Earth Day Teach-In: A Model for Industry, Community, and Education Collaboration

Ken Barnard, Aviation
Greg Stephens, Arts, Science, Business
Raju Dandu, Engineering Technology

College of Technology and Aviation
Kansas State University at Salina

Abstract

Earth Day is a driving force for environmental awareness around the world. It can also be an effective event for educating the 21st Century Community and the Engineer community because engineers and technologists will play a vital role in civic engagement, green economic development, and global awareness related to energy, global warming and conservation. This paper presents a cross disciplinary team presentation from community, faculty in Engineering Technology, Business, and Aviation an Earth Day Teach-In. Earth Day Teach-In events included a focus on current environmental issues that apply to Earth Day and an explanation on how Earth Day can be used to educate the 21st Century Engineer by showcasing a K-State at Salina Earth Day Teach-In that featured faculty, staff and local industry leaders. Attendees will leave with ideas on how they can organize an industrial, educational, and community collaborative Earth Day Teach-In.

Introduction

Technology in our society has provided multi-faceted benefits for our "good life" that we enjoy today. We live in safe structures with climate controlled atmospheres incorporating every appliance imaginable to include worldwide communication links. We are provided convenient electric energy supplied through regional and national electrical grid networks. We commute to our workplace and shopping malls with environmentally controlled vehicles powered with cheap oil. Through our technology we have designed and built aircraft coupled with a support system that allows inexpensive travel to anywhere in the world with significant savings in that other precious limited resource called time.

Current Environmental Issues

There is a price to pay beyond the energy costs for this way of life. The environment in which all living things are interconnected is being adversely affected. Many aspects of technology have played major roles associated with the discovery, extraction, and the consumption of energy as well as bringing efficiencies throughout the process. The problem now being recognized is that

the cheap fossil fuel era of the past cannot be sustained into the future. McDonough & Braungart (2002) stated, "The design of products and manufacturing systems growing out of the Industrial Revolution reflected the sprit of the day- and yielded a host of unintended yet tragic consequences". Kerry & Kerry (2007) provided a typical example. In 1998 the Environmental Protection Agency declared mercury a "threat to human health" and suggested that mercury was the most dangerous toxin in our environment (mercury is a pollutant from burning coal). In 2000 President Bill Clinton under provisions of the Clean Air Act ordered coal plants to reduce mercury emissions 90% by installing technology controls for these emissions by the end of 2008. In 2001 President George W. Bush rescinded the EPA order and revised it to allow five times more mercury through 2018. A consequence of this action in 2003 resulted in 100,000 lakes and 846,000 rivers put under fish advisories due to 76% contamination due to mercury. In 2006 the EPA issued advisories in 46 states warning of fish contamination which pregnant women and children are particularly vulnerable. One in six of the four million babies born in the U.S. each year have a blood mercury level above EPA set safe levels and high enough to cause learning disabilities, impair motor skills, and affect intelligence (Kerry & Kerry 2007).

Burning fossil fuels increase levels of pollutants and greenhouse gasses. Burning of coal adds mercury, sulfur oxides, and fly ash, among others to our atmosphere. The burning of fossil fuels also adds carbon dioxide to our atmosphere. Carbon dioxide is a greenhouse gas which means it traps more of the sun's energy that would otherwise be radiated out to space. Carbon dioxide levels have been increasing exponentially since the mid 1800's when humans started burning fossil fuels in earnest. With the aid of technology engineered internal combustion engines which burn fossil fuels, powered the industrial revolution. Fossil fuels add carbon dioxide to the atmosphere in varying amounts. By weight for example coal adds 3.7 pounds of carbon dioxide for every pound burned, where as gasoline adds 3.1 pounds of carbon dioxide for every pound burned. Carbon dioxide once entering the atmosphere remains there for approximately 100 years. The carbon dioxide pre industrial levels never exceed 300 ppm (going back 650,000 years) today their accelerating through 390 ppm; methane another green house gas has doubled.

