



Community College Undergraduate Research Initiative

Impacts of Early Research Experiences in Higher Education



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O C E A N
S C I E N C E S
M E E T I N G

23-28 February 2014 / Hawaii Convention Center
Honolulu, Hawaii USA

E Komo Mai

ASLO
Association for the Sciences of Limnology and Oceanography

AGU
American Geophysical Union

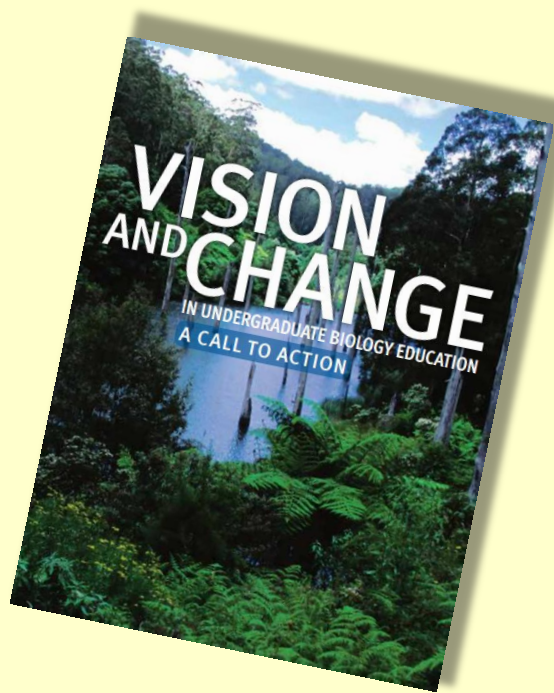

THE OCEANOGRAPHY SOCIETY



CCURI
COMMUNITY COLLEGE UNDERGRADUATE
RESEARCH INITIATIVE



Rationale for UR as a pedagogy



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What we have to learn to do, we learn by doing

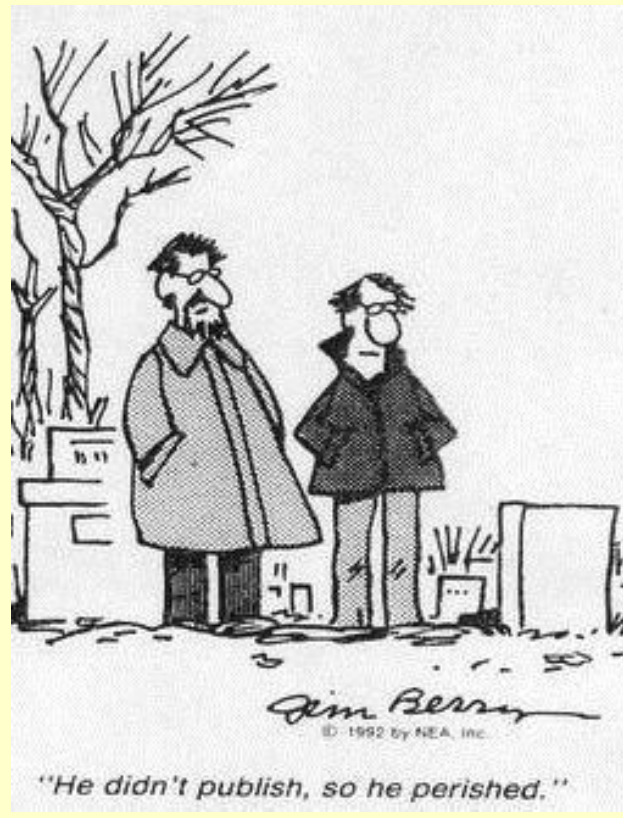


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Research OR Teaching

*In the
basic
sciences...
Research
IS
Teaching*



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Which of the following have you done or do you plan to do before you graduate from your institution?

