

Welcome

to the third edition of the new curriculum section. This month, our authors show how technology can enhance study of weather patterns, reading comprehension, real-world training, critical thinking, health education, and art criticism.

We hope these examples of exemplary practices inspire you to share your own stories. Please send your ideas or submissions to our acquisitions editor, Anita McAnear, at amcanear@iste.org. Even if you're not quite ready to share your story, we are very interested in hearing how you like our revamped curriculum section (letters@iste.org).

Weather Wondering

Using some basic Web sites, this lesson engages students with weather content by finding and using zip codes to learn about U.S. weather patterns.

Introduce the lesson with a map of the United States and a class discussion about the weather in different places. Demonstrate how to use the name of a city at the U.S. Postal Service Web site (<http://www.usps.com>) to locate a zip code and to use that zip code to learn about the weather at the Weather Channel Web site (<http://www.weather.com>). You can start this lesson in the classroom and complete it in a computer lab, or you can use it in a one-computer classroom. Each group will select a city from a different part of the country to learn about the weather. Using the two Web sites, each group will locate the zip code for their

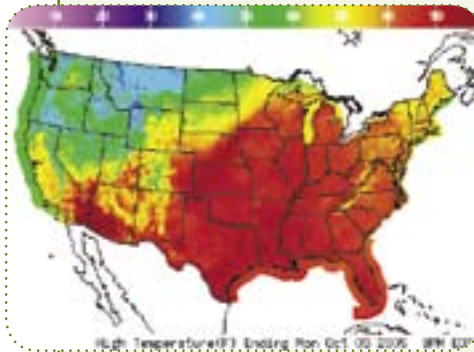


IMAGE FROM THE NATIONAL DIGITAL FORECAST DATABASE, COURTESY OF THE U.S. NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION'S NATIONAL WEATHER SERVICE. NOT SUBJECT TO COPYRIGHT PROTECTION.

selected city and then the high temperature for that day. Students could also investigate low temperatures.

Students input the data into a spreadsheet to chart the weather in different places. For younger students, you can set up the spreadsheet ahead of time with three columns: city, state, and high temperature. Each group will input the data for its city. When all of the temperature data has been added, teach the students how to use the chart wizard to create a simple chart.

For extra practice, give the students a list of mystery zip codes to find places. Using the Web sites, students will find the cities and their weather information.

You could project the completed spreadsheet for a class discussion. Locate the selected cities on a map. Guide the students into data analysis with questions lead them to generalize about the temperature. Where is the hottest city? The coolest? Why do you think it is hotter or cooler in that city? Guide the discussion toward the topics of latitude, nearness to water, and location in the desert or mountains. To integrate writing into the lesson, students can summarize their findings. For added technology enrichment, students could also make a slide show to display their findings.

Standards: NCSS Curriculum Standard III (<http://www.ncss.org/standards/>). NETS•S 3 (<http://www.iste.org/nets/>).

—Judy Britt, Assistant Professor of Elementary Education, Athens State University, Athens, Alabama

28

Social Studies

29

Language Arts

32, 35

Computer Science & ICT

33

Art

35

Health

Social Studies

Treasure Hunts for Better Reading

A new model for creating the often-overlooked Internet treasure hunt can help your students build valuable reading comprehension skills.

Language Arts



Much has been written on the value of using WebQuests in instruction, but the *treasure hunt* has been largely overlooked as a model for integrating the Internet into instruction. WebQuests focus on using Internet resources to solve problems and develop projects, and treasure hunts ask a series of questions that end with a Big Question, linking each question to an Internet resource that provides the answer. Unfortunately, with the spotlight on No Child Left Behind and its emphasis on reading, many educators are focusing on traditional printed texts to teach reading skills, thinking that they cannot spare instruction time for “extras” such as Internet-rich learning activities. However, with a bit of adjustment, the treasure hunt can be a wonderful tool not only for bringing content area resources into the classroom but also for improving reading comprehension across the curriculum.

