

Using a Student Research Group to Support Administrative Responsibilities of an Equine Unit



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Abstract

A student research group was used as part of the laboratory requirement for a junior level forage production course. The course consisted of traditional lecture and discussion, for three 50-minute periods per week, and a two hour laboratory each week throughout the semester. During the latter half of the semester, the students were required to work as a group to plan renovation of a pasture at the equine facility. The assignment included devising proper weed control, fertilization practices, forage species selection, planting implementation, and proper fencing and water requirements for horses. A formal written report was required of each student.

Initially, students hesitated to undertake this project. Once begun, students cooperated and showed an increased interest and performance for the course. Additional benefits for this project included donation of Max-Q™ seed by the Pennington seed company and assisting the equine unit supervisor with much needed pasture renovation. The instructor's work load was increased somewhat, but not enough to offset the benefits of this project.

Introduction

The forage production course consisted of topics such as morphology and systematics, grasses and legumes, forage program development and quality, establishment and fertilization, and grazing and weed management. Lecture was the primary mode of classroom instruction, with discussion incorporated when possible. Laboratory sessions consisted of forage identification, weed identification, pasture allocation, and pasture management assessment. Student points were available from three exams and one comprehensive final, quizzes, completion of laboratory assignments, and contribution to the weed identification book. For this book students were required to find two weeds on campus, identify and photograph them and write a one-half to one page description of the weed. This information was added to the weed identification book, a three-ring binder with information on weeds found on the Berry College campus.

The lecture is one of the oldest teaching methods and used by colleges and universities world-wide. It is an effective method for presenting information and providing explanations (Brown and Atkins, 1990), yet this method has been criticized for placing students in a passive role (McKeachie, 1980, 1999). Discussion

methods improve retention of information, problem solving, and motivation for further learning compared to lecturing (McKeachie, 1980). If a student is more actively engaged in learning material, information is processed more effectively (Brown and Atkins, 1990; McKeachie, 1999).

In some agricultural curricula, an effort is being made to identify different learning styles and the subsequent effects of various teaching approaches on student achievement (Honeyman and Miller, 1998; Hoover and Marshall, 1998). Students can be classified as field-independent or field-dependent learners. Field-dependent learners prefer collaboration, have well-developed social skills, and attends best to material relevant to his/her own experience. Field-independent learners prefer competition rather than collaboration; they are more socially independent and are interested in new concepts for their own sake. (Honeyman and Miller, 1998; Hoover and Marshall, 1998). The inclusion of the pasture renovation project would accommodate the field-dependent learners in the class, whereas the traditional lecture and laboratory sessions would accommodate the field-independent learners. A combination of teaching methods suited to field-independent and field-dependent learners was most effective for animal science students (Honeyman and Miller, 1998). Hoover and Marshall (1998) reported 58 percent of students enrolled in selected animal science courses tended to be field-independent learners, and suggested using a variety of instructional strategies. Students exhibited an improvement in attitude, motivation, and an interest in the subject matter when an interactive group learning activity was incorporated into traditional lecture and laboratory settings of a plant pathology course (Voltz, 2001). Furthermore, shared-responsibility teamwork increased individual development when the team collectively managed problem-solving tasks (Mears and Voehl, 1994).

Communication and writing skills traditionally have not been emphasized in agricultural courses. More recently, Writing Across the Curriculum has become an integral part of the animal science curriculum (Aaron, 1996; Haug, 1996). The successful animal scientist needs more than acquisition of technical material; development of writing, listening and speaking skills is also crucial (Orr, 1996). Incorporating more writing into animal science courses enhances the students' ability to write within their discipline.

I have taught Forage Production to animal science students during three different semesters in the past five years. In the first two semesters, I used traditional lecture and laboratory methods for teaching and student assessment. I chose to incorporate a group project requiring team participation and writing skills for two main reasons: 1) the literature supports active learning and stresses the importance of writing skills, and 2) as director of the equine program and the equine unit, I felt this project could supplement the maintenance needs of the unit. Although I do have a budget for basic maintenance of the horses and facilities, a few resources are available to upgrade and improve the facilities, both buildings and pastures.

