Cooperative Learning in Natural Resources Education

Rich Etchberger

Associate Professor
Utah State University

Acknowledgements

- Utah State University – Uintah Basin
- USU IRB Approval #2519
- Lianna Etchberger, Brent Bibles
- Cooperative Learning Center – University of Minnesota

Objectives

- Present my teaching philosophy
- Describe general education challenges
- Discuss how I am meeting challenges

My Teaching Philosophy

- Discovery
- Engagement
- Relevance

Discovery

- Student motivation
- Immersion into subject
- Inquiry-based learning
- Science
- My enthusiasm

Engagement

- Students learn by doing
- Application of classroom material
- Self-reliance
- Class size a factor

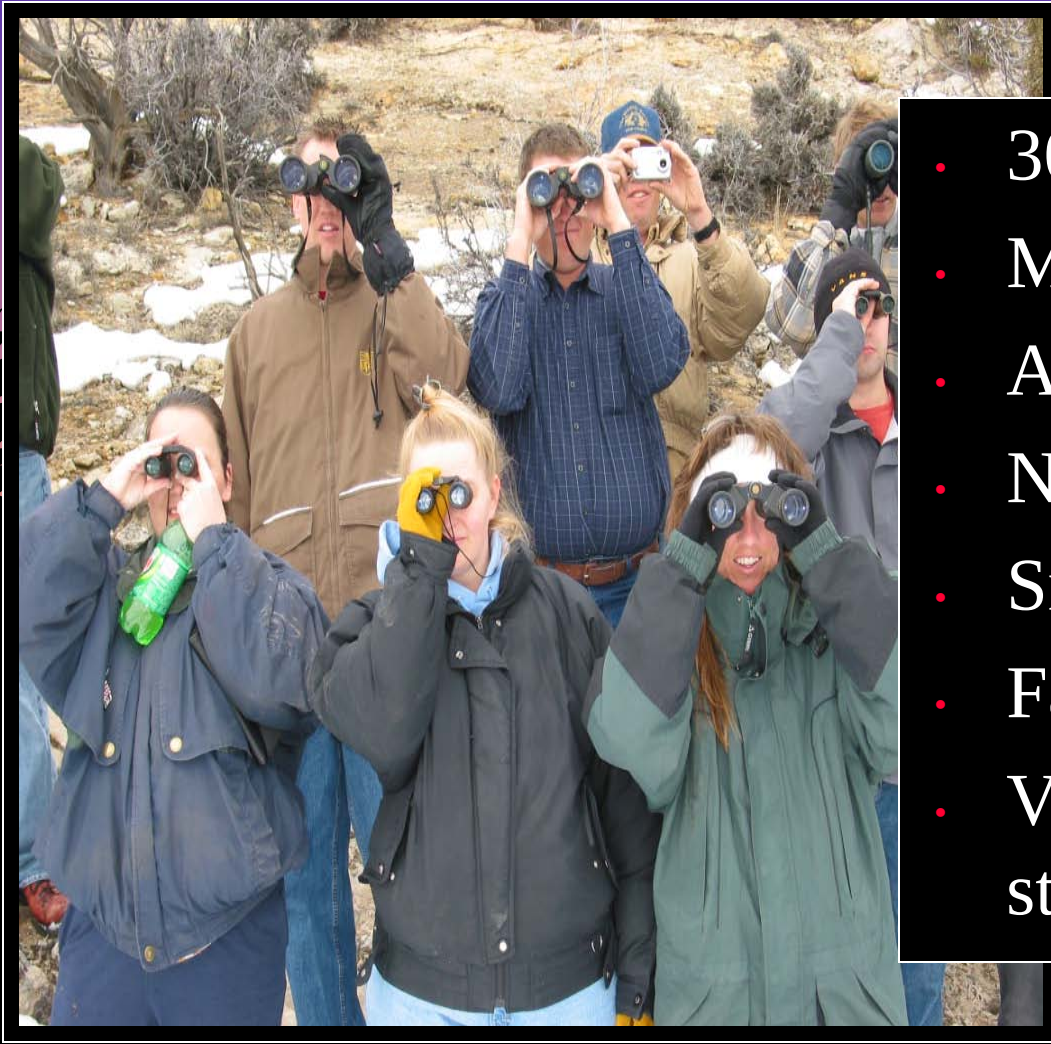
Relevance

- Why should I care?
- Multitude of answers
- Local and global
- Major vs non-major
- Can backfire

USU General Education

- Related to major
- Science vs non-science
- Two science courses
- Lower and upper level
- No prerequisites
- Dislike/fear of science

