

NANSLO: PUTTING SCIENCE LABS ONLINE



NANSLO

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NANSLO Project Manager: **Dan Branan**, Colorado Community College System

May 21, 2012

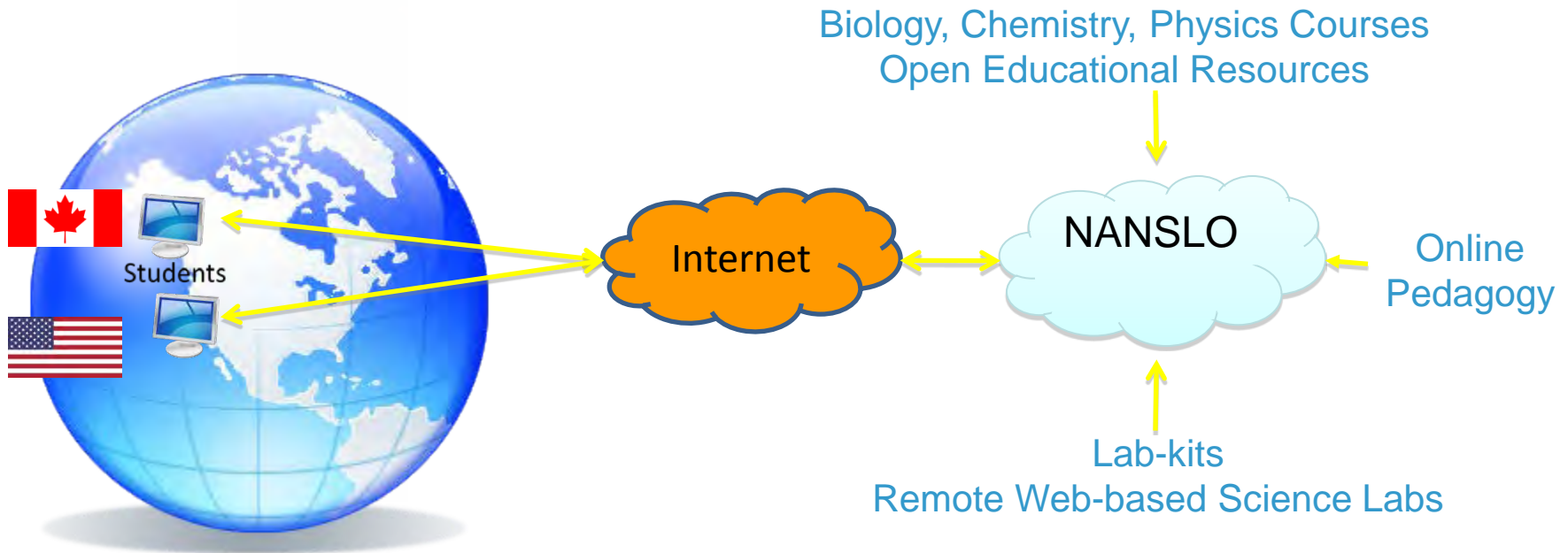
NORTH AMERICAN NETWORK
OF SCIENCE LABS ONLINE



