

Bikes Not Bombs Green Festival: June 8, 2008
Speech and Workshop: "Sustainability in Education"
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A. INTRODUCTION

Hello! Welcome to the Bikes Not Bombs Green Festival. I am Kristen von Hoffmann, President of Greenfox Schools, a new company providing environmental solutions to help schools go green. I founded the company less than a year ago along with four other people, and hold an undergraduate degree from Yale University where I was a part of the Yale Sustainable Food Project. I am currently working on a Master's Certificate in Sustainable Design from Boston Architectural College, and also teach 5th grade.

Our company works with both public and private schools, administering environmental audits and reports, and going into schools to do workshops and classroom lessons on environmental sustainability. I am here today to talk to you about sustainability in education.

Today you will come to understand sustainability in education in two ways: first, through the design, or way in which we approach the function of our school buildings, and secondly, through the practice, or the way in which we educate children, faculty, and staff to act sustainably within their school buildings.

B. WHAT IS SUSTAINABILITY?

As the Green Revolution continues to grow even stronger in America, you will hear the term sustainability used more and more frequently in the media and in everyday practice. One of the most common questions I get asked is: “Kristen, what exactly *is* sustainability?!?”

This is a good question to ask. Sustainability means having a human system that runs for a long time on practice and behavior that has minimal impact on the natural environment. My interest in sustainability is tied to a deep-rooted love of nature, and a belief in positive change for the environment at large, a sentiment I have had since early childhood when I used to climb trees every day. My own early education took place at a small cooperative school where the traditions and beliefs of Native American Indians were often intertwined in our classroom curriculum. My understanding of the world as both a built, human environment as well as a natural one was established at an early age. Now, as a businesswoman in the realm of environmentalism, I am happy to see other businesses recognizing the truth in Native American Indians’ value systems, and connecting these ideas to modern systems of sustainability, as well.

A successful eco-products company called Seventh Generation derives its name from the Great Law of the Iroquois, in a line that states: “In our every deliberation we must consider the impact of our decisions on the next seven generations.” Sustainability is just that: taking into consideration how your daily actions will impact your children and future generations, since nature cannot withstand over-use.

Population growth is a fact we must take into consideration as we strive for sustainable schools. As the population increases, it becomes even more crucial to preserve natural spaces and to build sustainable schools with minimal impact on the environment.

At the end of the 19th century America was still a rural nation, and 60% of the population, or 45 million Americans, lived in towns with fewer than 25 people. By mid-century, or 1950, the United States population was 152, 271,000 people. Today, in 2008, the United States population is 303, 824, 646.

The world population stood at 2,555,982, 654 people in 1950, according to the Census Bureau, and now stands at 6,677,563,921 people. That meant that in just over a half century the world population has grown by over 4 billion people.

In the pecking order of living things, human beings are superior to animals in that our intelligence allows us to imagine, create, and build a developed physical world.

It is that intelligence which has advanced humankind, and allows us to live by higher standards of comfort, but of equal importance our intelligence demands responsibility. We must be responsible to each other as people, to our buildings as living spaces, and to our natural world as the environment that encompasses us.

In 1983 the United Nations convened to form the Brundtland Commission—formally known as the World Commission on Environment and Development.

This new commission was led by former Norwegian Prime Minister Gro Harlem. The Brundtland Commission formed to address: “the accelerating deterioration of the human environment and natural resources and the consequences of that deterioration for economic and social development.”

The Commission defined sustainable development as development that “meets the needs of the present without compromising the ability of future generations to meet their own needs.” In the resolution that established the Commission the phrase “long-term” appears several times, as well as the words “cooperation,” “interrelationships,” and “community.” Thus, as we continue to develop, rebuild, and renovate human systems like school buildings, we must keep in mind how to put design and practice into place that allows for high levels of function with minimal impact on the natural environment: such as providing adequate shelter, lighting, heating, cooling, and waste disposal systems while reducing energy use, carbon dioxide emissions, and the amount of garbage we send to the incinerator or landfill.

