

Companion Animal Nutrition Student Group Projects Lead to Development of Professional Skills

Jared M. Mracek and Lisa K. Karr-Lilienthal¹
University of Nebraska-Lincoln
Lincoln, NE



Abstract

Applying nutrition concepts and the scientific method in a practical way can increase student learning. Group projects are a way for students to collaborate with each other on assigned projects that are more complex and challenging. University of Nebraska-Lincoln students enrolled in a Companion Animal Nutrition course were required to complete a group project designing and conducting their own research project. Upon completion of the project, students were required to complete an exit survey ranking items on a 1 (strongly disagree) to 5 (strongly agree) Likert-type scale. Students ($n = 66$) indicated that they had a better appreciation for nutrition research after they completed the project (mean = 3.97). Students expressed that the nutrition assignments allowed them to apply what they had learned in class to the projects they were conducting (mean = 4.09). However, groups had mixed opinions when they were asked if members from their group equally contributed to the completion of the project (mean = 3.56, $SD = 1.44$). Groups indicated that the completion of the projects improved their communication skills (mean = 3.20) and critical thinking skills (mean = 3.68). The group projects allowed learning activities that built upon the core objectives of the class.

Key Words: companion animal, nutrition, education, collaboration

Introduction

Group projects allow students to develop skills that they will use every day in the professional world (Mannix and Neale, 2005). By developing professional skills in the classroom, students are better prepared for the careers they are acquiring after graduation. Students can learn to break up complex tasks, manage time and develop stronger communication skills while working on group projects. These projects also allow students the opportunity to develop collaborative efforts that help students work as a unit or become team players. Collaboration skills are developed by students allowing

them to tackle more complex problems than they could complete on their own, to view other group member's perspectives and to pool everyone's knowledge to make educated decisions. This allows students to become more comfortable when working with peers on projects that may be assigned to them in the future. Group projects also give students a sense of community or connectedness when taking classes online or in person (Ouzts, 2006; Rovai, 2002; Williams et al., 2012).

More complex and challenging projects can be assigned to groups than if the project was going to be completed by an individual (Carnegie Mellon, 2014). This challenges students to become critical thinkers as more than one way may be the correct way to complete the project. Students must interact and use other students within their group as a resource to complete the project. Group projects also allow professors to assign projects that encompass a majority of the learning objectives of the course. This not only allows students to apply what they have learned throughout the semester, but can be used as an indicator of student understanding.

Students may find animal nutrition concepts challenging. The goal of this project was to ask students to apply class concepts to design and conduct a small scale nutrition research project. An evaluation was done to determine if the project resulted in students applying class concepts, learning research methodology and life skills such as working as a team and communication skills.

Materials and Methods

Course Enrollment

Companion animal nutrition is an upper level course offered to undergraduate students with a prerequisite of a general animal nutrition course. The course is offered in an on campus traditional lecture format and via distance. Course enrollment was 53 for the in person section and 35 for the distance sections over the two semesters data was collected (Spring 2012 and 2013). Students enrolled in the course were primarily

¹Associate professor, University of Nebraska-Lincoln, Department of Animal Science, lkarr-lilienthal2@unl.edu, 402-472-6458

Companion Animal Nutrition

juniors and seniors. They include mostly Animal Science majors, but were also Fisheries and Wildlife, Veterinary Medicine and Biomedical Sciences, Food Science and Applied Science majors.

While enrolled, students were required to participate in a group project to design and conduct a companion animal nutrition research study. The objectives of this project were to demonstrate the steps required to conduct a nutrition experiment, identify scientific resources and define a problem or issue to be evaluated related to companion animal nutrition. After identifying the issue, they developed a plan to answer the question that they proposed. Students first turned in an initial proposal for review by the instructor before moving forward with the project. Students were required to turn in several progress reports along the way to track progress throughout the semester. Final papers were expected to be in journal article format with a title page, abstract, introduction, material and methods, results and discussion, literature cited and tables.

A group mentor was identified for each group. Mentors were identified by either the group or the instructor and included graduate students, pet food industry professionals and zoo keepers. The mentor's role was to help the group determine the best plan to answer their hypothesis and conduct their experiment. The mentor also provided additional group support such as access to animals during the duration of the project. The research project was conducted throughout the semester the students were enrolled in the class. Numerical data was collected through each project. Students were required to compare their results to published literature and to draw conclusions on the validity of their hypothesis considering their finished product. Projects were graded and students completed a survey based on the project, group members and project results.

Project Evaluation

An evaluation tool was developed to be completed by undergraduate students at the end of the semester. The survey asked demographic information. It included semester in which students were enrolled in the class, year in school and if they were completing the class online or in-person. In addition, students were asked to respond based on the five point Likert-type scale (5 = strongly agree, 4 = agree, 3 = neither agree nor disagree, 2 = disagree, 1 = strongly disagree) to a series of questions (Table 1 and Table 2). Survey questions were designed to obtain feedback from students on how the group project was completed and how each student interacted with other members of the group, mentors and instructors to complete the project. The procedures of the survey were reviewed and approved by the University of Nebraska-Lincoln's Institutional Review Board (IBR).