What is NANSLO

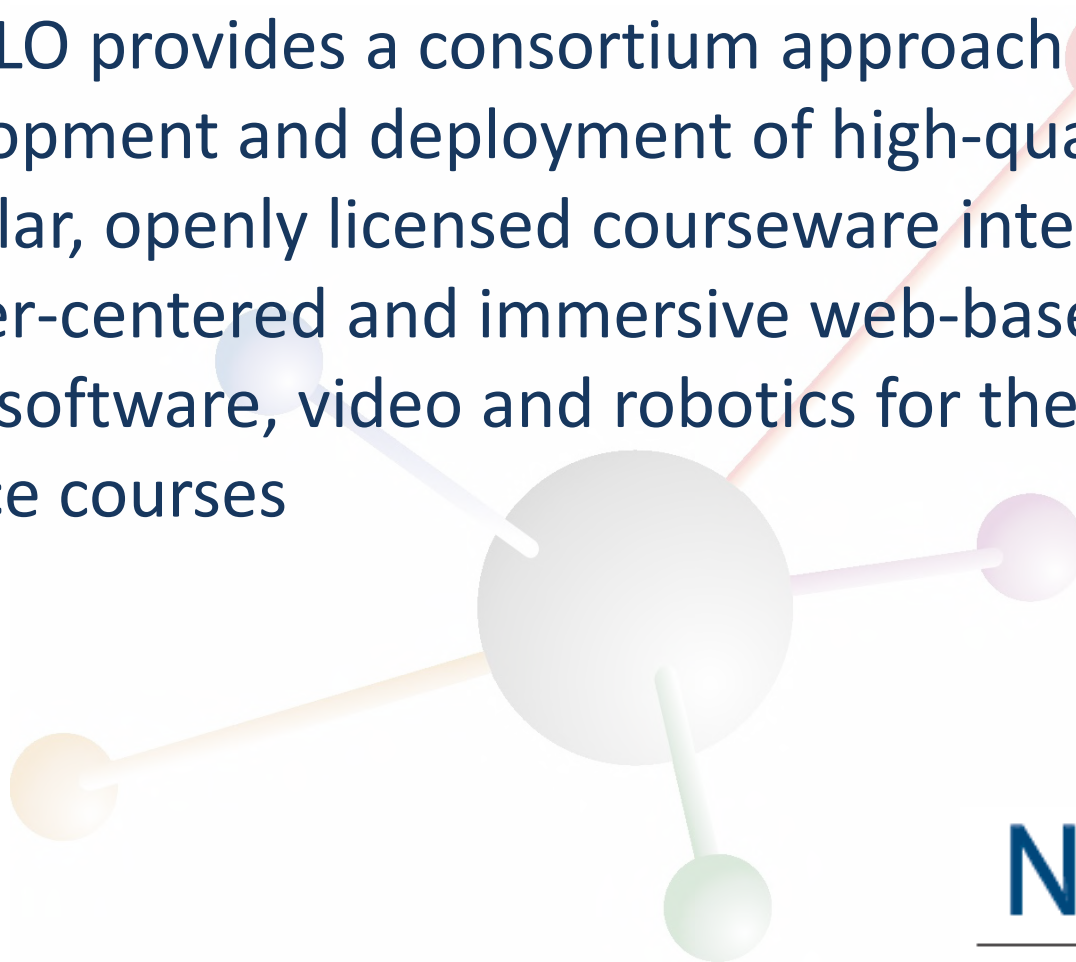
- Funded by Next Generation Learning Challenge Grant
- 15 months (April 2011-June 2012)
- Replication and Scale Up
- \$750,000

North American Network of Science Labs Online



NANSLO Mission

- ▶ 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



NANSLO

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History and Origin



Online Program Development Fund (OPDF) 2003-2011



WASc

Web-based Associate of Science Development
Year 3

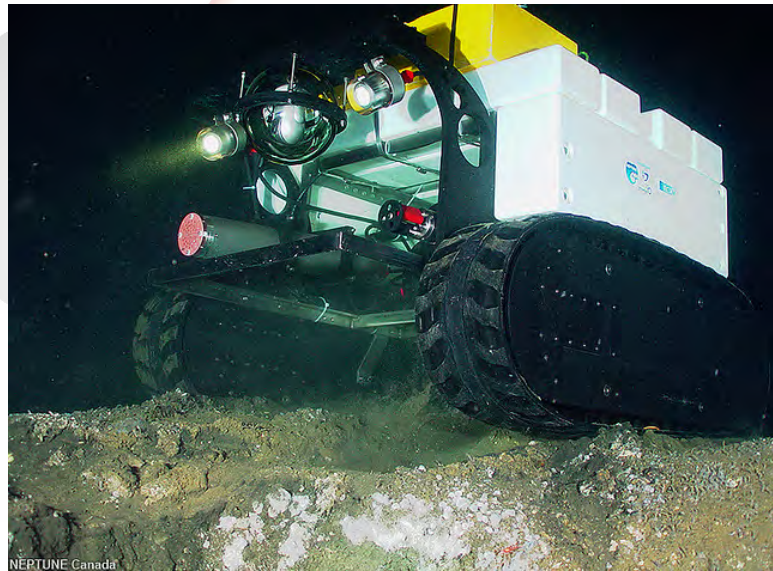
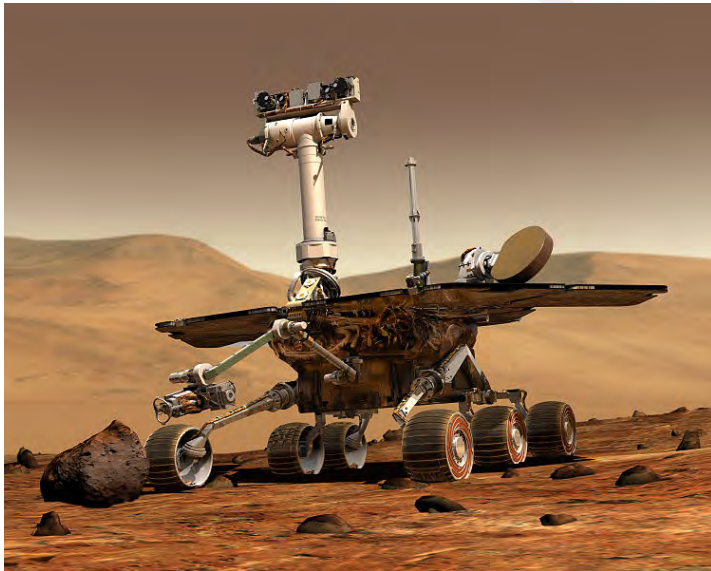
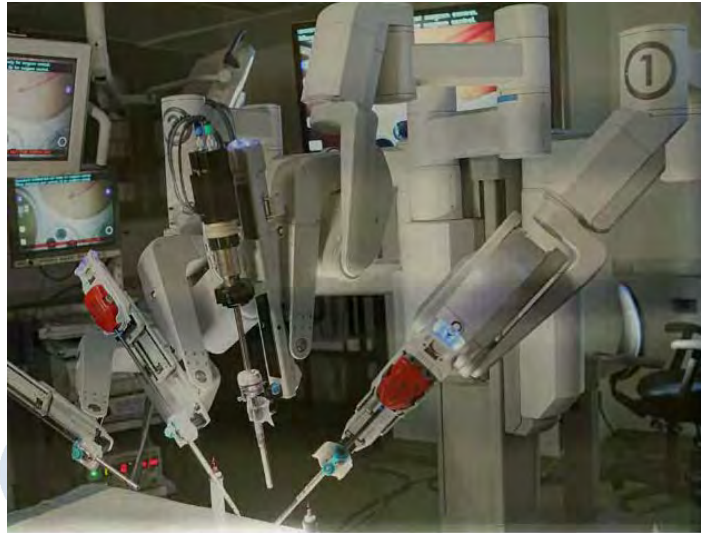
Biology, Physics, Chemistry, Geology

