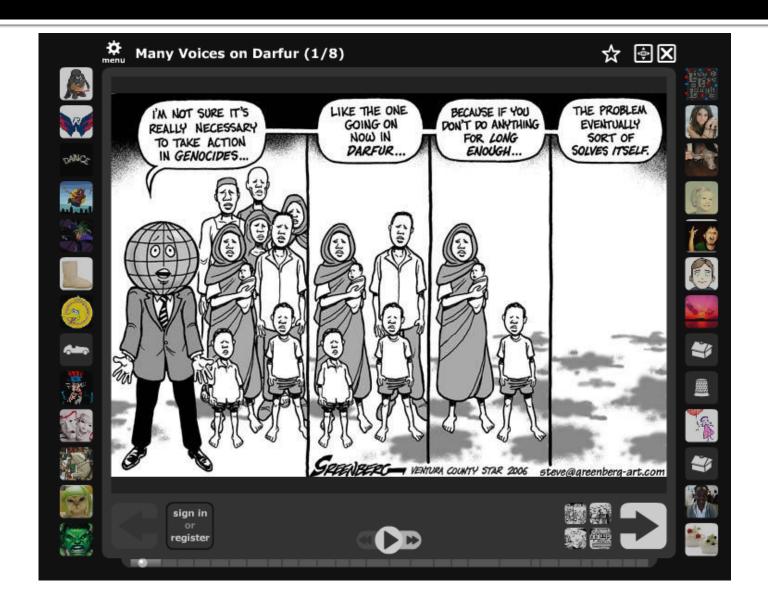
Every community has a history. For this lesson, we are delving into a chapter from the local history of Elk Grove, California, a small town that prior to the bombing of Pearl Harbor was a thriving agricultural community, in large part due to the efforts of its Japanese-American farmers. They were the strawberry growers of California. With the passage of Executive Order 9066, all citizens of Japanese ancestry were ordered to evacuate the West Coast, over night and forever changing the history of Elk Grove.

We invite teachers across the nation to replicate this project by exploring with their students the hidden histories of their own communities and to uncover those stories that might otherwise remain unknown or not immediately important to younger generations.

**Grade Level:** Grade 4\* - Note: Lesson can easily be adapted to grades 4 -12 standards and curriculum.







VoiceThread for Education website: <a href="http://ed.voicethread.com/">http://ed.voicethread.com/</a>

Letters from the Internment camps <a href="http://ed.voicethread.com/?#q+internment.b334997.i2942065">http://ed.voicethread.com/?#q+internment.b334997.i2942065</a>

Many Voices on Darfur VoiceThread Project: <a href="http://ed.voicethread.com/?#q.b62276.i322457">http://ed.voicethread.com/?#q.b62276.i322457</a>

# **Creativity and Innovation Tools**



# Creativity and Innovation Tools



# Creativity and Innovation Tool: Many Eyes

#### Many Eyes An experiment brought to you by IBM Research and the IBM Cognos software group Data sets: President Obama State of the Union 2012 Explore Uploaded by: DataJourno Created at: Jan 24 2012 Visualizations Data sets Data source: White House Comments Description: President Obama delivers his third State of the Union address Topic centers Tags: Obama state of the union 2012 speech SOTU **Participate** Create a visualization View as text Upload a data set Create a topic center Register Learn more citizens fought - and several thousand gave their lives. Quick start Visualization types Data format and style

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#### Popular tags:

census

Data sets budaet

Mr. Speaker, Mr. Vice President, members of Congress, distinguished quests, and fellow Americans Last month, I went to Andrews Air Force Base and welcomed home some of our last troops to serve in Iraq. Together, we offered a final, proud salute to the colors under which more than a million of our fellow

We gather tonight knowing that this generation of heroes has made the United States safer and more respected around the world. For the first time in nine years, there are no Americans fighting in Irag. For the first time in two decades. Osama bin Laden is not a threat to this country. Most of al Qaeda's top lieutenants have been defeated. The Taliban's momentum has been broken, and some troops in Afghanistan have begun to come home.

These achievements are a testament to the courage, selflessness, and teamwork of America's Armed Forces. At a time when too many of our institutions have let us down, they exceed all expectations. They're not consumed with personal ambition. They don't obsess over their differences. They focus on the mission at hand. They work together.