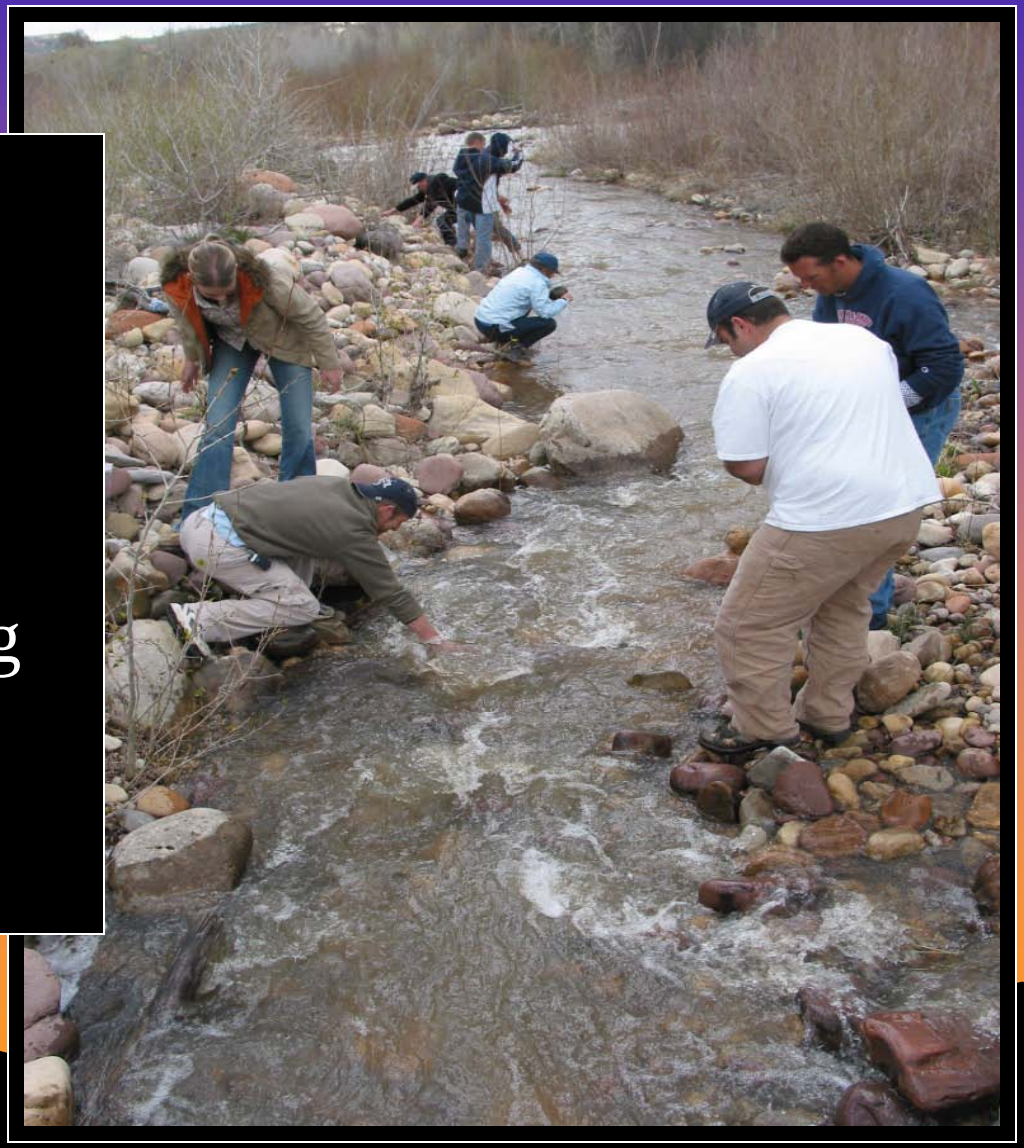
Biodiversity in Utah



- 3000-level Biology
- Majors and non-majors
- All living stuff in Utah
- No prerequisites
- Small class size
- Fall or Spring
- Very challenging for students

Class Topics

- Scientific approach
- Problem solving
- Hypothesis testing
- Model construction
- Tiny and slimy to big and hairy
- Interdisciplinary



Challenges of Depth Science Course

- Broad topic area for class
- Lack of prerequisites
- Majors and nonmajors in same class
- Three years of poor performance
- Decided to try cooperative learning

Cooperative Learning - Application

- Small groups 2 – 3
- Dr E determined group composition
- Science majors distributed
- Skills distributed
- Personalities distributed
- CL explained to groups

Positive Interdependence

- Everyone succeeds or no one succeeds
- Each student's efforts required and indispensable
- Each student will make unique contribution

Individual and Group Accountability

- Group sets and achieves goals
- Individuals set and achieve goals
- Individual stronger as result of group strength

Interpersonal Skills

- Complex interactions
- Diversity of social skills
- Task work & teamwork
- Cooperation
- Conflict

Promotive Interaction

- Students work together
- Project-oriented class
- Problem solving as group
- Connection between concepts and applications
- Personal commitment to individual and group success

