LAUNCHING K-12 OUTREACH PROGRAMS THROUGH LOCAL STUDENT SECTIONS

MICHAEL VILKHOVOY

GISELLE SCHLEGEL

MEAGAN LEWIS

NOVEMBER 7, 2015

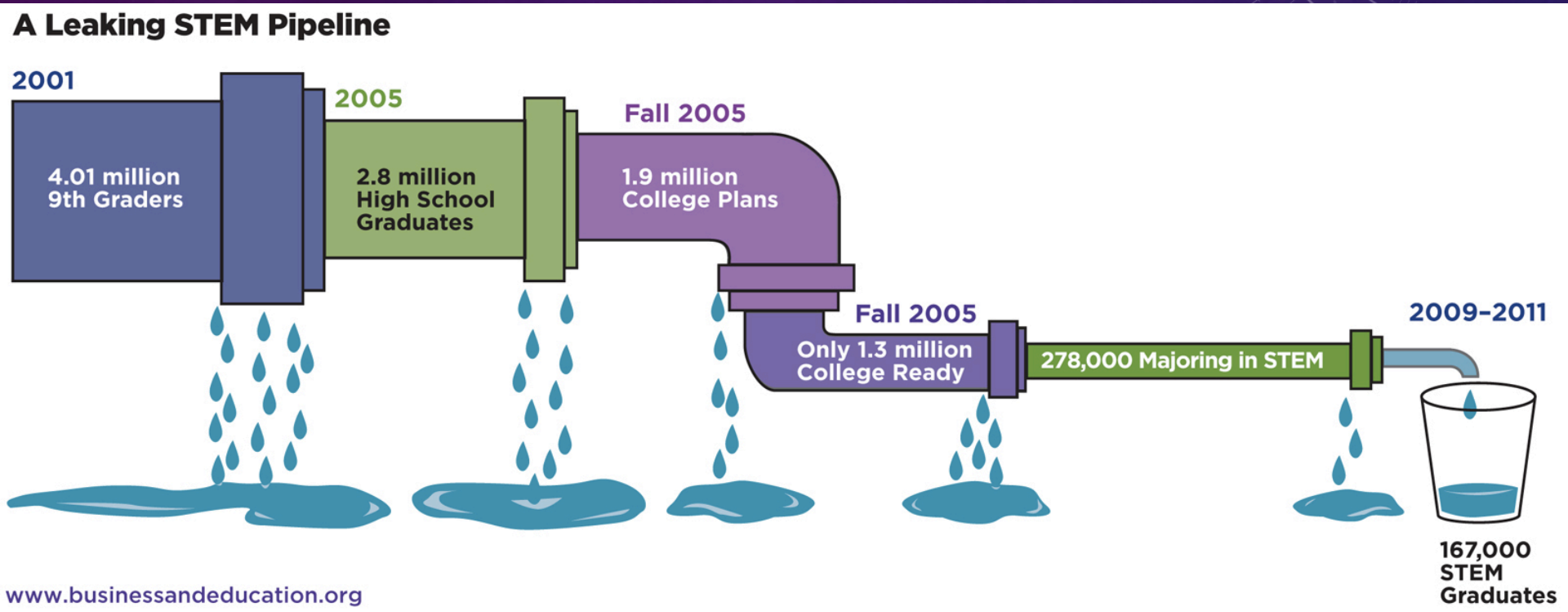
AIChE young PROFESSIONALS

WHAT DOES A K-12 STUDENT THINK OF A SCIENTIST?

"I think they are very boring but have to be really smart and stuff" - Ben, 3rd grade

AIChE young PROFESSIONALS

TOO MANY KIDS QUIT SCIENCE BECAUSE THEY DON'T THINK THEY'RE SMART



AIChE young PROFESSIONALS

OUTLINE

- How to initiate K-12 outreach event
- Fundraising and Resources
- Hands-On Activities
- Event Guide

AIChE young PROFESSIONALS

HOW TO INITIATE K-12 OUTREACH EVENT

- Set up your team
  - Team Leader
  - Treasurer
  - Activity Leader

- Get others involved (Department head, professors, AIChE student members, etc.)