C. WAYS TO MAKE YOUR SCHOOL SUSTAINABLE

I will now take a few minutes to talk about specific environmental solutions to make your school more sustainable. As students, parents, family members, teachers, administrators, and staff, we must first understand how our current school design and practices are harming the environment. By understanding our old practices, we can create positive ways in which to change them.

At Greenfox Schools, we look at a school building holistically. Our audits and reports examine the Greenfox Five, or the five systems of function that work together to run a building. The five categories are Energy, Waste Disposal, Food, Products, and Greenspace.

- GREENFOX I. Energy

The first category is energy. Energy use places a huge strain on the environment, primarily because schools, just like homes and businesses, generate heat and

electricity from non-renewable energy sources, such as power plants which are using oil, a fossil fuel or natural resource that is dwindling and must be extracted from the earth for use.

Worst of all, when oil is burned at electrical power plants, the result is an output of carbon dioxide emissions into the air we breathe. Thus, when you turn up the heat or turn on a light, you are generating carbon dioxide every time.

The great news is that there are many positive ways for schools to reduce energy use, and that reduced energy use always means saving money.

Greenfox Schools divides the energy solutions into two categories: Reduced Energy and Renewable Energy.

Reducing Energy in Schools:

Greenfox helps schools to Reduce Energy by designing and implementing sustainable energy systems unique to your school building, where each classroom is responsible for unplugging electrical devices at the end of the day, turning off lights, and making use out of natural light sources, such as windows. Wasted energy, known as standby or phantom energy loss, represents a relatively small but growing percentage of an individual home's electricity use (about five percent), but taken across all U.S. households, adds up to an estimated 65 billion kilowatt-hours of electricity each year. This extra electricity costs consumers more than \$5.8 billion annually and sends more than 87 billion pounds of heat-trapping carbon dioxide into the atmosphere each year.

We also help schools to reduce energy use by installing timed light sensors which automatically turn off when a room is not in use, installing central interactive control systems which control heating, cooling, security and electrical systems all in one, by installing CFLs (compact fluorescent light bulbs) in standing lamps or LED (light emitting diodes) lighting sources in hallways, and by insulating water heaters. Adding insulation can reduce standby heat loss by 25%-45%. This will save approximately 4%-9% in water heating costs, and reduces your building's carbon dioxide output.

Renewable Energy in Schools:

Greenfox works with renewable energy companies to help schools research and install solar panels on roofs and other areas. Solar energy has been very successful in green school design, helping to cut anywhere from 30%-70% of energy costs. Green schools use an average of 33% less energy than conventionally designed schools. In terms of savings, "Greening America's Schools: Costs and Benefits," a 2006 report by Gregory Kats, average school

energy use in 2005/2006 was \$1.15/square foot, of which electricity was 63% and natural gas 34%. Out of 30 green schools reviewed, the reduction in energy indicated a money-savings of \$0.38/square foot. Green school Ash Creek Intermediate School in Oregon has an energy savings of 30% and a water savings of 20%, while Clearview Elementary School in Pennsylvania has an energy savings of 59% and a water savings of 39%.

We also work with a national green roof company. Green roofs are fantastic for schools because they provide a layer of insulation that actually helps to heat and cool buildings in the winter and summer, reducing the need for actual heat and air-conditioning, and lowering a school building's energy costs. Green roofs also provide a natural habitat for outdoor science learning. They absorb carbon dioxide and generate oxygen, as well as catch rainwater that would otherwise become run-off and carry toxins into sewer systems.

- GREENFOXII. WASTE DISPOSAL

It is so easy for schools to generate waste, and yet it is also so easy to reverse this trend and put in place positive, sustainable systems for reducing waste.

Reducing Waste Disposal in Schools:

First and foremost, reducing waste in schools is about learning how to separate garbage into throwaway, recycling, and compost categories, and how to make less of it in the first place.

