Case Study: Strategies for Creative Writing and Team Activities

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Abstract

Students in technical agriculture courses need to develop an intuitive grasp of content material and critical thinking skills to be able to apply technical material when they enter the business and professional world. Skills in communications, team dynamics, and leadership are also critical to the success of students beyond the classroom. This paper describes two instructional projects which were designed to address these needs. Both projects involved students working with problems in the community and developing diagnoses and recommendations utilizing writing and critical thinking activities at the individual, small team, and whole-class levels.

Introduction

College faculty are experiencing greater challenges for providing quality instruction in integrated student learning environments. Faculty are challenging students to become better communicators, more cognizant of their environments, experienced critical thinkers, better decision makers, stronger team players, better writers, and potential leaders. What teaching strategies will work in the present learning environments?

Whittington and Newcomb (1992) indicate that faculty members make a difference in student learning stating that "their teaching must be effective and innovative to stay current in meeting both the needs of agriculture and the needs of students". They contend that simply adding science, technology, analysis and problem solving in the curriculum will not make significant differences. How the total undergraduate curriculum is taught will have the greatest impact upon student learning.

Riesenberg (1988) and Barkley (1991) documented the relative importance of better communications for college graduates. Zimmerman (1991; 1992) described several strategies to incorporate writing-across-the-curriculum assignments in technical courses and laboratory instruction. Elefson (1992) presented the agricultural writing framework as a process to integrate the higher levels of cognitive learning and the writing process. A primary challenge in teaching technically oriented lecture or laboratory courses is to develop students' insights of how to relate course material to problems and situations in the world beyond the classroom. This requires taking students beyond simple memorization and mechanical familiarity of course material to the higher levels of cognition, critical thinking, writing, and communication skills. Another challenge is to shift students from the academic environment of thinking and acting strictly as individuals to the business and professional paradigm of thinking and acting within combinations of individual, small team, and larger group levels. Skills in team building and leadership are valued in the business and professional world, and students need instruction in these skills as much as in technical content material.

Ideally, these challenges should be addressed throughout the curriculum. However, faculty members need to provide students a variety of learning experiences to accomplish these objectives. The projects described in this manuscript are attempts to provide synergistic approaches to learning that provide opportunities to develop skills and abilities in critical thinking, problem solving, communications, and cooperation through teaming.

Project Goals and Objectives

The overall goal of this project was to design and implement synergistic learning activities that deepen students' understanding of technical course material through critical thinking, problem solving, and writing strategies. The specific goals of this project were:

1. Use a variety of teaching and learning strategies based upon writing and brainstorming activity at the individual, team, and whole class levels.
2. Increase student communications and human interaction skills in working with real clients and one another.
3. Leave students with a perception of how the technical material covered relates to real world problems.

The following specific objectives were developed to facilitate the project goals:

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1. Increase critical thinking skills of students through cycles of writing, reading, and brainstorming activities at the individual, team, and class levels.
2. To improve and develop communications and interaction skills of students using teams activities, class situations, and interaction with clients.
3. Provide synergistic learning opportunities for students to work with "real world" problems based on "real world" situations.

These goals and objectives could be applied to a wide range of courses. We present two projects that were developed to utilize cooperative learning and writing activities in the fields of horticulture and agricultural education.

Project I

This project was conducted for two years in an upper division undergraduate course on fruit production practices and physiology. Student writing and discussion activities were used at three levels: (a) *as individuals*, including daily journal writing and drafts of plans and reports leading to final polished reports, (b) *as teams*, including reports of team meetings and activities, discussion of report drafts, and contracts assigning individuals to various parts of the overall team mission, and (c) *whole class* level activity including information exchange among teams, discussion, brainstorming, and field trips to see a range of plant problems and situations.

Journal writing was used throughout the project as a strategy for students to explore and integrate thoughts as they progressed through stages of the plant problem project. Journals were collected weekly by the instructor so that comments could be given frequently to the students. Frequent review of the student journals provided a means to keep students involved, to give positive encouragement wherever possible, and to ask questions that might give the student something to think about, or a possible alternate view.

The project began with field trips to allow students to become familiar with plant problems in orchard and home owner settings. These were conducted with experienced Extension plant specialists who discussed how they diagnose plant problems, work with clients, and formulate recommendations.

Individual and team efforts were employed to develop a coordinated plan to approach a plant problem, working from a draft stage to a completed formal plan. This plan included questions to ask the client, permission to collect samples, observations to make at the site, and plant and soil samples to collect for insect, disease, or nutrient analysis at the Plant Problem Clinic Laboratory at Clemson University.

The class was then divided into teams of four to five students and introduced to a fruit-growing client in the community with a plant problem. In some cases these clients were gardening enthusiasts and in others they were commercial fruit growers. Each team was assigned their own problem. After identifying the problem, interviewing the client, and collecting samples to submit to the Plant Problem Clinic for analysis, subsequent activities involved several stages of research, brain-storming, and writing at the individual, team, and whole class .levels. During this process, the students evolved their own ideas for the diagnosis and possible solutions that could be recommended to the client.

