

AAC&U Conference, April 2007

The Student as Scholar:

Undergraduate Research and
Creative Practice

Research and Creative Scholarship: An Integral Part of the Undergraduate Experience

Royce Engstrom, Provost and Vice
President for Academic Affairs,
University of South Dakota

Jeff Abernathy, Vice President and Dean
of the College, Augustana College

Workshop Outline

- Introduction of Participants
- Goals of the workshop
 - Develop strategies to *integrate* the research experience into the undergraduate experience
 - Develop strategies to *institutionalize* undergraduate research
- Case study from a public research university
- Case study from a private liberal arts college
- Questions/experiences from your campus
- Actions to take back to campus

Questions to be thinking about:

- What have been some significant barriers to integration and institutionalization?
- What are some success stories?
- What is needed on your campus- by the faculty; by the administration; by the students?
- Are there programs or practices that AAC&U can foster?

**Introductions and opening
questions or comments**

Case Study from the University of South Dakota:

Challenges of integration and institutionalization

Challenges

Strategies

Outcomes

- Challenge 1: Expanding the “culture”
- Challenge 2: Visibility on the campus and beyond
- Challenge 3: Administrative support
- Challenge 4: Funding and sustainability
- Challenge 5: Integration into the curriculum

Expanding the Culture



A contingent has gone virtually every year.

Deliberate expansion by discipline.

Deliberate expansion by faculty member.

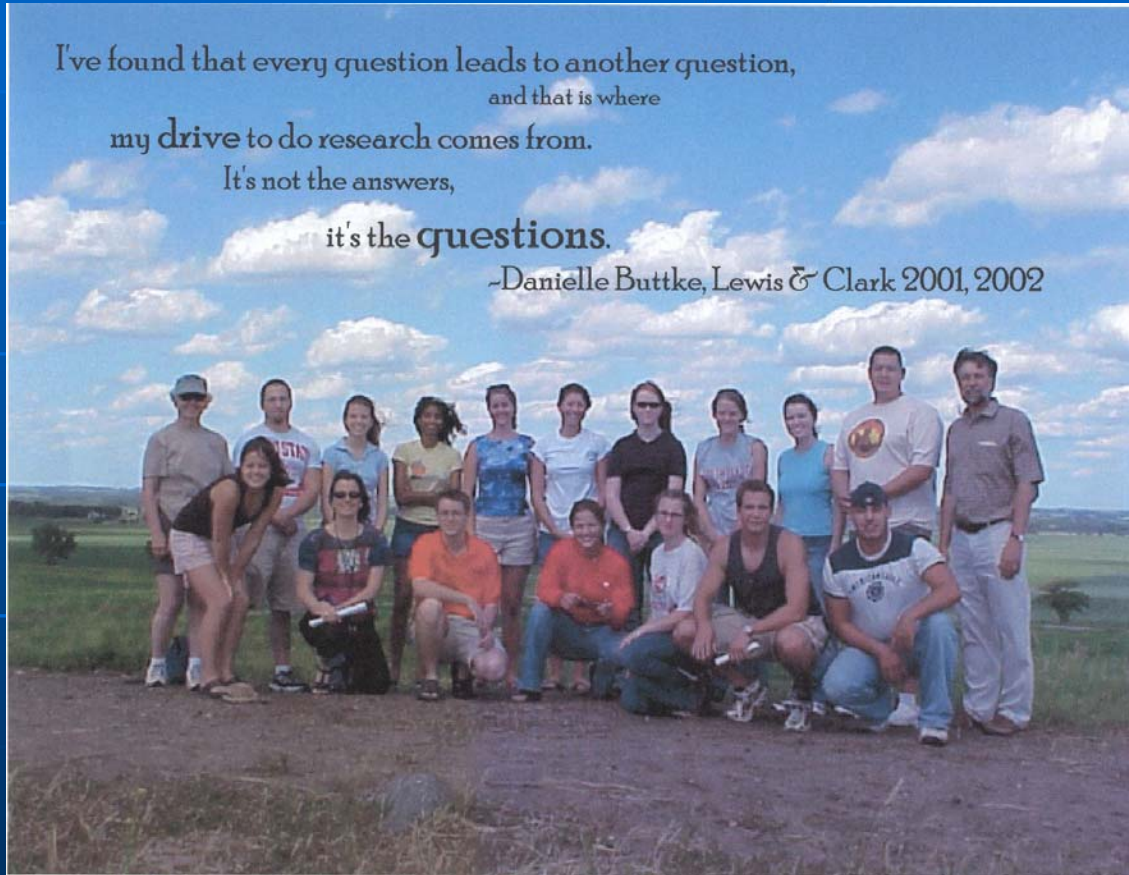
Expanding the Culture

I've found that every question leads to another question,
and that is where
my drive to do research comes from.