<http://rws1.nic.bc.ca/>

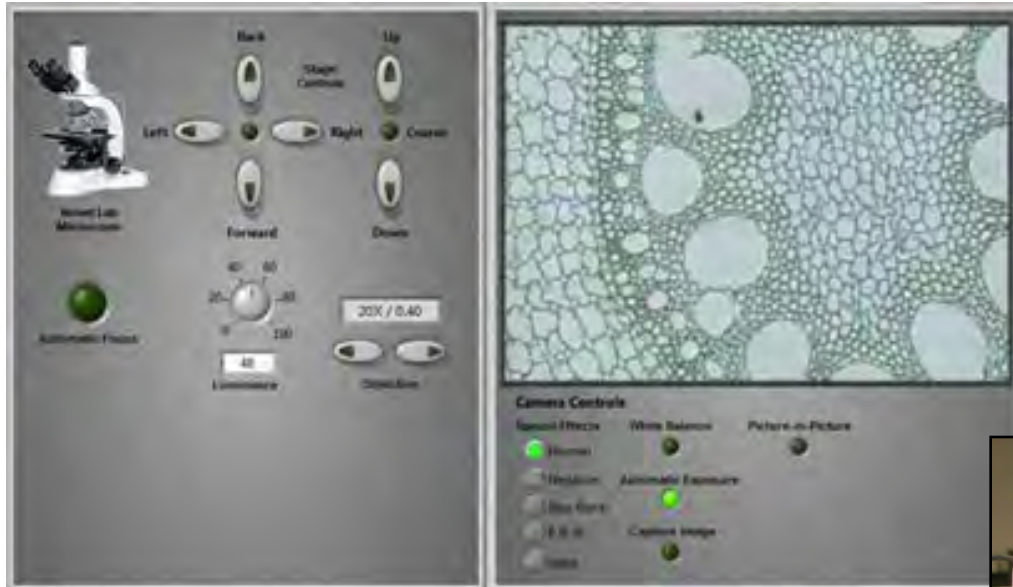


Tatla Lake On-line Observatory
Space Science and Astronomy
North Island College

Remote Scientific Instrumentation