Currently, the guidelines for creating treasure hunts are loose. In his article *Working the Web for Education*, Tom March, an expert on effectively using the Web in education, said when creating a treasure hunt you gather 10–15 links to exact pages you want the students to go to for information and pose one key question for each Web site you’ve linked to, culminating with a Big Question. Following this guideline, many educators create treasure hunts that lack focus. This approach has also led to disparate fact-based instructional activities. An analysis of 11 treasure hunts taken randomly from the Internet revealed that of 151 questions posed, 90% of the questions were literal. The low-level literal questions tended to

point to rote facts, such as “When did Twain die?” or “Who is buried with Lincoln?” These questions may be difficult to synthesize into a coherent understanding. By merging what we know about effective reading instruction with the current guidelines for treasure hunt design, we created a new treasure hunt model that has the potential to increase student understanding of content and improve reading comprehension.

When creating an effective treasure hunt, the first step is selecting the right topic. Select a topic for study that supports the curriculum and can best be explored with additional classroom resources. Then select grade-appropriate Web pages that provide information on the given topic. There is no prescribed number of Web pages to include in the treasure hunt. From the resources found, determine the most appropriate aspect of the topic to explore with the treasure hunt. De-

termine a focus and keep in mind that readability matters. Web pages should be chosen for the treasure hunt on or below the students’ instructional reading level (95% of the words are known by the student), or at their independent reading level (99% of the words are known by the student). Finding Web pages at the appropriate reading level is of vital importance if students are to read and understand most of the information in each selection. Having information read to them is beneficial, but it develops listening comprehension, which is related but not identical to reading comprehension. Finally, evaluate each Web page to be certain that the concepts and text structures are familiar to students.

New Model Design

Our revised treasure hunt has distinct features, outlined here and illustrated in the sample treasure hunt on the next page.

By Regina D. Royer
and Patricia O. Richards

Understanding Statement. To help avoid fact-based activities, explained Grant Wiggins and Jay McTighe in their 1998 book *Understanding by Design*, you should begin planning for instruction by developing an enduring understanding, from which you devel-

op a unit of instruction. An enduring understanding is that statement you hope the students will be able to make after completing the unit. In this vein, our model begins with an understanding statement that is explicitly stated in the treasure hunt not only to guide

you in developing questions but also to guide students in knowing what they are expected to understand when they complete the treasure hunt. The statement should be narrow enough to be sufficiently explored within the confines of the treasure hunt.

Sample Treasure Hunt: ¡Holá Mexico!

Understanding Statement

Although the people in Mexico and the United States have cultural characteristics that make them unique, in many ways they are all alike.

Introduction

Have you noticed people speaking a language that is not English when you have been shopping? Our community is becoming a mixture of different languages and faces. Some people may seem like foreigners at first. Many of them have moved to the United States from other countries around the world. A great number of new residents have moved here from Mexico, our country's southern neighbor. Are our Mexican neighbors completely different than U.S. residents? What might be familiar to those who came to the United States from Mexico? Complete this treasure hunt to learn more about Mexican culture. Answer the questions below. Then complete the Putting It All Together task so you will be ready to discuss the similarities and differences between the people and cultures of Mexico and the United States.

Questions

Here are some of the questions from our treasure hunt with the QAR type in parentheses.

- The Mayan people were living in what is now Mexico as early as 500 AD. How did the ancient Mayans write the number 14? (Right There)
- Explain why you would or would not want to attend a Mexican festival. (On My Own)
- Cinco de Mayo is becoming a popular holiday in the United States. For example, restaurants often highlight Mexican food on that day. Write a brief summary of how this holiday began. (Putting It Together)
- Look at the pictures of the process for making Talavera pottery. If you went to work in this art studio for a day, which job identified in these pictures would you most like to have and why? (Author and Me)
- Look again at the understanding statement for this treasure hunt. What question do you still have about the understanding statement? (On My Own)

Putting It All Together

Create a graphic organizer in which you list the differences and similarities between the people of the United States and Mexico. Use the chart that you create to discuss with a partner the understanding statement.

