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*Western Consortium of Idaho, Nevada, and New Mexico*

# Cyberlearning Year 3

*Provides many collaboration opportunities!*

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NM: Mary Jo Daniel, Lorie Liebrock, Nico Marrero,  
Gina Tanner

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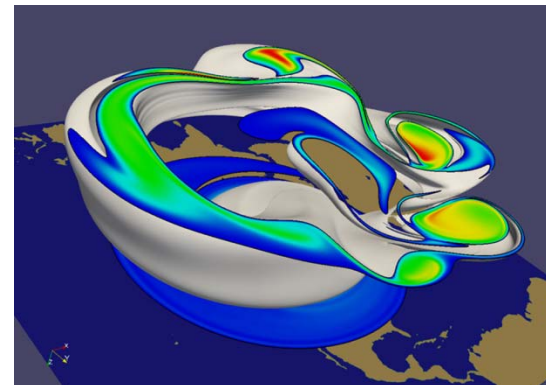
# Year 3 Action Plan

Activity	Task	Progress to Date
Offer and support CI training in computation and climate change	<ol style="list-style-type: none"> <li>1. Develop catalog and calendar of CI training to be posted on Track 2 webpage. Update web page and materials throughout year.</li> <li>2. Communicate training opportunities &amp; participants for higher education</li> <li>3. Develop and offer training in Climate Modeling</li> <li>4. Offer and support CI training in computation and climate change</li> </ol>	<p>EPSCoR Hosted Trainings</p> <ul style="list-style-type: none"> <li>• 2011 Tri-State: HIS; Climate Modeling Tutorial</li> <li>• 2011 Intro to Parallel Computing</li> <li>• 2012 Tri-State: HIS; Climate Modeling Tutorial</li> <li>• 2012: Interdisciplinary Modeling Course at NMSU</li> </ul> <p>Requested / Specific Training in Year 3:</p> <ul style="list-style-type: none"> <li>• SC11 (including panel participation), 3rd Annual Santa Fe Conference on Global and Regional Climate Change; several upcoming Spring 2012 training</li> <li>• 8+ (faculty, post-docs, grad students)</li> </ul>



*“Many of the exhibits I visited and the people I talked to, helped expose me to a variety of visualization tools, like ParaView. There are many new technologies that I could incorporate into my coursework, and help teach students the basics of modern visualization techniques”*

Participant, SC11



*“With the knowledge gained through the workshop, I will be able to convert my computationally expensive programs to benefit from the parallelism on the UNLV supercomputing cluster”*

Participant, Parallel Computing & Cluster Computing, June 2011



# Year 3 Action Plan

Activity	Task	Progress to Date	Evaluation and Findings
<p><b>Develop and disseminate educational materials for MS/HS {for in class use}</b></p>	<ol style="list-style-type: none"> <li>1. Develop educational materials</li> <li>2. Update &amp; use portal</li> <li>3. Compiling data to develop an evaluation of education materials</li> <li>4. Dissemination of education materials</li> </ol>	<p><b>Idaho:</b></p> <ul style="list-style-type: none"> <li>• MOSS – HIS database interface, curriculum development, teacher workshop (<a href="http://mossi.tfhsbruins.com/index/index/">http://mossi.tfhsbruins.com/index/index/</a>)</li> <li>• Blackfoot, ID charter school climate change seminar for IEN</li> <li>• Leverage NV C4D curriculum for ID</li> </ul> <p><b>New Mexico:</b></p> <ul style="list-style-type: none"> <li>• 11 MST teachers developing educational materials to finish by July 2012</li> <li>• Staff supporting statewide GUTS &amp; Supercomputing Challenge program</li> <li>• 11 UG students updating materials, mentoring Supercomputing Challenge/GUTS groups, helping with Java curriculum, Data Literacy curriculum, and Teacher’s P.E.T. (Pedagogical Enhancement Tool) framework</li> <li>• Developing open source website framework for teachers to use in classroom Teacher’s P.E.T.</li> <li>• <a href="http://cs.nmt.edu/~epscor/">http://cs.nmt.edu/~epscor/</a></li> </ul>	<p>The external evaluator conducted an educational materials development survey</p> <p><u>Lesson planning process</u></p> <p><b>Idaho:</b> used 6-step Construct Centered Design</p> <p><b>New Mexico:</b> Each used a different method</p>

# Year 3 Action Plan

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# Climate Change Education @ UNLV

You are logged in as P.G. Schrader (Logout)

CCED@UNLV > Course categories > Example Learning Material

Turn editing on

Assign roles

Course categories: Example Learning Material

## CyberLearning Summit



This course contains examples for the CyberLearning Summit, held in Jemez Springs, NM. As you interact with these materials, consider the benefits that tools like these will have for students. If beneficial, how might we make these tools more accessible for students? What obstacles might there be to scaling up this type of project statewide and/or nationwide?