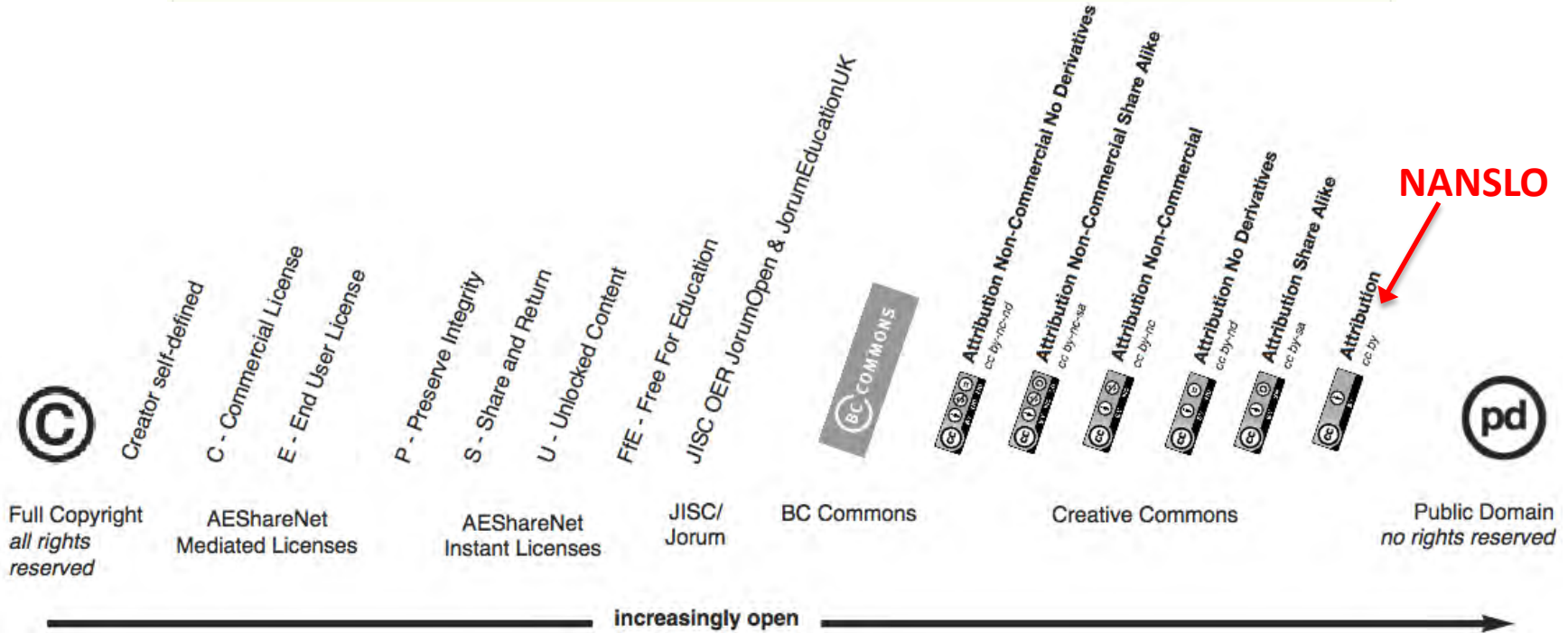


What is an RWSL Lab

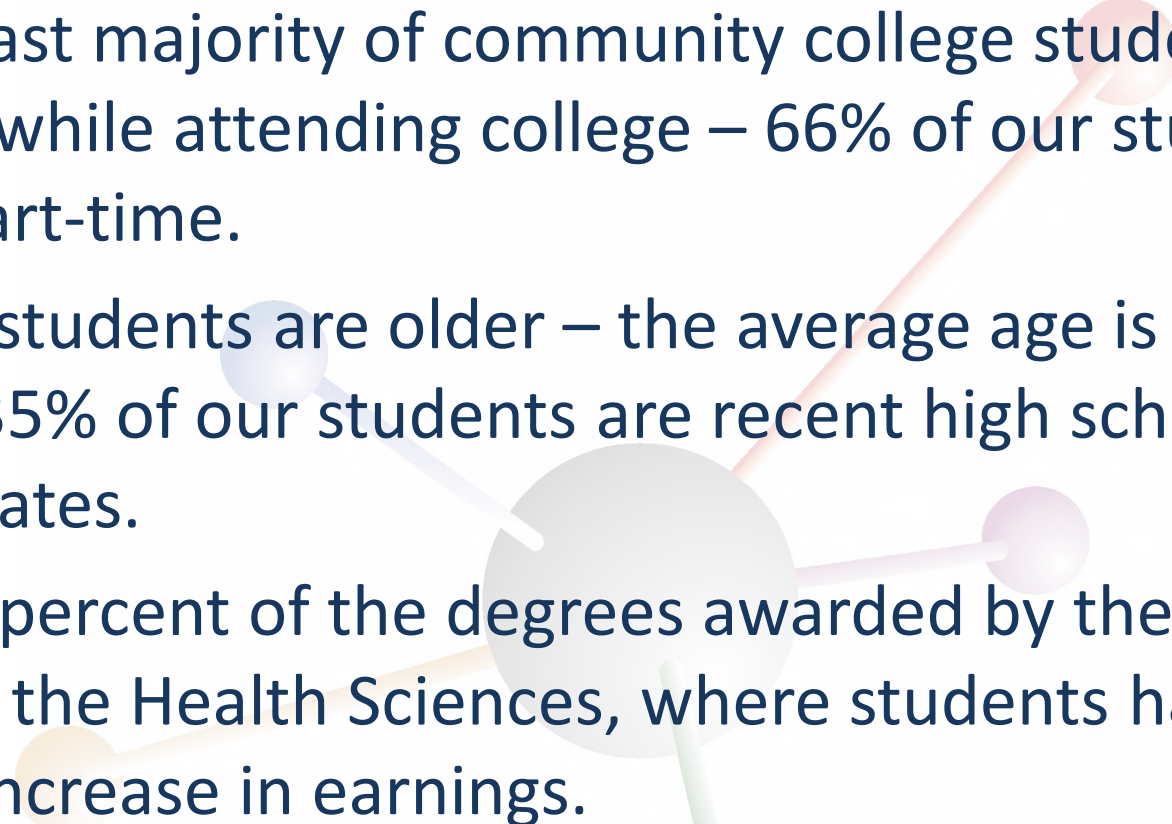




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Colorado Community College System