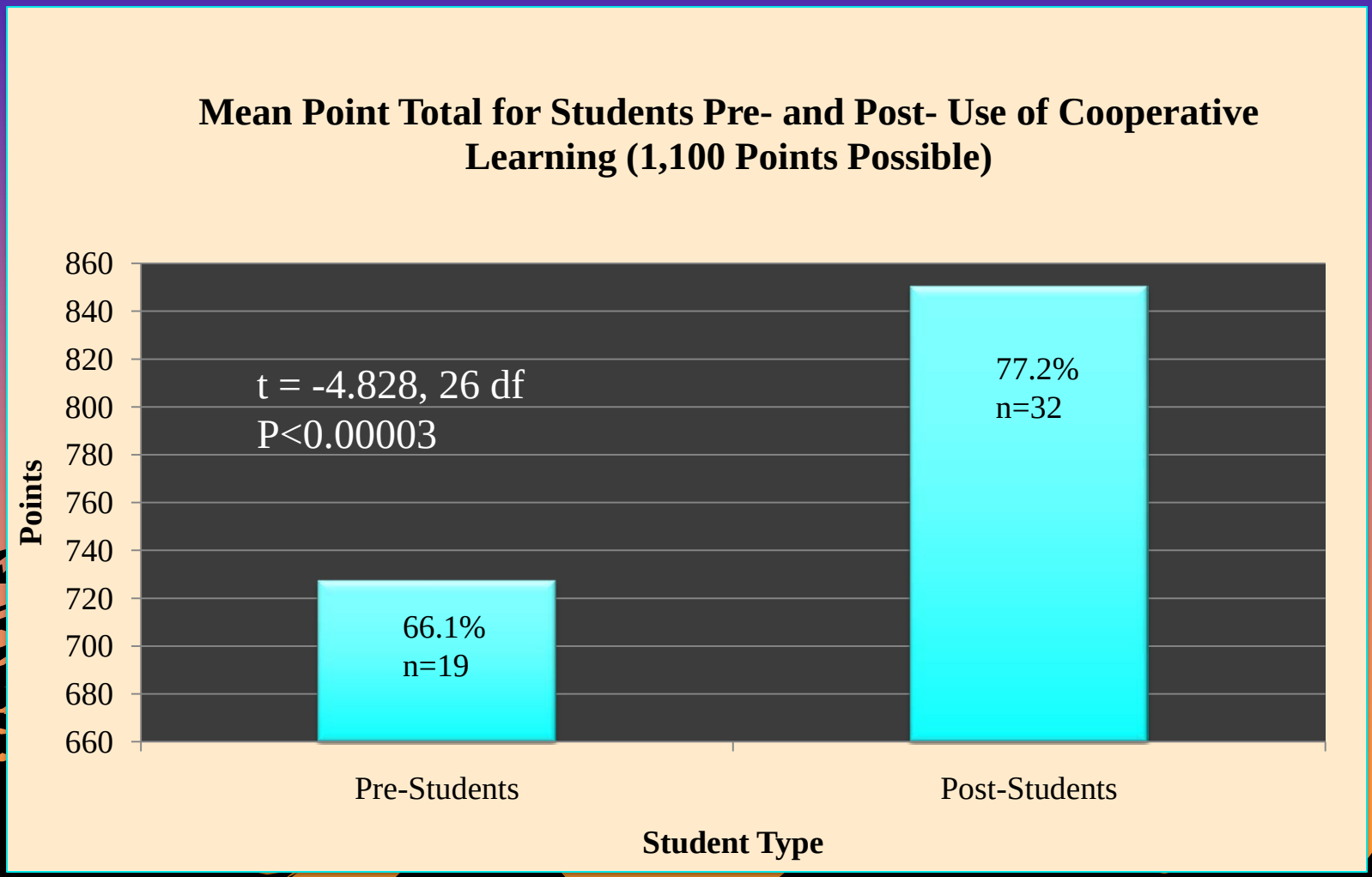
Group Processing

- Group evaluates success
- Tasks and teamwork
- Continuous process
- Conflict resolution

Methods

- Compare student achievement
- Pre- and post- cooperative
- Removed science majors
- Class requirements same
- Exams, labs, papers, project
- End of class survey

Results


Mean Point Total for Students Pre- and Post- Use of Cooperative Learning (1,100 Points Possible)
Points
860
840
820
800
780
760
740
720
700
680
660
t = -4.828, 26 df
P<0.00003
66.1%
n=19
77.2%
n=32
Pre-Students
Post-Students
Student Type

Student Responses

- Feel better about my work
- Better understanding of class
- Support of partner
- Shared work load

- Coordinating time
- Unequal work load

Cooperative Learning – In Practice

- Improved achievement
- Diversity of “buy in”
- Interpersonal skills very challenging
- Conflict resolution very challenging
- Majors vs non-majors

Questions?

www.co-operation.org