

STEAMed: Exploring the Intersection between Global Humanities and STEM through Water

Ideas for Classroom Application



Friday, March 31, 2017

2:00 – 4:00pm, BE 151

Bioscience Education Center, Germantown Campus

Table Topic	Table Discussion Leaders
Water and Myth	Alessandra Sagasti [Biology] and Miriam Simon [English]
Surprising Uses	Craig Benson [Chemistry] and Marianne Szlyk [English]
Water Security	Karl Smith [History] and Jim Sniezek [Chemical and Biological Sciences]
Cultural and Traditional Uses	Genevieve Carminati [Women's and Gender Studies] and Chris Haga [Geography]
Crystal, Quantum and Plasma	Max Nam [Physics] and Nancy Nyland [Libraries]
Contamination	Raquel Bertiz [Nursing] and Sara Ducey [Nutrition & Integrative Studies]
Legal Protection	Michelle Moran [History] and Kris Lui [Physics]
Climate Change	Megan Van Wagoner [Art] and Jim Smith [Biology]

The teaching and learning ideas listed below were generated by faculty and students during the STEAM event. For more information, contact Rita Kranidis (rita.kranidis@montgomerycollege.edu) or Carol Moore (carol.moore@montgomerycollege.edu).



Ideas Listed by Table Topic

Climate Change

Jim Smith (Biology) and Megan Van Wagoner (Art)

Resource Guide:



STEAMed Resource Guide Climate-Change-Info-Graphics.pdf

Megan Van Wagoner – In science class, tell human stories to convey scientific concepts/potential outcomes. There are films and long-form journalism being produced and published online. Use these forms of storytelling as a jumping off point for discussions of impact

Megan Van Wagoner – Ask students to read a current article on a climate change issue/impact. Then ask them to create an illustration depicting the essence/point of the article. (This is an alternative to writing a summary of the text.)

Alya Benhausen – color coded notes help students memorize; using time lapse images to help people to understand the issue; design problems; draw picture diagram as short answer

Francine Farr – 1) Web resources sheet reference (handout) 2) color coding in student notetaking in France 3) Biomimicry and engineering and recycling

Anne Mustafa – Art can make scientific ideas more concrete to people. When people see timelapses, for example, they can see climate change and then are able to believe in it. Classrooms should present forms of art so that students are not just told facts and expected to accept them, but rather students see acts and believe it for themselves.

Teresa Peachey – Have students read a current climate change article, but give them a choice of a written summary or an illustration of what the article states.

Amanda Miller – Design problem to communicate change or express a concern

Jim Smith – Use of student drawing to summarize/simplify complex topics

Alan Cutler – Students can make drawings to illustrate concepts

Surprising Uses of Water

Craig Benson (Chemistry) and Marianne Szlyk (English)

Allan Yu – Relate the idea and reward students

Angela Lanier – Experiment with satire and have students write a “modest proposal” for addressing the issue of water scarcity or other environmental issues.

Craig Benson – Start with a single product – have students identify external costs associated with that product. Each student should contribute something different so they can begin thinking about hidden costs of goods.

Janine Askins – Have students imagine a world with very limited water supply and how they would live/cope/survive/thrive.

Marianne Szlyk – audience analysis of group you’d convince to save water – whether you use it more efficiently or refrain from a behavior. Group should be different from you. LA Times interactive feature on food/use of water.

Protecting Water: Exploring the Science and History that Shapes Water Policy

Michelle Moran (History) and Kris Lui (Physics)

Anonymous – Include the resource water in the revenue and profit models in math class. Provide a historical blurb, perhaps describing a case where protecting a resource increased profit, when the model is introduced.

Anonymous – Provide a newspaper topic on a current scientific issue; pair with an excerpt from a historical newspaper account of similar issue. Ask students in bio class to compare/evaluate science discussed. In history class, ask how the issue under discussion should be recorded in the historical record (e.g. health crisis emerging from contaminated water).

Ebuse Mba – I feel it is necessary for individuals to be educated about the important of information especially that which is painstakingly gathered through research/science, and the importance of ensuring that this information remains publicly accessible.

Kris Lui – 1) Recent news story, related to topic – balanced article? Environmental problem. Data from what? 2) Culture (intersectionality) and arts related to science – write poem to intro info about science topic

Gillian Backus – 1) Watch “American Experience” about Rachel Carson, read Silent Spring and bring a humanities/science prof to class on discussion day 2) Use <https://www.iisd.org/ela/> on experimental lakes in Ontario, Canada for educational resources 3) In history classes, keep local history.