It's not the answers,

it's the questions.

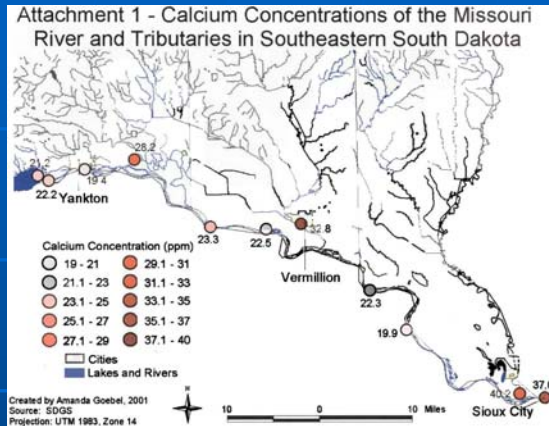
~Danielle Buttke, Lewis & Clark 2001, 2002



***NCUR/Lancy Project: Following the Lewis and Clark Trail:
Contemporary Issues of the Missouri River***

The Missouri River: A natural interdisciplinary laboratory

Science



Arts & Humanities



Policy



Education



Sample Projects from the L&C Project:

- History of Opera Houses in Tri-state area
- Environmental Risk Perception along the Missouri River
- Biological Inventory at Spirit Mound Prairie
- Mechanisms of Cold Tolerance in Birds
- Damming the Missouri River: A resource for Student-centered collaborative learning
- A Study of Musical Arts along the Missouri River during the time of Lewis and Clark



Visibility on the Campus and Beyond



IdeaFest

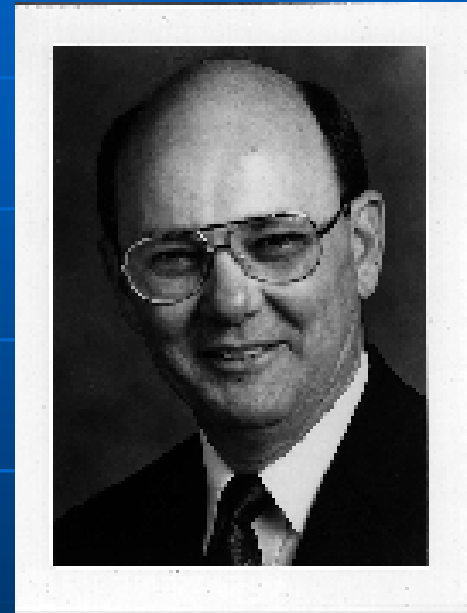
A Celebration of Undergraduate Research



Paul
Sereno-
Nat'l Geo

Visibility on the Campus and Beyond

*President's Lecture on
Teaching and Learning*



John Idoux, then from
Costal Carolina
University

Visibility on the Campus and Beyond



Posters in the Capitol Rotunda



CUR Posters on the Hill



Administrative Support



CUR Institutes-
Institutionalizing
Undergraduate Research

UW LaCrosse

Team Recommendations:

Formal Undergraduate Research Council

Line-item budget

Oversight at Vice-Presidential level

Funding and Sustainability



NCUR/LANCY INITIATIVE AWARDEES FROM 1999

- Bowdoin College (\$50,000, Professor Peter Lea)
- Colgate University (\$37,635, Professor John Dovidio)
- Loyola Marymount University (\$50,000, Professor Timothy Matovina)
- University of South Dakota (\$50,000, Professor Silvia Ronco)**
- University of Toledo (\$41,091, Professor Randy Bohn)
- University of Wisconsin-Eau Claire (\$47,763, Professor William Frankenberger)



