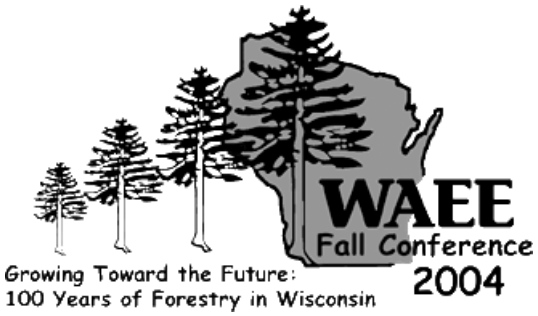
Join WAEE to Celebrate 100 years of Forestry in Wisconsin

The Wisconsin Association for Environmental Education (WAEE) invites you to join in the forestry festivities at their annual Fall Conference this October 28-30 at the Telemark Resort in Cable, Wisconsin. Entitled "Growing Toward the Future: 100 Years of Forestry in Wisconsin," this spectacular event will showcase keynote speakers, informative sessions, musical fun, professional development, and World Champion Lumberjacks, all in a vibrant Northwoods setting. For more information, check the WAEE Web site at www.uwsp.edu/waee or call 715.246.2014



A Wisconsin Center for Environmental Education Initiative

INSIDE:

A Sneak peak at KEEP's Renewable Energy Education activities!!

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Learning Resource Center
University of Wisconsin-Stevens Point
Stevens Point, Wisconsin 54481

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KEEP On Going

Wisconsin K-12 Energy Education Program Newsletter

Fall 2004 Vol. 5 No. 2

Teachers learn about energy in Ashland, WI

In this KEEP issue:

Energy is Happening!

Energy is fast becoming the "in" topic. Everywhere you look, energy happens. It's in the news, it's in your home, it's in your school!

Is energy education in your classroom? Where do you go if you need more energy? To the Wisconsin K-12 Energy Education Program (KEEP), of course! If you are receiving this newsletter, you have probably taken our introductory KEEP course. Did you know we have other courses you can take to further increase your energy know-how? You can learn about **renewable energy** (NR 732: Doable Renewables), **school building energy efficiency** (NR 734: Wisconsin Cool Schools), and **energy education online** (NR 733: Energy Concepts and Practices). Keep in mind that most Wisconsin utilities provide scholarships to cover all or most of the tuition fees associated with these courses. Use these graduate credits for your professional development plans.

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KEEP Staff Corner

Michelle Gransee-Bowman Says Goodbye

Michelle and her family have moved to be closer to her parents in Minnesota where she is working as a stay–at–home mother to her four children. If you have not met Michelle yet don't worry, we have hired her as an Adjunct Faculty member to teach KEEP courses in western Wisconsin. Michelle has had a profound impact on the other staff, teachers and partners she has worked with and she will be greatly missed.

While we will miss her, we are surrounded by the accomplishments she has brought to the KEEP program. Michelle led the way in the development of the KEEP Renewable Energy Supplement which will be printed at the end of the year. She also worked to create a graduate credit course which focuses on renewable energy. These courses were piloted last school year and will be offered on a regular basis starting this school year! One of Michelle's biggest accomplishments was her effort to develop a teacher track at the Renewable Energy and Sustainable Living Fair which is held annually in Custer, Wisconsin. Michelle developed the Educator Tent at the Energy Fair that acts as a gathering place for educators of all kinds to meet and exchange ideas about how to teach renewable energy. Thanks to Michelle's hard work, this past summer KEEP had a record number of teachers participate in the graduate courses offered at the Energy Fair. The remaining staff will continue to work to make the activities at the fair available to more educators every year.

Thank you Michelle for your hard work, inspiration and friendship over the past two years.