Introduction. The introduction has two purposes. First, it should hook the students and motivate them to complete the treasure hunt. A good introduction will connect with some aspect in their lives. Second, it should provide directions to the student for how to complete the treasure hunt.

Questions. To more closely align with research-based reading strategies, this new model is more precise in its guidelines for creating questions. A focus on the main ideas and their relationship to the statement of understanding should guide posing the questions. Reading comprehension can be undermined by undue attention to minor and irrelevant details. Provide a series of questions that address the understanding statement and can be answered by reading the Web sites provided. Include only questions that are central to the understanding statement. Develop questions that require students to read passages and identify, interpret, and analyze information. Develop questions that go beyond restatement of fact. For these questions, embed the appropriate links within the questions. Although many types of questions could be asked, some types of questions involving analysis and synthesis are too complex for struggling readers. To help those students improve reading comprehension, we recommend the Question/Answer/Relationship (QAR) method to design the series of questions.

- Right there: The answer is found within a single sentence (easy literal)
- Putting it together: The answer is found in several sentences within

the text (more difficult literal)

- Author and me: A combination of information from the text and the reader's background is required to answer the question (inferential)
- On my own: The answer is found in the student's background knowledge (developing opinions, drawing conclusions, making generalizations, devising solutions)

Include at least one question that focuses on a visual image to help students learn how visuals convey meaning. When appropriate, ask students to explain how the given visual compares or contrasts with their own mental image as they read the selection. Conclude with a final question that asks students to identify what questions they still may have about the understanding statement.

Putting It All Together. Finally, end the treasure hunt with a performance task that provides evidence that students comprehend the understanding statement. Although the original treasure hunt guidelines include a Big Question, our new model emphasizes a task that requires students to apply what they have learned.

Implementation Strategies

Providing students with additional instruction before beginning the treasure hunt can positively affect reading comprehension. First, set the purposes for reading and examine the understanding statement. Second, preview the linked Web pages and navigation needs. Then discuss varied purposes for reading and the occasional need to reread a selection. Indicate any questions that link to a Web page more than once. Discuss the need to click on any hyperlinks and the purposes of visual images. Review the different types of questions in the QAR approach and preview the questions. Finally, instruct students to work collaboratively to scan the sites, pose questions, and begin the treasure hunt.

Rationale

The new model for treasure hunts is aligned with the scientifically based reading research recommendations for reading comprehension instruction of the 2000 *National Reading Panel Report*. In reviewing the research on reading comprehension instruction, the panel deemed the following types of instruction and strategies to be the most effective. Each one is linked to the new treasure hunt model.

The report indicates that direct explanations about the reasoning

- **Comprehension Monitoring:** Students answer, pose, and discuss questions.
- **Cooperative Learning:** Students work independently and together to answer questions and develop understandings.
- **Curriculum Integration:** Enduring understanding is designed to address curriculum standards.
- **Graphic Organizers:** Performance tasks can include creating or using graphic organizers.
- **Mental Imagery:** Performance tasks can include visual representations and one question focuses on visual literacy.
- **Prior Knowledge:** Introduction encourages students to access prior knowledge and pose questions.
- **Question Answering:** Includes questions at various comprehension levels.
- **Question Generation:** Questions encourage students to pose additional questions of their own.
- **Text Structure:** Implementation of the treasure hunt begins with teacher discussing the unique features of electronic texts.
- **Summarization:** Questions and performance tasks require students to summarize and synthesize.
- **Multiple Strategies:** Supplement traditional printed text with electronic text and multiple comprehension tasks.

and mental processes involved in successful reading comprehension help students become better at the task. Explicit explanations of thinking processes, the transaction between the reader and the author, are also helpful. Finally, discussions in which students collaborate to form joint interpretations of text and acquire a deeper understanding of the mental and cognitive processes involved in comprehension cement the knowledge students get from texts they have read.