AIChE young PROFESSIONALS

HOW TO INITIATE K-12 OUTREACH EVENT

- Contact organizations and schools
- K-12 Institutions in your local area
- Science department chair

- Cornell Women's Outreach for High School
- K-12 Outreach, University of Utah

AIChE young PROFESSIONALS

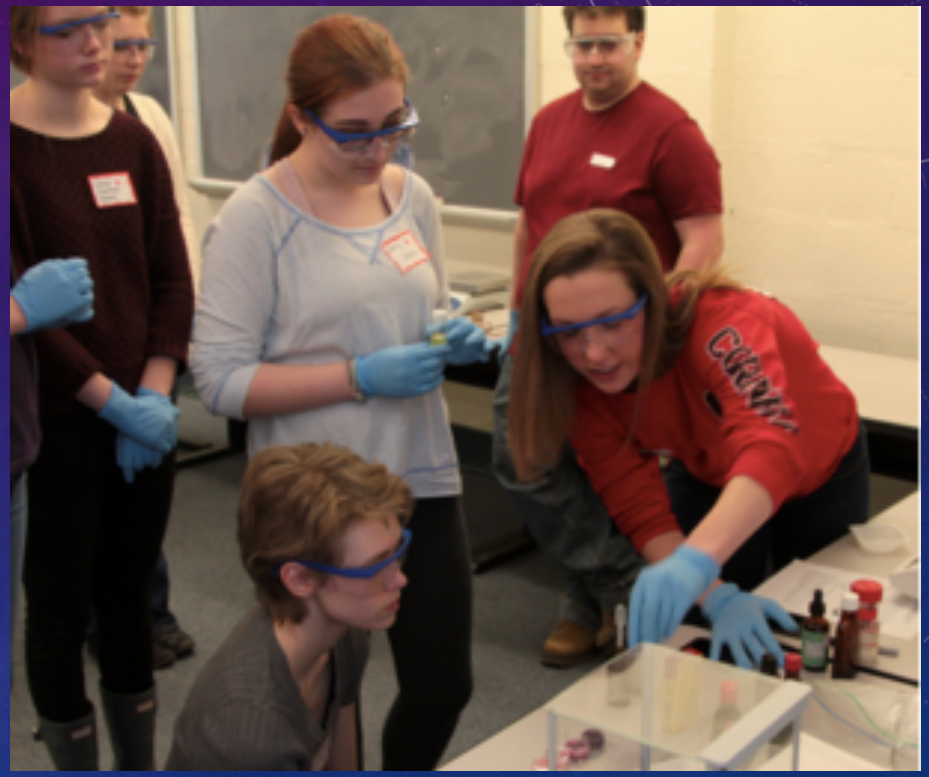
FUNDRAISING AND RESOURCES

- Create a budget
- Start with your department
- Outreach education office (most universities have them)
- Select an activity to run
- Create a supplies list

AIChE young PROFESSIONALS

HANDS-ON ACTIVITIES

- Classroom visit
- Hosting outreach at University
- Know your audience



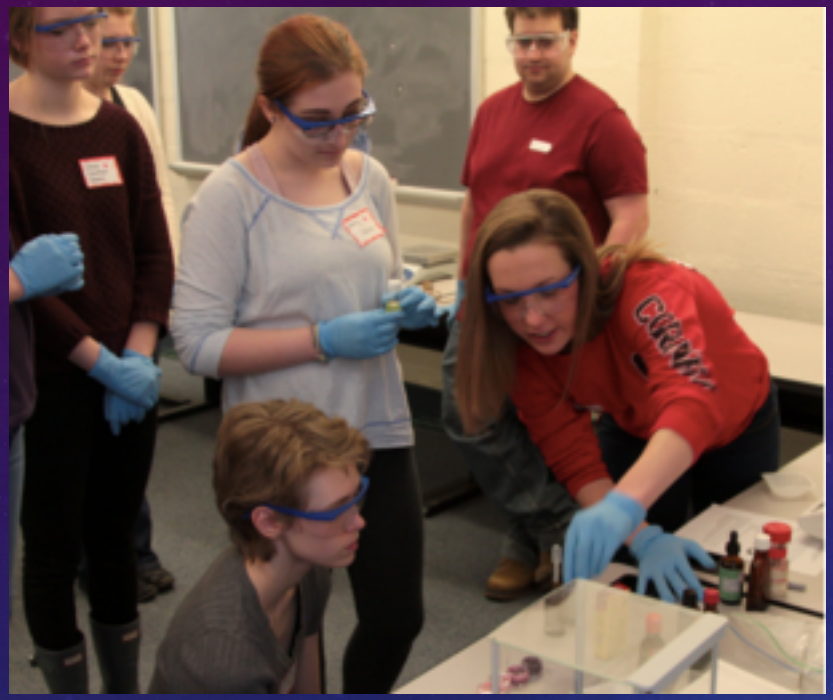
AIChE young PROFESSIONALS

HANDS-ON ACTIVITIES

- It's more important to be effective than original
- Online resources
  - http://www.engineeryourlife.org/
  - http://egfi-k12.org/ (activities by grade level)
  - http://www.howtosmile.org/ (activities by topic)