- ▶ 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



Colorado Statewide Articulation Agreements – Approved

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

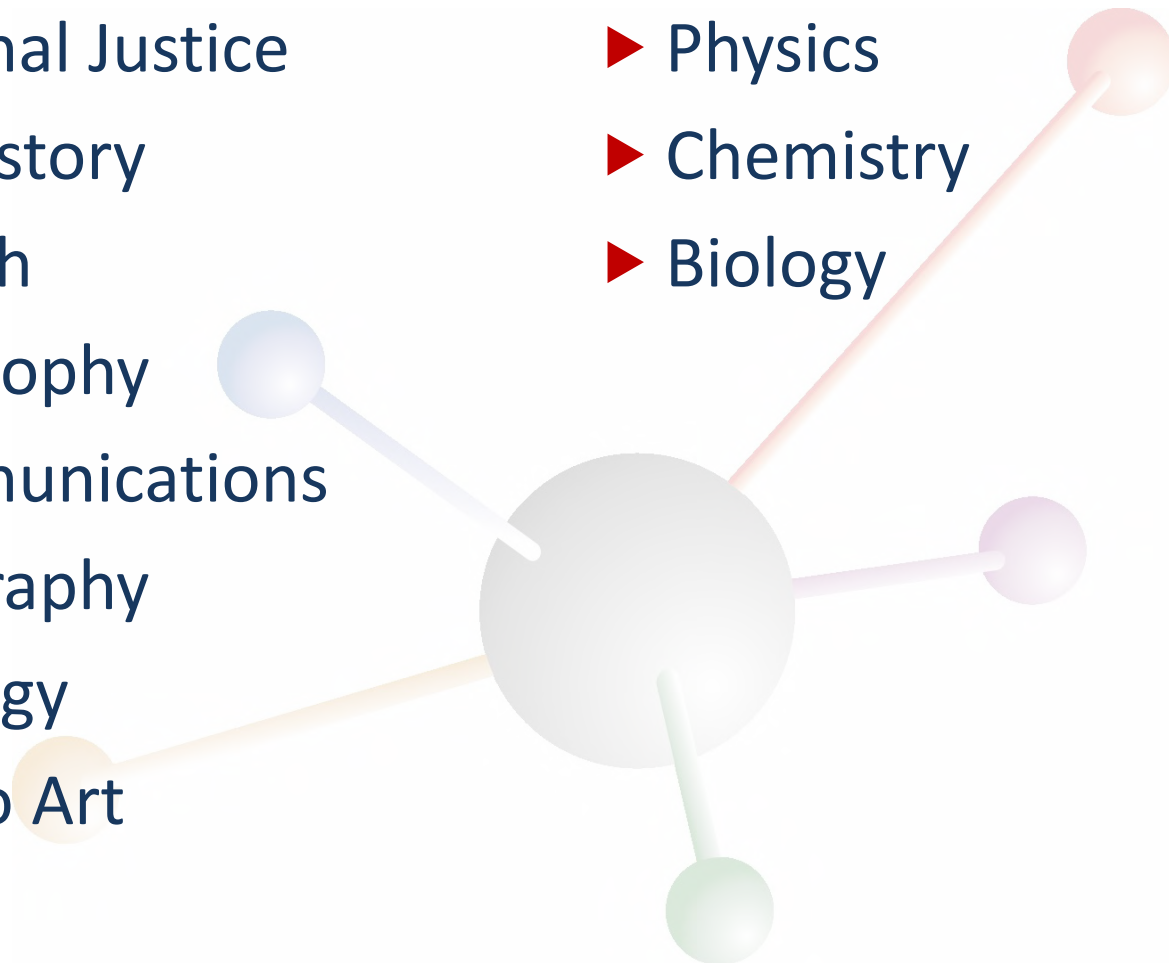
▶ Geology

▶ Studio Art

▶ Physics

▶ Chemistry

▶ Biology

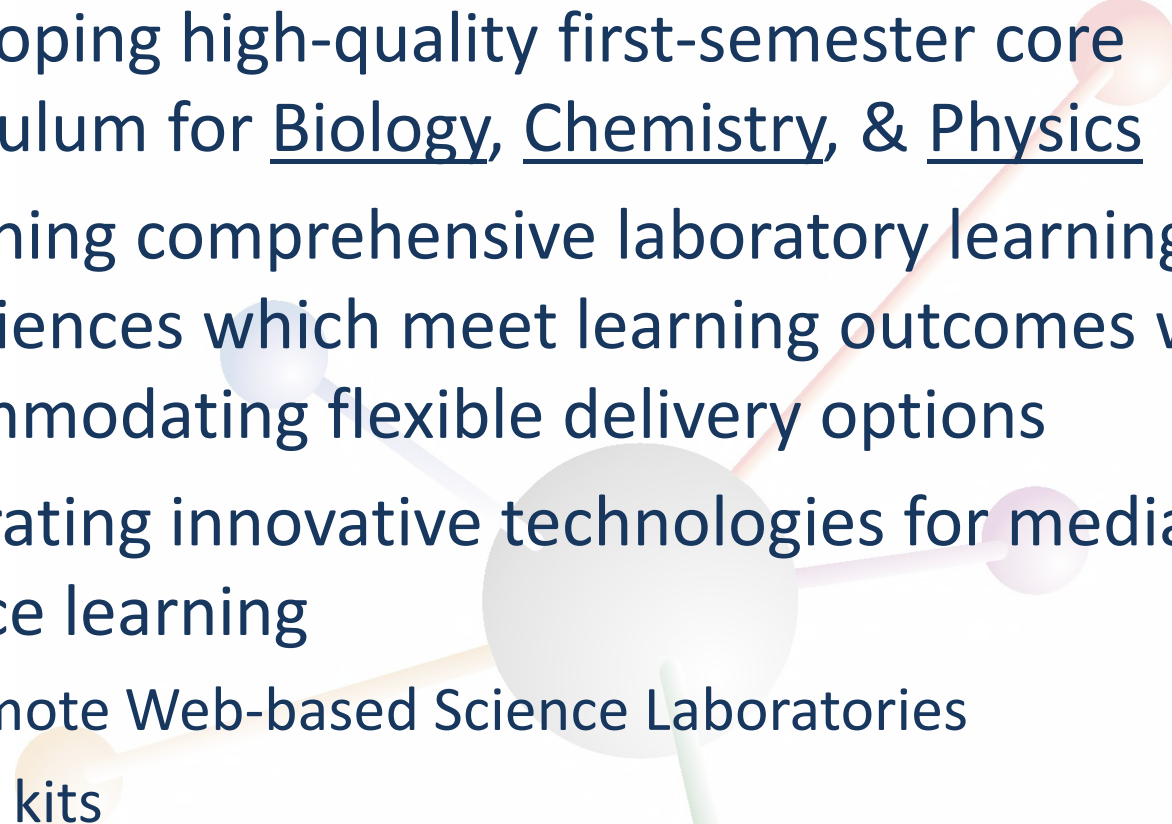


Benefits of Remote Laboratories

- ▶ 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



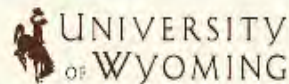


BCcampus
connect. collaborate. innovate.

A CONSORTIUM OF 25 POSTSECONDARY INSTITUTIONS THROUGHOUT BRITISH COLUMBIA, CANADA.
CONSORTIUM MEMBERS PLAYING A PROMINENT ROLE INCLUDE:



COLORADO COMMUNITY
COLLEGE SYSTEM



WICHE



Western Interstate Commission for Higher Education

Biology Discipline Panel Members



Amy Wangeline
**Laramie County
Community College**



Scott Seville
**University of
Wyoming/Casper Center**



Shannon Walden
**MSU-Great Falls College
of Technology**



Kate Lormand
**Colorado
Community College Online**



Sheridan Samano
**Community College
of Aurora**



Cynthia Norrgran
Colorado School of Mines



Frank Williams
**Langara College
British Columbia**



Carol Pollock
**University of British
Columbia**



Tracy Dougher
**Montana State University
Bozeman**

Developing lab exercises
Creating lab review processes
Collaborating online together

