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Resources: Handheld Computing Devices

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RESOURCES

handheld computing devices

introduction

With the impending gas crisis and the increased effects of global warming, going “green” is currently the rave in America. Greening our lives entails becoming more environmentally conscious, not to mention performing such tasks as recycling and using alternative sources of energy. As the environment changes around us, so too will our traditional ways of teaching and learning. Pencil and paper are slowly walking the road to extinction. As teachers struggle to stay abreast of the latest technologies for the classroom and try to stay “green,” it is appropriate for them to take a look at some valuable technology resources that they can use to help students understand their environment. This column will feature a valuable resource to assist teachers in their bid to satisfy the need to implement modern instructional technology and their students’ need to access “green” technology.

Several decades ago a product called Science Toolkit was introduced to connect probe kits to Apple IIe computers. This technology permitted teachers to add motion sensors, timers, and thermometers to computers for the purpose of collecting data. Thus began the dawn of the

computer-based laboratory equipment era. Today handheld computing devices are a new revolution in many classrooms, and technologically savvy educators can attest to the benefits of these data-collection systems. Handheld devices, like their predecessors (the Science Toolkit), also offer probes for data collection as well as a variety of other technological features. In order to address higher-order thinking, handheld computing devices offer students and teachers alike an opportunity to investigate the environment through the use of hands-on activities. As an example of some of the benefits of this technology, a classroom teacher may wish to use the handheld computing device during an environmental science experiment. One possible application could involve performing a hands-on experiment at a local creek and/or river; handheld devices would sufficiently provide all the hardware and software necessary. The unique device would allow students to collect data pertaining to the temperature of the creek water, flow rate of the creek, the soil moisture of the riverbank, and other relevant environmental data.

There are a number of companies that feature handheld computing devices, including probes, PDAs, and graphic organizers. One such company is Vernier Software & Technology. This company has developed a comprehensive collection of more than 50 sensors for use with computers, handhelds, and calculators. Many of these computer-based lab systems feature a variety of computer and calculator platforms in addition to support materials that are easy for

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students to use. The handheld computer devices offer a variety of software features including a meter tablet, graph tablet, table tablet, note tablet, stopwatch, periodic table, keyboard, and calculator. Moreover, these handhelds are equipped to accept probes including digital thermometers, motion sensors, microphones, soil-moisture sensors, and water-quality sensors. The advantage of using these probes is that they allow students to accurately record environmental data for critical analysis. Many of these handheld units also feature a color touch screen, allowing students to use a PDA-type stylus to input data into the unit. The unique features of these handheld units enhance the learning experience for students. Teachers have the option of downloading lab notes directly into the handheld units for students to reference as they complete the lab. Some companies offer an array of laboratory experiments embedded in the handheld devices that include all instructions, figures, and data tables needed to complete the lab.

As teachers seek to develop curriculum that provides unique learning experiences about the ever-changing environment, handheld units can provide students with an all-inclusive technological device that caters to all learners. Studies have shown that students are able to develop a deeper understanding of math, science, and technology principles through the use of handheld computing devices. Some researchers propose that computer-based learning environments would help




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QUICK ACTIVITY

Note: When cleaning up, DO NOT pour leftover paper pulp into a sink, as it can clog pipes and drains.

further exploration and extension ideas

- While recycling paper is one great way to help the environment, reducing the amount of paper products that we use is another. As evidence that kids really can make a difference, students from the Park School in Brookline, Massachusetts teamed up to start a catalog-canceling campaign. Their efforts were so successful that the students were even featured on national television! You can check out their story at www.catalogcancelingchallenge.com.
- Paper products may be the first type of waste that comes to mind when we think of sources for making recycled paper, but it is not the only one. Some very creative (and brave) individuals at The Great Elephant Poo Poo Paper Company (www.poopoopaper.com/) have developed a method to extract fibrous material from dried elephant dung to create sanitary products that, in their own words, “do not smell at all...not like poo anyway! Our products smell like normal stationery-type products.” Incredibly, a single piece of elephant dung yields about 25 large sheets of paper. Part of the proceeds from every sale goes to elephant conservation and welfare projects worldwide. 

resources

U.S. Environmental Protection Agency.
Paper and paperboard products.
Retrieved September 8, 2008, from www.epa.gov/epaoswer/non-hw/muncpl/paper.htm.

The GREENS: a cool kids' site about looking after the planet. MeetTheGreens.org is produced by the award-winning team at WGBH Interactive in Boston.

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students to think accurately and critically about the environment and other related science and technology subjects. In a bid to develop students who are critical thinkers, educators are constantly striving to implement new and innovative ways of teaching math, science, and technology principles. It is increasingly imperative that students become responsible consumers of technology, and the advent of handheld computing devices can help students make well-informed decisions about the use of certain technologies.

Technology has a history of impacting our environment, largely in a negative way. Scientists suggest that the adverse effects of many technologies have led to global warming, acid rain, pollution, and other negative impacts on the environment. Careful selection of technologies that help rather than harm our environment

will be important for future generations. What the future holds for our environment is currently unclear; however, locating appropriate tools for the classroom that will help children understand that these negative impacts exist might help students select appropriate technology that is environmentally friendly. Certainly companies such as Vernier will continue to push the envelope in providing innovative technology for teachers.

product information

Vernier's website, www.vernier.com, provides teachers with over 14 subject areas that Vernier supports and over 18 product categories from which teachers can choose. Perhaps one of the most beneficial features of the website is the resource section, which provides correlation of Vernier's curriculum with state and national

standards. If this wasn't enough to boost the credentials of the Vernier site, they also provide educators with a list of grants, their amounts, and detailed descriptions of state and federal grants. 

resource

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