Methods

Forage Production is a relatively new elective course within the animal science major. I developed the course during the second semester of my first year at Berry College. It is a four-credit course in which students attend three, 50-minute classroom sessions per week and one, two-hour laboratory session per week. Enrollments range from eight to 18 students. For the fall 2001 offering, eight students enrolled. Because of the small number of students, I decided to add a team project with significant writing assignments. Objectives for this project included: 1) to encourage teamwork, by requiring collaboration on the project by all students in the course; 2) to foster writing skills within the discipline, accomplished by requiring research summaries and a formal proposal from each student; 3) to increase interest in the subject matter, by allowing students ownership of the pasture renovation; and 4) to supplement resources needed for pasture improvement at the equine center, by using students' time and talent to research and design renovation of a horse pasture.

The majority of classroom periods were used to cover topics listed in the syllabus, through lecture and discussion. The first four laboratory periods included standard activities, such as forage and weed identification, soil sampling, and a field trip to a forage research station. During the next two laboratory sessions, the class analyzed the pasture in need of renovation. Students determined acreage, weed and forage species present, fencing and water needs and obtained soil samples.

The remaining laboratory sessions were dedicated to activities such as forage analysis and pasture allocation. During the classroom periods, students were allowed to ask questions and discuss progress on their renovation research as needed. Students were encouraged to seek assistance from various resources. I provided them with a list of contacts, including individuals at seed companies, extension offices, and farm supply stores. Students also consulted with the Berry College personnel involved in pasture and hay production.

I left the organization and division of responsibilities to the discretion of the students. Each student

was required to complete research summaries which detailed the progress of the project. These summaries included items such as forage species present in the pasture and the decision to keep or eradicate them, new forage species considered, with descriptions of each, weeds present in the pasture, chemical control needed to eradicate weeds and any restrictions, soil amendments, types of possible fencing to use, and the classification of horses that could use the pasture (i.e. is it safe for broodmares?). A formal proposal was required from each student after their research was completed. At least four print references and a cost analysis were part of the proposal. It was due at the end of the eleventh week of a fifteen week semester.

The writing assignments were graded on an individual basis. The project grade counted as approximately 17 percent of the course grade, or a possible 100 points out of a course total of 620 possible points. The proposal was worth 50 points of the project, with the remaining 50 points allocated for research summaries. Of the 50 points possible for the proposal, 40 points were allocated for content and 10 points for grammar, sentence structure and spelling. The research summaries served as the raw data for the proposal. The points available include 30 points for thoroughness, 10 points for presentation, and 10 points for grammar, sentence structure and spelling. The overall course grade was assigned based on the following criteria: exams 48 percent; comprehensive final 24 percent; quizzes 8 percent; contribution to weed identification book 3 percent; and pasture renovation project 17 percent.

Results and Discussion

The addition of the pasture renovation project to the forage production course garnered many positive results. Although initially reluctant about the increased writing and research necessary for the project, the students exhibited an improved attitude once begun. Motivation and interest increased with the development of the project, and there appeared to be an equal division of workload among the students. I was able to integrate the information they gathered regarding the renovation into many class periods. This often prompted discussions relating lecture material already covered or yet to be covered with their task.

Because of the possibility of using this pasture to house broodmares, the group decided to plant Max-Q™, a relatively new fescue variety that is endophyte-infected, yet non-toxic. This product is distributed by the Pennington seed company. This is a relatively expensive variety of fescue, but Pennington generously offered the necessary seed gratis because of the persuasive communication skills of a student.