Teaching students to use fewer materials is imperative. For example, to print on both sides of a sheet of paper, or to use scrap paper instead of new paper when scribbling notes. Once that mindset is established, students find it much easier to go along with other systems of sustainability such as placing recycled material into recycling bins, and throwing food scraps into a compost collector.

At Greenfox Schools we design and implement recycling and composting systems unique to your school, facilitating everything from the purchase of recycling bins and composters, to pick-up of materials, to educating students and faculty on how to implement the systems we design.

- GREENFOXIII. FOOD

Organic Food in Schools:

In terms of food, Greenfox evaluates the food systems in place at your school, and makes recommendations for bringing locally grown and organic food into school cafeterias and kitchens.

Our company is continually researching organic food and organic standards, and is also developing curriculum around organic practice, to teach students about the hazards of growing food with pesticides, and the benefits of growing and eating organic food.

When speaking about organic food benefits, we tell educators how the harmful effects of pesticides in conventionally grown food are even more detrimental to children than to adults, as children's bodies are still developing and thus more vulnerable.

We also emphasize many of the factual benefits of organic food and farming, some of which include higher nutritional content than conventional food, more vitamins and antioxidants, no hormones, no antibiotics, no genetically modified organisms or pesticides used, healthy use of topsoil and natural habitats, supports composting, and supports reduced energy use.

GREENFOXIV. PRODUCTS

Using Eco-Products in Schools:

Currently, most schools use virgin lined, copy, and printer paper in classrooms and offices. This means the paper is made directly from trees, and does not contain any recycled content. At Greenfox, we help schools to budget for, and order recycled paper for classrooms and offices.

We also help schools purchase recycled napkins, toilet paper, and paper towels, while also encouraging the use of re-usable products in kitchen and classroom spaces.

Finally, we supply non-toxic cleaning products, and in our report we evaluate the toxins in the cleaning products currently used at a school. Our reports provide information on the harmful health effects in such conventional cleaning products. For example, in one recent school audit we found several surface cleaning products that contained a chemical called "Phenol."

Phenol is a powerful disinfectant and bacteria killer, and it is also highly corrosive and toxic. It affects humans by causing skin burns and internal tissue corrosion if inhaled. It can affect the central nervous system initially causing sweating, weakness, dizziness and twitching; with prolonged exposure causing nausea, vomiting and coma. If ingested, even a small dose of phenol can be fatal.

The school removed these cleaning products immediately, and we helped them replace their supplies with Seventh Generation Glass and Surface Cleaner, which is non-toxic and biodegradable.

GREENFOXV. GREENSPACE

Greenspace at Schools:

In our final category, Greenspace, Greenfox helps schools instate rooftop garden projects, as well as other landscaping, organic garden, and tree-planting projects. Greenfox is also affiliated with re-forestation projects in South America, and connects schools to projects that allow students to support tree planting in rainforests.

D. CLOSING

In the pecking order of living things, human beings are superior to animals in that our intelligence allows us to imagine, create, and build a developed physical world.

It is that intelligence which has advanced humankind, and allows us to live by higher standards of comfort, but of equal importance our intelligence demands responsibility. We must be responsible to each other as people, to our buildings as living spaces, and to our natural world as the environment that encompasses us.

At Greenfox Schools, the way in which we come to understand the role of a school building is anchored in our ability to see the world as a greater system; to see that, as we become a global community, we need to slow down and consider how our present actions will affect the future.

We need to change some of our small, everyday behaviors in schools, like putting food scraps into a compost rather than throwing them into the garbage and at the same time, we need to plan for long term sustainable infrastructures, like solar panels on our school roofs, recycled greywater systems for school toilets, and natural light sources in our building designs.

We need to change our way of thinking about schools so that we see them as sustainable systems – both in their design and in their practice. Sustainability in education is about people. It is about our children, our teachers, our staff and our administrations. It is about positive energy, and it is about being inspired.