## Climate Change at Death Valley



The collection of materials offered here were produced to compliment a field trip experience to Death Valley, California. Our intent with these materials is to engineer cyberlearning curriculum that highlights the regional impact of climate change on the Western United States. The development team includes teachers from the Clark County School District in southern Nevada and faculty and graduate students at UNLV. Our collaborators include complimentary individuals from the states of Idaho and New Mexico.

Contact Dr. P.G. Schrader at UNLV ([pg.schrader@unlv.edu](mailto:pg.schrader@unlv.edu)) with questions or to obtain editable electronic copies of these materials.

## Science & Sustainability



The collection of materials offered here were produced to compliment the curriculum, *Science and Sustainability* that is distributed by Sepup. Our intent with these materials is to engineer cyberlearning curriculum that highlights the regional impact of climate change on the Western United States. The development team includes teachers from the Clark County School District in southern Nevada and faculty and graduate students at UNLV. Our collaborators include complimentary individuals from the states of Idaho and New Mexico.

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# Climate Change Education @ UNLV

Jump to...

CCED@UNLV > CLS2012 > Resources > What lessons can we learn about Earth from the tiny island of Rapa Nui?

Update this Resource

## Las Vegas Plus 30: Survive and Thrive!

- Big Question
- Your Initial Ideas
- Explore the Evidence
- Your Scientific Claims
- The Science Related to LV+30
- Research Council
- Lesson Summary

## Las Vegas Plus 30: Survive and Thrive!



### How This Lesson Works

This lesson is focused on a **Big Question**. The activities are divided into different sections or features.

