



The Determinants of College Student Performance: The Role of Assessment Method

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The objective of this research is to explore the potential influence of assessment method on student performance. Specifically, the research reported here used two semesters of data from a Principles of Agricultural Economics and Agribusiness course to identify and quantify the determinants of student performance, with an emphasis on how instructor choices of assessment type and method (assignments, quizzes, exams, etc.) can modify learning outcomes in undergraduate economics courses and curricula.

The results revealed a large variation of grades across assessment types, and relatively low correlations of grades across assessment methods (assignments, quizzes, and exams), ranging from 0.40 to 0.72. Quiz scores had a greater influence on subsequent student performance than assignment scores, and midterm examination grades had a larger impact on final exam performance than either assignment or quiz grades.

The study provides some evidence that assessment methods influence how well students perform in introductory courses. The implications are important and interesting: the selection, administration, and frequency of assessment tools such as assignments, quizzes, and examinations influence how well students learn economic principles, and their ability to usefully apply economic fundamentals to better understand agricultural, food, and environmental issues.

Learning from the Wisdom of Practice: Engaging Agriculture, Food, and Natural Resources Faculty to Become Reflective Practitioners

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The process of teaching and learning is complex, bound by context (Kreber, 2002), and often defined by ill-structured problems (Jonassen, 2000) of practice. Bass (2002), in regard to the differences between teaching and scholarship denotes that,

“One telling measure between of how differently teaching is regarded from traditional scholarship or research within the academy is what a difference it means to have a “problem” in one versus the other. In scholarship and research, having a “problem” is at the heart of the investigative process....But in one's teaching, a “problem” is something you don't want to have, and if you have one, you probably want to fix it.”

As such, college teachers are challenged to move beyond the notion of teaching as a private endeavor, and become reflective practitioners regarding the complex problems of their practice (Schon, 1983). Schulman (1999) denotes that it is from this wisdom of practice that much can be learned about effective teaching.

The purpose of this workshop is to engage faculty to become reflective practitioners. Specifically, participants will (1) learn about the reflective process and its impact on enhancing the teaching and learning practice (2) engage in reflective activities regarding the problems of practice and (3) connect reflection in teaching as a key component of scholarship in teaching and learning.

Determining the Qualities Agricultural Employers Want in Future Employees

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Many popular publications, including Internet job sites like Monster.com and Jobhog.com, contain articles on what employers are looking for in employees, however these are often written by experts based on their experiences in industries other than agriculture. This study's purpose was to develop an initial determination of qualities that Illinois agricultural employers would like to have in their future employees.

This study used a modified-Delphi approach to develop a list of qualities most desired by agricultural

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industry employers with operations in Illinois. Through a series of three Delphi survey instruments, employers in this study are developing and prioritizing a list of qualities. A purposive sample was selected from the Illinois Agricultural Employers data set, including employers of various size, agricultural business type, and geographical location. Data collected to date are establishing the list of priorities, which include qualities such as problem solving, independent working and ability to think. Upon completion of all three rounds, data will be reviewed and submitted to an employer focus group who will react to the list based on the same initial question given to the Delphi participants. The finalized list of qualities will be used to guide the curriculum development in the department's capstone courses.

Does Focusing on Individual Students Perceptual Learning Needs Enable Students to Achieve More Successfully?

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Ideally when going into a research study, one theorizes on an eventual outcome and then data is presented that supports or diffuses that theory. Upon occasion, trends surface that bring up questions in other areas that weren't being considered in the initial study. In Dr. Andrew J. Baker's fall 2002 study for Joliet Junior College entitled Research Study on General Education Requirements Associated with Associate in Applied Science Degrees in Agriculture, statistically, the students indicated that they felt (perceptually) more prepared to enter into their internship programs than their counterparts when coming out of two specific departments at one specific school (N=103). The high satisfaction rate from the employers in the survey (N=85) confirmed the fact that the interns from that specific school were considered prepared and teachable upon entry into the employers programs.

Although the sample responses from recent graduate students of that particular college were small (N=9), the lowest mean score on classroom instructional preparedness for the workforce came from one of the two departments that were significantly higher in the current students perceptual study. What might this indicate? Assuming no drastic philosophical or basic principle changes over the past 5 years at this institution, it would seem that the instructors were able to communicate their high expectations that everyone will succeed (Rosenthal, Robert, and Lenore Johnson, 1968). This unexpected deviation from the overall mean score supports this decades old study as it relates to student achievement.

Challenges of Objectively Assessing Thought Processes

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Eighty-three high school students (54 treatment, 29 control) from 11 schools participated in a research project testing an Integrated Decision Making Unit from the Integrated Resource Management High School Curriculum Aid.

Results illustrate the challenge faced by researchers attempting to measure thought processes and decision making objectively. An instrument was developed to measure student approach to decision making by placing a quantitative value on the level of importance students placed on four domain areas (animal science, finance, environment, human) when making agriculture related decisions.

Significant gains were not detected on objective items, student responses to questions regarding the decision making unit did provide valuable insight. Eighty-three percent explained how their decision making approach had changed or provided examples of decisions where they would apply learned concepts.

Most studies assessing thought processes and decision making are based on self-report measures where students indicate their believed skill level rather than completing tasks which provide evidence of their actual skill level. Both students and instructors would benefit from the development of an objective instrument which accurately assesses student approach by allowing them to display their own skills rather than respond to questions which may prompt them to provide a certain answer.

Promoting Interactive Learning with an Electronic Student Response System

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University instructors have long struggled to incorporate problem solving exercises and meaningful question/answer sessions into the traditional lecture format, particularly in large-enrollment courses. One promising alternative for creating a more interactive, student-centered classroom is provided by student response systems (SRS). The Department of Agricultural Economics at the University of Tennessee has recently begun using a SRS manufactured by EduCue in several of its courses. Similar systems have been used for several years, primarily in physics and engineering departments. A number of recent publications have analyzed SRS and their efficacy in this setting (e.g.,

Hake and Mazur, 1998; Crouch, 2001). However, the use of SRS has not spread widely to other disciplines and there is little research on its effectiveness in these other disciplines. The purpose of this paper is to summarize the Department's experiences with implementing SRS and to further the body of literature analyzing the effectiveness of using SRS in college classrooms. In general, the burden of using SRS remains somewhat heavy due to software inadequacies, but the response from students has been quite positive, with a large majority of students considering SRS-enhanced lectures to be more enjoyable and effective than traditional lectures.

Influence of Leadership Style, Learning Style, and Leadership Adaptability on Critical Thinking Disposition

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The purpose of this study was to determine the influence of leadership style, learning style, and leadership adaptability on critical thinking disposition. The target population for this ex post facto study was 115 students enrolled in a college of agriculture and life sciences leadership development course. Results showed that no critical thinking disposition differences existed between students of different leadership styles or adaptability. Likewise, students of various leadership styles and levels of adaptability apparently do not experience interference with the development of critical thinking disposition due to a pre-disposition to respond to a leadership situation in a particular way. Likewise, no differences in critical thinking disposition existed between students of learning styles. The implications of these findings for faculty indicate that instructors may be able to influence critical thinking dispositions across a broad spectrum of teaching strategies; that is, particular attention to one or more types of learning styles is not needed to advance student critical thinking disposition. In addition, students who are inclined to approach leadership situations differently (Telling, Selling, Participating, Delegating) apparently do not experience interference with their disposition to learn to think critically because of their leadership tendency.

Exploring the Reliability of Using the Learning Environment Preference Inventory as a Valid Measure of Perry's Scheme of Intellectual Development of College Students

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This study explored students' cognitive complexity as defined by William Perry (1970). Two components of this research were; (a) application of Perry's Scheme of Intellectual Development to encourage cognitive growth, and (b) investigate reliability of the Learning Environment Preference Inventory (LEP) (Moore, 1987) as a tool to understand cognitive development.

This qualitative research examined cognitive complexity using the LEP instrument. LEP could give instructors an approximate idea of how course construction can encourage higher order thinking. While it is difficult to make significant gains in intellectual development during one semester, it is even less likely if instructors are unaware of their students' stage of cognitive complexity. It is a mistake to assume all college students operate in Perry positions four and five, Late-Multiplicity and Relativism.

The use of reliable instrument, such as the LEP, may also help instructors recognize that class behavior and/or performance is conditioned by the student's cognitive complexity as well as by the teaching environment.

