Term Paper Design and Evaluation When Assignment Enphasizes Student Choice

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Introduction

Term paper assignments in undergraduate agricultural courses offer significant attributes as teaching and evaluation tools which are not provided by examinations, but they are also subject to some problems which examinations avoid. Such assignments provide an avenue for students to actively apply the subject matter of a course to an individual endeavor. Term papers can stimulate creativity and facilitate learning because they eliminate many of the pressures inherent in studying a subject in order to perform well on an examination. Students appreciate the opportunity to demonstrate knowledge and talents outside the confines of traditional examinations, which characteristically require the mental regurgitation of selected facts judged important by the instructor.

A major problem associated with the use of a term paper assignment for student evaluation in an undergraduate agricultural course is the value placed on correct English usage. Ignoring English usage in the evaluation of a term paper is virtually impossible, and such an approach would render the assignment inane and therefore useless. However, including English usage among the grading criteria discriminates against students who have not completed their required English courses or who lack writing skills. Such discrimination can discourage or even alienate students who are weak in English; yet such students may be interested and proficient in the actual subject matter of the course.

Assigning topics or narrowly restricting their range can have similar detrimental effects on motivation, enthusiasm, and general attitude toward the assignment, thereby severely undermining the paper's potential value as a learning experience. The perception of choice fosters a feeling of personal control which enhances learning (Harvey and Harris, 1975). Lorenz (1981) emphasized the importance of "free play" in a "field devoid of tension" for the promotion of curiosity, learning, research, and discovery. Because contemporary undergraduate animal science classes typically contain students from diverse experiential backgrounds and with a variety of career goals, it is difficult to narrowly limit acceptable topics for such an assignment without boring some students while handicapping others.

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A term project, to be summarized in and evaluated by a term paper assignment, was developed for a 3 semester hours, sophomore level, elective animal science course, Behavior and Management of Domestic Animals. The course includes two fifty-minute lectures and one two-hour laboratory period per week. The paper is worth 100 points and constitutes approximately 20 percent of the final grade. The assignment has evolved over five years, incorporating modifications suggested by instructors' critical observations and oral and written student feedback.

The following observation, gleaned from a text on physical anthropology, expresses the teaching philosophy which the "Doing Your Own Thing" assignment endeavors to actualize. Although the statement refers to "children," it is applicable to everyone.

> Differences in aptitude make it desirable for children to develop their own talents, rather than be forced through a standard process of indoctrination to which they are not necessarily suited. The word 'educate' means to draw out inherent ability, not to attempt to force its expression in a predetermined form. (Campbell, 1982)

Assignment Design

Students are first introduced to the assignment in an oral presentation during the initial class period of the course. The assignment, entitled "Doing Your Own Thing," is presented to the students in terms of four basic choices: the type of project to be done, the general topic to be studied, the species to be used as a model, and whether or not to utilize a pre-grading evaluation option. The project may be an observational study, a planned experiment, a traditional library research paper, or some combination of these basic types. All papers must include some background information from relevant published scientific literature, but papers based on observational studies or experiments do not require as extensive a literature review as does a traditional library research paper. All citations must follow the **Journal of Animal Science** style and form. Acceptable topics may be general, such as maternal behavior, or quite specific, such as the role of a particular sense in maternal imprinting. One species may be studied in depth, or several species may be studied in a comparative approach. Students are encouraged to use agricultural animal species as models, but other species are permissible as classes often contain one or more students in other fields, such as wildlife or psychology.

The pre-grading evaluation option allows students who are weak in English or otherwise unsure they can meet the requirements to submit their papers two weeks prior to the due date and receive the instructors' help in correcting English or other errors. Students utilizing this option may submit handwritten papers and are instructed to skip every other line to facilitate the insertion of corrections or improvements.

Both oral and written instructions are given. Oral discussion clarifies the written instructions and allows students to ask questions or otherwise indicate points which they may not fully understand. The written instructions provide a concrete guide to which they can refer.

The written instructions constitute an explicit seven page handout. They include the learning objectives of the assignment, guidelines for the written summary, an explanation of the pre-grading evaluation option, specific examples of how to write behavioral descriptions, a list of examples of acceptable topics, a list of supplemental information sources on ethology, a checklist which states the criteria by which the paper will be evaluated and includes specific examples of points which students often find difficult, and a copy of the Journal of Animal Science style and form for text citations and literature cited. The written instructions are given out and discussed during the first laboratory period of the semester. Methods of recording data are also demonstrated, and a tour is made of the animals available for projects.