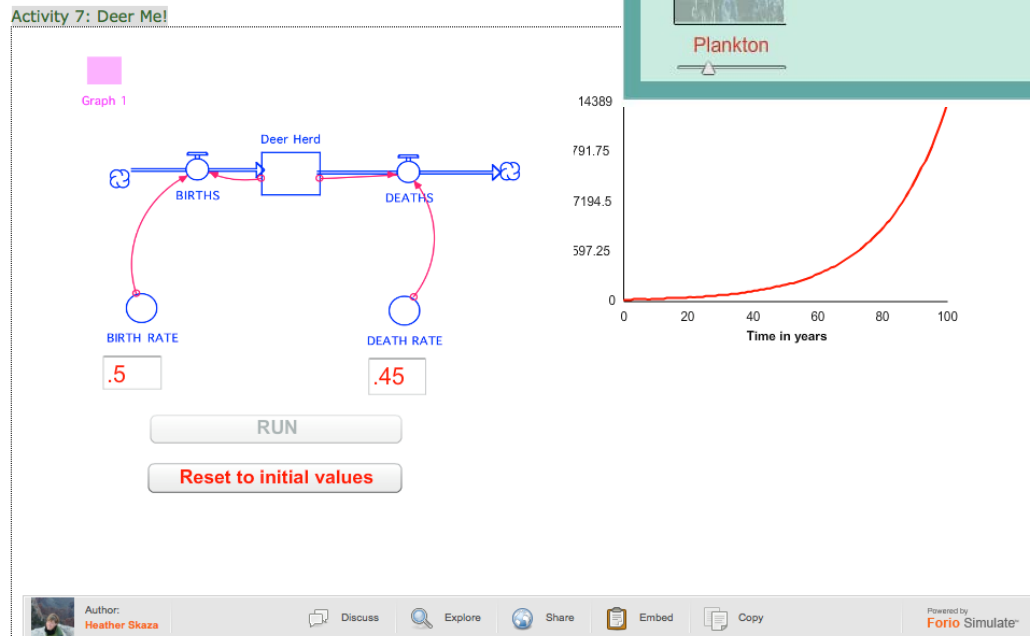
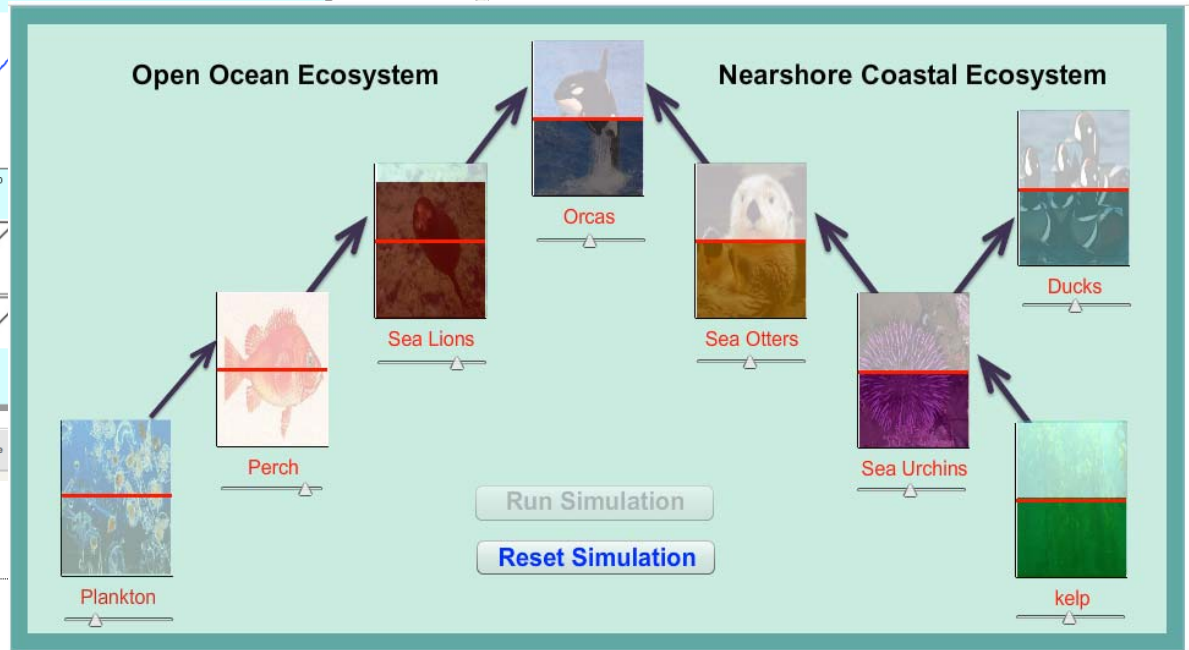
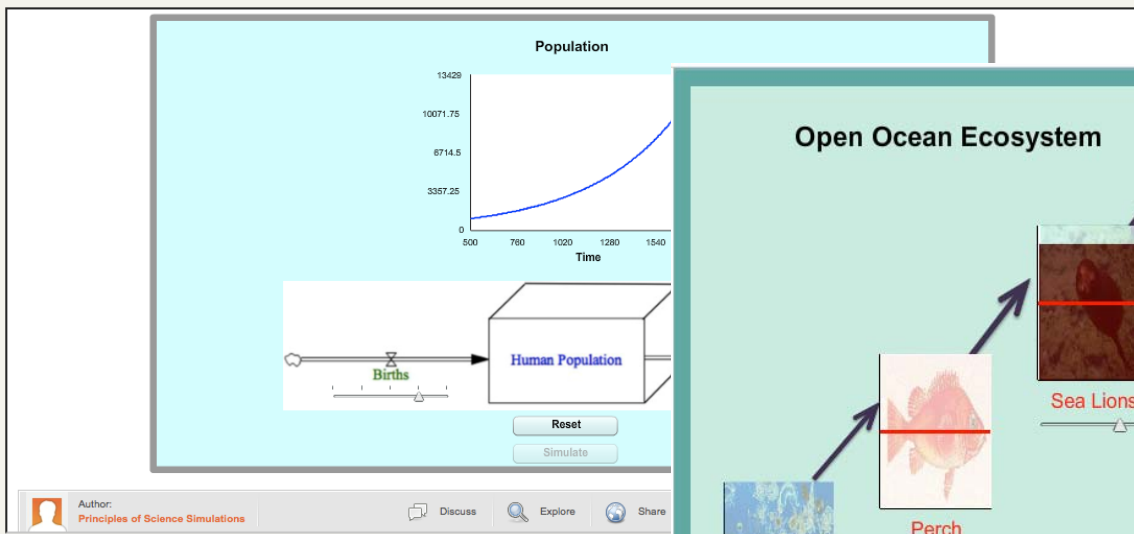
1. With feature one of the lesson, you will be asked to respond with **your initial ideas** related to the Big Question. In every additional feature of the lesson, you have the opportunity to provide any further thoughts or questions that arise.
2. Feature two of the lesson is an activity where you are required to collect and explore some **evidence** related to the science content of the Big Question. This evidence is used throughout the remaining features of the lesson.
3. Feature three of the lesson involves **analyzing** your evidence and using it to **generate an explanation** (also called a claim) about the scientific ideas of the lesson. Typically, your analysis will produce an artifact that you will describe and justify to your peers and teacher at **Research Council**.
4. The accepted scientific understanding of the lesson is presented in feature four. In addition to demonstrating a thorough **understanding of the scientific knowledge** of the content, you will be asked to compare and contrast your explanation from feature two.
5. Finally, feature five of the lesson involves sharing and justifying your explanation and artifact from feature three among your peers and with your teacher at **Research Council**. The culminating activity of the lesson is to reflect on the **Big Question** of feature one and synthesize your understanding by using your evidence to compare and contrast your ideas with those of your peers and teacher.