Choice of a Service-learning or Non Service-learning Senior Seminar Section Student Characteristics, Fulfillment of Learning Objectives, and Instructor Evaluation: A Case Study

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Service-learning (SL) provides dietetics students opportunities to solve complex problems in the context of real-world situations, advance decision-making and communication skills, and link students with outstanding professionals. Students chose a SL or non-SL class taught in the same semester, with the same instructor and topic. As a group, SL students (n=9) developed, presented, and evaluated a 3 hour in-service to dietitians in the community, whereas students non-SL students (n=9) presented to their classmates. SL students had an overall gpa of 3.48, compared with non-SL students (2.85, p = 0.02). Focus group discussions assessed why students chose sections, their perception of how well course objectives were met, the potential benefit of the experience, and how the classes could have been

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improved. SL students were more motivated, sure of their future plans, and better able to articulate concerns; they were also more career-focused than the other students. Instructor evaluation questions, notably “oral presentations helped me develop my communication skills” (4.9 v 3.78), “required course activities contributed toward development of skills” (4.8 v 4.33), and “I was forced to think for myself” (4.8 v 4.67) suggested the SL section provided better opportunities for learning and personal development.

Critical Thinking as a Function of Experiential Learning in Oral Communication

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Undergraduate education should develop critical thinking skills in order to solve problems and succeed in careers. Rudd, Baker, and Hoover (2000) described critical thinking as “a reasoned, purposive, and introspective approach to solving problems or addressing questions with incomplete evidence and information and for which an incontrovertible solution is unlikely” Facione (1998) determined six core critical thinking skills: interpretation, analysis, synthesis, explanation, evaluation, and self-regulation.

Dewey, Kolb, and others espoused experiential learning as part of the educational processes. Some collegiate courses offer opportunities for student engagement in actual learning experiences. The combination of critical thinking and experiential learning can be valuable for students.

During the 2003 summer term, undergraduates at a southern land-grant university engaged in experiential learning in an oral communication course. They also attempted to develop critical thinking skills, specifically self-regulation, about those experiences. The purpose of this classroom action study was to identify and describe effects of experiential learning on self-regulation in an oral communication course. The study surveyed students about their self-examination of thoughts and self-correction of practices between speeches in an oral communication course. Results indicated that students engaged in higher levels of self-regulation practices as the course and treatment progressed.

Teaching Critical Thinking Skills in the Context of Biotechnology

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Seeds of Change is an introductory course that develops students' critical thinking skills within the curriculum of biotechnology in agriculture, the environment, foods, and medicine. The objectives of the course is to 1) Become knowledgeable of the basic science and principles of genetic engineering; 2) Become familiar with the present applications and future potential of plant biotechnology; 3) Discuss the benefits and risks of plant DNA technology; 4) Become a better decision-maker regarding the role that genetically-altered plants should play in your daily life; and 5) Become more skilled at critical thinking.

The development of critical thinking skills in agricultural students goes beyond simply memorizing facts and becoming genetically literate. Angeli (1999) found that students who were taught critical thinking skills in context outperformed students taught critical thinking through non-contextual methods. By integrating critical thinking within the discipline of genetics, students may become more informed decision makers within the context of biotechnology.

The course has been awarded a USDA Higher Education Challenge Grant which will allow researchers to assess if in fact students taking the course will advance in the knowledge base of biotechnology as well as develop students' ability to think and reason.

Service Learning and National Youth Service Day

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Service learning is a teaching tool that enables students to perform a community service, while practicing the theories learning in the classroom. The goal of service learning is to benefit both the student and the community. Youth Service America awarded 100 service-learning project grants through the organization's State Farm Good Neighbor Service-Learning Awards. Fort Hays State University received one of the service-learning project grants. The funds were used to implement a service project during National Youth Service Day on April 16, 2004. Students in the Home Horticulture course at Fort Hays State University worked with Hays Lions Club members and City of Hays Park Department personnel in making improvements at a local park. The Hays Lions Club who sponsors the park donated \$1000 to the project. The City of Hays Parks Department matched the State Farm Good Neighbor Service-Learning Award and the Lions Club donation with another \$2000 resulting in a \$4000 project. Students were involved with planting trees, painting the shelter house, staining the park sign, picking up

litter, and installing a bench and walkway. A short ceremony announced the National Youth Service Day Project and a local politician spoke about the importance of youth getting involved in the community.

A Comparison of the Effectiveness of Two Educational Techniques: Informational Brochures vs. Cooperative Learning Activities

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Environmental education efforts between the general public and outreach professionals work to influence the perceptions and learning experiences of citizens. Two commonly used educational techniques in the natural resources and life sciences are: (1) informational brochures and (2) cooperative learning activities/presentations. The objectives of this study were to compare the effectiveness of these two educational techniques at changing public perception and increasing knowledge about dead wood (logs, standing dead trees, and stumps) in forested ecosystems. Pre- and post-survey instruments were used to evaluate how perceptions were altered in first year college students of introductory English and agriculture classes who either had an opportunity to read an informational brochure or participate in a cooperative learning activity and presentation. A total of 170 students participated in the brochure study and 182 students participated in the learning activity/presentation. Both educational techniques presented identical information on dead wood in forested ecosystems. The results of this study have implications for individuals in teaching and extension positions in the natural resources and life sciences.

A Virtual GIS Computer Lab for On-Campus and Distance Education Students

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Courses in geographic information systems (GIS) are now firmly established within the mainstream curricula of university programs world-wide. Recent changes in information technology have challenged instructors not only in terms of what they teach, but

more importantly in terms of how they teach GIS. We established an interactive virtual GIS computer lab (VGISlab) for a graduate level course offered to on-campus (OC) and distance education (DE) students at the University of Florida. Our objectives were (i) to build a virtual learning environment that provides 24 hour access to a rich resource of synchronous and asynchronous learning tools and (ii) to evaluate the efficacy of different e-learning tools for OC and DE students in context of learning outcomes. We implemented the following learning mechanisms to improve the abstract geographic thinking and reasoning skills of students: (i) Explanation based learning, (ii) Redundancy-based learning, (iii) Learning as response-strengthening, (iv) Analogy learning, (v) Learning based on problem-solving and critical thinking skills, and (vi) Abstraction learning. Results from a survey showed that DE and OC students' learning outcomes were comparable and that the VGISlab provided a framework to improve the abstract geographic thinking skills facilitating to understand complex environmental systems and their underlying phenomena.

Effectiveness of AGB 101 in Changing Students' Attitudes toward the Agribusiness Major and Careers

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A pre- and post-test methodology was used to capture whether students' choice of major and/or career interest was influenced by what they learned in AGB 101. The authors administered a pre-test to all four sections of AGB 101, which captured 148 students. This test was administered during the first two weeks of Fall Quarter, before the students had been exposed to the majority of the curriculum. The pre-test gathered information from the students regarding their backgrounds, what colleges and majors they had applied to, what their preferences were regarding their choices of colleges and majors, and a number of questions designed to test their familiarity with and their preferences regarding agribusiness career opportunities. The post-test was administered to the students during the last week of Fall Quarter 2002.

The data showed that the majority of the students will maintain the same attitudes regarding agribusiness as a major and/or career option, approximately 15% of the students will experience a positive change in attitude toward agribusiness. The authors also realize that the curriculum in AGB 101 may also have a negative impact on some students, but the data showed that less than 5% of the students planned to change majors.

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Assessment of Student Learning by Use of Pre and Post-Testing

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The objective of this investigation was to evaluate the usefulness of pre and post-testing as an assessment tool in the classroom setting. Traditional testing tools are typically designed to measure what a student knows regarding a given subject area at a given point in the course. A student may, however, have greater knowledge about a subject area than what was gained from a single course. The use of pre and post-testing is an attempt to more realistically measure what has been learned in a given course. In this investigation, pre and post-testing was utilized multiple times in Entomology and Pesticide course offerings, however, the results were not factored into student final grades. Post-test class mean scores were markedly higher than pre-test data, as might be expected. The primary value of such test data, is its usefulness to instructors for monitoring individual student progress as well as preparing for future course instruction. This data may also be useful when documenting for institutional accreditation reviews.

Forests for the Future: Critical Thinking in an Undergraduate Forestry Course

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The University of Florida's School of Forest Resources and Conservation offers a critical thinking course taught in the context of forest issues such as global warming, genetically engineered species, clearcutting, and wildfire. Designed for first and second year undergraduate students, Forests for the Future satisfies a social science core curriculum requirement for graduation. Assignments and class discussions focus on developing several of the critical thinking skills identified by the Delphi Study (Faccione, 1991), including interpretation, analysis, evaluation, explanation and self-regulation.

