Eco-Schools calling all eco-schools NATIONAL WILDLIFE FEDERATION

Academic Benefits

ADDRESSING THE ACADEMIC NEEDS OF SCHOOL ADMINISTRATORS AND EDUCATORS AND PLANTING SEEDS FOR A MORE SUSTAINABLE FUTURE

When integrated into core curricula or used as an integrating theme across curriculum, environmental education has a measurably positive impact not only on student achievement in science, but also in reading, math, and social studies.

Here's a few studies of how student academic achievement benefitted from the inclusion of environmental education:

"When I taught the kids math skills like measuring, in the classroom, they forgot it and couldn't make use of it. When the students had a chance to use these skills on our nature trail, they not only learned better but could apply and remember their math skills longer."

Kim Flynn, Math Teacher,
Jackson County Middle School,
Kentucky

Improved Reading Literacy—Many people naturally associate environmental education and improved understanding of science. But environmental education also contributes to the development of basic skills including reading. One elementary school employed environment based education for this purpose. Bagley Elementary School in Washington state employed the Environment as an Integrating Context (EIC) and then measured performance on reading scores on the Iowa Test of Basic Skills. Bagley found that the EIC students' Iowa Test scores rose from an average of 44 to 53 among students in the environment-based program.

Source: Lieberman, Gerald A. and Hoody, Linda (1998). Closing the Achievement Gap. San Diego, CA: State Education and Environment Roundtable (http://www.seer.org/)

Improved Math Literacy — The Maryland Association of Environmental Outdoor Education reports that students interested in learning increased when they engaged in authentic environmental investigations on school grounds and in their communities. Statewide test scores rose, too. Maryland Green School 8th grade students had 5.1% higher averages in mathematics than non-green schools. A 2000 case study of schools in North Carolina with environment-based programs shows that 4th grade students achieved a 31% point increase in math achievement in just one year.

Source: Maryland Association of Environmental Outdoor Education; NEETF, 2000, National Scope

Improved Science Achievement and Attitudes Towards Learning — Fifth grade students who participated in school gardening activities scored significantly higher on science achievement tests than students who had a curriculum without garden experiences. Evaluations of the Junior Master Gardener program in Indiana and Louisiana also found greater science achievement gains among gardening students compared to control groups. Gardening activities can be integrated into all areas of the school curriculum, making learning more meaningful. Parent involvement, shown to enhance student achievement increases at schools with garden programs.

Sources: Klemmer, Waliczek, & Zajicek, 2005; Dirks & Orvis, 2005; Smith & Motsenbocker, 2005; Canaris, 1995; Henderson & Mapp, 2002; and Alexander, North, & Hendren, 1995.

Improved Critical Thinking Skills — Environmental education is also associated with improved critical thinking skills. A study of 401 Grade 9 and 12 students from 11 Florida high schools found a strong positive correlation between participation in environmental-education program and higher achievement on tests that measure critical thinking. Environmental-education students scored 4.33 points higher on the Cornell Critical Thinking Test than students in the control group.

Source: J. Ernst & M. Monroe, "The effects of environment-based education on students' critical thinking skills and disposition toward critical thinking". *Environmental Education Research*, 10(4), (2004).

Improved Student Behavior and Attitudes — The Pacific Education Institute's *Environmental Education Assessment* (2004) project compared 77 pairs of demographically equivalent schools across Washington State: one with environmental education (EE) integrated throughout the grades and curriculum and a matching school without EE. Schools with EE programs consistently showed higher test scores on state standardized tests in math, reading, and writing, and more support from parents, community and administration. Young people exposed to EE tended to improve their overall GPA, stay in school longer, receive higher than average scholarship awards, and display more responsible behavior in the school and community. Schools with as little as 20% of the teaching staff involved with EE showed statistically higher standardized test scores and more students who met state standards.

Source: 2004 Report Card on the Status of Environmental Education in Washington State

For more information on the academic benefits of environmental education, please visit our blog at: http://blog.nwf.org/tags/eco-schools-usa/

Financial Benefits

ADDRESSING THE FINANCIAL NEEDS OF SCHOOL FACILITY MANAGERS AND PLANTING SEEDS FOR A MORE SUSTAINABLE FUTURE

The nation's school districts spend more than $8 billion a year on energy. As much as 30 percent of that energy is used either inefficiently or unnecessarily. By being conscious of energy usage and taking advantage of energy efficient technologies, schools have the potential to significantly cut their electricity use, save money and reduce their burden on the environment.

There are many ways for schools to address energy and water use efficiency that can range from simple, no or low-cost strategies to more complicated and expensive solutions.

Here's a few examples of how schools can save energy, improve the school environment, and cope with budgetary constraints.

"Our schools are doing their best to prepare our children for the future, and now they can help make sure that future includes a clean, safe environment. Taking the Energy Star Challenge will help participating districts cut down on their electricity bills. Money they would have spent on energy can go back into the classroom, where it really belongs."

EPA Administrator Lisa P. Jackson
September 2009

http://energystar.gov/challenge

- **Perform an Energy Audit**—Engage students, teachers, administrators and volunteers in helping you to perform a comprehensive energy audit. **This one step can save 5-35% of your energy costs.**
- **Develop a Lighting Strategy —** Lighting strategies such as installing occupancy sensors, bi-level or zone switching, exterior photocell installation or repair, selective delamping (where illumination is excessive), replacing all remaining incandescent with compact fluorescent bulbs, and strict nighttime and vacation shut-down **can save anywhere from 8% to 20% of lighting energy** by simply turning off lights in unoccupied rooms.
- **Replace Computers and Office Equipment with Energy Star® Models** — When it's time to replace computers, monitors, printers, and copiers — choose those models with an Energy Star rating. Energy Star monitors have a low-power sleep mode that only uses between 2-10 watts. Each Energy Star printers can save a school $25 per year. Energy Star copiers can **achieve savings of 40%** compared to standard models.
- **Develop Heating, Ventilation and Air Condition Strategies** — HVAC uses more than half the energy consumed in school buildings, and therefore is a major target for significant energy savings. Proper boiler maintenance can lead to **energy savings of 10 to 20%**, and regular maintenance (cleaning burners and AC coils; replacing and cleaning air filters; checking ducts and pipe insulation for damage) maintains optimal cooling and heating performance and saves money and energy.
- **Maintaining Controls** — Maintaining temperature settings, ensuring windows are closed during heating season, and unblocking air flow could **save 10% of heating and cooling costs**. Programmable thermostats cost between $50-$200, and have a payback within three months of installation.
- **Develop School Cafeteria / Kitchen Strategies** — Kitchen energy use can be **reduced as much as 60%** by reducing the amount of operating time of the different appliances in your kitchen. Pre-heating ovens no more than 15 minutes before using, and using the fan hood only when cooking are great places to start. Equipment not utilized during vacation periods should be shut down, and always keep the refrigerator coils clean and free of obstructions.

For a listing of energy efficiency resources, tips, and tools, please visit: www.eco-schoolsusa.org/energy

To download the *"School Operations and Maintenance: Best Practices for Controlling Energy Costs, A Guide-book for K-12 System Business Officers and Facilities Managers,"* please visit the Alliance to Save Energy's website at http://ase.org/content/article/detail/1806