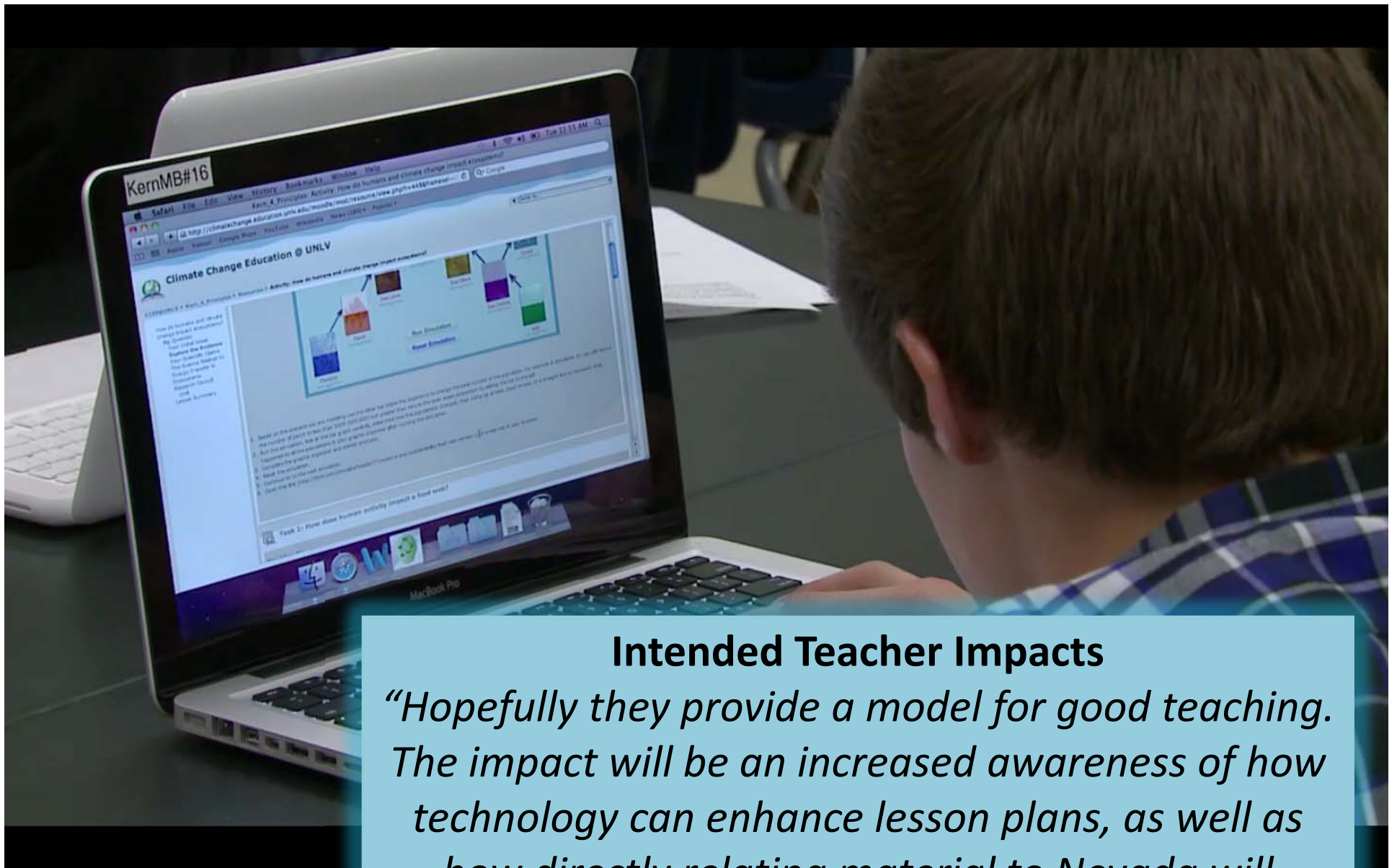
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This site provides structured academic content related to climate change education of the Great Basin and is funded by the National Science Foundation. (EPS-0919123).