This research contributes a mixed-method approach to critical thinking analysis, using both qualitative and quantitative instruments. Critical thinking dispositions are measured quantitatively through UF's Engagement, Maturity and Innovativeness (EMI) instrument. Skills are measured qualitatively with a variety of techniques including content analysis of written assignments, class discussions and interviews. Qualitative analyses are crucial in helping capture the depth and complexity of these thought processes and concepts. Both instruments are administered pre/post, and results are compared and complemented with the

qualitative tools to discern whether an improvement in critical thinking skill and/or disposition occurred throughout the course of the semester.

Using Experiential Learning to Enhance Knowledge about Sustainable Whole Farm Systems

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During the summer of 2003 six students participated in an Agroecology On-farm Internship, sponsored by an USDA Higher Education Challenge Grant. This grant provided students the opportunity to participate in a paid ten week internship with producers who utilize sustainable practices in their operation. Interns participated in all aspects of the farm operation and selected a production-based issue to research. An interdisciplinary team of faculty from five departments in the College of Agricultural Sciences helped guide the respective research projects. Students and faculty visited all host farms to learn about the diversity of agroecosystems in Pennsylvania. In addition to completing their research project, students developed descriptive farm case studies and experiential curriculum materials (<http://paonfarminterns.cas.psu.edu/default.htm>). Six students will participate in the internship project during summer 2004.

Based upon data collected from the first summer, students improved their understanding of agroecology as applied to management of soil, crops, livestock, weeds, diseases, and insects. They also learned about the farm community and economics. Students strongly agreed that the internship provided experiential activities that improved their understanding of agroecology and farming practices. The faculty indicated that the internship gave them the opportunity to interact and learn from their colleagues' expertise.

Excellence, Expertise, and Scholarship of Teaching in Agricultural, Environmental, Natural and Life Sciences

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The ways in which colleges and universities measure and recognize effective teachers is complex and controversial. There is disagreement on how to

identify, define, develop, and promote effective teaching within our institutions (Cross, 1977; Menges & Austin, 2001; Sherman, Armistead, Fowler, Barksdale, & Reif, 1987). Various terms such as teaching excellence, teaching expertise, and scholarship of teaching have been used to communicate teaching quality (Kreber, 2002). Two questions guided the researchers in preparing this presentation: How are these terms different regarding effective teaching, sound disciplinary knowledge, knowledge of how students learn, teacher reflection, and teacher motivation? Can all professors become excellent, experts, and scholars of teaching?

The purpose of this presentation is to engage professors to reflect on being or becoming excellent teachers, expert teachers, and scholars of teaching in agricultural, environmental, natural, and life sciences. Specifically, participants will: (1) distinguish between excellence in, expertise in, and scholarship of teaching; (2) discuss the issues of validity in identifying excellence, expertise, and scholarship in teaching; and (3) provide examples of how excellent teachers, expert teachers, and scholars of teaching in agriculture, environmental, natural and life sciences: think about teaching and learning, are motivated as teachers, and use teaching practices to be effective.

Learning Objects for Environmental Sciences

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Learning objects are small instructional components that can be reused many times in different learning contexts. They are self-contained each learning object can be taken independently; they are reusable a single learning object may be used in multiple contexts for multiple purposes; they can be aggregated learning objects can be grouped into larger collections of content; and finally, they are tagged with metadata every learning object has descriptive information allowing it to be easily found by a search (Wisconsin Online Resource Center <http://www.wisc-online.com/index.htm>).

Undergraduate students in Environmental Sciences often have a difficult time grasping and remembering key concepts. In addition, most instructors find it nearly impossible to cover all important concepts during a single semester. Therefore, it would be helpful to have a set of “just-in-time” learning objects available that could be used to either reinforce key concepts taught in class, or allow the students to learn new information on their own. Most instructors lack the skills needed to develop sophisticated multimedia modules. However, by using Flash 2004 Professional, digital photographs,

video from local resources, the reusable Flash components discussed in this paper, and a little enthusiasm and creativity, most professionals can create unique learning objects for their classes.

The Value of a Legislative Internship: A Case Study

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Student internships permeate academic programs across a wide variety of disciplines. For both undergraduate and graduate students, internships with companies and agencies can expand knowledge and understanding and may result in employment after graduation. Students also can intern with legislatures at both the state and national levels. Considerable literature is devoted to discussion of types of internships, procedures involved in acquiring an internship and the potential benefits of internships to students. It is clear that concern exists as to whether students really benefit from internships and whether faculty, unfamiliar with the pedagogy of experiential learning, can appropriately evaluate the benefits to students.

This paper details the experiences of an agribusiness management student from the University of Florida's College of Agricultural and Life Sciences during the course of a Legislative Internship with the Florida House of Representatives' Committee on Agricultural and Consumer Affairs. Information is included on relevant legislative sessions and committee procedures and issues, as well as intern activities and responsibilities, lessons learned from the internship experience, career preparedness and educational value. Application to the student's course of study focuses on issues facing agricultural and agribusiness firms, marketing and management strategies and applications, policy issues, risk management and agricultural law.

Using Marketing Concepts to Enhance Student Enrollment in Colleges of Agriculture

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Static or declining enrollments have become issues for many Colleges of Agriculture (COA), especially those competing for enrollment-based university resources. Curriculum changes, in the absence of a strategic marketing approach, have not reversed this trend. Enrollment enhancement efforts by COA's often lack a conceptual framework to guide their efforts in recruiting diversified market segments as well as maintaining traditional sources

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of enrollment.

This paper addresses the issue of enrollment enhancement for Colleges of Agriculture using a strategic marketing framework. Strategic marketing concepts relevant to student recruitment are identified and used as a conceptual basis for recruitment efforts. Using a framework of Product-Market Strategies, market penetration and market development strategies are identified for traditional COA enrollment sources, as well as for diversification to new enrollment sources. New product development strategies are then presented for both existing and new enrollment sources.

Application of these concepts is illustrated in a case study of enrollment enhancement by the College of Agricultural and Life Sciences (CALs) at the University of Florida. The CALs market-development strategy and product-development strategy are presented. Marketing techniques used to implement the strategies are provided. Implications for other COA's seeking to adopt more strategic enrollment enhancement plans are then offered.

Job Seeking Skills: Teaching Students to Think, Reason, and ACT

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The mission of the agriculture department at Eastern Kentucky University is to prepare students for careers in the food and fiber industry. This mission is similar to other agriculture departments at institutions across the country. The preparation involves coursework in all of the major agricultural areas, but is that enough for the students to be competitive in the job market?

This presentation will focus on the agriculture students' career preparation and job seeking skills as they near completion of an agricultural degree. Specifically it will outline the type of career information sources students use and the frequency of use. Students' perception of the department's responsibilities in the job seeking process will also be addressed.

Using Field Experiences to Enhance Student Learning

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The Agricultural Systems Technology and Education (ASTE) department uses experiential approaches to improve students' thinking and reasoning skills and validate coursework for

students. The department hosts three bachelor of science degree programs, Agricultural Systems Technology (AST), Agricultural Education (AE), Family and Consumer Science Education (FCSE); and one associate of science degree program, Agricultural Machinery Technology (AMT). Each program relies upon field experiences to engage students as they apply theoretical and practical skills learned in the classroom to a realistic professional environment. The teacher preparation programs (AE, FCSE) use two clinical experiences for career exploration and professional validation in the sophomore and junior years. This is followed with student teaching and portfolio compilation as a culminating experience. All students in the AMT program must complete a ten-week internship, typically in a machinery dealership between the freshman and sophomore year. The AST program encourages internships in the sophomore and junior years and requires students to complete a senior project. The senior project requires that students design and build a project. The process and reasoning behind their choices are presented to, and critiqued by, the entire ASTE faculty. Although the experiences vary by program, students find these to be critical in their education.

Meeting Upper-level Agriculture Course Prerequisites: Where Have All The Students Gone?

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Agricultural academic units in four-year universities have traditionally sought to maintain institutional quality in degree programs through structured sequences of prerequisite courses. The theory was that students would first be required to demonstrate an acceptable level of knowledge in prerequisite courses and would then be adequately prepared to pursue more difficult, upper level courses. Recently, expanded numbers of community colleges and technical schools have provided alternatives for completing prerequisites. Courses from these schools are generally lower in cost per credit hour, offered on single night bases, regarded as academically less rigorous, and not counted in student grade point averages when transferred into four-year schools. Undetermined is whether these courses adequately prepare students for subsequent, upper-level courses. An analysis of student choices for completing prerequisites and observed effect on student success in a subsequent upper-level soils course was conducted over 1997-2003 agriculture graduates at a small, four-year university located near several two-year colleges. Percentage of students completing prerequisites through

alternative options had dramatically increased over the period studied. Primary student motivations for prerequisite location choice were compiled through a class survey. Extensive analysis regarding the effect on subsequent, upper-level course grades was conducted to determine the extent of prerequisite source effects.