The final stage was to write a technical report to their peers, and a letter to the client. Each student wrote their own report and letter. After writing the first draft, each team presented their conclusions to the entire class for feedback and discussion. In those cases where there were differing views within the team a "minority report" was also given. Some students changed their views as a result of discussion. Each student then prepared the final draft of their technical report and client letter.

The technical report was to be written for an "expert" audience, describing the plant problem, diagnosis, and recommended action in detail, including a literature review. The letter to the client was to summarize the same information, but was to be written in layman's terms that would be meaningful to the client. There was no "right" or "wrong" diagnosis of these plant problems. Grading was based on the portfolio of each student's work on the project, and on the logic, thoroughness, and clarity of the report and letter.

Project II

This project was conducted in a lower division undergraduate course which introduces students to the concepts, principles, and practices of agricultural education. Emphasis was placed on students being able to write clearly and concisely. Two basic strategies were utilized: (a) students were expected to write individual "microthemes" based upon their perceptions of instructional environments, and (b) a "team writing" activity was utilized where students worked together to prepare a written assessment of instructional program needs.

The first phase of the writing exercises required that students utilize higher level cognitive skills to evaluate five selected agricultural education teaching and learning environments. During the first five weeks of the semester, the students visited five unique, very successful agricultural education programs as planned field trips. Each student was expected to write a micro-theme which described their perceptions of the effectiveness of each program and the teacher involved. A micro-theme is a writing activity based upon a single theme which restricts the length of the writing and therefore requires a clear and concise writing style.

Traditionally, agricultural education students have course work and experiences related to sciences and technology, with little emphasis upon human relations and communications. Because this is the first education course the students take, the composition of micro-themes based upon their feelings and perceptions was difficult for the majority of students.

The students were expected to write their perceptions of each teaching and learning environment on a 5 x 8 inch index card. This activity required that the students write their ideas in a very clear, concise manner. The micro-themes were turned in each week for evaluation and returned prior to the

next week's field trip. The evaluations were designed primarily to foster critical thinking. Every effort was made by the instructor to respond to each micro-theme with at least one thought provoking question in an attempt to broaden the student's perspective.

The second phase was designed to allow the students to work together in preparation of a written report. The class was divided into teams of from three to four students. The primary objective of the project was to determine if a local community should have an agricultural education program. A local community which does not have a program was identified. The students were expected to conduct a local needs assessment in order to collect information from which they could base their evaluation.

The teams were expected to utilize several strategies for collecting information, including personal interviews of local community and business leaders. Each team was required to develop a plan of action for completing the needs assessment. A final written report was required which presented the problem, described the local community, stated a decision, and clearly presented the basis for the decision. No particular format was specified for the final report: however, during the course examples were provided of needs assessment documents.

The teams were expected to complete a self-evaluation of the effectiveness of the process that they used to make their decision. Grading was rather subjective, based upon the techniques and strategies the teams used for decision-making, rather than the actual decision.

Analysis

Did these projects achieve their objectives? While this analysis is based upon subjective information collected from student evaluations and instructors' perceptions, the following key points were selected to address the objectives of this cooperative effort.

First, the writing exercises did appear to increase the opportunities for students to think critically. The most significant factor was the use of "real world" situations which increased student interests and enthusiasm, and evoked higher order questions which required students to evaluate situations and propose solutions.

Secondly, these projects required that students communicate and interact with one another and with others in the "real world". The fruit production students interacted with growers and gardening enthusiasts; and in the agricultural education project, students interacted with teachers. The student evaluations indicated that students, generally, were not comfortable communicating with others. Students expressed concerns about being evaluated based on the interactions with others in team projects. Students interacted more freely in non-formal settings such as when traveling on field trips.

Thirdly, the planned activities of these projects created synergistic learning situations. The "real world" activities created environments where students needed to be actively involved in finding solutions to problems. The problem solving processes created learning environments where students were to go beyond what was required of the projects.

Overall, these activities did accomplish the objectives of the project, even though this conclusion is based upon subjective evaluations. A constant challenge is to actively involve students in activities which motivate them to utilize critical thinking, writing, and communications. The use of "real world" problems provided a synergistic learning environment.

Strategies and Implications

Based upon the activities described in these two projects, the following strategies and implications are presented to assist others in implementing these types of learning activities in technical agriculture courses.

Students need examples and guidelines. Both of these projects indicate that students needed far more detailed guidelines and examples than was anticipated. This was true at all stages of the projects. One indication that more guidance was needed came from the weekly review of the student journals. Also, students responded well to timely instructor feedback, with encouragement and suggestions in addition to corrections on preliminary drafts of reports and assignments. Providing immediate feedback with both concrete and abstract responses was most effective. Additional emphasis on peer review among students of drafts would also be helpful and future plans are to incorporate more of this activity.