Imagine what we could accomplish if we followed their example. Think about the America within our reach: A country that leads the world in educating its people. An America that attracts a new generation of high-tech manufacturing and high-paying jobs. A future where we're in control of our own energy, and our security and prosperity aren't so tied to unstable parts of the world. An economy built to last, where hard work pays off, and responsibility is rewarded.

We can do this. I know we can, because we've done it before. At the end of World War II, when another generation of heroes returned home from combat, they built the strongest economy and middle class the world has ever known. My grandfather, a veteran of Patton's Army, got the chance to go to college on the GI Bill. My grandmother, who worked on a bomber assembly line, was part of a workforce that turned out the best products on Earth.

The two of them shared the optimism of a Nation that had triumphed over a depression and fascism. They understood they were part of something larger; that they were contributing to a story of success that every American had a chance to share - the basic American promise that if you worked hard, you









### Analyze a text



### Word Tree

See a branching view of how a word or phrase is used in a text. Navigate the text by zooming and clicking.

Learn more



### Tag Cloud

How are you using your words? This enhanced tag cloud will show you the words popularity in the given set of text.

Learn more



### Phrase Net

Display networks of related words and ideas.

Learn more



### Word Cloud Generator

Word Cloud Generator is a toy for generating "word clouds" from text that you provide. The clouds give greater prominence to words that appear more frequently in the source text.

Learn more

### President Obama's State of the Union Speech

### **Customizing Word Tree**

Data set: President Obama State of the Union 2012 (Version 1)

Your visualization will look like this: Search American Back Clicks Will Zoom V Forward Occurrence Order V had a chance to share - the basic american promise that if you worked hard , you could do well enough to raise a family , 34 promise that if you worked hard, you could do well enough to raise a family, own a home, send your kids to college hits this blueprint begins with american manufacturing of fair play and shared responsibility will help us protect our people and our economy manufacturers are hiring again, creating jobs for the first time since the late 1990s american energy, skills for american workers, and a renewal of american values manufacturing when it comes to accessing finance or new markets like russia skills for american workers, and a renewal of american values - - a strategy that's cleaner , cheaper , and full of new jobs , and a renewal of american values workers ingenuity auto industry is back american company should be able to avoid paying its fair share of taxes by moving jobs and profits overseas manufacturer, you should get a bigger tax out. sell products all over the world businesses to secure a pledge of 135, 000 jobs for veterans and their families goods in panama, colombia, and south korea. looking for work to have the same opportunity as jackie did - through and through, yet they live every day with the threat of deportation - jobs and new american industries industries ail production is the highest that it's been in eight years. consumers finally have a watchdog in richard cordray with one job : to look out for them. know what the right choice is people -families, your taxes shouldn't go up. blood on his bands. leadership can be felt across the globe

### President Obama's State of the Union Speech

Your visualization will look like this:

1 word 2 word compare	
Search:	Showing 200 Out of 860
\$2 trillion 160,000 jobs 2 percent 2005 american 22 months air force al qaeda america built american auto american businesses american company american american ingenuity american manufacturers american manufacturing american people american promise american values american workers america americans holding americans struggled andrews air armed forces assembly line auto industry automaker chrysler avoid paying back home bad behavior bad debt basic american babin laden bipartisan support blueprint begins bomber assembly bring back bring jobs bring manufacturing business leaders business sense car company cards collap clean energy common sense community colleges company ford comprehensive plan congress distinguished construction workers courage create jobs creating jobs credit card decades osama defining issue demanded responsibility democratic values distinguished guests economic crisis economy built economic entire industry fair share fair shot federal agency fellow americans fellow citizens fifteen years fight obstruction final proud financial profits financial system force base for full capacity full effect gather tonight general motors gibill god bless growing number growing paychecks grown faster hard work hard-working americans hardworking americans heal high-paying jobs high-tech manufacturing higher education highest tax hold wall home send home today huge bets huge opportunity incomes rise industry added innocen interest rates investing billions jobs back jobs home jobs obsolete late 1990s left innocent locktold lower tax made businesses made huge major car make sense makes bus manufacturing american manufacturing began master lock middle class million homes million jobs minimum tax money regulators months busines moving expenses moving jobs may peaker mr vice multinational company natural gas new american new energy new generation new jobs new markets osama bin outsource jobs outsourcing bad personal ambition personal debt phony financial place new president members profits overseas profits tonight pro	icans barely americans fighting basic minimum began leaving appeal citizens fought ge selflessness cover moving my weakened energy skills fought – free market alth care heroes returned ent hard-working usiness esses move forward s new rules obsolete folks put millions recession jobs reet accountable turn back unionized plant
young people	