The learning objectives of the assignment are stated on the first page of the written instructions, as follows:

> The term project should be regarded as an opportunity to:
> 1. Broaden your experience with species or aspects of behavior with which you are less familiar;
> 2. Familiarize yourself with the scientific literature pertaining to ethology and the application of ethology to animal science;
> 3. Develop observational skills;
> 4. Develop an ability to effectively describe in written form what was observed;
> 5. Develop an ability to integrate information from different sources, such as books, scientific journal articles, and your own observations, into a coherent, unified discussion.

Students are also given a "term project planning guide" which requires them to submit tentative titles and indicate the topic to be studied and the species to be used as a model. Students choosing an experiment or observational study must provide such information as the location, breeding, sex, and ages of the animals; sizes and number of groups to be studied; date, frequency and duration of observations to be conducted;

examples of the data which will be collected and how it will be recorded; and one book and one scientific journal article which will be used as sources of reference. Students electing a traditional library research paper must provide at least three books and three scientific articles which they will use as sources of reference. These numbers are not the minimum required for the actual paper; they are just what is required in the planning guide. Requiring students to locate a few references early in the semester insures they have carried out at least a preliminary literature search before they begin their projects.

Students bring these term project planning guides with them to an individual student-teacher conference held during the third laboratory period of the semester, during which they discuss their project ideas and plans with an instructor and obtain approval of their topics. Students who have difficulty selecting a topic are questioned about their reasons for electing to take the course, and instructors then offer suggestions based on the student's interests and goals. Learning is improved if the subject is relevant to an individual's personal goals (Lefcourt, 1966). The term project planning guide is completed by the student after this conference, and submitted the following class period. A copy of the planning guide is made and returned to the students; the original is retained by the instructors.

Student feedback indicates the planning guide is a valuable tool, helping students organize their thoughts, providing them with a concrete plan to follow, and preventing them from procrastinating about selecting animals, locating references, or deciding what to do. Instructors have observed definite improvement in the overall quality of term papers submitted since the planning guide was added to the assignment. Learning studies have demonstrated that provision of such aids reduces anxiety and improves learning (Krohne and Laux, 1982).

The checklist was derived from the errors most frequently made, and these errors have been significantly reduced since its inclusion in the written instructions. Students appreciate knowing the specific criteria by which their papers will be evaluated. By writing answers to the basic information questions included in the checklist (i.e., how many observations were made, when, where, under what kinds of weather conditions, etc.) students who have trouble getting started writing are able to overcome the initial inertia. The checklist also helps instructors evaluate more objectively.

Assignment Evaluation

An anonymous questionnaire about the assignment was given to classes for three semesters, yielding a total of 112 responses. The pre-grading option was utilized by 33.9 percent of the students in these classes; percentages of the individual classes ranged from 32 to 38. Of those utilizing pre-grading, 97 percent thought it was "worthwhile." Students utilizing the pre-grading

option indicated the following suggested benefits had the associated relative values:

Value	Suggested Benefit
(45%)	prevented procrastination about doing project
(42%)	improved descriptions of behavioral observations
(42%)	basic English/grammar corrections
(34%)	expanded project's applicability to behavior
(29%)	reference use and citation corrections
(8%)	other

The percentages of responses indicated do not sum to 100 percent because students were allowed to mark more than one response to this question. Virtually all the respondents who marked "other" referred to a perceived psychological benefit derived from a feeling of security which resulted from utilizing the pre-grading evaluation option. All students utilizing this option indicated they would recommend its use to others, and 86 percent of those students who did not utilize the option indicated they would recommend its use to others. This may reflect that a considerable number of students intended to utilize the option but failed to have their rough drafts completed in time, or perhaps a considerable number found they made more errors than they anticipated when they submitted their papers.

A pair of questions regarding the grading of the term papers *yielded an* interesting set of responses. In response to the question "The grade you received on the term paper was ... ", responses of those students who utilized pre-grading evaluation were:

"higher"	"lower"	"what you expected"
16%	21%	63%

Of students not utilizing this option, responses were:

"higher"	"lower"	"what you expected"
33%	28%	39%

But when the question was worded "compared to the grades you usually receive on term paper assignments ... " students utilizing the option responded:

"higher"	"lower"	"what you expected"
32%	5%	63%

whereas, those not utilizing the option responded:

"higher"	"lower"	"what you expected"
34%	20%	46%

This shift toward "higher" in responses from both groups suggests that the overt attempt to help students perform well on the assignment demonstrated by the explicit written instructions and the provision of a pre-grading evaluation option may have been interpreted as an indication that grading would be lenient by some students.

