



Looking Through the Lens

Weaving the Web of Science and Technology

According to Marc Prensky the “new students’ in our classrooms today are all “native speakers” of the digital language of computers, video games, and the Internet. Because of this he has designated them as **digital natives**.

Think about your students, no matter what their age or grade level you teach, they are the *digital natives* that Marc Prensky refers to. They have grown up with cell phones, computers, handheld devices, and digital cameras. Blogging, downloading, tweeting, and texting do not phase them. So if this is our audience, why not incorporate technology into our science classrooms?

The National Science Teachers Association has an official position on the use of computers in science education. They posit that computers are “an important resource for learning the concepts and processes of science through simulations, graphics, sound, data manipulation, and model building.” However NSTA emphasizes that “computers should enhance, but not replace essential “hands-on” laboratory activities.” Keeping this in mind let’s look at different ways computers can be incorporated into science classrooms.

Computers, when purposefully integrated in the science classroom, can “open the door” to the world for our students.



Many times students are given the task to go to a website and play an interactive game. No purpose or connection is given to the activity and students don’t see the connections to the science content they are being taught.

Having students engage in firsthand investigations, documenting in their science notebooks, and taking part in small and whole group science conversations should be the starting point in their science lessons. Then you can interlace the use of computers to support the science that they are doing.

Note—Always preview websites prior to using them in your classroom. Be

sure they contain accurate content and are age appropriate.

Science Notebooks

Begin the school year by introducing science notebooks to your students. Have them brainstorm why scientists use them and what they think scientists’ notebooks contain. Often we do not have access to these notebooks; however, there are websites that can be shared in a whole group setting. Have students discuss what they see in the samples. These can be added to a class chart for future reference. A few websites that are useful for this are: <http://www.mos.org/sln/Leonardo/LeonardoRightToLeft.html> This site is from the Boston Museum of Science and has samples of Leonardo Da Vinci’s notebook. Students can view samples of Linus Pauling’s notebook at <http://osulibrary.orst.edu/specialcollections/rnb/>.

Virtual Dissections

If your students are working with owl pellets, you have seen their excitement when they find animal bones. After this firsthand experience, students can take part in



virtual owl pellet dissections (<http://www.kidwings.com/>) and make comparisons to the bones they found in their owl pellets. Students who were absent during this time or may be allergic to fur could use this site to “experience” the owl pellet dissection.

Opening the Doors to the World

Computers can open the world to our students. Many times it is not physically possible to take a field trip to an actual location; however, the computer can offer a virtual opportunity for students. This would certainly be the case when intermediate students must know that the “solar system includes the Sun, planets, and moons. (E5B2)”.

They can visit the NASA website (<http://sse.jpl.nasa.gov/index.cfm>) and get a close up of the Sun and the planets and their moons. The site also contains a plethora of information about each of these components. Or how about checking out Google Earth? Wow! Students can view the stars and the planets. Discussion can be centered around aerial photos and images.



Maybe you are discussing eclipses. The Exploratorium has a site that students can view on the total eclipse of the sun that occurred in August, 2008. Many times we do not have the opportunity to witness such events so having students view and discuss this webcast affords them this amazing opportunity (<http://www.exploratorium.com/eclipse/>).

The Exploratorium’s website (<http://exploratorium.edu/>) contains webcasts, interactive activities, digital libraries, and a number of other resources that support the science our students are learning.

Studying weather? After students have been collecting data on the weather in their area, they can go to The National Weather Service’s website (<http://nws.noaa.gov/>) and compare their data to that from other cities.

Students need to be aware of how to stay safe in different types of weather. Have students visit this website and then create posters which highlight the safety measures that need to be taken. The posters can be displayed in your classroom.

Real-time Data

It is important to give students the experience of collecting data.

There are websites that provide real-time data that students can access for their investigations. Students can use the data to make claims, look at relationships, and draw conclusions from the data. One such site is http://aa.usno.navy.mil/data/docs/RS_OneDay.html.

Final Thoughts

As stated in EDThoughts *What We Know about Science Teaching and Learning*, “It is not the equipment in the classroom, but how the equipment is used that makes the difference in student understanding. The key to success lies in finding the appropriate points for integrating technology into science, so that it supports the understanding and reflection students must do.”

References

- Krueger, A. & Sutton, J. (Eds.). (2001). *EDThoughts what we know about science teaching and learning*.
- National Science Teachers Association. (1992). *A position statement. Use of computers in science education*.
- Prensky, M. (2001). *Digital Natives, Digital Immigrants*.

Regional Trainers

Anna Maria Behuniak	Northeast and East Regions	behunam@interact.ccsd.net
Lois Bloom	Northwest Region	labloom@interact.ccsd.net
Sandy Davis	Southwest and East Regions	sandra_r_davis@interact.ccsd.net
Becca Kacmar	Southeast Region	rkacmar@interact.ccsd.net