Standards: NETS•S 3 (<http://www.iste.org/nets/>)

Resources

- iHolá Mexico! Treasure Hunt: <http://facultyfp.salisbury.edu/rdroyer/Mexicoth.htm>.
- March, T. (2001). *Working the Web for education*. Retrieved March 17, 2004 from <http://www.ozline.com/learning/theory.html>
- National Reading Panel Report (2000). *Report of the National Reading Panel*. Washington, DC: National Institute of Child, Health, and Human Development and U. S. Department of Education.



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Putting the Web to Work



In 2001, I participated in a program with Apple Computer and Macromedia to design, equip, and launch 1 of 12 Web academies in Florida's Miami-Dade county. The Web academy within the Design and Architecture Senior High (DASH) School in Miami is offered as a class in which students learn Web design and development skills as well as business processes—and then sharpen their nascent abilities working as part of a team that provides Web design and development services to nonprofit organizations.

Many of my students have learned universal lessons I hadn't expected to teach them in the classroom. For example, they learn to take responsibility for their actions, do what they say they will do, and listen and respond to other people's points of view.

Web academies are a recent phenomenon. But as K-12 educators strip away the layers between "college prep" coursework and career and technical education, the concept is catching on.

Background

DASH needed a program that could be taught by teachers and learned by students with little technical know-how and sometimes limited interest in the subject. And our students needed to understand the demands of a real Web project: what it was like to function as part of a team, how to meet deadlines, how to solve problems, and how to satisfy clients.

DASH Web academy students commit to staying in the program their junior and senior years. Most spend the first half of the first year learning design principles and how to use the Web design applications. In the second half of the year, they begin working with nonprofit organizations. To ensure they experience the dynamics of a real-world Web project, our students are assigned roles that mirror those found in business: project manager, art director, technical coordinator, and content editor. I make sure each team has strengths in design, technology, the language arts, and

Computer Science & ICT

administration—I oversee their activities to their conclusion. In that sense, I'm more like a CEO than a teacher.

To this standard team assortment I sometimes add a specialist. I noticed in each class there are usually one or two kids who want to dig really deep into a software program or a specific skill. So rather than tie them down to a single project, I empower them to share their Flash or streaming video talents, for example, across many teams. And sometimes I'll let a specialist pursue his or her niche through independent study.

By Deb Singer

Lessons Learned, Values Gained

Now that you've got a sense of the DASH Web academy world, let's look at the transformations it has helped create in numerous students.

"My Team Depends on ... Me?" I always stress the importance of a student's responsibilities, both on the team and to the team. Most students take it to heart, some more dramatically than others. In class recently, I noticed one team didn't seem to be working in a coordinated fashion. I called them together and learned that the project manager was working on an assignment for her next class—if she didn't complete it, she said, she

would be in trouble. So I gave her the rest of the class to finish the assignment. But, first, we discussed her role as project manager, how the team counts on her to keep them moving in the right direction and that she cannot abandon them, even briefly. A light bulb went off; she really got it. She quickly handed out some short-term tasks and the team stayed productive for the rest of the class. And now she's committed to making sure no team member ever holds up the team.

"Wow. I Did It. And I Can Do It Again." Teenagers can be very hard on themselves. One student a few years

DASH continued on p. 34

Art

In this 10-day unit, students examine a variety of artwork and adopt the role of an art critic. The guiding question they answer is, "Was this art work successful in accomplishing what it was trying to do?" Supporting their opinions with reference to artistic elements, students demonstrate their knowledge of art history and criticism.

Day 1. In small groups, students complete the simulation A. Pintura, Art Detective, The Case of Grandpa's Painting (<http://www.eduweb.com/pintura/>). Groups work to solve the mystery of a missing painting while analyzing art. Use Inspiration to conduct a class brainstorming chart that shows the art elements and the different periods of art history students learned.