AIChE young PROFESSIONALS

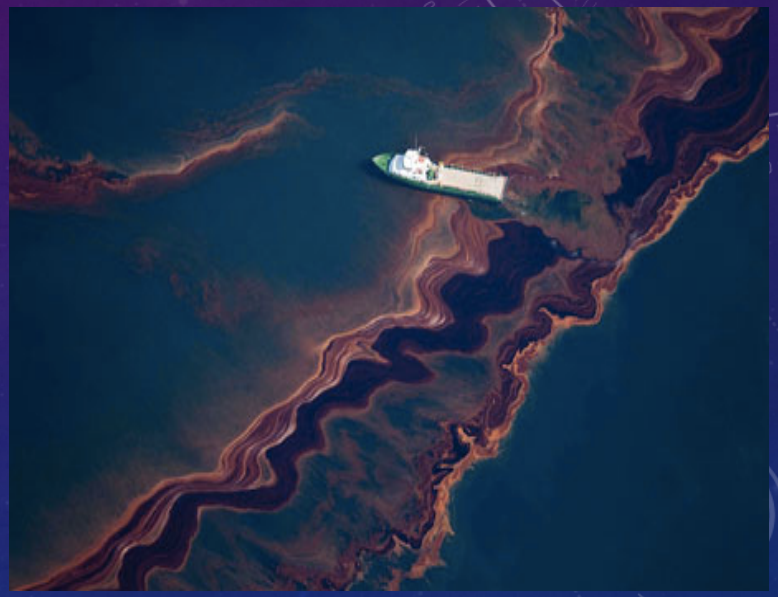
KNOW YOUR AUDIENCE



AIChE young PROFESSIONALS

EXAMPLE: OIL SPILL ACTIVITY

- Discuss importance of oil and its everyday uses
- Fuel for transportation
- Fuel for heating
- To make things we use everyday (chemicals, plastics, etc.)



AIChE young PROFESSIONALS

EXAMPLE: OIL SPILL ACTIVITY

- Materials
  - Cooking oil
  - Water
  - Cocoa
  - Feather
  - Absorbent material (sponge, paper towel cotton balls, etc.)
  - Syringe
  - Dishwashing detergent
  - String

AIChE young PROFESSIONALS

EXAMPLE: OIL SPILL ACTIVITY

- Clean Water
  - Show feather repels water
- Oil Spill
  - Oil stays on top of water
  - Simulate wind/current
- Activity
  - Contain Oil
  - Clean-up Oil
  - Cost analysis

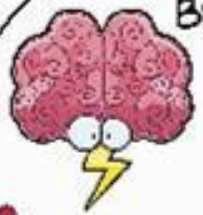
AIChE young PROFESSIONALS

THE ENGINEERING DESIGN PROCESS

ask

Define the problem.

imagine



Brainstorm possible solutions.

plan

THINK!
SKETCH!
LABEL!

create

Make a prototype and test it.

improve

How can you modify your design to make it better?

CHANGING THE STEM MINDSET

- Use inspiring words (discovery, design, create, imagination, innovation, etc.)
- Emphasize that engineers are problem solvers and shape the future
- Stop focusing on science and math classes as the required inputs

AIChE young PROFESSIONALS

BEING AN EFFECTIVE ROLE MODEL

- Make it personal
- Use kid-friendly language
- Share academic/career path
- Show how engineers can change the world
- Encourage the effort

AIChE young PROFESSIONALS

SAMPLE EVENT SCHEDULE

Student Schedule	
09:00 - 09:15	Check-In and Continental Breakfast
09:15 - 09:25	Opening Message
09:25 - 09:45	"Icebreaker" Group Activity
09:45 - 10:30	Lab Rotation 1*
10:30 - 11:15	Lab Rotation 2*
11:15 - 12:00	Lab Rotation 3*
12:00 - 1:15	Lunch
1:15 - 2:15	Parent-Student Lab
2:15 - 2:50	Dessert and Student Q/A Panel
2:50 - 3:00	Closing Address
3:00	Campus Tour (optional)

AIChE young PROFESSIONALS

EVENT GUIDE CHECKLIST

- Budget
- Volunteers
- Location
- Activities
- Food/Snacks

AIChE young PROFESSIONALS

GUIDES TO TAKE AWAY!

- Initiating a K-12 Outreach Event
- Fundraising and Resources
- Activity/Supplies
- Event Guide Checklist

AIChE young PROFESSIONALS