Moving the needle on sustainability with college students

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Framing the problem

A climate scientist noticed:

• Students in his climate change courses were not understanding the science at the level that he thought they should as educated citizens.
• His students were concerned with talking about climate change with the public.

A science educator noticed:

• Science students were not provided with opportunities to talk science with the public.
• Science professors did not know how to support their science students with meaningful outreach opportunities.
Our solution

A collaboration between climate scientists and science educators to design a college course that teaches:

• Fundamental concepts underlying climate change
• How to communicate science based on how people learn
Our design for the course

**Climate science** include
1. greenhouse effect
2. carbon cycle
3. sea level rise
4. ocean acidification
5. solutions & sustainability

**Learning science** include
1. how people learn
2. designing effective learning experiences
3. learning conversations
4. how people make decisions
5. changing behavior

Apply the learning sciences to teach the climate sciences
Modeled the practices

**Minute Paper** to activate & revise prior knowledge, and to generate questions & explanations

**Sea level rise:**
What is it?
What causes it?
Who is affected by it & how?
What questions do you have about sea level rise?

**Hands-on activity** to explore phenomena, and to provide evidence for explanations

**Interactive briefing** to elaborate on & explain relevant concepts, and to answer students’ questions
Juxtaposed learning & teaching

**Reflections** to think about what students learned and how they learned it

**Jigsaw readings** on learning to extend their thinking on how people learn and challenge their assumptions

**Analysis** of practices modeled to integrate ideas from research into activities experienced
Apply the learning

Experience the activities to build their understanding of the climate change concepts.

Teach the activities to integrate their understanding of the climate change concepts with learning sciences concepts.
Together, how have we moved the needle

Students have a deeper and more robust understanding of climate change, from both physical & social science perspectives.

Science students are comfortable & confident to talk about climate change with their peers & others.

Science professors have a college course that models good teaching practices.
Next steps

• Course materials are available
• Use materials into *Reflecting on Practice*, new module on decision making and behavior change

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A professional learning program for informal science educators