President Obama's State of the Union Speech



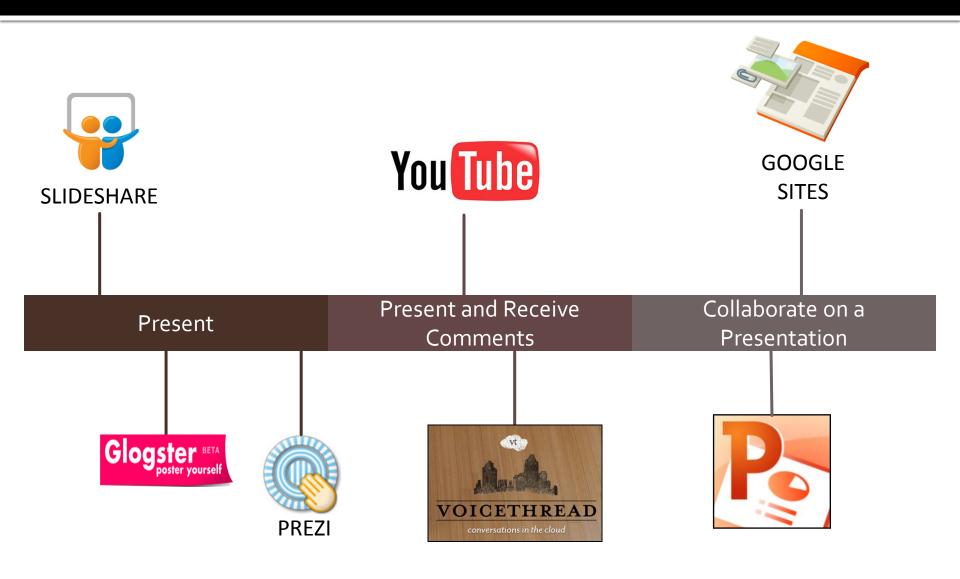
### Many Eyes website:

http://www-958.ibm.com/software/data/cognos/manyeyes/

### **Presentation Tools**



### **Presentation Tools**



### Presentation Tool: Glogster



### GlogsterEDU Basics

What do you get when you cross a digital poster with a blog? You get a Glog! GlogsterEDU is a free web-based application for students and teachers to create multimedia posters to present projects and other course work.

What is Glogster?



### Presentation Tool: Glogster



### **Presentation Tool: Glogster**

Glogster for Education website:

http://edu.glogster.com/

## Critical Thinking and Problem Solving Tools



### Critical Thinking and Problem Solving Tools: Creaza Education



An engaging suite of creative tools where learners can create, publish and share digital stories