Western Consortium of Idaho, Nevada, and New Mexico





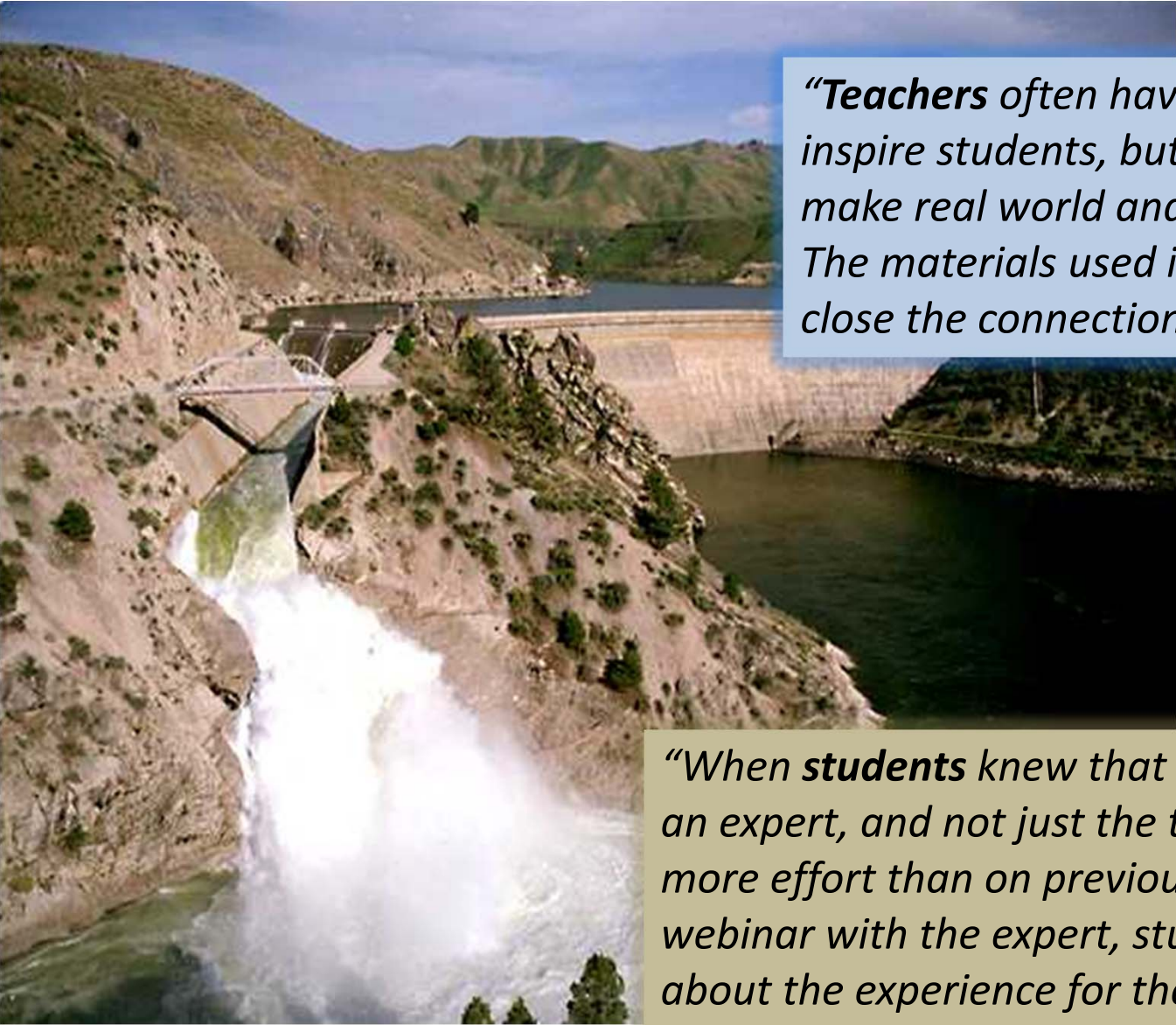
## **Intended Teacher Impacts**

*“Hopefully they provide a model for good teaching. The impact will be an increased awareness of how technology can enhance lesson plans, as well as how directly relating material to Nevada will further engage students.”*

NV Education Materials Developer



*“Students will be impacted by recognizing that climate change is occurring in their backyard, not only in other places across the globe. This should enhance their level of engagement with the topic as well as increase awareness of climate change.”* NV Education Materials Developer



*“**Teachers** often have great ideas to inspire students, but lack the ability to make real world and career connections. The materials used in this project helps to close the connection gap.”*

*“When **students** knew that they were presenting to an expert, and not just the teacher, they put forth more effort than on previous projects.....after the webinar with the expert, students were talking about the experience for the next several days at school and what a positive experience it had been.”*

*ID Education Materials Developers*

# Leigh Hedderman: *Climate and Water - Earth System Interactions in the Southwest*





## **New Mexico Intended Student Impacts**

*“Excite them about using engineering to explore science.”*

*“The students will gain confidence in their ability to use concepts of physics to impact real world issue.”*

*NM Education Materials Developers*



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# Year 3 Action Plan

Activity	Task	Progress to Date	Evaluation Recommendations
<p><b>Develop and disseminate educational materials for MS/HS</b></p> <p><b>{for in class use}</b></p>	<p>4. Dissemination of education materials</p>	<p>Cyberlearning Summit – 2 days, January 2012, New Mexico</p> <p>Objectives: 1) Collect materials and exchange across sites</p> <p>2) Scale up for sustainability</p>	<p>All states should:</p> <ul style="list-style-type: none"> <li>• Use a research based curriculum planning process</li> <li>• Coordinate curriculum development efforts within and between states</li> <li>• Work with evaluator to develop and carry out assessment plan</li> <li>• Develop dissemination plans</li> </ul>

# Cyberlearning Summit



- Focused on key activities in each state and ways to integrate/collaborate
- 26 attendees from all 3 states

# Cyberlearning Summit



- 60-75% found all sessions very or extremely **useful**
- 74% said it achieved project goals very well or with excellence
  - identifying components suitable for scaling and/or disseminating to other locations
  - including funding opportunities to scale and/or disseminate components

*"I am excited that we were able to come out of the summit with some very concrete steps for moving the project forward."*

Participant

# Cyberlearning Summit (cont.)

- Next steps include:
  - Proposal to NSF Cyberlearning
  - Sessions at Tri-State Meeting 2012
  - Infuse cyberlearning into next Track 1 proposals
  - Plans to integrate MOSS, NV curriculum model (C4D), agent-based modeling



# Year 3 Action Plan

Activity	Task	Progress to Date
<p><b>Develop and support extracurricular CI activities</b></p>	<p>1. Develop and disseminate materials as part of GUTS and Supercomputing Challenge (SCC)</p>	<ul style="list-style-type: none"> <li>• Hired regional coordinators for GUTS who visit each team throughout the year for support</li> <li>• GUTS and SCC – developing 2 more new units on water resources and climate change</li> <li>• 11 ug students mentoring Supercomputing Challenge &amp; GUTS groups</li> </ul>
<p><b>Design/coordinate/advertise/deliver Industry CI Days Program</b></p>	<p>1. Develop mechanism for use of CI in rural start-up businesses</p>	<ul style="list-style-type: none"> <li>• Established contract with FastForward NM to offer computer training for small business entrepreneurs in 3 rural NM communities.</li> </ul>