Trade-offs in Agriculture and Natural Resources: An Issues Course Designed for Non-Majors

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Nearly every issue related to agriculture and the environment has two or more sides, often with both vocal proponents and opponents (e.g., genetically modified crops, forestry practices). In 1995, we developed a required course for Environmental Studies students in the College of Arts and Sciences. The objectives of the course were to provide a solid exposure to agriculture and natural resources and to foster dialogue between those with differing opinions in objective ways. Early on, the course consisted of presentations by content experts on many different areas, discussion sessions to probe issues, field trips, short writing assignments, and essay exams. Grades were based largely on the essay exams. In the past few years, the course has evolved to include use of journaling and initial and final reflective writings, rather than the essay exams. Since its inception, students have given the course high ratings, with some indicating that the course was the only truly “environmental” course in their curriculum. Reaction to the addition of journaling and reflective writing has been largely positive. The course has successfully introduced students to issues related to food and fiber production, and the social parameters associated with these issues.

Influence of Student Learning Styles on Critical Thinking Skills

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The purpose of this study was to determine the influence of student learning styles on critical thinking skills. The target population for this ex post facto study was 135 students enrolled in a college of agriculture and life sciences leadership development course. Results showed that no critical thinking skill differences existed between male and female

students in this study. Students with deeply embedded Abstract Sequential learning style preferences exhibited significantly higher critical thinking skill scores. No differences in critical thinking ability existed between students of other learning styles. These findings have implications for faculty with teaching appointments in colleges of agriculture. If Abstract Sequential learners are inherently adept at thinking critically, teachers may not need to focus as intently on teaching strategies that address this learning style. By contrast, however, Concrete Sequential, Abstract Random, and Concrete Random learners may need additional attention through instructional methods and techniques that enhance the critical thinking skills of these learners.

Virtual Plant Identification and Landscape Design

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The onset of distance education has significantly broadened student enrollment while unifying lecture content, and minimizing duplication of faculty resources. However, the challenge of delivering hands-on laboratory portions of courses still remains. In an effort to illustrate landscape design principles and to facilitate access to native plant material, a virtual, interactive tour of the Indian River Research and Education Teaching Gardens was produced for online accessibility.

To accomplish this, a high resolution digital camera was fitted with a 360 One VR optic, allowing the capture of a complete 360° image in single photographs taken throughout the gardens. The photos were un-warped and processed into panoramic images using PhotoWarp 2.0 software and then converted into Quick Time VR movies using VRWorx 2.5. By using a mouse for navigation, hyperlinked plant information sheets and high resolution plant images can be viewed in detail. This interactive technology will help students visualize seasonal plant characteristics such as flower, fruiting, leaf structure, and form year-round and ultimately provide a new, innovation alternative to plant identification worldwide.

A Comparison of Learning Styles, Academic Majors and Selected Demographic Characteristics of Agricultural Students at Abraham Baldwin Agricultural College

Garvie Nichols, Jr., John C. Ricketts, Frederick R.

Abstracts

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Learning styles and preferences has been of interest to educators for decades. The more we know about the learning styles of those we teach the better able we are to design curriculum and deliver instruction. Dyer and Osborne (1996) supported this assumption when they reported that we should recognize that students differ in learning styles, and that we should use that information to better facilitate learning. This study sought to understand the learning styles and preferences of a group of students attending Abraham Baldwin Agricultural College (ABAC) for the very purpose of improving teaching and learning at that institution. The paper describes the learning style preferences of two-year agricultural students at ABAC. The Lewin-Kolb Learning Style Inventory (LSI) was used to assess students' preferred learning style. Using demographic data students were divided into groups based on college major, gender, age, and class standing. Comparisons of LSI scores among these groups were made and found. Differences between these groups and implications for teaching in agriculture are discussed.

Enhancing the Crop Science Laboratory Experience

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Laboratories for introductory Crop Science courses regularly include exercises related to seed and plant structures; crop growth and development, including growth stages and environmental factors; agronomic calculations; and identification of crops and weeds.

Following several years of administrative duties, I returned to classroom teaching and desired to enhance the standard crop science laboratory experience. New laboratory exercises were developed for 1) New Uses of Crops 2) Crop Breeding and Biotechnology 3) Climatology and Carbon Sequestration 4) and Grain and Forage Quality. These labs primarily focus on cutting edge research conducted in the Departments of Agronomy and Plant Pathology via visits to laboratory, greenhouse, field, and seedhouse facilities.

Student response to these topics has been excellent, based on their evaluations of the laboratory during the past five years.

Journal- Based Reflection in Undergraduate Service Learning and the University Therapeutic Riding Center

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Principles of Therapeutic Riding, Animal Science 3309, is a service- based learning course that gives undergraduates the opportunity to participate in hippotherapy sessions. This course first offered in 1998, has been held for 12 semesters. A total of 233 students from over 15 majors have been trained in this discipline. Advanced Therapeutic Riding, Animal Science 4001, is a continuation of the Principles class that allows students to participate in the sessions and serve in leadership roles. This class has been active for 8 semesters and has included 51 students.

Recognizing the enriched experience that reflection brings to service learning, a diverse methodology of reflection was implemented in Principles of Therapeutic Riding. Students are also administered pre and post-course surveys that measure attitudes towards the course and towards disabilities. Informal oral reflection is also used throughout the semester. In keeping with the same framework set forth by the University it is important to note that the definition of service learning at Texas Tech University is, "a pedagogy that links academic study and civic engagement throughout thoughtfully organized service that meets the needs of the community. This service is structured by and integrated into the academic curriculum, which provides opportunities for students to learn and develop through critical reflection," (www.provost.ttu.edu).

Written reflection in the form of journaling was implemented weekly to allow students to assess the week's course material, assess participation in hippotherapy sessions, and to allow students to voice questions and concerns. This encourages students to organize their experiences and put them into perspective. Journal entries include both responses to instructor-guided questions and free topics. Journals also document in-class discussions reflecting the experience of each assigned therapy session team. Weekly journal reflections allows students to explore their initial assumptions on hippotherapy and disabilities, reflect on experiences during the semester, and document personal accomplishment within the course.

Previous post-course surveys administered to each class found that 77.8% of students has

experienced a change of general outlook as a result of this class. In addition, 100% reported having a better understanding of what people with disabilities and their families face in their daily lives. These results show the impact that this educational experience has made. The benefits that the students receive are tremendous. These benefits range from heightened self-efficacy, increased social and personal development, and an increased awareness of what children with disabilities face.

Teaching for Critical Thinking in an Undergraduate Service Learning Course

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Agricultural Education

Bobbi Langkamp-Henken

Food Science and Human Nutrition

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Improving student critical thinking skills is a goal of many faculty members in colleges of agriculture, life sciences, and natural resources (Rudd, Baker, & Hoover 2000). Making this goal a reality presents a wide variety of challenges to college faculty. Students vary greatly, even within a given discipline, in their knowledge of subject matter, disposition to think critically, and critical thinking skill.

This study utilized a service learning course to teach students what they needed to know to mentor middle school students in science. The course content (mentoring to complete a science fair project) was relatively easy for these advanced college students to master (the course prerequisite required advanced college coursework in biology and chemistry). With a "level" playing field in knowledge, the researchers measured the affect of teaching the course content and critical thinking skills on student critical thinking disposition.

As a result of the course, the college students made significant gains in their critical thinking disposition scores. The researchers recommended teaching course content with critical thinking skills to positively affect student critical thinking.

Teaching Thinking Skills

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Why should we be concerned about critical thinking skills in our classrooms? Obviously, to educate citizens whose decisions and choices are based on careful, critical thinking. Educators have been bombarded with a series of reports which claim

that "Johnny can't think" (Mullins, 1983; Gardner, 1983). The skills needed to begin to think about issues and problems do not suddenly appear in our students (Tama, 1986; 1989), they must be learned. A number of researchers claim that the classroom must nurture an environment providing modeling, rehearsal, and coaching for students and teachers alike, to develop a capacity for informed judgments (Brown, 1984; Hayes & Alvermann, 1986). In both the school setting and in the world outside of school, it is crucial for people to have "skills in questioning, analyzing, comparing, contrasting, and evaluating so that they will not become addicted to being told what to think and do" (Freseman, 1990, p. 26). Putting into practice the findings from the thinking skills research can help faculty, colleges, and universities to teach thinking skills.

