



# Student Perception of Trans-Institutional Cooperative Learning in an Animal Science Course

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## Abstract

The use of cooperative learning in STEM disciplines has been linked to increased student achievement and performance. With this in mind, faculty at Purdue University and Michigan State University (MSU) collaboratively developed the Advanced Animal Systems Management course. The course was designed to facilitate interaction among students at both institutions through shared course lectures/discussions, cooperative peer review of work, and a joint field experience. The objective of this study was to determine students' perception of the impact of trans-institutional cooperative learning on meeting the overall course goals and desired learning outcomes. A pre-survey was developed and administered during the first week of class to 11 students at Purdue and 9 students at MSU (100% response rate). All students were enrolled in the Advanced Animal Systems Management course. Student enthusiasm was high, with 95% agreeing or strongly agreeing that they were interested in the course content area. Ninety percent of students agreed or strongly agreed that they expected collaboration with students from the other university to be beneficial in the learning of course concepts and principles. The majority felt that it would foster them to think differently about course content. In conclusion, initial data indicates that students believe cooperative learning between schools will be a worthwhile aspect of the course. Data collected at the end of the course will be evaluated to determine if perceptions changed from the beginning to the end of the course.

## Introduction

- The use of cooperative learning in a classroom allows students to work together towards a common goal, while maximizing their own learning. This learning strategy increases students' intrinsic motivation and higher-level reasoning strategies.
- Based on this, the Advanced Animal Systems Management Course was offered for the first time in Spring 2017 to students enrolled at Purdue and MSU, with the goal of utilizing a cooperative learning strategy to accomplish an extension fact sheet.
- Students were required to complete at least one animal management course before enrolling.
- Course learning outcomes: 1) identify and described current issues related to animal management; 2) compare and contrast management goals and practices that promote efficient and profitable production; 3) develop skills to evaluate farm management practices; 4) use spoken language and active learning to communicate ideas and information; 5) work with others and in teams to enhance learning of class material.
- Course topic was beef cows in confinement with three different scenarios provided to students for a semester long analysis and fact sheet creation. Working in teams, students at each school were assigned to one of the three scenarios.



## Objective

To determine students' perception of the impact of trans-institutional cooperative learning on meeting the overall course goals and desired learning outcomes.

## Hypothesis

We hypothesized that students will have a positive perception of the cooperative learning experience between Purdue University and Michigan State University.



## Methods

- Course met 2 times/wk (Purdue and MSU shared lecture 1 time/wk using Zoom video conferencing and universities met independently for discussion 1 time/wk).
- At the start of the semester 11 Purdue and 9 MSU students were enrolled in the course. At the end, 11 Purdue and 7 MSU students remained enrolled.
- Students peer reviewed extension fact sheet drafts from the equivalent scenario at the partner institution 2 times throughout the semester.
- Both schools participated in a weekend field trip to three operations managing cows in confinement.
- Pre- and post-surveys were developed to determine student perception of the cooperative experience and administered the first and last day of class.
- Cronback's Alpha was used to gauge the reliability of the questions in the surveys, The Mann Whitney U Test was used to determine differences in survey results between and within institutions (significance declared at  $P < 0.05$ ) and the Cohen's effect size for differences between pre- and post-survey responses within institutions.

## Results/Discussion

- Overall, students were interested in the topic and content of the course at the beginning and the end.
- The survey questions were reliable (pre-test alpha = 0.88, post-test alpha = 0.95).
- Pre-survey results did not differ between institutions ( $P = 0.33$ ), indicating that students had similar expectations for the cooperative learning process.
- There was a tendency for differences in the post-survey questions between institutions ( $P = 0.10$ ).
- A medium effect size was found for both the pre-test and post-test between universities (Cohen's  $D = 0.76$  pre-test and  $0.59$  post-test).
- Within institutions, there was a difference between the pre- and post-survey responses ( $P < 0.001$ , for both) with a large effect size at both institutions (Cohen's effect size = 2.52 for Purdue and 1.83 for MSU).
- Post-survey results for both institutions indicate students believe trans-institutional cooperative learning can be beneficial, but in this course, provided minimal assistance in the learning process.
- Students were initially enthused about the cooperative learning aspect of the course, but did not feel they were engaged enough with the other institution during the semester.
- Assignments and class meetings needed to facilitate trans-institutional interaction.

## Percentage of students answering somewhat agree, agree, or strongly agree.

Pre-Survey	Purdue (%)	MSU (%)	Post-Survey	Purdue (%)	MSU (%)
I am very interested in the content of this course.	100	100	I am very interested in the content of this course.	100	100
Collaboration with students from another university and related assignments will increase my overall learning in this course.	100	100	Collaboration with students from another university increased my overall learning in the course.	36.6	14.3
Collaboration will help my learning of concepts and principles.	100	100	University collaboration in this course helped my learning of concepts and principles.	27.3	28.6
Collaboration will help me to think differently about course content.	100	100	University collaboration helped me think differently about course content.	45.5	57.2
Collaboration will be a worthwhile part of this course.	100	100	University collaboration was a worthwhile part of this course.	27.3	71.4

## Conclusion

- Students have high expectations for cooperative work with peers from other institutions. Additional, more deliberate, activities need to occur during the semester to foster the interaction and engagement of students from both schools in the learning process. These activities will be the focus of the cooperative learning strategy when the course is taught again in Spring 2018.

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