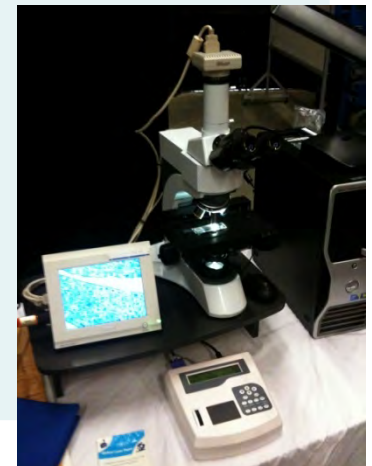
Biology Open Courseware

Topics

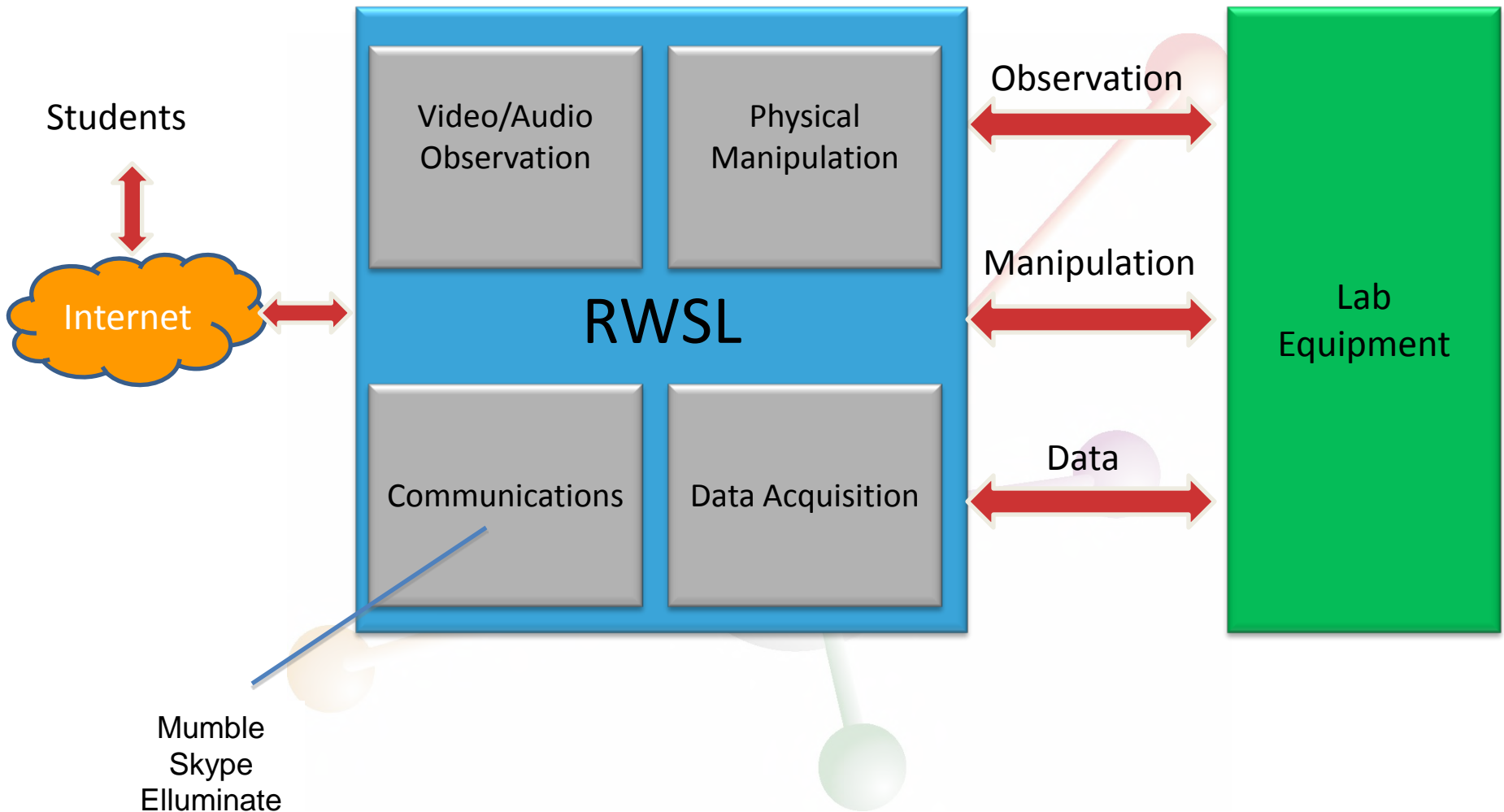
1. Intro and Cell Cycle
2. Meiosis and Mendel and Genes
3. Chromo and Molecular Basis of Inheritance
4. Gene to Protein
5. Regulation of Gene Expression
6. Darwin and Evolution of Populations
7. Origin of Species and History of Life on Earth
8. Phylogeny and Prokaryotes
9. Protists and Plant Diversity I
10. Seed Plants and Fungi
11. Intro to Animal Diversity and the Invertebrates
12. Vertebrates and Intro to Ecology
13. Population and Community Ecology