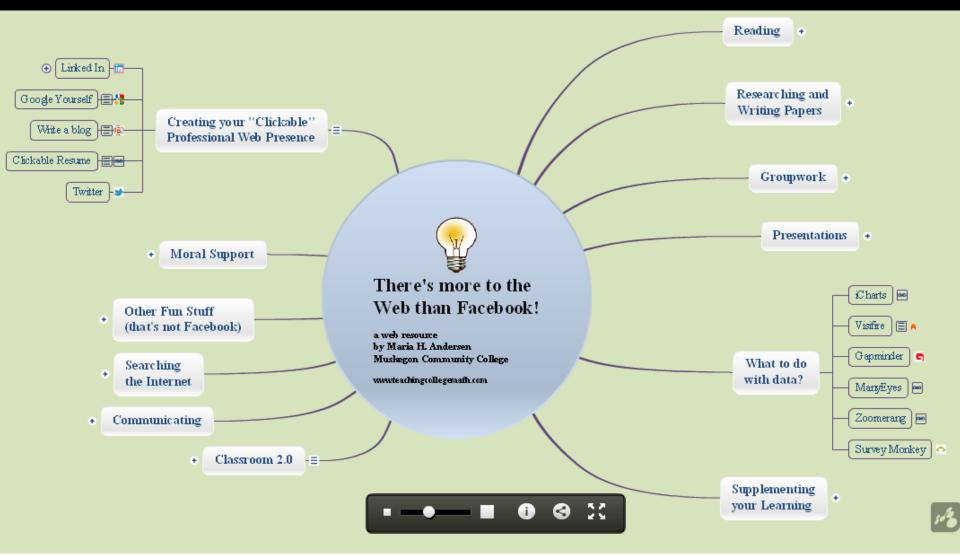




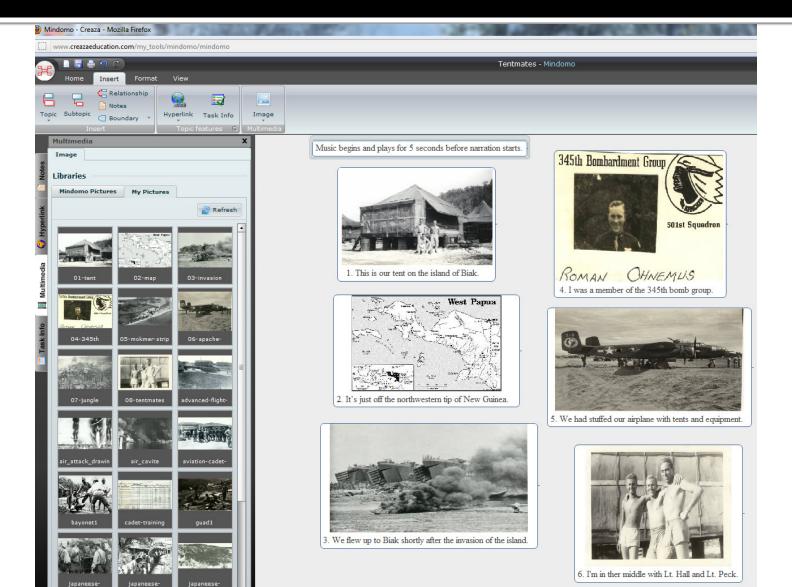


FINALIST

## Critical Thinking and Problem Solving Tools: Creaza and Mindomo



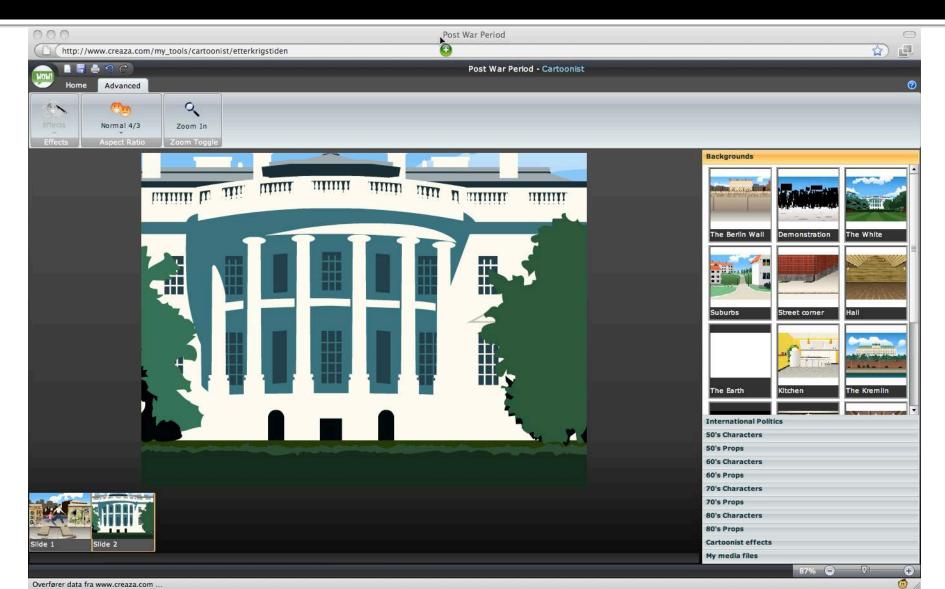
## Critical Thinking and Problem Solving Tools: Creaza and Mindomo



### Critical Thinking and Problem Solving Tools: Creaza Movie Editor



## Critical Thinking and Problem Solving Tools: Creaza Cartoonist



## Critical Thinking and Problem Solving Tools: Creaza

Creaza for Education website: http://www.creazaeducation.com/



### **ABOUT THE WEBSITE**

21st century skills are an important consideration for every educator as we are striving to prepare today's students to become prepared for the competitive global market of tomorrow. This website seeks to provide a resource that allows educators an opportunity to easily navigate educationally relevant Web 2.0 tools, resources, and examples of standards alignment. Connecting these skills to familiar frameworks, such as Bloom's Digital Taxonomy, can assist educators who are transitioning into meaningfully integrating technology into their classrooms.

http://newtech.coe.uh.edu/

# Using Web 2.0 Applications as Educational Tools for 21st Century Teaching and Learning

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