The presentation will focus on the findings from the thinking skills. Furthermore, examples of how to apply the 12 postulates will be shared with the participants.

Reaching Students with Communication Technologies

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College students today are familiar with communication technologies that, up until a few years ago, were not commonplace for most people. With their use of cell phones, downloadable music and video files, instant messaging and email, college students may be more technologically literate than past generations. Because of their relationship with communication and informational technologies, college students expect multimedia-rich learning experiences that integrate technology into the courses they take. This presentation focuses on ways that current college students view communication technologies and how instructors should factor in students' communication technology "appetite" as they develop and deliver traditional and distance education courses. Faculty should view communication technologies as another teaching method consideration in their courses. Specifically, the presentation will cover how communication technologies can be used to recruit students, in traditional classes, and in distance education delivery and how faculty should be open to technology training to better utilize these communication technologies.

Throwing Out the Cookbook: Student Planned and Executed Laboratories

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Abstracts

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While hands-on learning exercises are useful in demonstrating techniques and principles, they may become routine for students in courses with scheduled laboratories. Students know the expected outcomes and so don't evaluate the results with open minds. In an attempt to promote critical thinking and observation skills in my horticulture classes, I have initiated periodic laboratory exercises that require students to plan and execute an experiment, rather than following preset instructions. These self-directed exercises may be as simple as choosing an additional treatment to include with those already described in the lab instructions, or as complex as starting with only a set of materials and creating the whole experiment from hypothesis to evaluation. Turning planning over to students carries the risks of not demonstrating the intended effects and creating some classroom chaos. Self directed experiments take longer as students need time to discuss options and come to consensus on what materials to use and which measurements to take. However, my experience has been that students pay more attention to experiments that they have created themselves, are more likely to integrate information from lectures to explain their results, and more often have those 'light-bulb' insights that we all hope for.

Multimedia Instrument for Greenhouse Education: Designing for User Needs and Higher-Order Thinking

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In the United States, the greenhouse industry covers more than 15,000 acres and is supported by a diverse number of firms with employee expertise in greenhouse manufacturing, engineering, irrigation, horticulture, IPM, sales, marketing, and business management. The greenhouse industry is in need of highly trained undergraduates having

higher-order thinking skills. These traits are necessary to integrate scientific and business concepts, potentially yielding a competitive advantage in today's agricultural marketplace.

Using a multidisciplinary approach, we are creating a multimedia instrument for utilization in a variety of greenhouse related courses. Deliverables on this project include interactive Flash-based greenhouse science modules, user-modifiable website, video collection, and image gallery. This open access repository will be publicly available on the Internet. To ensure the project development vision matched need, greenhouse courses offered at 1862, 1890 and 1994 land grant institutions were identified. Sixty-four instructors located during this review were asked to complete an on-line survey concerning the development of this instrument. Twenty instructors representing approximately 30 courses nationwide completed the survey. Over 50% indicated they would use the site for instructional purposes 5 or more times per year. Eighty percent indicated willingness to submit additional materials to the site if authorship was indicated.

Using Writing to Promote Thinking in a First Year Agriculture Course at the University of the West Indies

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One learning objective of AG16B Introduction to Agriculture, a first year course in the B. Sc. Agriculture and B.Sc. Agribusiness programs at the University of the West Indies, is that the students will be able to prepare written discussions on topics presented in the course. In 2003/2004, 145 students enrolled for this course were divided into groups and were assigned a research paper as coursework. The criteria for assessing students' thinking were the selection of factual content, the analysis of that information and the conclusions.

The results showed that all groups presented relevant information and 73.9% gained a score of 3 or 4 out of 5 for information. In their analysis, most groups (95.6%) identified concepts, theories and issues that were discussed in the classroom. Most (91.3%) presented facts that had not been shared in the classroom but only 39.1% identified other theories or other issues. Even fewer (21.74%) presented evidence for new issues that they raised. Out a total score of 5, the mean score was 2.65 (0.98) and 2.65 (0.57) for analysis and synthesis, respectively. The students will require further assistance in developing the thinking skills for analysis and synthesis.

Student Understanding of Molecular Genetics 2: Investigating Student Understanding

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A Scholarship of Teaching and Learning project was developed to document agriculture students' understanding of the molecular genetics concepts that form the heart of modern biotechnology. The project focused on two student populations: animal, plant, and food science majors in an agricultural biochemistry course and agricultural education majors in an agricultural biotechnology lab course. The first goal of the project was to document students' previous coursework in this area. Students were given a pretest in the first part of the class. The pretest asked student to report which biology/genetics courses had been completed or were in progress. The majority of students had completed introductory biology and/or genetics. The second goal was to measure student understanding at the start of the course. The second part of the pretest asked students to define 5 key terms. There was a wide variation in student understanding. Classroom activities were developed that targeted students' misconceptions and lack of understanding. Informal assessments were used to monitor students' learning. Hands-on activities were added that pushed students to apply molecular genetics concepts in multiple contexts. Following each activity, the percentage of students providing correct answers increased.

Using an Online Modified Delphi Approach for the Development of Competency Profiles

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Dacum processes and similar procedures have long been the staple technique for the development of competency lists or profiles for occupations in many fields. These profiles often become the basis for curriculum, instructional programs and training. All of these approaches require that a group of experts in the field being profiled must be away from their workplace for two to three days in order to develop the profile. This project modeled an online modified Delphi approach to developing profiles, allowing panelists to review and respond to items at their own pace, on their own schedule, twenty-four hours a day if they wished, during a specified two week time frame. The two to three

rounds of review and revision resulted in competency lists that, when reviewed by industry representatives for validation, were deemed both appropriate and complete from their perspective. The nuts and bolts of handling this type of activity in an online format will be presented, as well as the problems encountered in conducting a modified Delphi study online.

A Sophomore Pre-Capstone Seminar to Prepare Students for Internships and Independent Learning Experiences.

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Our objective was to determine the effectiveness of a pre-capstone seminar, which has been offered for the last four years to our Dairy Science department Sophomores to expose them to a variety of out-of-classroom experiences and to help them transition from passive, lecture-based learning to active learning. Pre-capstone speakers included primarily Juniors and Seniors who completed internships, capstones, and study abroad. Class participants submitted reflective weekly reports and a resumé. Over the last three years 68% (34 out of 57) of Sophomores elected to take the class. A modified student assessment of learning gains (<http://www.wcer.wisc.edu/salgains/instructor/>) that used a Likert-type scale of 1 to 5 (1 = strongly disagree and 5 = strongly agree) indicated that students found the seminar relevant (4.2 ± 0.7 mean \pm standard deviation), learned from their peer instructors (4.1 ± 0.7) and from having to submit a resumé (4.4 ± 1.1), gained an appreciation for independent work (3.8 ± 1.0), but were divided as to the usefulness of written reports (3.1 ± 1.2). Speakers indicated in a follow-up survey that the presentation to fellow students made them reflect on what they truly learned and was a better way to share their experience than a written report.

Peer Review of Teaching: How do I Prepare to be a "Peer"

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According to Chism (2003), peer review is a critical component of today's university environment. Promotion and tenure expectations place a heavy burden on faculty to document their effectiveness in their classroom teaching. Therefore it is essential that we study the peer review process as part of our ongoing teaching improvement.

The objectives of the presentation will be to

Abstracts

define peer review of teaching, establish a rationale for conducting peer reviews of teaching, provide a framework for peer review of teaching, and apply the framework to teaching.

The foundation for the presentation is Danielson's (2000) work entitled *Enhancing Professional Practice: A Framework for Teaching*. The workshop will examine teaching from the four domains presented by Danielson in which participants will more readily grasp, analyze, and interpret their classroom teaching in a common framework.

The presentation will be couched in the context that participants themselves are preparing to teach well, and thus will be best suited to determine that peers are teaching well. However, the tables will turn at the end of the presentation, and a videotape of a professor will be used for participants to practice their newly acquired peer observation skills.

What are Students Thinking During a Typical College Lecture?

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The power to think and solve problems should be the learner outcome desired by professors. Resnick (1987) writes, research shows that many components of thinking can be effectively taught. American educators, however, have not been singled-out as exemplary models for teaching thinking. Kline (2002) contends, "...much of what happens in schools does anything but develop intelligence" (p. 145). Thus, in teaching thinking, a discrepancy exists between what theorists believe "ought to be" happening in college classrooms and what educators suggest "is" happening in college classrooms.

This presentation will highlight findings of a recent study of college of agriculture professors and their students. Participants will examine the cognitive levels at which the professors delivered their content, and will examine the frequency of opportunities that were given for students to think beyond rote memorization during the class session. Participants will then examine the qualitative data from students that reveals that which they were really thinking during class.