As population growth increases and as cultures around the world continue to industrialize, consumption rates of all resources are increasing including energy. We have responded to this increased resource demand by increasing mining of these resources. This simple way of thinking can not be sustained. There are finite resources that are quickly being depleted and will not be available in the future. McKibben (2007) stated that human beings have used, shockingly, more raw materials since World War II than in all of prior human history. Alternate energy and consumption sustainability must be adopted world wide because we are polluting or environment and changing our climate as a direct result of our excessive consumption habits.

Technology has played an instrumental role in our efforts to extract and consume more natural resources. It is now time to use technology for reducing carbon emissions by finding sustainable alternatives, implementing recycling and conservation practices. Moreover, national and world policies of carbon caps and trade with equable wealth distribution have to be implemented. Lastly, our short term way of thinking and habits of ever increasing consumption has to change. Sustainability has to be in our consciousness and actions. Knowledge carries with it a moral imperative to leave our environment healthy for future generations. Old ways of thinking coupled with new technology has lead to over consumption and extensive mining extraction of

all finite resources to include fossil fuels. This is the problem. A new way of thinking assisted by technology can help solve this problem by implementing consumption conservation coupled with sustainable and renewable energy alternatives including emissions and pollution controls.

Objectives

The overall objective of Earth Day Teach-In is to involve students, academia, industry, and community to:

- Bring awareness of the problem
- Change our way of thinking: wanting to be part of the solution
- Find alterative, sustainable energy policies
- Use technology to clean up and limit pollution

Corporate America is demonstrating that energy efficiencies can be strongly linked to profitability. Paul Anderson, CEO Duke Energy Corporation, "The time has come to act" with a growing number of companies 25+ know as the U.S. Climate Action Partnership are demanding a national carbon cap and trade, tax incentives on alternate energy, and tax on carbon emissions.

Organizing an Earth Day Teach-In

Organizing an Earth Day Teach-In is quite easy to do. Many people are interested in the topic and technology plays an important solution to issues raised.

Our Earth Day Teach-In was initiated by our campus Multicultural Committee which gave the event legitimacy and campus wide purpose. The Multicultural Committee provided a budget and administrative support; although the budget was limited and our expenses were less than $100.

Our initial hurdle was to develop a plan, organize various groups, generate campus support and exceed expectations in order to make the day a success.

Development of a Plan

Initially the purpose of an Earth Day event was wide open. The Multicultural Committee asked us to conduct an event as part of their monthly cultural programs. We started in early to mid spring by identifying those leaders on campus we thought would be helpful and could play a role in the event and we invited them to a planning meeting. Attending the meeting were representatives from Continuing Education, Student Services, Arts, Sciences and Business Department, Aviation Department, and Engineering Technology Department.

Our first meeting was a general brainstorming session and many ideas were brought forward. One person kept notes. The singular question of disagreement was whether to have a small speaker event or the broader teach-in event and the group was about evenly split with a tendency to lean toward a decision of going with the smaller event due to lack of time left since we were in mid-spring semester.

Following the first planning meeting we started making contacts to see what type of interest we could generate from local business and industry, educational, and other organizational support. The response and level of interest was very strong. One reason for the strong interest might have been the recent release of the movie "The Inconvenient Truth". Another reason might have been due to a recent low water supply issue in Salina. Nevertheless, timing may have played a role in the support. It should be noted that these timing issues may not always be present in other communities as was present in Salina.

Because of the strong business and community interest, we extended our concept to conduct a broader teach-in event and fleshed out a rough tentative agenda that included speakers, music, color, culture, art, poetry, and history. Within two weeks of our first meeting we met with the deans advisory staff to present this tentative plan and ask for other ideas and for support.

Following the meeting with campus leadership a core group that included three faculty and two staff persons met on a regular face-by-face basis and via e-mail. We had about five weeks to finalize the event, confirm all speakers, and make arrangements for publicity and the multiple details needed for this first teach-in event.

Our plan was as follows: To have the event on April 18 rather than on Earth Day which was the 22nd because the 18th fell on a school day and Earth Day was on a weekend day. Our choice for Thursday the 18th was because it is easier to find extra free time among students, classes, and faculty on Thursday's at our college. We also felt we needed to manufacture and generate a crowd by having the event at times when people and student would likely be present for other reasons and not expect people or students to voluntarily attend on a weekend at the campus.