Funding and Sustainability- Current

U. Discover!

Supported By



NSF REU
CHEMISTRY

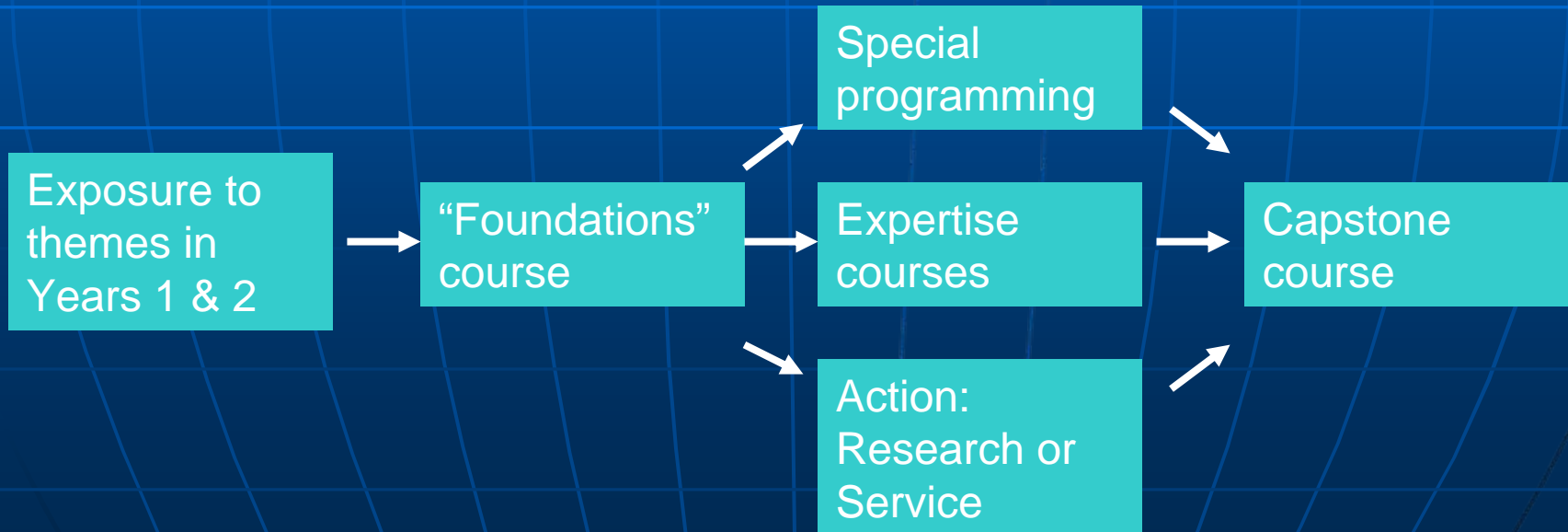
Northern Plains Undergraduate Research Center-National Science Foundation

Augustana College in Sioux Falls, SD, Mount Marty College in Yankton, SD, Sinte Gleska University in Mission, SD, Dordt College in Sioux Center, IA, Buena Vista University in Storm Lake, IA, Fort Berthold Community College In New Town, ND, Briar Cliff University in Sioux City, IA, and The University of South Dakota, Vermillion, SD.

Integration into the Curriculum

IdEA- Interdisciplinary Education and Action

- Institutional graduate requirement- all undergraduates
- Interdisciplinary theme-based
- Components:



Themes

American Indian World Views

Arts and Identity: Developing Cultural Competency

The Ecology of Human Development

Global Health

Living a Life of Leadership

Living in a Quality Environment

The Natural and Cultural Heritage of the Missouri River

Peace & Conflict Wealth & Justice in America

Sustainability

What has worked and what hasn't

- Student interaction
- Rich mix of disciplines
- Student appreciation
- Faculty engagement
- Student reporting-oral and written
- NCUR, Ideafest
- Attraction of off-campus students
- Student coauthors
- Faculty engagement across the disciplines
- Follow-on funding for interdisciplinary program
- Complicated advising for IdEA program

Augustana College
Inquiry for the Common
Good

Senior Inquiry projects will be:

- **Substantial** in meaning and impact
- **Communicative** of the discoveries made through the project
- **Reflective** of one or more of the following:
 - the nature of knowledge and inquiry
 - self-awareness and connection with others
 - the relationship of individuals to a community

Inquiry at Augustana

- Builds on an emphasis on inquiry throughout the curriculum, in both general education and the major.
- All seniors will complete the program in their majors.
- Serves as a culminating experience linked to assessment of student learning.
- Departments will determine how to move forward.
- Part of both student and faculty workload.