Time will be devoted to examining potential barriers to reaching higher cognitive levels in college classrooms. However, a brief review of basic methodologies, will lead participants into reflecting on their own teaching and examining techniques for making desired changes in the cognitive level of classroom instruction.

The Role of Absenteeism on Student Grades in Two Horticulture

Courses

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The correlation between class attendance and grades at secondary and post secondary levels of education in the United States has been debated for many years. Though intuition suggests that poor class attendance leads to poor grades in college, definitive data is scant on this issue due to a number of factors. At Virginia Tech, requiring class attendance is at the discretion of the instructor, and anecdotal reports suggest that most instructors do not factor in attendance as a consideration in determining grades. This longitudinal study, which spans several years, was developed in response to what appeared to be an increasing rate of absenteeism in a number of agriculture courses. At the start of the study an attendance policy was implemented in two horticulture courses; one of which had multiple sections taught by Graduate Teaching Assistants, in which students were given bonus points if their number of absences during the semester did not exceed a certain maximum. Analyzed data highlighting the following criteria in the aforementioned classes will be presented: specific instructor, students' genders, students' class levels, students' departments, students' total number of absences and students' total numerical scores or grade averages.

The Cost of Distance Education: A Florida Experience

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The wave of distance education courses, degrees and programs developed over the past decade has generated considerable discussion both within universities and in the literature regarding effectiveness and cost. Articles have described various forms of distance education focusing on cost and the necessary conditions for being cost effective. Two NACTA Journal articles have addressed distance education from a strategic need and planning perspective (Telg and Cheek, September, 1998) and from an evaluative perspective (Diebel, McInnis and Edge, March, 1998).

In 1998, the University of Florida's College of Agricultural and Life Sciences began offering a master's degree in agriculture (MAG) via distance.

The Food and Resource Economics Department offered the degree from two locations through several modes of delivery, including videoconferencing, Internet, CD-Rom and videotape. The paper evaluates this distance-based degree by examining both cost-of-delivery and curricular issues. The paper identifies course demographics and calculates and compares the cost of traditional on-campus course delivery with the additional cost of delivering a course via distance education from both a satellite campus and a main campus.

Reviving Agricultural Economics

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The land grant universities were designed to provide education concerning agriculture and related disciplines. Hence most of these institutions were/are located in predominantly agricultural areas. Agricultural economics programs are relatively successful at many land grant institutions. These programs can also be useful and successful at institutions that may not be designated land grants, but that are located in primarily agricultural areas. This paper considers effective teaching strategies for the re-introduction of an agricultural economics program at a university located in a predominantly agricultural area in California's central valley. In devising effective teaching techniques at such an institution, another dimension to consider is that a significant percentage of the student population is Hispanic. So any teaching methods considered need to incorporate a certain cultural sensitivity. Teaching techniques need to educate as well as motivate retention in the agricultural economics program. Tools considered in this paper are primarily interactive in nature and include activities, field trips and videos. Given a chance to present this at the meeting, the author would also like to conduct a survey of conference attendees to solicit other effective strategies. Results of the survey would be made available to the NACTA membership, possibly through the website.

Student Understanding of Molecular Genetics 1: Developing a Scholarship of Teaching and Learning Project

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As agricultural applications of biotechnology are increasingly adopted, agricultural students need a solid understanding of basic molecular genetics

concepts. While students are exposed to these concepts in multiple courses, they seem unable to transfer the knowledge. A Scholarship of Teaching and Learning project was developed to address this problem in two courses: an agricultural biochemistry course taken by animal, plant, and food science majors; and an agricultural biotechnology lab course taken by agricultural education majors. The goals of the project were to 1) document students' previous coursework, 2) characterize student understanding at the start of the course, and 3) measure student understanding following instruction in molecular biology concepts. One of the first steps was to develop the tools to collect data on student understanding. A simple pretest was developed to give students at the start of course. The pretest asked students to identify the courses completed and in progress that address molecular biology concepts. Students then had to define 5 key molecular biology terms. The definitions were then scored. A pilot test was conducted with the agricultural biochemistry course. The results showed that while majority of students had completed two previous biology/genetics courses, few could accurately define the terms.

Through the Digital Lens ...

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Advancements in cameras have changed technology but not photography techniques. As photography is fundamental to agricultural communications, faculty at Oklahoma State University developed a new digital photography course to help students.

The course is designed around a one-hour lecture and four hours of lab each week. The lecture is structured as a seminar to discuss photographs from previous assignments. A two-hour laboratory is designed to allow students to learn computer software and digital enhancement of photographs. During the remaining lab time, students work independently to capture photographic images for weekly assignments.

Students are challenged with a variety of unique assignments. The intent is for students to learn the artistic approach to conceptualizing, framing and shooting good photographs. The assignments provide the student with some options for creativity. Example assignments include: Visual Journal, Changing Light, People in Agriculture, Interaction, Livestock in a Natural Setting, Agriculture in the Field, Honest Emotion, Livestock without Livestock, Macro, Flash, and A Day in the Life of Rural America.

Each student purchases a digital camera and accessories such as memory cards, rechargeable batteries, case, etc. This investment allows students a tangible product to use in a variety of other agricultural communications classes.

Abstracts

Preparing Professors to Teach in the Laboratory Setting

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Introduction/need for idea or innovation

Conducting effective labs is essential in many technical agriculture disciplines. Learning the fundamentals of organizing and managing an effective laboratory is critical for professors. Specifically, the goal of this poster is to provide opportunities for professors to evaluate instructional laboratories, examine an instructional laboratory management plan, devise a plan of action to improve an instructional laboratory, and evaluate student work within an instructional laboratory.

How it works/methodology/program phases/steps

1. Introduce purpose, breadth, and scope of laboratories in technical agriculture in colleges and universities.

2. Discuss responsibilities of the instructor pertaining to safety, hazards, and standards.

3. Examine laboratory management topics.

5. Engage in on-and off-campus field trips/learning experiences.

6. Allow students to develop a "wish list" for a newly acquired laboratory.

7. Present a proposal for a selected laboratory design.

8. Evaluate their students' performances in the laboratory setting.

Results to date/implications

To date, the Agricultural Education 594 class has been designed, and pilot-taught one quarter. Continued implementation of this course will occur during spring quarter at The Ohio State University. Trips to an urban agricultural science school, an urban horticulture/greenhouse and landscape school, and an exemplary production rural school are being organized.

Future plans/advice to others

In the future students will be afforded more hands-on opportunities. Extended visits at host schools will allow students to perform micro-lessons in the natural setting with real students. Others implementing a similar course should include this technique, and others, to strengthen the experience.

Costs/resources needed

Travel/Van Rental (2 vans) (per trip) \$300.00

Copies (per trip) \$30.00

Honorariums/Host school (per trip) \$50.00

Total \$380.00 per trip

Recruiting Expansion for Agricultural Education

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Eighty-three high school agriculture education students participated in a survey. Ninety-five percent were from rural areas. As the number of students from rural communities continues to decline and the number of urban students increases, it is important that agriculture education make a concerted effort to attract urban students. Core credit requirements for high school students continue to increase, minimizing opportunities for elective courses.

Increasing populations are driving the need for increased food and fiber production. Technological advances make it possible to meet those demands with fewer workers. Consumers expect a safe, economical, and abundant food supply. To continue to ensure ample production and meet consumer needs, it is necessary to have educated individuals guiding that process. This education must begin at the high school level.

In addition to providing students with an agricultural knowledge base, agricultural education students gain life skills such as: critical thinking, communication, group work, public speaking, decision making, and self-confidence. Throughout history, agriculture education has made adjustments to meet students' needs, equipping them for the world in which they live. It is time to make adjustments that will increase connections with urban youth, providing students with the life skills required to be productive, successful individuals.

The College of Agricultural & Life Sciences Honors Colloquium: Teaching and Learning 'Outside the Box'

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The College of Agricultural and Life Sciences (CALs) at the University of Florida is unique in

that it is the only college on campus that offers an Upper Division Honors Program for its high achieving juniors and seniors. In this program, these students may strive for academic and personal excellence and explore extraordinary possibilities in the Honors coursework. In this program, these scholarly students are invited to participate in the requisite course known as The CALS Honors Colloquium. The forum for this particular course is based on the teaching of different subjects within the College of Agriculture and Life Sciences and focuses on problem solving, developing critical thinking and professional skills. Participation in the Colloquium not only teaches students about theoretical ideas and concepts related to agriculture and life science, but it teaches students how to learn by thinking 'outside the box,' and how to ask questions of depth and complexity, and think critically about how the box was made.