The feedback I obtained regarding this project through student evaluations and verbal communications was generally positive. The students enjoyed working as a team to complete the project. The one minor complaint expressed by the students was the time and work involved in writing the formal pro-

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posal. From my experience teaching students in many different courses, I'm familiar with the resistance to writing assignments, yet it is an area of improvement for many students. They need ample opportunity to enhance their writing skills, and although this course is not designated as a writing intensive course, it was taught in a manner conducive to improving writing skills.

Workload increased related to grading the writing assignments and the increased need to meet with students outside of class. However, with only eight students enrolled in the course, the increased workload was manageable. I would feel comfortable continuing to incorporate this type of project into the course if student numbers remained at or below 20 students.

Overall, the students performed well on the project. The grades ranged from seventy-eight percent to ninety-three percent, with one A, (92 percent or higher), four B's (82 to 91 percent), and three C's (72 to 81 percent). Interestingly, the two students with the highest grades on the pasture project tended to perform relatively poorly on the exams. One of these students increased her final course grade to a B, and the other increased her final course grade to a C because of the high quality of work related to the project. Their research summaries were detailed yet concise, and their written communication skills surpassed those of their classmates as evident by their formal proposals. The two students appeared to be more socially dependent than classmates, and seemed to prefer the collaborative effort of the project, suggesting they may be field-dependent learners. Another student actually dropped a letter grade for the course because of an average grade earned for the project, which was lower than most of her exam grades. This student's report was not thorough, and the proposal was mediocre. The remaining students earned grades similar to scores earned on their exams.

Summary

I believe the incorporation of the pasture renovation project into the forage production course was successful. Students seemed to appreciate the combination of passive and active learning. Some of the students were able to significantly improve their overall course grade because of the project, and one student's grade significantly decreased. The project required the students to become active participants in the course.

I was able to blend some of my teaching and administrative responsibilities, and I believe both areas benefited. Students enhanced their communication and teamwork skills, and I was able to gain resources needed for the equine unit. Regrettably, the students could not see their proposals implemented because many had graduated before the actual physical renovation was undertaken.

I plan to continue to use such projects in my teaching. Several pastures could be used for similar

projects in future offerings of the forage production course. Other types of team activity projects could be tailored to satisfy specific needs of various courses. From my experience with this project (and teaching a different writing intensive course), I recommend: 1) the addition of smaller writing assignments early in the semester to motivate the students to begin the project earlier; 2) a draft of the proposal to undergo peer review; and 3) the incorporation of oral presentations.

Literature Cited

- Aaron, D.K. 1996. Writing across the curriculum: Putting theory into practice in animal science courses. *Jour. Animal Science*. 75: 2810-2827.
- Brown, G. and M. Atkins. 1990. *Effective teaching in higher education*. London, England: Routledge.
- Haug, M. 1996. How to incorporate and evaluate writing skills in animal science and dairy science courses. *Jour. Animal Science*. 74:2835-2842.
- Honeyman, M.S. and G. S. Miller. 1998. The effect of teaching approaches on achievement and satisfaction of field-dependent and field-independent learners in animal science. *Jour. Animal Science*. 76:1710-1715.
- Hoover, T.S. and T. T. Marshall. 1998: A comparison of learning styles and demographic characteristics of students enrolled in selected animal science courses. *Jour. Animal Science*. 76:3169-3173.
- McKeachie, W. J. 1980. Improving lectures by understanding students' information processing. In: W. McKeachie. *Learning, cognition and college teaching. New directions for teaching and learning*, No. 2 (25-35). San Francisco: Jossey-Bass.
- McKeachie, W. J. 1999. *McKeachie's Teaching Tips*. Boston, MA: Houghton Mifflin Company.
- Mears, P. and F. Voehl. *Teamwork and synergy*. In: *Team Building: A Structured Learning Approach*. Delray Beach, FL: St. Lucie Press.
- Orr, C. L. 1996. Communication across the curriculum in animal science. *Jour. Animal Science*. 74:282-2834.
- Voltz, D.C. 2001. Using student research groups as a supplement to lecture. *NACTA Jour*. 45(2) 9-11.