NANSLO: PUTTING SCIENCE LABS ONLINE

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What is NANSLO

- Funded by Next Generation Learning Challenge Grant
- 15 months (April 2011-June 2012)
- Replication and Scale Up
- $750,000

North American Network of Science Labs Online

- Biology, Chemistry, Physics Courses
- Open Educational Resources
- Online Pedagogy
- Lab-kits
- Remote Web-based Science Labs

Students access NANSLO through the internet, which provides internet lab-kits and remote web-based science labs, supporting Biology, Chemistry, and Physics courses.
NANSLO provides a consortium approach to the development and deployment of high-quality, modular, openly licensed courseware integrating learner-centered and immersive web-based labs using software, video and robotics for the study of science courses.
History and Origin

Online Program Development Fund (OPDF) 2003-2011

Biology, Physics, Chemistry, Geology

http://rwslnic.bc.ca/

Tatla Lake On-line Observatory
Space Science and Astronomy
North Island College
Remote Scientific Instrumentation
What is an RWSL Lab
Colorado Community College System

- The vast majority of community college students work while attending college – 66% of our students are part-time.
- CCCS students are older – the average age is 28 and only 35% of our students are recent high school graduates.
- Forty percent of the degrees awarded by the CCCS are in the Health Sciences, where students had a 97% increase in earnings.
Addressing Challenges

- Budgetary Pressures
- Faculty acceptance of online education
- Quality of online science lab experiences
- Articulation to programs at four-year institutions
- Preparing students for the future
Community Colleges offer “Degrees with Designation” in these fields:

- Anthropology
- Business
- Economics
- French
- History

- Mathematics
- Political Science
- Psychology – BA
- Psychology – BS
- Sociology
- Spanish
Colorado Statewide Articulation Agreements
In Process

- Criminal Justice
- Art History
- English
- Philosophy
- Communications
- Geography
- Geology
- Studio Art
- Physics
- Chemistry
- Biology
Benefits of Remote Laboratories

- Remote access benefits underserved students
  - Rural, disabled, and working students with difficult schedules can access scientific experiments 24x7
- Networked laboratories promote efficiency
  - Expensive scientific resources are shared by multiple institutions and scheduled for maximum efficiency
- Students enjoy benefits of remote access
  - Extended opportunity for repeated experimentation
  - Collaboration among geographically separated students
NANSLO Project Objectives

- Developing high-quality first-semester core curriculum for Biology, Chemistry, & Physics
- Designing comprehensive laboratory learning experiences which meet learning outcomes while accommodating flexible delivery options
- Integrating innovative technologies for mediating science learning
  - Remote Web-based Science Laboratories
  - Lab kits
North American Network of Science Labs Online - NANSLO

British Columbia

Wyoming

Montana

Colorado
Biology Discipline Panel Members

Developing lab exercises
Creating lab review processes
Collaborating online together
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<td>6. Darwin and Evolution of Populations</td>
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<td>9. Protists and Plant Diversity I</td>
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<td>10. Seed Plants and Fungi</td>
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<td>11. Intro to Animal Diversity and the Invertebrates</td>
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<td>12. Vertebrates and Intro to Ecology</td>
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<td>Lab 9 Population Growth (Lab Kit)</td>
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RWSL—How it works

Students

Internet

Mumble
Skype
Elluminate

RWSL

Video/Audio Observation
Physical Manipulation
Communications
Data Acquisition

Observation
Manipulation
Data

Lab Equipment
Student & Faculty Perspectives

- Allows participation in laboratory experiments for students who may otherwise be unable to attend a traditional classroom/laboratory setting
- Students interact with and manipulate remote scientific laboratory equipment
- Class works in small groups or individually to collect authentic real-world scientific data in real time
- Ideally, students feel like they are “in the lab,” or at least, “in the next room”
Please follow along with the lab procedures in your packet.
Next Steps

- Cyberlearning – $1.35 million research learning outcomes
- HP Catalyst grant – $100K adaptation for high school
- Round 2 expansion/scale funding available $5 million
- TAACCCT grant app ~$15 million for Applied Health
CONTACT INFORMATION

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Project Overview
http://www.wiche.edu/nanslo

NANSLO Wiki
http://nanslo.pbworks.com