

Tenure Track or Mommy Track? (OS16L-05)

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The Dream



Daniela Na

The Nightmare



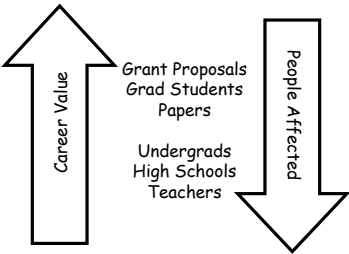
"Surely you were aware when you accepted the position, Professor, that it was publish or perish"

Abstract

Scientists are rewarded for their tangible accomplishments: papers published, projects funded and PhD's generated. Educational outreach often produces far less tangible results: awareness of some scientific issue, or kids' faces glowing with interest. Tenure committees have no interest in intangibles. For all the lip service given to educational outreach, time spent doing outreach reduces a scientist's research productivity, and can damage a career. It's a mommy track, and we need to redirect the train.

So ... how do we make the impact of our educational efforts more tangible?

Problem: Career Vs People



Solution: measure & publish

Measurable Results of Education

- student evaluations of course
- students' scientific understanding
- students' understanding of issues
- **change** in students' understanding
- students' ability to articulate ideas

Publication Opportunities

- papers on measuring student learning
- papers on educational methods
- papers on impacts of outreach

Goal: Ocean Literacy (oceanliteracy.org)

An ocean-literate person understands the Essential Principles and Fundamental Concepts about the functioning of the ocean, can communicate about the ocean in a meaningful way and is able to make informed and responsible decisions regarding the ocean and its resources.

Image credits -- Nemo: svatebnidorty.cz, Captain Planet: warnawiki.com, Ocean Closeup: nessus.gunslingers.org

Survey Instrument: 12 open-format questions

- 3 quantitative - size and depth of ocean
- 9 qualitative - based on Essential Principles

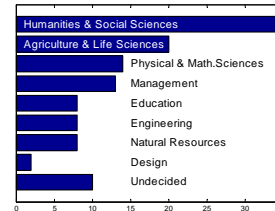
Test Populations:

- large lecture introductory oceanography (pre and post test)
- distance learning introductory oceanography
- National Ocean Science Bowl teams (post test)

Demographics, large lecture intro course

- all students expect to take other science courses
- most students filling science requirement
- only 3 students have majors requiring intro ocean
- 6 students taking course for personal interest

Majors are consistent with university Demographics.



Quantitative Questions: Scoring and Results

Q: How much of the Earth is covered with ocean?

- Scoring:
- <60% or >80% 0 pts
 - 60-80% 1 pt
 - 70-76% or $\frac{1}{2}$ 2 pts

Result: average score = 1.7 => ocean literate

Q: How deep is the ocean, on average? What familiar size or distance is similar to the depth of the ocean?

- Scoring:
- <= 1 mile or > 5 miles 0 pts
 - 1-5 miles or similar to mountains 1 pt
 - 2-3 miles, or 4000 m 2 pts

Result: average score = 0.4 => clueless

Q: What fraction of the water on earth is in the ocean?

- Scoring:
- < 90% 0 pts
 - 90-99% 1 pt
 - 95-98% 2 pts

Result: average score = 0.7 => mostly clueless

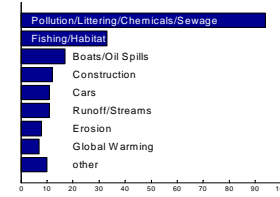
Qualitative Questions: Scoring and Results

Q: Discuss some ways your actions affect the ocean.

- Scoring:
- no answer 0 pts
 - "pollution harms sea life" 1 pt
 - mention at least 2 effects 2 pts

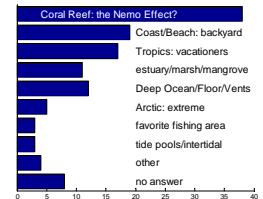
Result: average score = 1.4 => semi-literate

Captain Planet taught my students not to pollute.



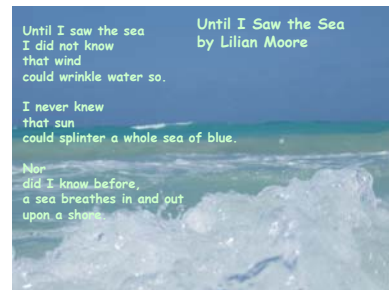
Q: Describe an oceanic environment you find interesting, and the ecosystem in that environment.

Result: semi-literate, everyone likes coral reefs



Interpretation

- "Oceans cover about $\frac{3}{4}$ of the earth" is easy to understand.
- "97% of the water is in the ocean" is much harder to visualize.
- Ocean depth is meaningless until related to personal experience.
- marketing makes a difference - Captain Planet and Nemo
- students like places they can visit



We must bring the ocean home to students, or students home to the ocean.