

Goals

- 1. Improve student group work experiences by
 - A. Exploring general attitudes toward cooperative learning, feelings of self efficacy, and attitudes toward group mates
 - B. Implementing a trial run of a "project management" styled set of group roles
- 2. Introduce and reinforce technical skills through an invasive species identification, mapping, and management project

The Course

BIO-242 Plant Biology

(5 cr.)

Repeatable for Credit: No Introduction to structure and function of plants and their role in matter and energy transformations. Survey of the plant kingdom including the evolution and life history of representative plant groups.

Curriculum spot and course organization

- Introductory course for new freshmen and transfer students in the Environmental Science program • Three 1-hour lecture meetings (48 students), 2, 2-hour
- lab meetings (24 students)

The Project

management strategy"



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Team Role Assignments: Effective Group Strategies for First-Year Environmental Science Students

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• Dedicated group role assignments and discussions (adapted from Barkely 2014) • Message board posts for each project segment Group and Self-Assessment Tool (Lejk and Wyvil 2001)

- Facilitator: Responsible for getting the group started, keeping it on task, and involving all members
- Recorder: Responsible for keeping a record of what happens in the group meetings. • Spokesperson/Reporter: Responsible for summarizing group decisions for the larger class.
- Devil's advocate: Responsible for pointing out alternate viewpoints and asking tough questions
- details
- Explorer/Innovator: Seeks to uncover new potential in situations and people (fellow team

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Interventions and Data Collection

• SAGE questionnaire (Gaudet et al. 2010), Student Self-efficacy tool (Baldwin et al 1999),

Group Experiences

Survey Question: "I learn more information when I work with other students" Prior to the project 13 % respondents 13 % respondents After data collection 17% After making the map

Student attitudes toward group work related to learning changed in both positive and negative ways. This is one question from the 56-question survey that I was interested in as it reflects student attitudes toward the benefits of group learning.

Future Directions

Refinement of group roles to better align with professional outcomes in the class Student comments that roles don't feel "real" as they relate to the project Continue data analysis of larger SAGE questionnaire

Question types (workload in groups, learning that happens in groups, feelings toward group mates) Complete review of qualitative feedback on self and group assessment questionnaire DEI issues in group work: Are group experiences promoting equity through their organization?

Work Cited

Baldwin, J. A., Ebert-May, D., & Burns, D. J. (1999). The development of a college biology self-efficacy instrument for nonmajors. Science education, 83(4), 397-408. Barkley, E. F., Cross, K. P., & Major, C. H. (2014). Collaborative Learning Techniques : A Handbook for College Faculty (Vol. Second edition). San Francisco: Jossey-Bass. Gaudet, A. D., Ramer, L. M., Nakonechny, J., Cragg, J. J., & Ramer, M. S. (2010). Small-group learning in an upper-level university biology class enhances academic performance and student attitudes toward group work. PloS one,

Lejk, M & M. Wyvill (2001) Peer Assessment of Contributions to a Group Project: A comparison of holistic and category-based approaches, Assessment & Evaluation in Higher Education, 26:1, 61-72

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Results and Insights

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Rating		Comments, Examples, Explanations, etc.				
Group Participation Attends meetings regularly and on time.						
Time Management & Responsibility Accepts fair share of work and reliably completes it by the required time.						
Adaptability Displays or tries to develop a wide range of skills in service of the project, readily accepts changed approach or constructive criticism.						
Creativity/Originality Problem-solves when faced with impasses or challenges, originates new ideas, initiates team decisions.		Group and Self-Assessment tool. Students completed this on				
Communication Skills Effective in discussions, good listener, capable presenter, proficient at diagramming, representing, and documenting work.		paper after each segment of the project.				
General Team Skills Positive attitude, encourages and motivates team, supports team decisions, helps team reach consensus, helps resolve conflicts in the group.						
Technical Skills Ability to create and develop materials on own initiative, provides technical solutions to problems.						
Scoring For each category, award yourself and each member of your team a score using this scale.	 3 - Better than most of the group in this respect 2 - About average for the group in this respect 1 - Not as good as most of the group in this respect 0 - No help at all to the group in this respect 					
(adapted from Goldfinch, 1994; Leik & Wyvill, 2001)					

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