Pictured on the right are three of the Gransee-Bowman children

KEEP Staff

Jennie Lane
Director
Carrie Hembree
Project Coordinator
Carrie Bea Ziolkowski
Program Specialist
Lindsay Dahl
Program Assistant

KEEP Advisory Committee Members

Randy Champeau (chair)
Director
Wisconsin Center for Environmental Education
Dean Gagnon
Agriculture and Natural Resources Consultant
Department of Public Instruction
Peter Hewson
Professor of Curriculum and Instruction
UW-Madison
Kathy Kruthoff
Elementary school teacher
Washington Elementary School
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Director of Operations
Wisconsin Energy Conservation Corporation
Shelley Lee
Science Education Consultant
Department of Public Instruction
Pat Marinac
Science and Staff Development Program Leader
Appleton Area School District
Mary Meunier
Energy Program Manager
Department of Administration
Andrea Minnlear
Project Manager
Education Outreach Services
Energy Center of Wisconsin
Tehri Parker
Executive Director
Midwest Renewable Energy Association
Lynn Rinderle
Middle School Teacher
Fritsche Middle School
Barbara Samuel
Marketing and Communications Coordinator
Department of Administration
Dan Sivek
Professor of Environmental Education
UW-Stevens Point

Andrea Minniear

Energy Center of Wisconsin

In the Spotlight

One of the reasons KEEP has been a success with Wisconsin teachers is our ability to offer low cost graduate credit courses with funding from Wiscosnin utilities. This is made possible with the support of Andrea Minniear who works to secure over 200 teacher scholarships a year! This is why KEEP has choosen to put Andrea "in the spotlight." Thank you Andrea from the KEEP staff and the over 2000 teachers who have received scholarships because of your dedication to energy education.

Andrea joined the Energy Center in 1994 to direct library services and build a unique collection of print and electronic resources covering all aspects of the energy industry. Today she is responsible for a variety of electronic information projects including Web site planning, design, and development; database design and implementation; and marketing information products and services. She also manages the development of virtual case studies and consumer energy education initiatives. Andrea has expertise in information architecture; Web design and development; and adapting print materials for the Web. Her other responsibilities include strategic planning, budgeting, and managing teams.

Andrea's goal is to make information as accessible as possible. In her current role as a project manager with the Energy Center, she has been able to realize this goal through many interesting projects. She is passionate about developing and sharing energy information with businesses and the public.

Andrea loves her role as the Energy Center's KEEP liaison because she gets to see the program make energy information as accessible as possible through its comprehensive curriculum, teacher trainings, and other successful outreach initiatives.

KEEP High School Supplement Links Educators to Support

Every day, high school students are faced with increasingly complex options. From which jeans to purchase to what career to choose, students are bombarded by options at all levels. The KEEP High School Supplement **Energy Matters: A Web-based Exploration of Energy Today and Tomorrow** can help educators guide students toward making more informed, environmentally-friendly choices. With topics including global renewable energy development, energy efficient transportation, and recycling, **Energy Matters** offers educators a one-stop shopping source for quality Web sites, background information, classroom ideas, and student involvement activities. Each topic is being correlated to state academic standards to ensure relevance to Wisconsin classrooms. Looking for career suggestions? Each topic features a "Careers" section, highlighting potential professions to arouse student interest. Need more support? Throughout the Web site, convenient "Ask An Expert" links connect you directly to KEEP Staff via email exchange. The KEEP High School Supplement is a contemporary tool to meet the contemporary needs of educators. To check it out, go to the KEEP Web site at www.uwsp.edu/keep and click on Resources, then look for the High School Supplement.

Renewable World

Summary: Through designing a class book, students will explore renewable energy use world-wide.

Grade level: 5-8 (K-12)

Subject areas: Language arts, social studies

Setting: Classroom, library, and community

Time:
Preparation: Two hours
Activity: One week

Vocabulary: Developing nation, industrialized nation, renewable energy resources

Resources:
Menzel, Peter. *Material World: a Global Family Portrait*. San Francisco: Sierra Club Books, 1994.

Related KEEP Activities:
Have students participate in KEEP activities "Energy Divide" or "Renewable Candy Resources" prior to this activity to help them understand renewable energy basics.

KEEP Connections
Visit the KEEP Web site and check out the High School Supplement under the Resources link (www.uwsp.edu/keep). An online version of "Renewable World" is available, including an interactive global map.

Objectives

Students will be able to
- identify renewable energy resources being used worldwide; and
- name countries throughout the world that use renewable energy.

Rationale

When studying renewable energy, its uses and implications, it is important for students to be aware of the 'big picture.' Through this activity, students explore where renewable energy is being used throughout the world.

