Mar 6th, 1:15 PM - 2:45 PM

Afternoon concurrent track 1: Sustainability in the K-16 classroom

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EDUCATION FOR A GLOBAL SUSTAINABLE FUTURE: 21ST CENTURY CHALLENGES IN SUSTAINABILITY & CLIMATE CHANGE EDUCATION

UNIVERSITY OF NEVADA, LAS VEGAS
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Beginning in 1982, the National Science Teachers Association called for curriculum designers to develop materials that demonstrate the interconnectedness among science, technology and societal issues while presenting both positive and negative influences. This session will focus on using the STS/EEE learning model to design curriculum for secondary science that emphasizes sustainability issues focused on the Colorado River system. The presentation will outline the essential features of the STS/EEE model, then engage participants in applying the model in a novel situation.
Using the STS/EEE Model in 6-12 Curriculum to Understand the Sustainability Issues Related to the Colorado River System

Ellen Ebert
Southern Nevada Regional Professional Development Center
March 6, 2009
Our vision is of a life-sustaining Earth. We are committed to the achievement of a dignified, peaceful, and equitable existence. A sustainable United States will have a growing economy that provides equitable opportunities for satisfying livelihoods and a safe, healthy, high quality of life for current and future generations. Our nation will protect its environment, its natural resource base, and the functions and viability of natural systems on which all life depends.

The President’s Council on Sustainable Development
Interviewing Students
Science

- Water has hydrogen bonds
- Made up of hydrogen and oxygen
- Unique properties found only on Earth
- Polar
- Causes cohesion, adhesion
- Dissolves things
- Neutral substance that exists in three states
- Plays a role in global climate change
Water costs money
We buy bottled water
They are buying water for baseball fields
There are waterfalls on the strip
Someone is making money on water
Water helps the economy
It costs money to get water
Technology

- Sinks, toilets, showers, pools, sprinklers, water softeners
- Hoover Dam and hydro-energy
- Water wheels
- Rain collectors
Ethics

- No water – no people
- Can’t pay bills
- Water is distributed unequally
- Water is over-used
- People move water from one place to another
- It isn’t sustainable
- Colorado River provides us with life and we share the water with other states
- Sometimes we make good decisions
- Water is renewable
**Society**

- Provides resource we need to survive
- People take water for granted
- The Hoover Dam provides energy for us
- Water makes people angry
- People steal water that we need to share
- Many states share the same water
- Keeps us alive
- Fights for rights to water
- Water gets wasted
Dry, hot place
Keeps place alive
Plants and animals
Land
No water – we die
We water grass for football, baseball
Something to drink other than coke
Drought
Helps us survive in the desert
Sustainable Water in the Colorado River
Challenging the students to think more deeply about the topic…

**Sustainable Water in the Colorado River**

- What is the actual cost of water from the Colorado for Las Vegas, for farmers in the Mohave, for industry?
- How can water be used and reused so that everyone has access to it? What can be done to make people more aware?
- What can be done to plan for water use in a desert environment that is both pleasing and sustainable?
- How can research on water quality and water use help make water a reliable resource?
- What are the costs/benefits for everyone who pumps water from the Colorado?
- What technology solutions are most feasible for water quality, water recycling and stretching a limited resource?
Sustainable Water in the Colorado River

Science
- How would water be effected if scientist had more used for our water?
- What would science be like if we never had water?
- Could SN use ocean water to help solve our water crisis?
- Can we can take water from space to help solve our water crisis?

Economics
- Can we sustain our water if we can a find a water distribute it properly?
- If we were to use ocean water, how much $ would it cost?
- With our current budget crisis, and the potential getting worse, how will people afford fair distribution of water?

Society
- How would society be impacted if we ran out of water in Nevada?
- How does the uneven distribution of water effect society?
- How is SN impacted by the fact that we have water?

Environment
- What would happen to the environment if we ran out of water?
- Can landscaping, like rocks, save water use?
- Does manufacturing artificial grass hurt the environment?
- Is the environment impacted by water technology?
- How would an increase in rain impact our environment?

Ethics
- What would happen to the water if our population continues to increase at the same rate?
- Is it ok for so many people to have pools in Southern Nevada?
- Is it ok to use water to water parks, field, golf courses, and gardens?
- If we take water from the ocean for SN, will it impact the ocean?

Technology
- What would happen to the water if we had more advanced technology?
- What would have happened if we never had hydro-electric technology?
- If we were to use water wheeling on the river, how many houses would it give power to?

Resulted in...
Fosters student literacy in sustainability
Extension of classroom to community
Encourages higher level analysis of complex issues
Extends science discourse and communication across disciplines
Easily adapted into current curriculum syllabi
Encourages students to consider moral and ethical implications of resource use based on well-rounded discourse
Develops critical thinking about resource use
Scientific Inquiry includes:

- Engagement in a scientifically oriented question
- Development of working hypotheses that can be examined
- Formulation of explanations based on scientific evidence
- Connection of findings to previous scientific knowledge
- Communication of results
Questions???