Labs

- Lab 1 Intro to Microscopy (RWSL)
- Lab 2 The Cell Cycle (RWSL)
- Lab 3 Cat Genetics Part 1 (Lab Kit)
- Lab 4 Cat Genetics Part 2 (Lab Kit)
- Lab 5 DNA (Lab Kit)
- Lab 6 Stream Series Part 1 (Lab Kit)
- Lab 7 Stream Series Part 2 (Lab Kit)
- Lab 8 Stream Series Part 3 (Lab Kit)
- Lab 9 Population Growth (Lab Kit)



RWSL—How it works



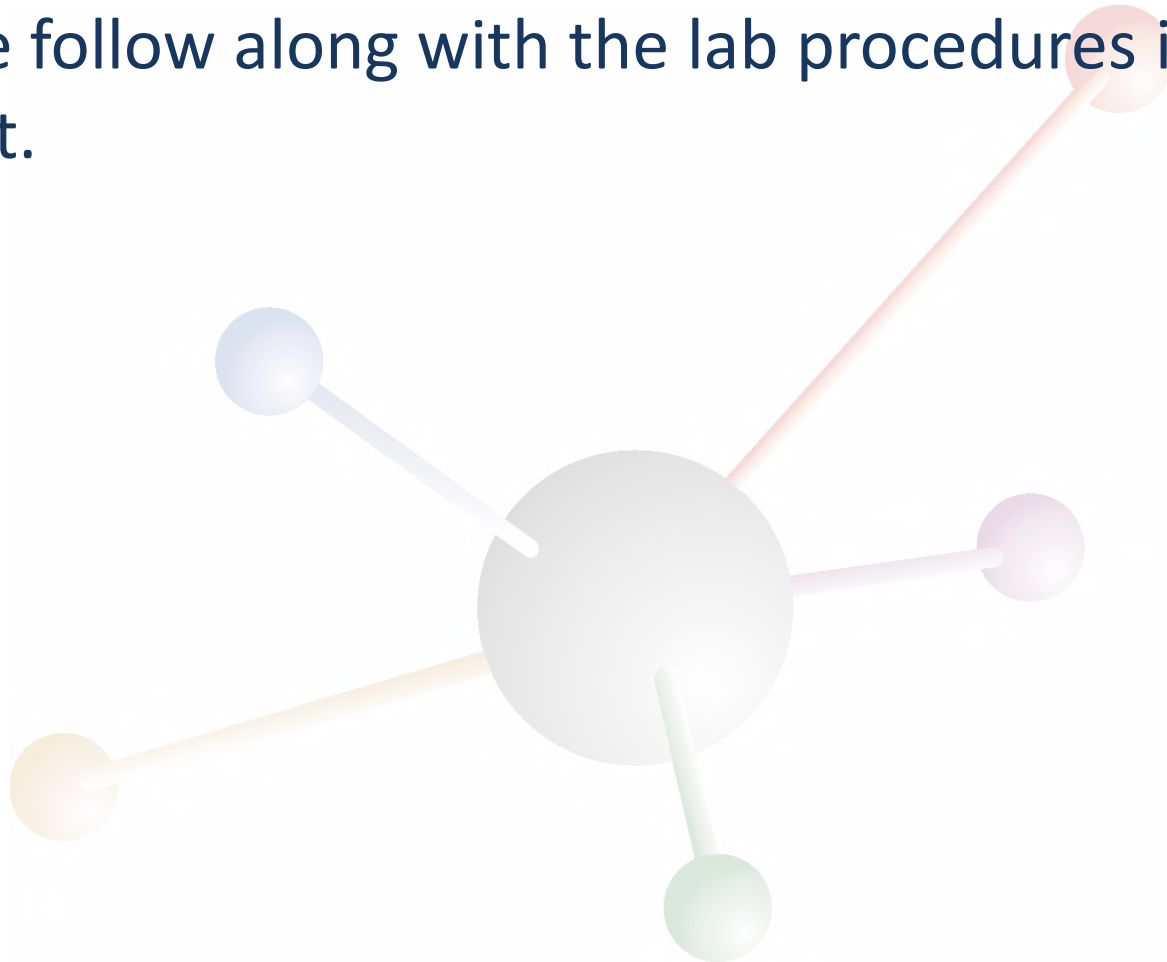
Student & Faculty Perspectives

- ▶ 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”



Demo: Metrics & Microscopy Lab

- ▶ Please follow along with the lab procedures in your packet.



Next Steps



Cyberlearning – \$1.35 million research learning outcomes

iLabCentral | Real Labs, Real Learning.

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>