Michael McDavit – 1) Social history vital to understanding and solving environmental/water problems; can learn from Canadian scientists who were restricted under the recent conservative 2) American scientist newspaper article on water issue – students answer set of questions and write short essay 3) poetry lesson/persuasive argument about protecting water 4) Colorado River – sourced by glacial and now melt – with climate change, what will we do?

Water Security

Karl Smith (History and Political Science) and Jim Sniezek (Chemical and Biological Sciences)

Anonymous:

For international relations and politics of the developing world, water scarcity will lead to increasing pressures on migration, conflicts and urban growth

Nutrition: eat more/less meat and how much water it takes to grow it

1) Role play that changes perspective on water policy: developers, industrialists, environmental and plan water source management 2) For bio class: what happens to water supply when budget for infrastructure is cut? What will be the effect? 3) Have students do water usage foot print exercise.

A learning community! CHEM 109 and SPAN 102

Have students calculate (with differential equations) how much water they use vs. how much they save

Use wastewater to generate power for engineering and physics students

Contaminated!

Sara Ducey (Nutrition and Integrative Studies) and Raquel Bertiz (Nursing)

Maisha Duncan – “6 Word Memoirs” or 6 word poems about water. Make lists of positive and negative association and then craft

Maisha Duncan – Research project on local water policy – follow the water from tap to source. Gov’t websites (USGS, EPA, MD/MoCo/, advocacy groups, journals/news articles – goal/outcome is introduction to different types of resources.

Ethan Goffman – Have students research where the water they use comes from and what possible sources of contamination may be. Also discuss where it might end up when they're done with it.

Anita Mohan - Bottled water: how safe is it to drink?; Lead in toys – does it affect the growth of kids?

Raquel Bertiz – health and water source, contaminated water exposure; Consciousness of chemical/ pharmaceutical use and its eventual effects on water source

Water and Myth

Alessandra Sagasti (Biology) and Marcia Bronstein (English)

Joshua Kuon - Allow student club to organize an event that involves water in order to allow students to think beyond an assignment, and to be able to reflect on the values of water.

Alessandra Sagasti – 1) Provide students with articles about Ganges River pollution and mythology – have a project or paper where students combine ideas for both to come up with possible solutions to environmental problems. 2) Write a paper: talk about a situation in which you learned something in class that clashed with your beliefs.

Jesse Parker – Water is essential to life – permeates our existence, our history, commerce, art, and represents life cleansing practices in various cultures. Culture and science often compete for privilege. For example, water use is widespread throughout communities along the Ganges in India which has a mirror representation in Flint, Michigan. Encouraging a pan-college discussion of water's influence and import in all disciplines is vital. It is important to emphasize science is not a belief system. So, how do we strategize cooperation between cultural and scientific understandings of the value of water.

Cultural and Traditional Uses

Genevieve Carminati (Women's and Gender Studies)

Margaret Latimer – Have a campus or CW theme. Problems, readings, performance, discussion occurs around the theme.

Krissia Ortiz – Encourage students to think more about how they contribute in a positive way to the community in terms of better (sustainable) use of water. All students would be conscious that their everyday activities regarding water will affect their future children or grandchildren.

Amir Nili – The potential capability that women have and can contribute to conserving and preserving water. We also discussed historical and traditional aspects of water.

Genevieve Carminati – 1) Study rituals/practices/ceremonies related to water – find ways they relate 2) students need to be thinking about the future as they consider their studies – we all need to know about climate change, pollution, and so on 3) Share stories, experiences from students' backgrounds about rituals, ceremonies – consider similarities/influences 4) common readings across disciplines – student suggested Sherman Alexie's *The Lone Ranger and Tonto Fistfights in Heaven*.

Caroline Toscano – 1) carrying water back and forth – physiological toll on body 2) beach – relaxation, now contaminated 3) global warming – flooding, building houses on flood plains

Hidden States of Water

Max Nam (Physics) and Nancy Nyland (Libraries)

Zachary Lacey – Maybe think about the engineering applications that the properties of water can have. Is there any way to implement physical or chemical properties of water into designs (especially in terms of preventing erosion or design failures). The dynamic properties of water could allow water to fill into gaps or spaces. The materials used in designs is important (e.g. ships and ocean water)

Esat Atikkan – Water – living systems – biology – evolution – alternatives to water

Neda Nikoobakht – Show video = group activities related to water

Jerry DeVera – Temperature greatly affects the states of water. At really high temperatures plasma can be created; Different conditions can affect the shape of water crystals, different frequencies from those conditions affect the shape.

Bill Krayner –1) Use photos of snowflakes to reconstruct the physical conditions leading to the formation of the crystals (Ken Libbrecht, Dept. of Physics, Cal Tech) 2) Ask students to make visual renditions of exoplanets with water on their surfaces based on physical principles.

Table Topic: Climate Change