Materials

- Copy of the book ***Material World*** (optional-See **Resources**)
- Writing utensils and paper
- Reference materials related to energy resource development
- World map
- Magazines or Internet access for student exploration on renewable energy use worldwide

Background

Energy comes from many sources and is found in many forms. This wide range of form and scale lends itself to a variety of applications. Energy is used for heating, as fuel, to sustain life, to move objects, to generate electricity, etc. Yet, there are environmental costs for the use of energy resources. Extracting fossil fuels affects the cultures, environments, and health of the region. Using renewable energy can help mitigate the effects of extracting fossil fuels by prolonging the availability of nonrenewable resources.

Many developing nations are benefiting from the development and deployment of renewable energy equipment from industrialized nations. At the same time, the use of renewable energy technologies in developing countries is providing a market and increased knowledge base for applications in industrialized nations. The use of renewable energy resources also allows countries that are dependent on foreign energy resources to become more energy independent.

Photos

Left: Man bagging charcoal made by traditional earth-mound kilns, using wood collected from a forest near Chandrapur, India

Right: Drawing hot water from flat plate solar collectors (Ethiopia)

Procedure

1. Inform the class they are going to develop a picture book of renewable energy use around the world. If the book **Material World** is available, show them how photographers and journalists compared household possessions of people in different countries.

2. The class can work together or can be divided into small groups with each group having one country or continent to research. Make sure that within the class, students choose a variety of countries/regions. Encourage students to visit KEEP's Web site and check out the online version of "Renewable World." Locations that will be researched can be noted on a world map with a pin or flag.

3. Tell students that they will be designing a two-page spread for each country researched. Provide text size, margin, and other considerations for students. Suggest that they include aesthetic and cultural graphics (e.g. the country flag or colors).

4. As a class, brainstorm the areas of interest to include in the two–page spread and class book. The class can develop rubrics to help guide project development and evaluation. Some possible areas include:

- Country name, population, size, political structure and standard of living.
- Photographs of renewable energy used in their country (students may have to use photos of countries from their region).
- Energy sources used for heat, fuel, electricity, etc.
- Major renewable energy resources used (solar, geothermal, biomass, etc.)
- Significant applications of renewable energy use (e.g. hydropower provides 70% of countries electrical needs).
- Major investments or developments in renewable energy (e.g. major oil company provided photovoltaic arrays in remote locations of a developing country).
- World map with location of country.

5. Give students one week to complete their assignment. For photographs of renewable energy use worldwide, students can search through magazines, articles, and the Internet.

Assessment

Have students present their investigations in front of the class, sharing with them the details of renewable energy use that they found in their country. Have students place color-coded markers on the class map signifying the significant renewable energy resources (you may want to establish criteria, e.g. the top three renewable energy resources) that are used within the country or region.

Have students turn in their country pages in alphabetical order according to country (or choose another method of organizing). This will provide for easy compilation and grading. Once compiled, copy pages and provide students each with a copy, or ask for a student volunteer to design a cover and keep original in room for students to see.

Extension

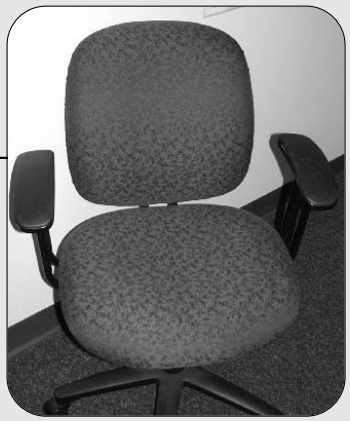
As an addition to their country page, have students research the political and societal influences that impact renewable energy use around the world. Ask students to include answers to one or more of the following questions:

- What types of incentives impact renewable energy use in my selected country? (e.g. tax incentives)
- What influence does 'payback' have on the renewable energy resources that are used? (e.g. biomass vs. PV installations)
- What support or hindrance is provided by the political structure? (e.g. zoning regulations)
- What impact is large business having on renewable energy development? (e.g. utility–sponsored PV systems)
- What environmental or societal costs or benefits are involved in the development and use of the renewable energy technologies being used? (e.g. hydroelectric dam influencing fish communities or biomass replacing coal).

Photo

Shepard family of Karakum using several portable solar collectors to prepare hot tea in the desert

KEEP is hiring! Are you a KEEPer?



Can you see yourself working for KEEP and sitting in this chair? KEEP is in the process of hiring a Energy Education Resource Specialist to join our KEEP team!