NSSE	CCSSE
Practicum, internship, field experience, co-op experience, or clinical assignment Community service or volunteer work	Internship, field experience, co-op experience, or clinical assignment
Participate in a learning community or some other formal program where groups of students take two or more classes together	Organized learning communities (linked courses/study groups led by faculty or counselors)
Work on a research project with a faculty member outside of course or program requirements	Developmental remedial writing course
Foreign language coursework	English as a second language course
Study abroad	Study skills course
Independent study or self-designed major	Developmental remedial math course
Culminating senior experience (capstone course, senior project or thesis, comprehensive exam, etc.)	Developmental remedial reading course

Breaking Ground

Goldwater Scholars



Lynn Desmarais of the Biotechnology Program was named a 2010 Winner of the Barry M. Goldwater Scholarship in Science and Engineering. Lynn was one of 267 awardees coming from all 50 states and territories of the United States.

The Goldwater Scholarship was mandated by the United States Congress and named in honor of the late U.S. Senator from Arizona, Barry M. Goldwater. It is this nation's highest and most competitive

award in the sciences. Desmarais is the Biotechnology Program's 17th winner, giving MassBay more Goldwater Scholars than all two-year colleges in the nation combined and more than most four-year institutions.

Desmarais's winning research was entitled: "Induction of a Decision Tree to Determine the Functional Pathways of Regeneration Polarity in Planarians".

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TUES Type III

4-years \$3.35M



U.S. SCIENCE EDUCATION

Two-Year Colleges Are Jumping Into the U.S. Research Pool

January 15, 2012

With NSF Support, Research Moves Into Science Labs of 2-Year Colleges



© Michael Forster Rothbart Photography

Andrea Hook (left) and Jessica Prame work with James A. Hewlett, their biology professor at Finger Lakes Community College, to test their method for extracting and purifying a protein. The college has a grant from the National Science Foundation to foster undergraduate research at two-year colleges.

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CCURI Model

- Based on FLCC's RCA
- PBL intro course reform – “the hook”
- Opportunities for advanced exploration (CURE PURE SURE)
- Faculty skill and network development = CCURI

Phase	Focus	Institutions	Evaluation
I	Pilot	FLCC	Feasibility of model components
II	Institutional Capacity	COHORT A: FLCC and 5 regional partners	Faculty, Curriculum, and Institutional Change
III	Institutional Capacity	COHORT B: 16 new CCs identified from the CUR workshops	Faculty, Curriculum, and Institutional Change
	Student Impact	COHORT A: Original 6 CCs from Phase II	Learning gains, recruitment, retention and transfer in STEM discipline

Table 1. CCURI's three phase expansion and implementation plan with evaluation foci

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Co-PIs
John VanNiel
Jackie Crisman

PI
James Hewlett
Executive Director

Co-PIs
Jake Jacob
Virginia Balke

Heather Bock
Project Director



Tracy White
Case
Study/Curriculum
Editor

PARTNERS

Anoka Ramsey CC	Mesalands CC
Austin CC	Messa CC
Capital CC	Midland College
Central Wyoming	Muskegon CC
Edmonds CC	North Hennepin CC
Everett CC	Piedmont Tech College
Florida Keys CC	Portland CC
Gaston College	Redlands CC
Genesee CC	Seminole State College
Ivy Tech CC	Truckee Meadows CC
Kapiolani CC	Tulsa CC
Lake Wash Inst. Of Tech.	Volunteer State CC
McLennan CC	

CURRICULUM DESIGNERS / CASE WRITERS

Andrea Marino (Finger Lakes Community College)
Kellie Aitchison (Finger Lakes Community College)
Darby Oldenberg (University of Wisconsin La Crosse)
Pamela Tranby (Riverland Community College)
Michele Snyder (Clinton Community College)
Tanya Vickers (University of Utah)
Kristen Genet (Anoka Ramsey Community College)
David Krauss (CUNY Borough of Manhattan)
Claudia Hinds (Midland College)
Amelia Belizaire (Midland College)
Marlana Mertens (Midland College)
Rachel Smith (Estrella Mountain Community College)

COLLABORATORS

Bellvue Community College
Oklahoma City Community College
Mass Bay Community College
Montgomery County Community College



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Florida Keys Community College
(Marine Tech, Marine Bio,
Coral Restoration)

McLennan Community College
(Coral Reef Ecology)



Everett Community College (Ocean
Research College Academy –
ORCA)