Success Strategies for Agriculture: What Should a Course with this Title Contain?

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As a junior-level core course, "Success Strategies for Agriculture" objectives include developing skills in problem-solving, communication, interpersonal relations, resume preparation, and interviewing. Over time, the course has been taught by many different faculty members using different syllabi. While course evaluations may have been strong, course content has varied, resulting in concern that students leave the course without being given the opportunity to achieve these objectives. Some instructors also believe that too much was "pushed" into this course, leaving little time for the development of thinking and reasoning skills that underlie these objectives. Sometimes, as a marketing expert may tell you, it is a good idea to ask the customer what they think of the product, or in this case, determine the perceptions of students who have taken the course as to the value of the course's intended and actual content. This study ascertained perceptions of students regarding the content and activities of this course, in order to incorporate their perceptions of what content and activities seemed significant to them as they moved into their final semesters. Perceptions from students over two semesters were obtained and analyzed, and will be used as part of the background material for updating the course.

Professional Development Workshops

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Professional development workshops are routinely offered for agricultural education teachers and extension agents. Professionals attend these workshops to maintain their pedagogical and technical expertise. As such, the content presented varies greatly at these workshops. Practicing educators have discovered that using student-centered approaches that allow students to become actively involved in their education are more successful in teaching the content and maintaining student interest. This approach seeks to allow students to actively interact with the phenomenon being studied. These same methods can be used to effectively deliver professional development workshops to teachers, extension personnel, and other adult audiences. Experiential learning has great potential for delivering professional development workshops and was the model used to deliver a series of professional development opportunities to agriscience teachers in Florida.

Experiential learning is based on the premise that experience is the basis for all learning. The concrete experience phase is the usual starting place for experiential learning. Experiential learning begins with a student-centered activity, such as a laboratory, that allows learners to directly experience the phenomenon being studied. Then during the reflective observation phase, learners are given the opportunity to reflect on their experiences from the concrete experience phase. Next is the abstract conceptualization phase. Here learners form generalizations, rules, and hypotheses about the phenomenon they experienced. The last phase of a cycle in the experiential learning process is active experimentation. Learners are allowed to test the conceptualizations they formed during the previous phase. Unlike the concrete experience phase, learners now have some direction or guidance in interacting with the phenomenon.

Agricultural Knowledge Assessment: Does FFA Membership Make a Difference?

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The National FFA has spent millions of dollars in recent years to maintain and develop existing programs, and this has resulted in membership once again nearing the half million mark (National FFA Organization, 2003). An integral part of a comprehensive agricultural education program, the FFA both enhances and supplements instruction. The purpose of this study was to assess the agricultural knowledge of selected FFA members and other students with no membership in an agricultural youth organization. The population studied was 330 seniors at six high schools in Oklahoma; two urban, two suburban and two rural schools. This study compared general education students to agricultural education students, and FFA members to non-members. Comparisons were also made between the three types of schools according to overall mean scores, student gender and residential location of students. Results of the study showed that agricultural education students and general education students differed little in their overall mean agricultural knowledge scores, while students in rural schools obtained lower overall mean agricultural knowledge scores than did students in urban and suburban schools. However, those students who perceived themselves as active members of the FFA consistently scored higher than those students who were not FFA members.

Teaching Students to Teach Themselves through a Self Guided Science Lab

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Teaching students to teach themselves through a self guided science lab

Enter the world of online education. We have conquered the lecture, now we combat the lab. The Department of Entomology and Nematology at The University of Florida is working to develop curriculum for students away from the main campus. This involves not only modifying the lecture information for web access, but also adapting the laboratory exercises to be self-guided. Is it possible to teach a successful science lab without a microscope? Can students guide themselves through a lab without supervision? This material addresses those concerns and features some examples of distance lab exercises and experiences from an introductory entomology web class.

A Critical Thinking Instructional Model for Food Biotechnology

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The area of food biotechnology offers one of the most important domains of knowledge where the teaching of critical thinking skills has a potential for enhancing education for students in the food and agricultural sciences. It can be argued that no greater need and importance of critical thinking exists than in the current debate surrounding the production of genetically engineered crops. Many agricultural educators are teaching courses solely focused on biotechnology; however little has been done to develop a model, which can assess the quality of thinking, reasoning, and decision-making of these students.

Huitt (1998) argues that critical thinking is a process that is best developed in connection with a specific domain of knowledge than as a more generalized teaching technique.

The intention of this project, which was funded through a USDA grant, was to develop new curricula for effective integration of critical thinking instruction into a specific discipline such as agriscience. As a result, a comprehensive course Web site, six interactive CD-Rom based course modules containing video and audio, a curriculum guide, printed copies of a skills assessment instrument and score sheets, and project materials are available for adoption by other institutions on a cost recovery basis.

Integrating Video and Digital Photography into College Classes

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With the decrease in prices of video and digital photography equipment, many people are taking advantage of these communication technologies in their homes. They are able to send and receive emails, download Web pages, or send CD-ROMs accompanied with family photos and videos. Some professors also are realizing the benefit of integrating video and digital photography into their college courses. They are able to take video and photos "in the field" and bring the "field" back to their classrooms. They also can use video and photos on their class Web sites or on CD-ROMs. But how does a person get started or if a person has some video and digital photography equipment keep going?

This session provides an overview of how to integrate video and digital photography into college classes. The session will cover the following topics:

Choosing the right video and digital photography

equipment.

Examining various video editing software packages.

Shooting video and digital photographs effectively.

Providing examples of how to integrate video and digital photography into courses.

Principles of Therapeutic Riding as a Service-based Learning Course Within an Agricultural Curriculum

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Increasing evidence in higher education has pointed to the benefits of service-based learning on the total undergraduate experience. At Texas Tech University, undergraduate students can take an elective course in which they participate in hippotherapy sessions with disabled children while in a structured university situation.

An instructor-designed post-course questionnaire was administered to all students (n=90) from 4 semesters from 2001-2003. The class represented a wide range of university majors (n=27). Of these, 26.5% were in Agricultural Sciences and Natural Resources, 42.9% were in the fields of Pre-Allied Health and 30.6% were from other majors. This questionnaire presented 14 questions probing student attitudes towards the course and towards disabilities. In summary, 84.4% felt their general outlook changed as a result of taking this course; 98.9% felt they had have a better understanding of what children with disabilities face in their daily life; 100% felt they had a better understanding of what families of children with disabilities face; and 96.7% felt that as a result of this experience, they were better able to relate to persons with disabilities. These responses were backed by statements on standard university-wide course evaluation forms reflecting student attitude towards this service-based learning.

Networking and Collaboration for Strong Off-campus Programs

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Off-campus locations of major universities serve a major purpose in achieving the overall goals and

mission of a university. The satellite or off campus locations are designed to meet the needs of time- and place-bound students as well as draw others from outside the region. The student population at these off-campus locations is as diverse as the nature of programs offered. The proportion of non-traditional students is higher than the traditional students at these locations. Thus, students at off campus locations may have unique needs and requirements that must be met for ensuring growth, sustainability, and success of the programs. Resource limitations and rigid organizational infrastructure may result in less than desired growth. Unique teaching/learning techniques and effective use of available resources will allow faculty and students to experience an enriched educational environment. Importantly, collaborative work and greater degree of "networking" are essential for preparing students to excel at the off-campus locations. This study will address various factors affecting the growth and success of off-campus programs. Challenges and opportunities will be identified and recommendations will be made.

Teaching Food Economics and Menu Planning to Dietetics Students.

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Understanding the relation of food economics to diet and ultimately, health, is mandated in didactic programs of dietetics. This topic is especially important for low income clients. Working with low socioeconomic status (SES) audiences is especially challenging for primarily middle-class dietetics students. Service-learning allows students to understand this population better, and to perfect needed skills step-wise in a series of courses: Food Fundamentals (FF), Community Nutrition (CN), and Medical Nutrition Therapy (MNT). Students work in the local food bank or community dining room to understand the population, including their nutritional needs and economic limitations. Class room activities on meal planning, community nutrition programs, and the epidemiology of chronic disease complement these activities. In FF and CN, students use these knowledge and skills to design recipes, menus, and meal plans using heart-healthy foods available through the food bank and commodity distribution sites and community programs available to low SES audiences. Students in MNT use this information to design nutrition education targeted to chronic diseases that are prevalent in this population which can be distributed with food boxes that are given.