Development of Senior Inquiry

- Strategic Plan goal, January 2005
- Greater Expectations
- Faculty retreats
- Faculty Senate guidelines, January 2006
- Senior Inquiry Development Committee
 - half or more of programs will be in place this year

VIDEO: Inquiry for the Common Good

What are the critical factors for student growth in college?

- Student engagement
 - Student – Faculty interaction
 - Student oriented faculty
 - Active and collaborative learning
-
- Astin, A.W. *What Matters in College: Four Critical Years Revisited*.1993.

- Reflection on Vocation:

“Who do you want to be?”

■ Reflection

Purpose of reflection is to encourage students to:

- **integrate** educational experiences (broadly defined)
 - **connect** to those outside themselves—their community (broadly defined)
 - **articulate** their own identity within these contexts
- In simplest terms... have the students find the words to tell their own stories!!!

Why Should We Do It?

FIGURE 4.2. A HOLISTIC VIEW OF ACTIVE LEARNING



•P. 107 in Creating Signification Learning Experiences: An Integrated Approach to Designing College Courses. San Francisco: Jossey-Bass. 2003.

- Reflection was seen as strong desire in a recent survey:
 - 76% of students responding agree with the statement that ‘Understanding how one’s skills, gifts, talents and passions address the needs of one’s community should be an important part of the ‘college experience’.’
 - Only 30% of the students agreed that they have had an opportunity to discuss and receive feedback on these issues.

- Who are you?

- What are your **skills, gifts and talents**?
- What are you **passionate** about?
- What do you **value**?
- What are the **needs of your community**?

Backward Design

(Wiggins and McTighe 1998)

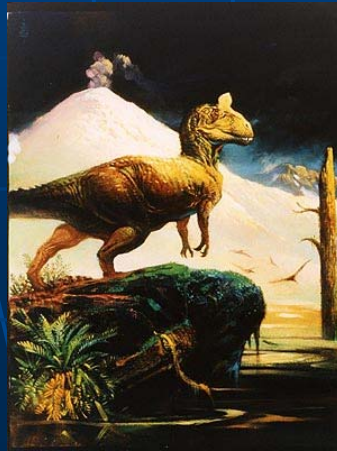
- Identify desired results
- Determine acceptable evidence
- Plan learning experiences and instruction

Student Outcomes

- Intellectual independence and maturation
- Recognition of the broader context of learning and research
- Explicit acknowledgment of the contribution intellectual work makes to community

Faculty Outcomes

- Increased focus on balance of teaching and scholarship.
- More opportunity to work closely with students.
- Peer review publication on the increase.
- Boyer model embraced across campus.



Faculty Support

- Pre-tenure leave.
- August contracts
- Reduction of first-year teaching
- Presidential fellowships.
- Release for major project.
- Grant support.
- Start-up funding.

A Practical Guide?