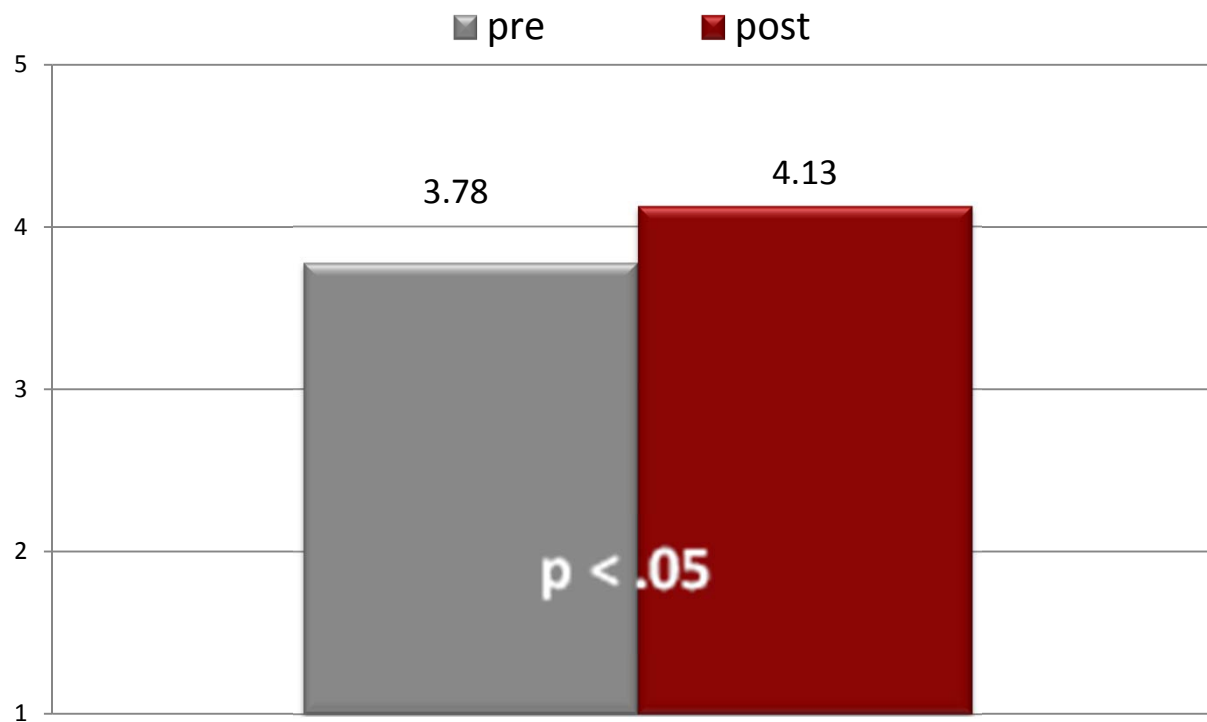
# FastForward New Mexico (FFNM)

- Trained over 400 participants in Ohkay Owingeh Pueblo and the Navajo Nation in Introductory Computer Skills and Using Computers for Small Business
- Collaborated with state libraries
- Provided training in English, Spanish, and Diné (Navajo language)



# FastForward New Mexico

Knowledge, ability and confidence using computers increased because of participation in FastForward New Mexico



# New Mexico Supercomputing Challenge



← April 2012 Finals!  
at Los Alamos Nat. Lab.

432 students, 71 teachers  
39% women  
1% African American  
3% Asian  
24% Hispanic  
14% Native American