Student journals versus in-class micro-themes. Students in technical fields are reluctant to spend time outside of class reflecting and writing on course material if it is not in the context of a specific paper or problem assignment. Based on experience from these two projects, the micro-themes were more readily accepted than student journals and accomplished the same goals.

Evaluation of student performance. As with any teaching technique, students are concerned about the eventual evaluation of their relative performance. The activities described by the projects were challenging for the instructors to develop effective student evaluation strategies. Evaluating writing and team activities requires considerable time and clear objectives of what the activities are attempting to achieve. The key concepts which evolved were to provide timely, detailed evaluations, to present clear criteria for the evaluations when assigning the activities, and to allow students ample opportunities to respond.

Summary

Both of these projects were valuable learning experiences for the students enrolled in the agriculture courses. Students need to be provided with opportunities to develop critical thinking and communications skills. The use of synergistic approaches utilizing writing activities and team approaches provided these types of learning activities. However, such activities require considerable time for planning, implementation, and evaluation of student performance. The activities of these two projects indicate that writing and team activities

are a step in the right direction, and very worthwhile learning activities for students to develop much needed cooperation, problem solving, and communications skills.

References

Barkley, A. (1991) "What Skills Do Graduates Need?" *NACTA Journal*, 35(1), 53-57.

Elefson, J. (1992) "Toward Teaching at Higher Levels of Cognition: Teaching the Process of Agricultural Writing" *NACTA Journal*, 36(2), 11-14.

Riesenberg, L. (1988) "Future Curriculum Changes For Colleges" *NACTA Journal*, 32(2), 34-37.

Whittington, M. & Newcomb, L. (1992) "Raising Cognitive Levels of College Instruction" *NACTA Journal*, 36(2), 8-11.

Zimmerman, A. (1991) "Journal Writing for Technical Courses in Writing-Across-the-Curriculum" *NACTA Journal*, 35(2), 24-29.

Zimmerman, A. (1992) "Laboratory assignments in Writing-Across-the-Curriculum" *NACTA Journal*, 36(1), 7-10.

INSTRUCTIONAL MEDIA REVIEWS

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Agricultural Economics Demand Multimedia Module

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Agricultural Economics Demand Multimedia Module is a computer hypertext program. The instructional objective of the module is to:

1. define demand
2. define marginal utility
3. identify factors that shift demand and
4. identify factors that change quantity demanded.

The module was developed to supplement instruction related to the concept of demand. It has been used in the introductory agricultural science and business course (AGEC100) at Purdue University. It is also being used in high school classes in Indiana.

Review Summary

The computer program rated good to excellent in all categories except picture quality. The choice of colors used to display the text caused some difficulty. The program was described as doing an excellent job of helping students achieve the stated educational ob jective.

	Excellent	Good	Fair	Poor
Picture Quality			X	
Sound Quality				
Editing Content		X		
Currentness		X		
Organization	X			
Accuracy	X			
Vocabulatory		X		
Interest		X		
Technical Quality			X	
Overall (Avg. of Reviewers)		X		

Summary Remarks

Content Panel Member • The module provides a good basic introduction to demand and the factors that impact it. More interactivity in the module gi ven current computer technology, would be beneficial to students. For example, when questions are raised, allow the students to rea lly answer on screen and allow the program to respond to their answers(s). This is a good beginning and I would encourage the autho rs to consider increasing the technical interactivity of the module and then even consider other modules for supply, opportunity cos ts, etc.

Foy Mills, Jr., Associate Professor, Abilene Christian University

Content Panel Member • It often seems that because computers are such complex devices, people who design and produce instructional programs that us e them think their programs must also be complex. Such is not the case with this program. This module is an effective instructiona l tool because of its simplicity. This is not to imply that economic demand is a simple concept, but rather the way the concept is presented facilitates understanding.

The authors describe the program as a "multimedia module." It would be more accurate, however, to refer to the module as a "hypertext" program. Information is presented through a series of hypertext screens. Specific terms or concepts are highlighted on the screen and may be selected to further reveal additional information, including definitions, examples and graphs. In this way, students are lead through the information is an efficient and effective way.

The choice of colors that were used to display the textual information was the only real problem I encountered with the prog ram. The authors used two primary colors, read an blue, on a dark (black) background. This reduced legibility and made it difficul t to read the text information.

Other than this slight technical problem, the program achieves the authors stated purpose: To supplement instruction related to the concept "demand".

George Bostick, Professor, North Carolina State University

Content Panel Member • The principles of demand curves are illustrated well with mainly agricultural examples. This program should be very useful in increasing the time students spend studying the subject, and thinking about the kinds of questions they may be asked, and thus be successful.

Gene Pesti, Professor, University of Georgia

Availability

Agricultural Economics Demand Multimedia Module is available for the cost of a diskette and postage from David L. Marrison and Martin J. Frick, Department of Curriculum and Instruction, Agricultural Education, 1442 LAEB, Purdue University, West Lafayette, IN 47907-1442.