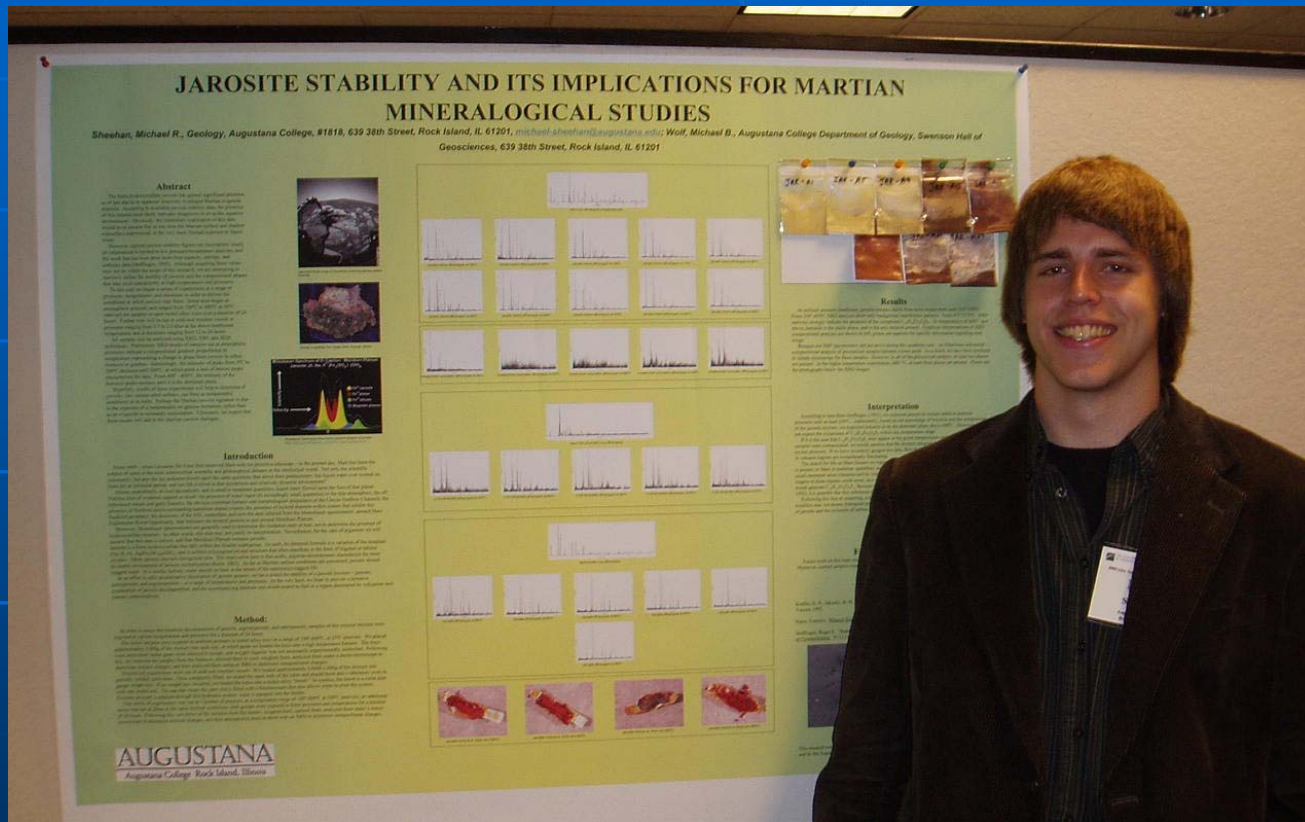
- Structure
- Philosophy
- Support
- Goal

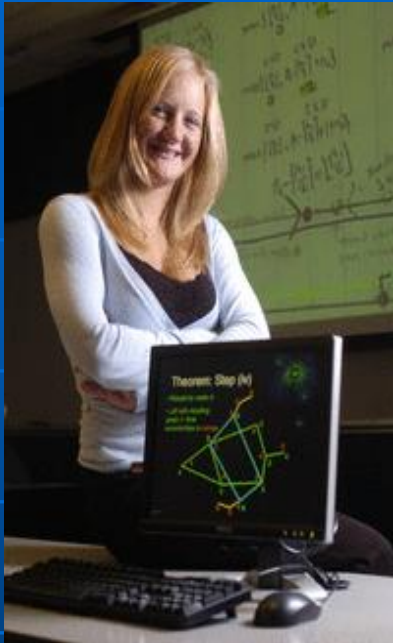
Change the Culture!!!

Geology Department Senior Inquiry Projects Reflection Questions

- How did this Senior Inquiry research experience change my view of the discipline?
- How did my education at Augustana prepare me to do this project properly?
- What will the meaning of this work be to me in 5 years? In 50 years?
- How does this project fit into my evolving life story? Why do I care about it? Who was I when I came to Augustana, and who am I now?

Michael R. Sheehan: Jarosite Stability and its Implications for Martian Mineralogical Studies





Sara Muhs '06

Mathematics and Biochemistry Major

At MathFest 2006, her paper “Centers and Eccentricities of Finite Simple Graphs” won the Council on Undergraduate Research award for outstanding paper of undergraduate research from the Mathematical Association of America.

Adviser: Dr. Tom Bengtson, Earl H. Beling Chair of Mathematics at Augustana

Challenges

- Assessment
- Top-down vs. grassroots
- Board involvement
- Dean's role
- Pace of change
- Use of resources

Inquiry Research
Collaboration
Reflection
Growth
Discovery
Expectations

Questions and experiences from your campuses

- What have been some significant barriers to integration and institutionalization?
- What are some success stories?
- What is needed on your campus- by the faculty; by the administration; by the students?
- Are there programs or practices that AAC&U can foster?

Action Plans: What can you implement on your campus to strengthen undergraduate research?