Beyond Google: Incorporating Information Competency into the Classroom

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The purpose of this paper is to present and discuss current and future developments in teaching information literacy to undergraduate agribusiness and agricultural economics students. Few students enter college with the critical thinking skills necessary to determine information needs, locate and evaluate content, organize information into a logical format, and successfully communicate it to an audience. More specifically, first-year agribusiness and business students at Cal Poly overwhelmed by the vast array of electronic resources available have an inadequate understanding of how to conduct basic business and economics research. In response to this need, an agribusiness information competence Website was developed to create a digital environment where Cal Poly's motto, "learn by doing," comes to life. The creation of the website was funded via a \$5,000 grant from the California State University Information Competence Project in May 2003. The Website embodies the ideals set forth by the Council on Student Success by delivering real-world business and economics research skills that students will need to compete in the competitive business arena. The Agribusiness Information Competence Website (<http://multiweb.lib.calpoly.edu/Agbusiness/index.html>) is a comprehensive, tutorial-driven, digital guide that teaches the skills needed to master basic information literacy skills

The Learner-Centered Classroom: An Overview and Implications for College Teachers of Agriculture, Environmental, Natural and Life Sciences

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Whether we teach courses in agricultural economics, animal science, entomology, fisheries and wildlife, forestry, or horticulture, one of our goals as instructors should be to provide students with opportunities to become active, critical thinkers who

move beyond a view of learning as information-gathering to a view of learning as knowledge-building. Yet, studies indicate that students in colleges of agriculture possess limited abilities to think at higher levels of cognition (Rudd, Baker, & Hoover, 2000; Torres, 1999). Moreover, agricultural professors have been found to teach at the lower order levels of knowledge and comprehension (McCormick & Whittington, 2000; Whittington, Lopez, Schley, & Fischer, 2000). In spite of these findings, the good news is that leading educational research has shown that learner-centered approaches to teaching provide learners with an opportunity to think at higher levels of cognition and make learning a more transformative experience (Marzano, 1992; McCombs & Whistler, 1997; Savoie & Hughes, 1994).

In an effort to shift learner comprehension and teaching approaches within the agriculture, environmental, natural and life sciences, the purpose of this presentation is to introduce the concept of a learner-centered classroom. Specifically, participants will: 1) learn how a learner-centered class differs from a more traditional teacher-centered class specifically in the areas of power, content, the role of the teacher, the responsibility for learning, and evaluation; 2) discuss the benefits and obstacles to developing a learner-centered class; and 3) provide practical examples of ways to incorporate learner-centered approaches into teaching agriculture, environmental, natural and life sciences.

Multiple Intelligences: What Are They?

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In 1983, *A Nation at Risk*, was published. The report called attention to the serious problems in education in America. The major problem was that the educational system had not kept pace with society's expectations and needs for the rapidly changing world of the 21st century (Cognition and Technology Group, 1994). In order to succeed in the 21st century, educational systems must graduate students who are prepared to be lifelong learners. This challenge necessitates a pedagogical shift from transmitting a body of expected knowledge that is largely memorized to one that is largely process oriented.

The concept of multiple intelligences comes into play as well. The traditional concept of intelligence includes an overemphasis on verbally-loaded skills. Expanded views of intelligence are especially important because learner's beliefs about the nature of intelligence can affect their assessment of their own capabilities and their actual performance. Gardner (1983) lists eight areas of intelligence. Giving learners a chance to share a wide variety of kinds of intelligence adds to their confidence and belief in themselves as intelligent and competent learners, that no matter what the task, they will learn from the task.



A Feedback Mechanism for Guiding Novice Graduate Teaching Assistants in Preparation for and Presentation of Effective Instruction

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People new to the teaching profession are often bewildered about how to plan an effective lesson, and then how to deliver the lesson effectively. Too often, there is little help with gaining the perspectives needed for success. The authors have developed and tested an instrument for evaluation of "micro-teaching," wherein the major components of a lesson are demonstrated in an abbreviated period of time, with emphasis on both student and teacher activity. Competency-based instruction is the focus of teaching objectives. Methods of instruction common to Agricultural Education, Extension Education and the military services are offered as viable options. Lesson introductions, technical outlines, teaching materials and techniques, closing activities and teaching/learning effects are monitored and rated on a scale of zero to three. The instrument has space for rater comments and suggestions for improvement, as well as an overall rating on a 100-point scale. Thus the person being evaluated has specific feedback on key points as well as a percentage rating of overall performance, which can be easily transposed into a letter grade. The instrument is most effective where counseling can be provided following the teaching demonstration.

A Classroom Performance System: Using a Question-Discussion-Feedback Learning Process to Inspire Students to Think and Reason

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Envision an interactive classroom, where all of the students participate, all of the time. Students are posed questions, think and reason to answer the questions, and then receive immediate feedback. Data can be saved and analyzed and feedback can be related to objectives and standards. Customized reports and review sheets can be accessed and printed out for use by the professor and the students. Most important of all, students enjoy the learning process.

This is a Classroom Performance System or CPS.

CPS is an integration of technologies that includes a computer, a receiver, a series of keypad transmitters, and a software package. The system is applied on the theoretical basis of question/discussion-feedback learning process. The system allows teachers to pose questions, engage in discussion and provide individualized, immediate feedback to all students.

A Classroom Performance System was tested in agriculture courses at North Carolina State University. Our study hypothesizes that the application of this system will keep students engaged in the classroom, create an enjoyable learning atmosphere and improve student achievement. Attend our interactive classroom and learn how to use the Classroom Performance System to teach your students critical thinking and reasoning skills.

Using Computers at a Higher Level to Teach at a Higher Level: Effective Instruction with Laptops and at a Distance

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The Department of Genetics, Biochemistry, and Life Science Studies is using a variety of computer technologies to incorporate process and critical thinking skills into our curricula and in delivery of Web-based courses at a distance. The first part of this workshop will include a demonstration of how laptops and various software packages are being used in Introductory Biology lecture and laboratory and in upper division genetics and biochemistry courses. Illustration of uses of software include WebCT®, Infotrac®, Virtual Laboratory®, laboratory interfacing, and Macromedia Breeze Live®. Beginning next fall, all Clemson students will be required to maintain a digital portfolio of their academic experiences at Clemson. Plans to incorporate problem solving into digital portfolios will also be discussed.

The second portion will discuss techniques and specific uses of various Web-based media to encourage interactivity and higher order thinking in distance courses. If Web-based courses are only used for one-dimensional delivery, learning will occur at the lowest levels of thinking, at best. Michael Moore, a well-known scholar in distance education, encouraged optimal interactivity in his theory of transactional distance (1980, 1989). An overview of

Workshop Abstracts

Educational Applications of Microcomputers taught via Web in Spring 2004 will address practices underscored by Moore's work.

Teaching and Learning in a Large Botany Class

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"Plant Life" is a class of 200+ students I teach fall and spring semesters. My philosophy is "students don't care how much I know until they know how much I care." I personalize class by: sending a personal e-mail before semester begins, greet them at door first day, give birthday notes, take pictures and try to learn each person by name, etc. I enhance learning by: demonstrations, videos, course pack of lecture notes, costumes, animations, humor, group discussions, lecture summary sheets. Students are often reluctant to respond in class to questions or ask questions in large classes. Course pack includes a summary sheet to be completed and turned in after each lecture. This has the following questions: 1. What did you receive as new information today? 2. Was there something from lecture that applied to your life? 3. What questions came to you during lecture? 4. What part of the teaching style was most effective? 5. What part of the teaching was least effective? 6. What I have done to improve my leaning skills in this class. Comments and questions are summarized at beginning of next lecture; this helps both learning and personalization.

Critical and Creative Thinking Course Activities

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Helping students improve their critical and creative thinking skills and abilities is one of the most fundamental and underlying goals of higher education. The importance of emphasizing critical and creative thinking in course work has been well documented in the literature based on numerous surveys of faculty, graduates, and industry personnel.

The curricula at most colleges of agriculture typically include first-year experience and capstone courses. Activities that help students enhance their critical and creative thinking skills and abilities can readily be incorporated as an integral part of these courses. Many of the critical and creative thinking exercises and assignments that have been developed for course work in general are also appropriate for use in first-year experience and capstone courses.

Participants in this workshop will have the opportunity to experience several classroom activities related to critical and creative thinking that have been used successfully in an orientation course and/or a capstone problem-solving course. Examples of additional activities will be solicited from those in attendance. This session will be informal and interactive, and participants will be actively involved in sharing their ideas about teaching and learning as related to critical and creative thinking.

Erratum

Dr Carl E Sams, University of Tennessee, Knoxville TN earned the NACTA Teaching Award of Merit in April 2004. He should have been in the listing on page 77 of the September 2004 issue of the Journal.