Usage of Team- and Problem-Based Learning in a Sophomore-Level Animal Management Course (AB 337)

University of Nebraska, Lincoln

B. A. Reiling

Figure 1. Teams of 4-5 students working together on problem sets during class.

Introduction

Employers demand graduates who can interact with others and solve problems. However, most undergraduates have negative perceptions of team- and problem-based learning. It may be difficult for groups to meet, and there is anxiety regarding fairness of grading.

Course Design

1) For two years, team- and problem-based learning pedagogy was used as an integral component of a sophomore-level animal management course taught once per year.
2) Average enrollment; 80 students/semester.
3) Students were stratified into groups of 4-5 students each (Figure 1), based upon primary species of interest. Theoretically, each group possessed a diversity of species interest and "expertise".
4) Groups were re-randomized at mid-semester (2nd year only).
5) At least one week, prior to start of each species management unit, related extension publications were posted on-line, and students were assigned to read those materials.
6) On Day 1 of each species unit, students worked in teams (Figure 2) to complete a readiness assessment test (RAT) to test fundamental information related to the management of that particular species.
7) Special scratch-off answer sheets (Figure 3) that functioned to provide immediate feedback and allowed partial credit to be awarded on multiple choice tests were used.
8) Upon completion of the RAT, student teams could appeal up to three incorrect responses. Student teams were required to write a one-paragraph response detailing (with references, when applicable) why they should receive credit for their answer. The appeal process was "open-book".
9) Within each unit, student teams also completed problem sets &/or case studies.
10) All students within a team initially received the same team score, but scores were individually adjusted based upon self- and peer-evaluation.
11) Upon conclusion of each term, an anonymous survey was administered to ascertain students' perceptions of team- and problem-based learning.

Figure 2. A specific team works together to complete a Readiness Assessment Test.

Figure 3. Student is marking a scratch-off answer sheet providing immediate feedback.
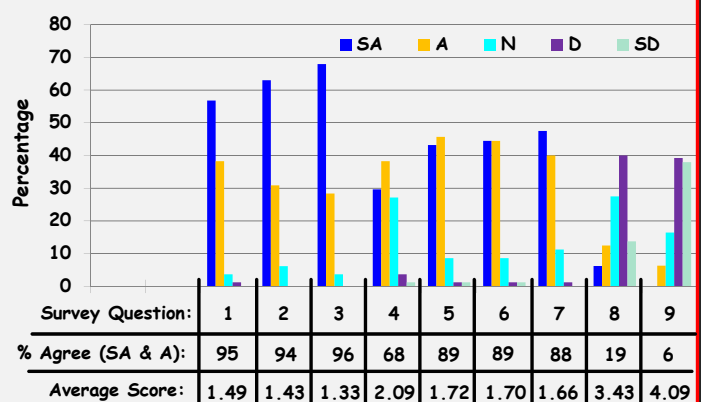
Survey Questions (See Table 1 for Results)

To what extent do you agree or disagree with the following statements?
1) Strongly Agree, 2) Agree, 3) Neutral, 4) Disagree, 5) Strongly Disagree

1) The team quizzes helped me learn.
2) The scratch-off sheets promoted discussion and learning within the group.
3) Having an opportunity to appeal questions further facilitated learning of particular concepts because we had to further review our notes and develop a concise argument.
4) Because my team counted on me, I prepared more for the team quiz.
5) Completing problem sets as a team helped me to learn basic concepts.
6) The team problem sets facilitated discussion and learning within our team.
7) I was more alert, attentive, and interactive when team components were conducted during class.
8) I felt I did more work than others on my team.
9) I would prefer to take the quizzes individually.

Table 1. Student Perceptions of Team- and Problem-Based Learning in a Sophomore-Level Animal Management Course

Survey Question:	1	2	3	4	5	6	7	8	9
% Agree (SA & A):	95	94	96	68	89	89	88	19	6
Average Score:	1.49	1.43	1.33	2.09	1.72	1.70	1.66	3.43	4.09

Results and Conclusions

1) Team quizzes facilitated learning, and the scratch-off sheets promoted discussion amongst students.
2) The ability to appeal questions stimulated additional discussion, learning, and understanding.
3) Positive peer pressure appeared to have some effect on enhancing student preparation for quizzes.
4) While 19% of students believe they did "more work" than others, only 6% wanted individual quizzes.
5) Students were more attentive and interactive when team-based components were conducted during class.
6) With long-term, regular team interaction; most students will provide an honest peer- and self-evaluation.

Figure 4. A student team appeals incorrect answers on a Readiness Assessment Test.