Statistical Analysis

The data were analyzed using the mixed models procedure of SAS (Cary, NC). The survey was analyzed

Table 1. Effects of student participation in a group project while enrolled in companion animal nutrition.

Item	Mean	SD
I found the mentor to be helpful.	3.64	1.19
I liked having multiple checkpoints throughout the assignment.	4.32	0.99
I felt that the expectations of this assignment were clearly explained.	3.98	1.10
I applied the concepts we learned in class when completing this assignment.	4.09	0.92
The members in my group equally contributed to the completion of this project.	3.56	1.44
Having a day to meet with the instructor was helpful in completing my project.	3.92	1.18
This project was a worthwhile experience.	3.55	1.20
How many times did you meet as a group outside the class?	2.86	1.07
Approximately how much time did this project take outside of class time?	2.58	0.93

Ranked on a scale of 1-5: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree

Table 2. Impact of group project the development of student's profession skills and future decisions.

Item	Mean	SD
I had to improve my communication skills to complete this project.	3.20	1.13
Completing the project improved my critical thinking skills.	3.68	1.11
I better understand how to support my ideas with research.	3.76	1.04
I have a better understanding of the application of the scientific method.	3.57	1.17
After completing this project, I have a better appreciation for nutrition research.	3.97	1.12
I can see how completing this project relates to my future career choices.	3.55	1.17
Completion of this project will be beneficial to my future career.	3.33	1.19
Completing this course/project changed my perception of research in the pet food industry.	3.46	1.15
I am considering graduate school after completion of this course.	2.53	1.43
I am more interested in a career with research after completing this course.	2.38	1.20

Ranked on a scale of 1-5: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree

using class (in-class vs. online) as the variable. There were no differences found in student responses regarding if they took the class online or in-person, so the data for all students were combined.

Results and Discussion

There were 40 students enrolled in the course in 2012 and 30 of the 40 students (75%) returned the survey. In 2013, 47 students were enrolled in the course and 36 students (77%) returned the survey. Majors of students completing the survey were Animal Science (61%), Fisheries and Wildlife (27%), Veterinary Science and Biomedical Sciences (7.5%), Food Science (3%) and Applied Sciences (1.5%) majors. The types of projects conducted included surveys on pet food buying trends and consumer knowledge of pet foods, palatability and preference studies in dogs, cats and zoo animals.

Students indicated they found their mentor helped (mean = 3.64, SD = 1.19) with projects (Table 1). However, there was wide variation in student responses. Students were only required to meet with their mentor once during the semester. Some students indicated having difficulties contacting their mentor or setting up times that would work for both the mentor and group members to meet. After the first year, students were given additional advice on how best to communicate with their mentor. Students suggested that they

should have met with their mentor more times so they would have gotten more professional guidance on the assignment. However some groups met more frequently and developed their project more with their mentor throughout the conduct of the experiment than students who only met with their mentor a few times.

Throughout the semester, there were multiple checkpoints in which students had to turn in part of their project. Students agreed (mean = 4.32, SD = 0.99) that they liked having several checkpoints throughout the semester. They stated the checkpoints allowed them to stay on track with the group project, not fall behind and make progress throughout the semester. The checkpoints also allowed for students to get feedback on their project to improve their final submission. When asked if they felt that expectations of this assignment were clearly explained, student agreed (mean = 3.98, SD = 1.10). Students were provided a handout with the layout of each section of the paper and example citations. However, some students commented that they would have preferred there be clearer announcements about the checkpoints.

Research projects allowed students to apply what they learned in class to their nutrition project (mean = 4.09, SD = 0.92). Students commented that reading research articles that covered material discussed in class allowed them to validate lecture topics. The research project allowed students to see where information comes from.

Groups had mixed opinions (mean = 3.56, SD = 1.44) when asked if members from their group equally contributed to the project completion. Students stated it was hard to find time to meet with group members if their group was comprised of online and in-class group members. Groups composed of students enrolled in both online and in-class, said it was hard to develop working relationships with group members when not seeing them in class. Some students reported difficulty communicating with group members. Hiltz and Wellman (1997) also saw similar results when comparing virtual classrooms to traditional classrooms. They stated students were able to make friendships with students taking the class via a virtual classroom, but it was harder to establish a working relationship between students.

The instructor scheduled dates to meet with groups prior to the start of the group projects and again halfway through the semester. The instructor provided feedback on project ideas, best practices for completing the project and tips for developing the final paper. Students agreed (mean = 3.92; SD = 1.18) that meeting with the instructor was helpful in completing the project. Students felt the meeting helped them stay on task with the project. Instructors who express the value of a group project, provide insight to the group and try to limit negative aspects of group projects may positively affect students' attitudes toward group work (Chapman and Van Auken, 2001).