← Kickoff in October 2011  
at New Mexico Tech

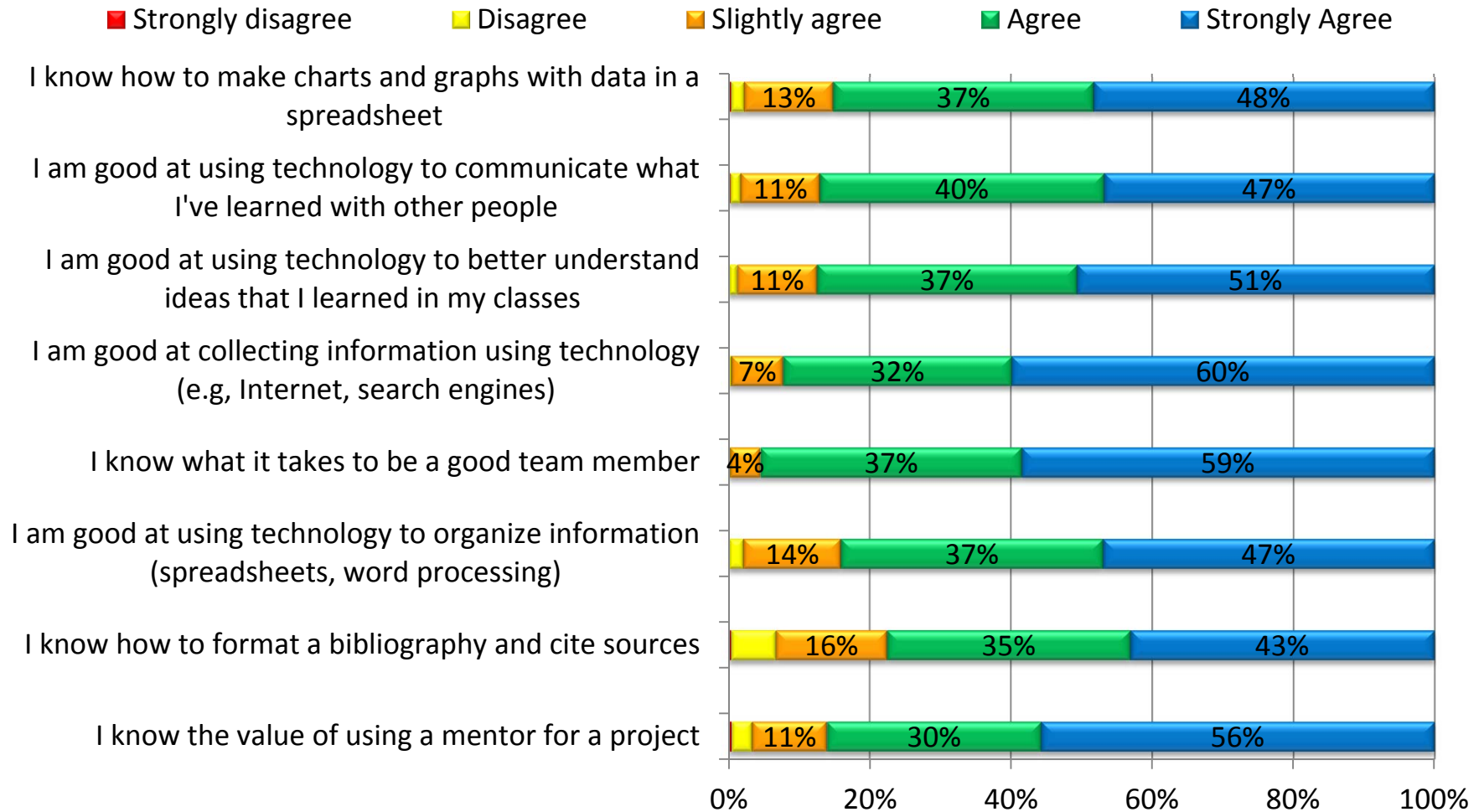


<http://www.challenge.nm.org/>



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# New Mexico Supercomputing Challenge



# Update to EAC Response

- Evaluation
  - CI Trainings, Education Materials Development, SCC, GUTS, MOSS, CI Training for Industry, SSI, and Annual Meeting and Workshops
  - Impact measures are included in all evaluation instruments
- Activities be presented with rationale of how CI enabled them
  - Teacher's P.E.T provides CI to teachers who do not have servers and support for hosting classroom management tools (e.g. Moodle).
  - NM is working to develop a teacher's interface to the NM data portal to make it easier to access and use researcher data in classes.
  - In NV/ID, the infrastructure has directly provided students with learning opportunities (C4D, Blackfoot Charter).

# Update to EAC Response

- Involve more middle and high school teachers
  - NV Cyberlearning materials used by 1,000+ students to date and nearly 100 different teachers during the summer professional development in Death Valley.
  - Cyberlearning Summit
- Link with national/international resources
  - Climate Literacy Framework: <http://climateliteracynow.org>  
“Climate varies over space and time through both natural and man-made processes” (e.g. climate ≠ weather)
  - Pedagogical models
    - C4D: 5 DIE, scaffolded knowledge
  - Supercomputing Challenge model has been adopted in Utah

# Sustainability

- Cyberlearning Summit
- Tri-State meeting
- Conference presentations
- Publications
- Cross-state collaborations
- Websites