The Wisconsin K-12 Energy Education Program (KEEP) is seeking an Energy Education Resource Specialist (full time academic staff) to serve as project leader for various activities within KEEP, such as developing, disseminating, and managing energy education support materials. Appointment date: January 2005.

Qualifications: background in environmental science or education; Bachelor's required, Master's preferred; excellent computer and communication skills, ability to work collaboratively or independently. Experience working with teachers, communities, and diverse populations desirable. Salary commensurate with experience, plus benefits. Application Procedure: Send letter of interest (no email), resume, transcripts, two letters of reference, and the names, addresses, and telephone numbers of two additional references to:
Jennie Lane, Director
KEEP, WCEE, LRC, UWSP
Stevens Point, WI 54481
For a full position description, contact Jennie Lane 715.346.4770 or email energy@uwsp.edu. Screening begins October 29, 2004.

Energy is Happening! (con't)

Another source for energy fun facts is our Web site (www.uwsp.edu/keep). From our site, you can link to Focus on Energy (www.focusonenergy.com), a public-private partnership offering energy information and services to energy utility customers throughout Wisconsin. Check out their Web site to learn how you can save energy where you live and where you work. Through KEEP and Focus on Energy you can be further assured that energy–specifically energy efficiency and renewable energy–is in your classroom!

Do You Know the Flow of Energy in Your School?

Expand your knowledge of how energy flows through your school through participation in a building audit, learn energy saving techniques for your classroom, and discover how to use your school building as a teaching tool. In partnership with the Focus on Energy Schools Program, this KEEP initiative seeks to empower teachers with an awareness of school building energy use and how they and their students can make a difference. Call or email Carrie Hembree at 715.346.4320 or chembree@uwsp.edu to learn more.

It's Electric!

The roar of the crowds, the thrill of the competition.....the environmental friendliness of the cars?? Students across Wisconsin are experiencing the transportation revolution first-hand as they design, build, and operate fully electric cars to vie for the Electrathon title this May. Do your students have what it takes? For more information or to get involved, contact the Midwest Renewable Energy Association at info@the-mrea.org or 75.592.6595. Ask for Josh or Tehllula.

Energy Sparks

Sneak a peak into KEEP's latest resource, Doable Renewables: Renewable Energy Education in Wisconsin. This resource will be offered through NR 732: Doable Renewables, beginning in spring 2005. You can sample a few of the activities in this newsletter. Let us know what you think!

Corn in Your Car?

Ethanol is made by fermenting and then distilling starch and sugar crops–maize, sorghum, potatoes, wheat, sugar-cane, even cornstalks, fruit and vegetable waste. It can be used to increase octane levels, decrease engine emissions, and can extend the supply of gasoline.

Have students investigate the availability of ethanol-blended products in their community. Divide the class into working groups and provide each group with a street map of the community. Assign each group a region of their community to investigate.

Allow students up to two weeks to map stations in their region that do and do not sell ethanol fuel (students can visit or call the stations) and to develop a one-page fact sheet about ethanol, summarizing how it is produced, used, and its economic and environmental costs and benefits.

Have the groups transfer their researched information to a class map. The class can create a key, using colored stars or dots to represent fuel stations of different ethanol classifications.

As a class, review the presence (or absence) of ethanol and ethanol blends in their community. Based on their research and perceptions, discuss pros and cons of ethanol use in their community.

Hydrogen Generation

Fuel cells are an evolving technology that use hydrogen as fuel. The fuel cell basically reverses electrolysis - hydrogen and oxygen are combined to produce electricity. Hydrogen fuel cells are very efficient and produce only water as a by-product, but they are expensive to build. With technological advances, small fuel cells will be readily available to power electric vehicles and larger fuel cells could provide electricity in remote areas.

Ask students if they have ever imagined a future situation. Discuss the reasons why they spent time doing this exercise and what purpose it served. Ask students how imagining the future might help to prepare for future energy use practices. In particular, how might the use of an alternative fuel source such as hydrogen affect future energy use practices?

Challenge students to envision how fuel cell use might affect life in the future by writing a four-page fictional essay about a day in the life a student living in the year 2050, focusing on energy consumption; in particular, the use of hydrogen fuel cells. Encourage them to base their stories on research, browsing newspapers, the internet, and other resources for information about alternative fuels and in particular fuel cell technologies. Have students share their scenarios and scrutinize the stories for credibility and feasibility.