Students indicated the group project improved their communication skills (mean = 3.20, SD = 1.13) and

critical thinking skills (mean = 3.68, SD = 1.11; Table 2). However, students commented it was hard to find time to meet or contact students not in the same section of class. This lack of communication made it difficult at times to complete the tasks with all group members present; however, it required students to assess the situation and develop a plan to make sure all group members were involved and actively participating in the project. Coers et al. (2010) indicated group communication was the foundation of a successful group. By improving group communication, students will be able to better prepare themselves for employers.

Students identified they had a better understanding of how to support their ideas with research after completion of the project (mean = 3.76, SD = 1.04). Several students commented that they liked how selection of the topic for the experiment they were going to conduct was offered. Students enjoyed the hands on research and opportunity to see how their results correlated with similar studies that were similar. Students indicated they had a better understanding of the application of the scientific method following their project (mean = 3.57, SD = 1.17). Students reported that they enjoyed completing the research while trying to support their hypothesis. This allowed students to develop a better understanding of the application of the scientific method.

Felder and Brent (1996) indicated when using cooperative (team based) learning properly in college settings enhances motivation to learn, retention of knowledge, depth of understanding and appreciation of the subject being taught. Students agreed (mean = 3.97, SD = 1.12) they had a better appreciation for nutrition research after they completed this project. It allowed them to learn about how important nutrition is to an animals and why research needs to be done in order to ensure that products developed are healthy and beneficial to our pets. Students also indicated the research project was a way to get them accustomed to research by having them come up with their own research experiment, conduct the experiment and have them write up their findings to present to their peers.

Summary

The project allowed students to see what type of research goes on in the pet industry. Being Animal Science majors, many of the students' careers could involve research within the industry. These projects gave students hands on experience of the research conducted in the pet industry. Students agreed (mean = 3.55, SD = 1.17) that the project related to their future career and stated that it was beneficial to their future (mean = 3.33, SD = 1.19). After completion of the course, a student interviewing for veterinary school indicated explaining her project was well received by the interview committee. Other students have discussed this experience in interviews as well.

Overall, students commented the project was a worthwhile experience. Several students stated they

Companion Animal Nutrition

liked the opportunity to pick the animals that they were able to do the research trial on and that this type of project helped them build upon the foundation that was developed in lecture. By being able to conduct the experiment, they were able to learn about the scientific method and develop skills to properly conduct a research trial.

Conclusions

Group projects are a great way for professors to develop learning activities that build upon the core objectives of a class. The nutrition projects allowed students to develop skills that they will continue to use throughout college and their career. These skills allow students to become more confident in themselves and in completing complex tasks within a group setting. By learning how to collaborate with each other, students were able to collaborate with each other and meet deadlines. These skills will not only be needed during their careers, but in their everyday lives. Group projects allowed students to not only grow themselves as individuals, but also as members of a group.

Literature Cited

- Carnegie Mellon. 2014. What are the benefits of group work?. <http://www.cmu.edu/teaching/design/teach/design/instructionalstrategies/groupprojects/benefits.html/> March 14, 2014.
- Caruso, H.M. and A.W. Wooley. 2008. Harnessing the power of emergent interdependence to promote diverse team collaboration. *Diversity and Groups* 11: 245-266.
- Chapman, K.J. and S. Van Auken. 2001. Creating positive group project experiences: An examination of the role of the instructor on students' perceptions of group projects. *Journal of Marketing Education* 23(2): 117-127.
- Coers, N., J. Williams and D. Duncan. 2010. Impact of group development knowledge on students' perceived importance and confidence of group work skills. *Journal of Leadership Education* 9(2): 101-121.
- Felder, M. and R. Brent. 1996. Navigating the bumpy road to student-centered instruction. *College Teaching* 44(2): 43-47.
- Hiltz, S.R. and B. Wellman. 1997. Asynchronous learning networks as a virtual classroom. *Communications of the ACM* 40 (9): 44-49.
- Mannix, E. and M.A. Neale. 2005. What differences make a difference? The promise and reality of diverse teams in organizations. *Psychological Science in the Public Interest* 6(2): 31-55.
- Ouzts, K. 2006. Sense of community in online courses. *The Quarterly Rev. of Distance Education* 7 (3): 285-296.
- Rovai, A. 2002. Building sense of community at a distance. *International Rev. of Research in Open and Distance Learning* 3 (1): 1-16.
- Williams, K.C., B.A. Cameron and K. Morgan. 2012. Supporting online group projects. *NACTA Journal*. 8 (2): 15-20.

Our website is completely redesigned.

Check it out:

<http://www.nactateachers.org/>