Finger Lakes Community College
(Marine Research Methods,
Global, Regional, Local threats
to coral reefs)



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FLCC TODAY - INTEGRATED



Science and Technology

Biology

Clinton Krager and Kellie Aitchison

Biotechnology

James Hewlett



Conservation and Environmental Sciences

John Van Niel

Program Page



Viticulture and Wine Technology

Paul Brock

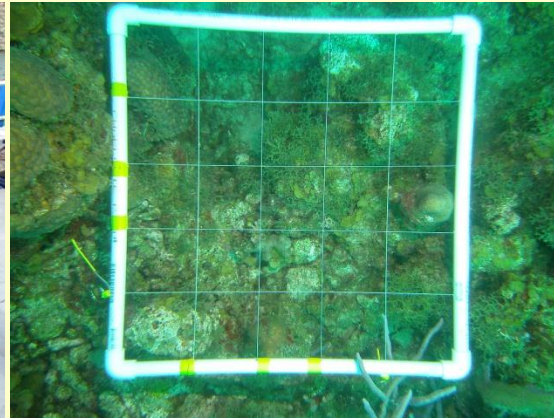
Program Page

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Course Integrated / Embedded experiences



BIO 291 – Research Methods in Biology
SCI 200 – Global Ecosystems: Tropical Coral Reef Ecology
BIO 122 – Introductory Biology (majors)

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Join the Conversation

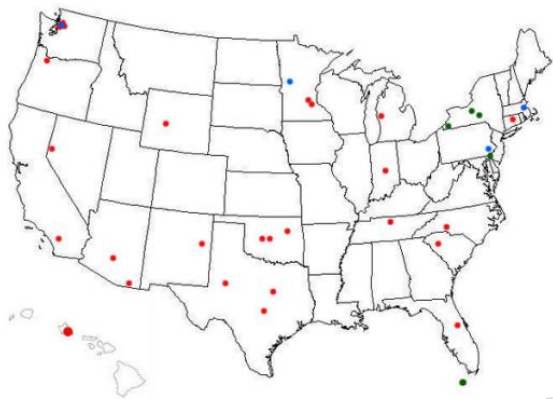
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yk (left) and Jessica Prame work with James A. Hewlett, their biology professor at Finger Lakes Community College, to
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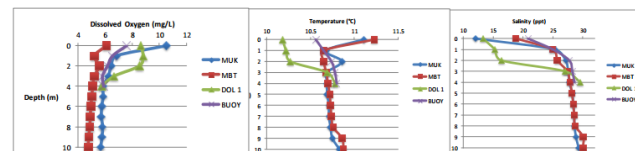
Long-term ecological questions

ORCA Program

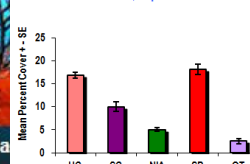
Leveraged Partnerships

State of Possession Sound (SOPS) Update

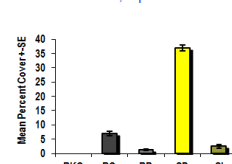
Dissolved Oxygen, Temperature and Salinity (DOTS)



Mean Percent Living Cover For <<RC Reef name, depth and date>>



Mean Percent Non-Living Cover For <<RC Reef name, depth and date>>



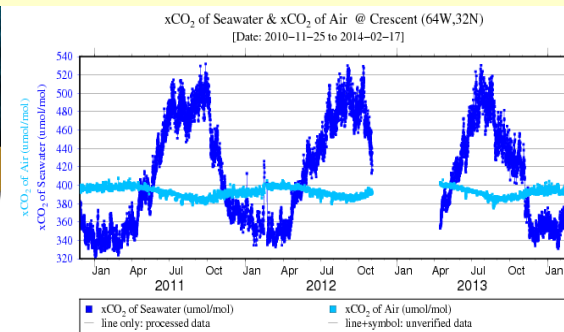
Large accessible datasets



Ocean Acidification

Created by: sage

This lesson was designed assuming that the students have had a lecture on calcifiers, carbonate chemistry, and gas exchange. Students should also have an understanding of models.





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