We also planned to kick off the Thursday Earth Day event by sponsoring a showing of the film Inconvenient Truth on Wednesday evening at our college library. Following the film we planned to have a panel discussion led by international students from Kazakhstan, Nigeria, Kenya, Japan and Mexico and moderated by Dr. Ken Barnard. The evening event focused on the cultural and international dimension for Earth Day and was the connection of the event to our Multicultural Committee sponsor.

On the following day, our plan was to start the Earth Day Teach-In at our cafeteria at noon and continue throughout the afternoon with break-out sessions on a multiple of topics. We picked the noon time period and the cafeteria location because our cafeteria sponsored $3.00 Thursday all you can eat luncheons which generates a large following from the community that usually come out to campus to eat which gave us a ready made crowd for our first session.

Prior to the event, we contacted the Kansas State Historical Society for a traveling KITES (Kansas Interpretive Traveling Exhibit Service) displays and selected "By a Thousand Artifices: The Folk Technology of Farming in the Flint Hills". The exhibit was on display in our cafeteria for one week prior to the Earth Day event and was used to help publicize the event.

During the event we planned to coordinate with our Facilities Department to plant a tree on campus and at the end of the event we planned to have a faculty supervised volunteer trash pick-up along the roadway leading into campus.

Organizing Various Community Groups

The groups we planned to target for support and participation were students, faculty, business and industry, other community organizations, and local citizens. To target students we contacted student government for support and developed an e-mail campaign and campus flyers. We also encouraged faculty to allow and encourage their classes and students to attend all or part of the various breakout sessions or events.

In addition, several of our sessions were planned with students in mind hoping the events would add to their educational experiences and generate interest in attendance. For example the Wednesday evening panel discussion at the library included international students. We also included the Students Involved in Free Enterprise (SIFE) club in one session as presenters on their recent trip to France to learn about local culture and foods. We included a student "Call to Action" with a goal to have a number of students send text message to their friends about Earth Day. Engineer Technology students had their solar boat project on display. Breakout sessions included topics of interest for students which included topics such as Leadership in Energy and Environmental Design (LEED) certification standards, energy efficient lighting systems, transportation, wind energy, green marketing, local foods, and energy savings. Finally, students were encouraged to play games, fly kites and play outdoor music.

Faculties were encouraged to participate by being involved with student events, breakout sessions, and a poetry reading. Since this was our first event, and Earth Day is often thought of as a soft educational event, some faculties were inquisitive about the event and they attended breakout sessions.

Business and industry were among the most motivated participants because they saw this as an opportunity to extend themselves to the college, showcase what they are doing, and as part of their community and social responsibility. Our strategy was to elevate technology by showcasing how business, industry and technology focus on solutions to environmental issues. Earth Day is a natural event to make this possible. For example Westar Energy utility saw this as an excellent opportunity to talk about energy saving issues related to electrical consumption. Bucher Willis Ratliff showcased their LEED construction certification program. North American Philips lighting was very interested in doing a breakout session related to efficient lighting systems. Images recycling volunteered to present at a breakout session. And local wind energy manufacturers provided displays of working wind generators. Breakout sessions also included zero water landscaping, composting and locally grown organic foods. A rap up session was conducted on how to "Reduce Your Carbon Footprint". Other opportunities were also possible on various topics but time slot availability was a constraint for this first teach-in.

Community organizations such as the Sierra Club and Audubon supported the event by encouraging their members to attend. The Land Institute was a partner and one of their staff moderated at the cafeteria. Local cooperative extension personnel helped with the tree planning and participated in a breakout session on composting. The dean of Brown-Mackie (a local

private business college) participated in the alternate transportation breakout session. Local citizens were encouraged to attend and many did. Tying the event with a discounted cafeteria meal helped draw a larger crowd. We also did two radio talk programs and the Salina Journal carried a news story promoting the event. Finally, local Community Access TV covered the event and video taped various presentations for later broadcasting on the local Access TV station.

