The Use of Websites as an Aid in Differentiating Instruction

Gail K. Arakaki
University of Hawai‘i at Manoa
Honolulu, Hawaii
Diverse population of students with different needs:

- Struggling readers
- Highly motivated/unmotivated students
- Students with behavior, emotional problems
- Readers way above grade level
- Students with health, attendance issues
- ESL students
- Students with different interests and strengths
- Students with different cultural backgrounds

“How do I divide time, resources, and myself so that I am an effective catalyst for maximizing talent in all my students?”

- The Differentiated Classroom (Tomlinson, 2005, page 1)
Differentiated Instruction

Modify content, process, or product according to the student’s readiness, interest, learning profile

“Differentiated instruction is a set of strategies that will help teachers meet each child where they are when they enter class and move them forward as far as possible on their educational path.”

-Meeting the Needs of All Students Through Differentiated Instruction: Helping Every Child Reach and Exceed Standards (Levy, 2008, page 162)
Technology improves student performance when the application directly supports the curriculum objective being assessed.

Technology improves performance when the application is integrated into the typical instruction day.

- The Center for Applied Research in Education Technology (CARET)
Blogs and Websites

- Blogs have the ability to increase instructional time (Colombo & Colombo, 2007)

- Blogs can promote higher order thinking skills with structured activities and prepare elementary students for new literacies on the Internet (Zawiliski, 2009)

- Blogs and websites can include podcasts, vodcasts, text, links to other websites, and graphics
Purpose

To develop and evaluate the use of a class website to facilitate differentiation of instruction for nine second grade students at a rural elementary school in Hawaii.
Instructional Goal:

- Students able to access webpage and follow directions independently with minimal intervention?
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- Students able to complete learning artifact and submit face to face or electronically?
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- Students able to complete learning artifact and submit face to face or electronically?

- Use of website results in increased instruction time?
Instructions

(Don't forget, anytime you're on one of the pages and not sure what to do, click on Instructions and come back to this page.)

Voice Thread <---- Click to hear this page read to you

I need some help...

How do I change pages?

If you look on the left side of this page under Navigation, you will see a page called Home, a page called Instructions a page called Lesson 1, a page called Lesson 2, and a page called Vocabulary.

You are now on the Instructions page. When you go to another page, the title of the page you are on will turn purple, and the title of the page you left will turn dark pink.

If you look on the left side of this page under Student Pages, you will see all your Disney names. If you click on your name, you will go to a page that was created especially for you. Your page will tell you exactly what you need to do to finish this lesson.
Lesson: “Exploring Earth’s Surface”

HCPS III SC2.8.1: Earth Materials: Identify different Earth materials and classify them by their physical properties
3. Explore:  
   - Grand Canyon
   - Freezing Ice
   - Discovery Weathering
   - Discovery Erosion
   - Discovery Land & Water
   - Discovery Weathering and Erosion

4. Use pages 154 and 155 in your textbook to complete RJE in the “Exploring Earth’s Surface” booklet.

Section of “Below Level” assignment page with links to external websites and support (VoiceThreads).
Activity C: 1. Read your science book, pages 154, 155, 156, 157, and 158. Be sure you look at all the pictures and captions. Look at the questions that are on these pages and see if you can answer them.

2. Turn to the "Vocabulary" page of the website. Use "A-Z" in the "Exploring Earth's Surface" booklet and record the words in alphabetical order. Click on each vocabulary word on the website page and you will be taken to a Science glossary page. Use the bar on the left side to find the vocabulary word. Write down the meaning of each word. Click on the loudspeaker icon (small picture) above the vocabulary word to listen to the meaning. (Be sure to click on the red x at the top of the page after you are done with the website page.)

How Ice Cracks Rock

When it rains, water can seep into cracks in rock.

When the water freezes, it expands. The frozen water takes up more room than the liquid water.

This puts pressure on the rock around it.

Sometimes the rock breaks and the crack widens.

Example Due to Rivers

Example Type:

Earth Erosion

Information:

Image 1: Location: River's Edge

Season: Summer

Image 2: Location: Grand Canyon

Season: Spring

Note:

This shows a river's edge of a river. During the spring months, when the snow melts, the river flows faster and pulls soil away from the bank. As the soil is taken away, this is what is left. This process of erosion will continue as long as there is seasonal rainfall. It is a much slower process than flash erosion.

Erosion, River

- Complete List

More Earth Science Topics

- Erosion, Flood
- Erosion, Volcano
- Erosion, Desert
- Erosion, River
- Erosion, River

Check Out All of Our Free Science Topics

- Chemistry
- Earth Science
- Astronomy
- Biology
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Exploring Earth's Surface

Land and Water Features
- Glacier
- Volcano
- Plateau
- Canyon
- Mountain Range
- Basin
- Desert
- Inlet
- River
- Delta
- Strait
- Peninsula
- Archipelago
- Island
- Paper and pencil test
- Make a model volcano
2nd Grade Class:

- Rural elementary school in Hawaii
- 243 students in grades K-6
- 61% eligible for free lunch
- 12% qualify for reduced lunch
- Entire class of 16 students participated
- Parental permission from 9

Analysis based solely on 9 students:

- 5 boys, 4 girls
- 2 - 7 yr olds
- 7 - 8 yr olds
- 8 with computer/Internet access
Results

- Quantitative data - quiz results, review of booklets, survey type questions in wrap up discussion
- Qualitative data - teacher observations and class discussion
- Reviewed using constant comparative method
Teacher Intervention

- Navigation
- Guidance in workbook completion
- Validation
- Reminders to stay on task
Engagement

- Engaged most of the time - if not, usually on a writing activity
- Linked website and videos “awesome”, “radical”
- Noticeable change by fourth session - more content related questions, individual work
- Student listening to VoiceThread and working independently - not usual behavior
*Student unable to locate workbook
**Student missed one session
Discussion

Access and navigation:

- Problems navigating between VoiceThreads and web pages
- Not used to multiple page website, first experience learning in this manner
- Novelty of the site added to problems, unable to introduce website in small groups
- Most problems at start, familiarity led to independence
- At the end, majority said navigation “easy” or “kinda easy”
Discussion

Assignment content and instruction:

- All felt VoiceThreads helped with assignment completion and understanding
- “It told me what to do. I listened and it explained to me what do and and what I was looking at.”
- All enjoyed learning in this manner
- 7 prefer this manner of instruction, 2 prefer textbook
Discussion

Assignment content and instruction:

- Understood content, able to articulate it, but unable to transfer to papers - possible explanation for incomplete workbook pages
- Addressed learning styles
Discussion

Increase in instruction time IF the following criteria were met:

- All activities completed within 5 days
- 75% of students proficient on the lesson end quiz
Conclusion

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- Practice 21st Century technical/critical thinking skills
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- Website use valuable tool to provide audio/visual support and scaffolding based on students' needs.
- Different learning styles addressed.
- Practice 21st Century technical/critical thinking skills.
- Interactive, fun, engaging way to learn.
Mahalo and Aloha!

Gail K. Arakaki

gailk@hawaii.edu
Questions??