

# Successful STEM/ STEAM Water Education for K-12



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# Overview



Who We Are

Program Development

STEM/STEAM Examples

How We Found Success

Next Steps

Water Experiment Stations

# Who We Are



## Colorado Springs Utilities

- 4 service provider to community of 400,000+

## 2011 Water Education Renewal

- State requirement to promote conservation
- In 2012/2013 school year gave 351 presentations to over 12,500 students

# Program Development

## Background work

- Reviewed old curricula
- Interviewed other water education providers
- Met with districts' science coordinators and administrators
- Interviewed teachers
- Aligned programs with revised 2009 CDE Academic Standards



# Program Development

## Program Design with STEM In Mind

- Engage students through inquiry-based questions and activities
- Include active participation and movement
- Provide evidence outcomes or ways to measure learning
- Make these fun, action-packed sessions

# STEM/STEAM Examples

## Water Wonders (2<sup>nd</sup> - 6<sup>th</sup>)

Inquiry based

**Science:** Mickey Mouse molecule

**Technology:** Foot pump pressure system

**Engineering:** Water molecule stacking

**Arts:** Role-play and Reader's Theatre

**Math:** Calculate water savings, etc.





# STEM/STEAM Examples

## Water Wise (5<sup>th</sup> - 8<sup>th</sup> grades)

Powerpoint media presentation

**Science:** Chemistry of treatment

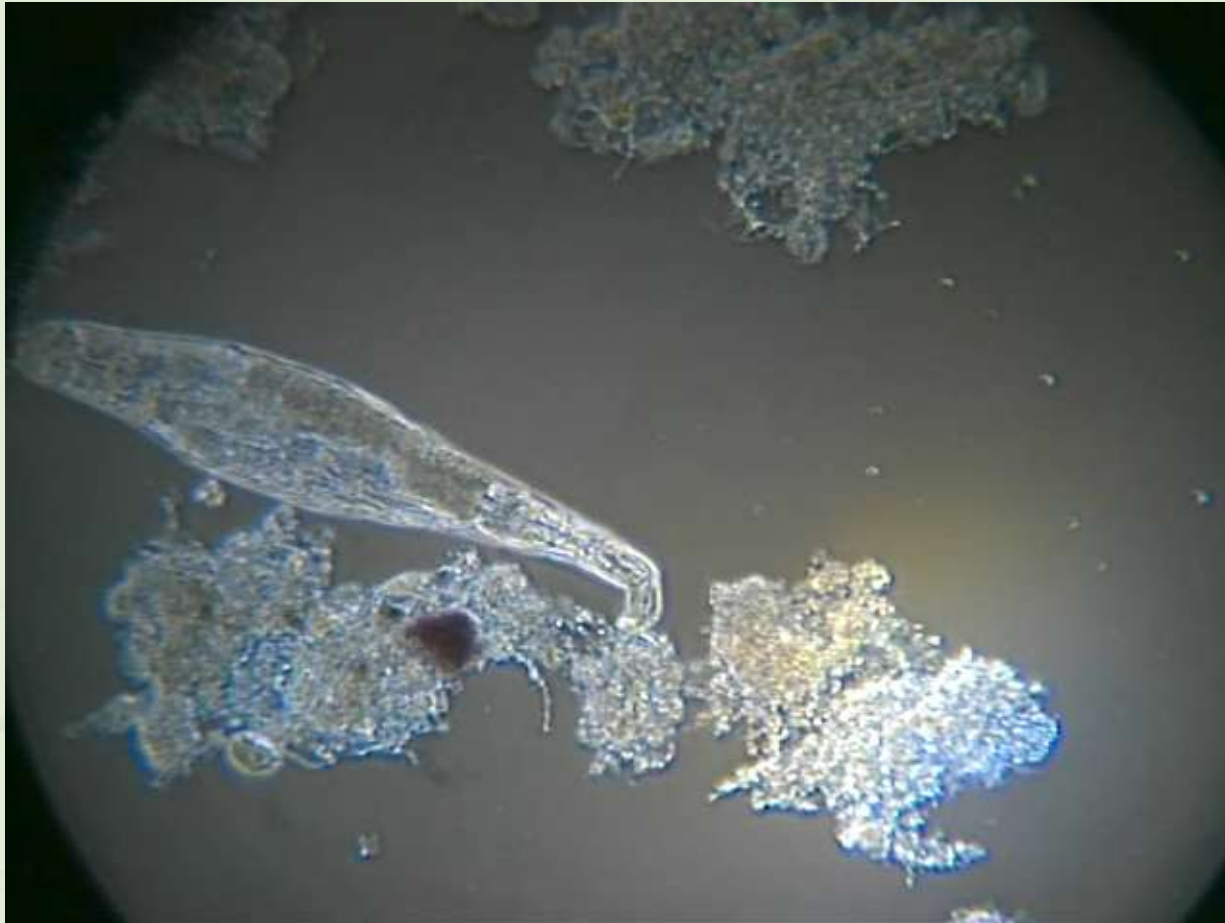
**Technology:** Microbes at work (videos)

**Engineering:** Pipeline challenge game

**Math:** Calculations and evaluations in Water Wizard follow-on workbook



# Technology: Microbes Video





# Pipeline Challenge



# STEM/STEAM Examples

## Water Quality (High School)

Powerpoint media presentation

**Science:** Measure pH and TDS of water samples  
+ burn area runoff experiment

**Technology:** Microbes at work (videos)

**Engineering:** Stormwater runoff post fire

**Math:** Conservation water savings calculations



# Fun Outcomes (STEAM)



# How We Found Success

- Design with teacher/district input and feedback
- Programs are complementary to lesson plans and easy to incorporate
- Best promoters are teachers and administrators (and volunteer coordinator)



# Next Steps

- Understanding our impact
- Reaching more students (and adults)
- Continuous improvement





# Water Experiment Stations

- Cloud in a bottle
- Water Cycle in a Balloon
- Burn Area Run-Off



# Thank You!



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