Putting Together A Breakout Session

The organizing committee encouraged faculty and students to get involved in coordinating the breakout sessions. Several faculty had "can do' attitudes and took responsibility in organizing breakout sessions. The committee explained the overall objective of the Earth Day Teach-In to raise environmental awareness in students, academia, industry, and community. Further the session topic should bring an educational experience with an attitude change – behavior change in the way one uses energy. Before determining the scope of each session the committee agreed on a common topic framework to address the objectives of the event with the following guidelines:

Bring awareness of the problem

Change way of thinking in relation to the energy consumption

Involve experts in the topical areas

Identify two speakers each for 25 min. per session

For example the session topic "Energy Efficient Lighting Systems", knowing the objectives, scope of the session, and the expertise needed in the area of energy efficient lighting made it easy to plan for the activities. Faculty responsible for organizing the session contacted the local industry, Philips Lighting a leader in energy efficient lighting products. The company has expertise both in product development and manufacturing. Faculty gathered the information about personnel and their expertise and contacted the people and explained the objective of the event. This process identified a person of authority in the subject area that would lead the session. During the discussion on the scope of topic, we focused on keeping the event educational, interesting and revolve around the theme of the event. The main emphasis of the topic is to address the role of industry on environmental issues and how the public can be involved in energy conservation.

The speaker from industry talked about their role in energy efficient lighting systems technologies and trends and the other speaker focused on saving potential from adopting the energy efficient lighting systems and products by consumers. In parallel to the presentation the speakers also displayed the energy efficient lighting products that are currently available in the market.

Summary

Earth Day represents an excellent opportunity for technical educators to showcase their programs, collaborate with business and industry, network with community organizations and

other constituents and provide a needed educational focus for students and provides a platform for faculty expertise.

We received excellent feedback on our event. Several faculty members have stepped forward after the event asking to be included in next year's Earth Day event. Business and industry participants were very motivated to showcase their technology and what they are doing on Earth Day type of issues. College leadership saw an opportunity to assist in future events as a way to highlight the college, faculty expertise and community service. The students had fun, and they learned practical information that served as a bridge between their technical oriented classes and current events of global warming, energy efficiencies, and alternative sustainability issues.

Finally, climate change is an importance issue facing all of us. We feel by making a small difference in some lives of those attending is part of a college and university's mission for the communities they serve.

The event exceeded expectations, which is a good way to build success. Next year we can plan earlier, think bigger, and generate more support. Given more time, more community organizations would likely become involved. One suggestion would be to include them earlier in the planning process. In conclusion it is our hope that our experience will help other college and universities promote Earth Day activities on their campuses across the nation.

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KENNETH W. BARNARD

Ken Barnard has a doctorate in Aviation and Space from Oklahoma State University, and is a professional pilot with Airline Transport Rating, Certified Flight Instructor in airplanes and helicopters and Mechanic Airframe and Power Plant ratings. Ken is a professor in Aviation at Kansas State University at Salina. A former Department Head and Director of an International Pilot Center Ken became interested in climate change issues while doing atmospheric research for the Aviation Meteorology class he currently teaches. He was selected as one of the one-thousand individuals from around the world to be trained at the ClimateProject founded by the Honorable Al Gore. Ken is active on the lecture circuit addressing climate change issues.

GREG STEPHENS

Greg Stephens teaches business and management courses in the Technology Management program at Kansas State University at Salina. He is an Associate Professor and serves on several non-profit organization boards. Greg also produces local TV programs for Community Access. He also served as chair for the Institute for Rural America and was recently awarded The Inspire by Example faculty award for community service by K-State.

RAJU S. DANDU

Raju S. Dandu is the program coordinator and an associate professor of Mechanical Engineering Technology at Kansas State University at Salina. He teaches courses in CNC Machine Processes, Material Strength and Testing, Advanced CAD/CAM, Industrial Instrumentation and Controls, and Automated Manufacturing Systems II. He is active in offering workforce training in reliability centered maintenance, process instrumentation and PLCs. His areas of interest are: Reliability Centered Maintenance, Energy Efficient Lighting, CAD/CAM, Industrial Automation, and Smart Materials. He is a member of ASEE, ASME, and SME.