Day 2. Students select and research an artist from a specific school of painting. They must save at least five digital images of the artist's work. Students should also gather data including when and where the artist lived, the school of painting the artist is associated with, and a definition of that school.

Days 3–6. Using a drawing program, students identify the art elements used in each image they captured by labeling each element on and around the images. Students use the outline mode in their presentation program to analyze the artist's work. Each bullet defines a specific art element. Then, students add three bullets on

Art Criticism

the artist's biographical data and at least five identifying each image they studied.

Days 7 and 8. Students add the images on each slide containing a name of a painting done by the artist. They then add a new slide after each painting slide on which they will insert their labeled image of art elements for each corresponding painting.

Days 9 and 10. Students share their slide shows with one another. The class then revisits their concept map and adds new learning to the map.

Assessment

Develop an assessment rubric covering the following criteria:

Content: evidence of understanding of art elements, research on at least five pieces of art, collection of biographical data, critique of each piece of art, and neatness

Technology: participating in online simulation, use of the assigned software programs, capturing digital images online and saving them offline, and manipulation of digital images

—This article was adapted from an activity in National Educational Technology Standards for Students Curriculum Series—Multidisciplinary Units for Grades 3–5, Larry Hannah, Editor (ISTE, 2002, pp. 107–108).

LEARNING CONNECTIONS

DASH continued from p. 33

ago was convinced the upcoming client meeting, the team's second, was going to be a disaster—the team had not met all its deadlines—and he, as project manager, would be blamed. But the client did not focus on what was missing, choosing to discuss the elements the team had presented. The student realized the pressure he felt was more self-imposed than project-related; the client was not expecting anything more than what the team actually delivered. You could see the student grow more confident during the meeting. But he realized the team could have been in trouble and vowed to keep them on task for the rest of the project. The next two client meetings went unbelievably well: the team's expertise, professionalism, and confidence were evident, and the client was overjoyed with the results.

What the Client Wants, the Client Gets. I continually stress the importance of client management techniques. Most students have rarely if ever interacted with adults in a business setting. Making things even more challenging, the students are suddenly seen as the experts—a role new to many of them. But some clients pay little deference to student expertise. One team's client dictated the entire Web site's look and feel. The kids were very frustrated because they

had to give up artistic control and could not demonstrate their capabilities. The art director naturally took it hardest and tried several times to “push” the client into a different design. No luck. Ultimately, the team swallowed its pride and rallied its professionalism to deliver exactly what the client wanted.

Clients Must Play By the Rules, Too. Students always seem surprised they can insist that clients adhere to certain rules of business engagement. For example, if clients do not show up for meetings on time, the team can fire them. I can always find my teams a new client or, if it's too late in the school year, assign them to projects without clients. I never let the students forget they are providing clients with a huge service—at no charge—and thus deserve respect.

You Never Know Where You'll Find the Lesson. I like our students to enter contests because the competition drives them to take chances, which is really exciting and makes for some great Web sites. Last year three Web academy teams entered an international contest organized by the U.S. State Department. The goal was to develop a Web site that would teach students elsewhere in the world something about your country. Each entry would be reviewed first by one

of the other country's Web teams and then referred to a panel of adult judges. One of the teams chose U.S. immigration and border control as its topic. They researched all the content and created a fabulous design. As fate would have it, a student team from Mexico reviewed the site. They loved the site—and gave it high marks—but strenuously objected to the content. They sharply criticized the site's immigration policy content and suggested that the United States used war to “steal” land from Mexico. It was a historical perspective my team—all first-generation immigrants—would never have been exposed to otherwise. Eyes opened, consciousness raised.

Providing Service to the Community

DASH Web academy's services to the Miami-area nonprofit community over the last few years have been valued at more than \$350,000. I know we're successful by the reputation we've built in the community—and by the overwhelming demand for our services. I spent much of the academy's first year cold canvassing, trying to attract clients. Pretty soon, word of mouth spread and now they're coming to us. Even with 30 kids in the academy, we still have a waiting list.