In response to "Overall, how would you rate the assignment as a learning experience?" students utilizing the early grading option indicated:

Very Worthwhile	76%
Average Worthwhile	24%
Totally Worthless	0%

Students not utilizing the option indicated:

Very Worthwhile	61%
Average Worthwhile	34%
Totally Worthless	5%

100 percent of students utilizing the option responded "keep" to the question "should we keep or drop the term paper assignment?"; 94 percent of students not utilizing the option indicated "keep" and 6 percent responded "drop". This indicates students who may have been disappointed in their grades on the assignment nevertheless perceived it as a valuable learning experience. The degree to which students perceive they manage their own learning behavior influences the amount of personal responsibility they feel for their learning outcomes (Arlin and Whitney, 1978) and therefore probably fosters a more positive attitude toward the experience as a whole. Several students underlined "keep" on the questionnaire, or wrote such comments as "definitely keep!" in the margin by this question. Several questionnaires also bore comments stating the assignment was enjoyable because of the relative degree of freedom allowed students.

Conclusions

Critical observation of students' performance and written and oral student feedback indicate a term paper assignment can be a valuable teaching and evaluation tool in an undergraduate animal science course. Such an assignment stimulates creativity and induces some students to consider graduate work. The individual student-teacher conference associated with this assignment increases familiarity and trust early in the semester. The contrast between some students' performance on examinations and the quality of their term papers helps instructors avoid stereotyping students and become more aware of the influence of the learning environment on student performance. "Open" classroom environments have a positive effect on achievement motivation, especially of low-achieving students (Wang and Weisstein, 1980). Some of the questionnaires which revealed a generally negative attitude toward the assignment contained comments which indicated some students still consider the instructions to be insufficiently explicit. The provision of explicit instructions, both written and oral, and the requirement of a definite plan of the project early in the semester appear to be critical to the success of such an assignment.

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Microcomputer Instruction In Agriculture
A Report of a Cooperative Approach

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Institutions of higher education across the country have recently been faced with the problem of providing undergraduate instruction in the use of microcomputers in agriculture.

Such problems with emerging technology surfaced in the Institute of Agriculture and Natural Resources (IANR) at the University of Nebraska-Lincoln (UNL) in the spring of 1981. Although the University of Nebraska had long been recognized as one of the pioneers in the application of computers to agriculture, primarily through the AGNET system for delivering information to time share subscribers, very little effort had been made in applying new developments in microcomputer technology. The rapidly increasing pace by which computer technology was affecting the agricultural industry made it obvious that UNL must adopt the latest microcomputer technology to prepare students to enter the highly computerized agricultural industry.

The institute of Agriculture and Natural Resources consists of three principal components: the College of Agriculture, the Agricultural Extension Service, and the Agricultural Experiment Station. Although many staff and graduate students in the Experiment Station were using microcomputers for research, there had been relatively little application within the College of Agriculture for teaching, or within the Agricultural Extension Service for serving Nebraska clientele.

This led to the astute observation by one faculty member that, regarding the state of affairs for the use of microcomputers at UNL, there was good news and bad news. The good news was that UNL was no farther behind than other similar institutions, and in fact, was

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ahead of many. The bad news was that we were all behind the elementary and secondary schools.

The implication was obvious. Even though students were enrolling with increasingly greater computer awareness, IANR had remained essentially unchanged in computer sophistication for nearly a decade. While some individual departments and faculty were using specific microcomputer applications, IANR had no overall coordination or long range plan for the incorporation of microcomputers into the educational programs of the institute as a whole.

The IANR Model

The Dean of the College of Agriculture appointed an ad hoc committee of concerned faculty members to determine the options available.

One point became obvious very quickly. The college could not allow each department the luxury of developing their own, unique microcomputer applications course. Such a fragmented approach to providing microcomputer instruction would only lead to "turf building" and duplication of efforts. The solution had to lie in a uniform offering which had direct appeal to the broad spectrum of academic departments within the College of Agriculture. The first alternative was to take advantage of existing computer courses offered by the University's Computer Science Department. It became evident that none were particularly appropriate for agricultural students, nor was there room in existing courses for the additional four to five hundred IANR students per year.

The second alternative was to have the Computer Science Department offer a course tailored to the needs of agricultural students. While receptive to the concept, Computer Science officials indicated they had no microcomputers; had no space to teach that many additional students; and had no instructor with the