Local businesses hire DASH academy students for paid internships, and most graduates go on to college where

Call for Curriculum Submissions

Have you or a colleague taught a lesson or unit integrating technology that went particularly well?

Do you have:

- Tips, tricks, or tidbits?
- Stories or quotes that demonstrate student learning?
- A great tech tool or resource?
- Quick ideas easily adapted to other settings or content areas?

If you answered **yes** to any one of these, please call or write the editor with your ideas:

Kate Conley • kconley@iste.org • 1.541.434.8926



Videoconferencing Connections

During her first year in the classroom, Jan Dickens was feeling disenchanted and discouraged. She had started her second career full of hope, but now she was ready to quit teaching. In her previous career, she had regularly used technology, and she saw how it could be useful in the classroom. But her suburban high school had limited resources and offered little in the way of staff development in technology. Dickens nearly became a statistic—one of the 30% of new teachers who leave the field within their first three years.



That was five years ago. Today, Dickens leads an innovative health studies program that brings her Tennessee students into direct contact with doctors, researchers, and other medical experts. She's energized about teaching, and her students are getting the chance to engage with health professionals in the real world.

What's made the difference?

Dickens developed a partnership with Vanderbilt University. Working with Kecia Ray, Dickens has set up regular videoconferences between her health students and medical experts from the university. Students can ask questions, learn about research, and gain a real window into the world of medicine and health. It isn't the technology that has made such a difference but the resources that Dickens and her students have discovered at the other end of the technology.

The success of this effort has generated other changes. Today, a physician coordinates the high school's instructional technology efforts—another symptom of change in the way this school thinks about using technology to forge new connections and expand learning opportunities.

—As told to Suzie Boss, *Learning Innovation and Technology Consortium in Portland, Oregon*, by Kecia Ray, Anne Noonan, Connie Louie, Neal Strudler, Betsy Goeltz, and Shirley Crehan. For more stories like this, visit <http://www.iste.org/advocacy/toolkit/>.

Health



they study Web design, visual communications, programming languages, or computer engineering; many receive scholarships. Other graduates immediately enter the Web and graphics design community, either starting their own businesses or working with established firms. In fact, one former student, who first discovered Web design as a project manager in my class, is now the lead Web designer for a major design group.

Standards: NETS•S 3; NETS•T II; NETS•A VI (<http://www.iste.org/nets/>)

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What Do You Think?

L&L has unveiled some changes this volume, and we want to know what you think.

What do you like? Dislike? What else would you like to see in the pages of L&L?

Send your feedback to letters@iste.org.



Thinking Critically

Information literacy requires new skills of today's students. In the Cedarburg School District in suburban Wisconsin, high school students are becoming discerning readers and analytical thinkers by using technology for research.

The catalyst for change was the district's purchase of several online subscription databases. The media specialist collaborates with teachers in key content areas to plan learning activities that integrate these resources and help students meet state standards.

In English, science, and social studies, for example, students use a database of articles that take pro and con positions on issues. Students not only conduct research, they also evaluate sources for point of view, authority, reliability, and bias. The district Web site contains links to the databases so students can access the information from any computer. What's more, students gain an understanding of the different methods used to find varied types of resources.

Lifelong learning requires students to use a variety of resources to gather and evaluate information. Students need skills to sift through data and find reliable information to answer their questions. Teachers are now seeing evidence that new learning is taking hold. Students' assignments now include bibliographies that show they have found information and assessed it. They are becoming more literate and better prepared for the future.

—As told to Suzie Boss, *Learning Innovation and Technology Consortium in Portland, Oregon*, by Vonna Pitel, Cedarburg School District, Wisconsin. For more stories like this, visit <http://www.iste.org/advocacy/toolkit/>.

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