

# ACADEMIC PROGRAMS



College of Agricultural,  
Consumer and  
Environmental Sciences

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

From the Office of the Associate Dean

Vol. 8 No. 5

## ACES Fall Teaching Symposium

The ACES Fall Teaching Symposium is scheduled for Friday, August 20, 2004 in the Heritage Room of the ACES Library Information and Alumni Center. The program begins with refreshments at 8:30 a.m. and will conclude by 1:00 p.m. The planning committee (Cleo D'Arcy, Don Briskin, Mike Hutjens and Shelly Schmidt) has selected Dr. Linda Martin, Oklahoma State University, to be the featured speaker and workshop leader. Dr. Martin is Assistant Dean of Academic Programs in the College of Agricultural Sciences and Natural Resources. The symposium will focus on the importance of group learning activities as a strategy to promote team work while maintaining independent student accountability.

The ACES Academy of Teaching and ACES Academic Programs sponsor the annual symposium. Registration information will be distributed in early August, so mark your calendars now for August 20.

## NACTA Award Winners

ACES will be well-represented at the annual conference of NACTA, the North American Colleges and Teachers of Agriculture. The conference is being held in Gainesville, Florida

**Darrel Kessler**, ANSCI, will receive the NACTA Outstanding Regional Teaching Award.

**Diane Noland**, NRES, will receive the NACTA Teacher Fellow Award.

**German Bollero**, CRSC, will receive the NACTA Teacher Fellow Award.

**Prasanta Kalita**, ABE, will receive the NACTA Teacher Fellow Award.

**Dawn Bohn**, FSHN and **Sean Seepsersad**, HCD, will receive the Graduate Student Teaching Award.

## Campus Award Winners

ACES faculty and students were recognized for their achievements during the Campus Instructional Awards Programs last month.

ACES recipients included:

**Robert Skirvin**, NRES, Campus Award for Excellence in Undergraduate Teaching

**Charles (Carl) Nelson**, ACE, Honorable Mention for Excellence in Graduate and Professional Teaching

**Shelly Schmidt**, FSHN, Campus Award for Innovation in Undergraduate Instruction Using Educational Technologies.

**Nicki J. Engeseth**, FSHN, Honorable Mention Campus Award for Guiding Undergraduate Research

**Donald Briskin**, NRES, Campus Award for Excellence in Off-Campus Teaching

## Top Students Recognized

The College of ACES Student Awards Banquet was held in late April. Congratulations to the recipients of the *Warren K. Wessels Achievement Award* for outstanding seniors in ACES.

The finalists included: **Jason Moss**, **Christina Riley**, **Katheryne Stoll**, **Amy Taylor**, and the winner - **Tim McDermott**.

The *Robert M. Harrison Leadership Award* for outstanding juniors in ACES included: **Aaron Lower** and **Jennifer Fritzche**, and winner - **Lynda Gould**.

# Teaching for Long-Term Retention and Transfer

Why do we have colleges and universities? The main reason-- some might argue the only reason-- is transfer of learning. The underlying rationale for any kind of formal instruction is the assumption that knowledge, skills, and attitudes learned in this setting will be recalled accurately, and will be used in some other context at some time in the future. We only care about student performance in school because we believe that it predicts what students will remember and do when they are somewhere else at some other time. Yet we often teach and test as though the underlying rationale for education were to improve student performance *in school*. As a consequence, we rarely assess student learning in the context or at the time for which we are teaching.

If we want to enhance long-term retention and transfer of learning, we need to apply a few basic laboratory-tested principles drawn from what we know about human learning.

**1.) The single most important variable in promoting long-term retention and transfer is “practice at retrieval.”** This principle means that learners need to generate responses, with minimal cues, repeatedly over time with varied applications so that recall becomes fluent and is more likely to occur across different contexts and content domains. Simply stated, information that is frequently retrieved becomes more retrievable. The strength of the “memory trace” for any information that is recalled grows stronger with each retrieval.

**2.) Varying the conditions under which learning takes place makes learning harder for learners but results in better learning.** Varied learning conditions pay high dividends for the effort exerted. When learning occurs under varied conditions, key ideas have “multiple retrieval cues” and thus are more “available” in memory. Educational research suggests that significant learning gains can occur when different types of problems and solutions are mixed in the same lesson, even though the initial learning can take significantly longer. Variability in constructing learning situations requires greater student effort.

**3.) Learning is generally enhanced when learners are required to take information that is presented in one format and “re-represent” it in an**

**alternative format.** Cognitive research has established the fact that humans process information by means of two distinct channels-- one for visuospatial information and one auditory-verbal information. A given piece of information can be organized and “stored” in memory in either or both of these representational systems. Information that is represented in both formats is more likely to be recalled than information that is stored in either format alone.

**4.) What and how much is learned in any situation depends heavily on prior knowledge and experience.** Psychologists use the term “construction of knowledge” because each learner creates new meaning using what he or she already knows. Thus, the best predictor of what is learned at the completion of any lesson, course, or program of study is what the learner thinks and knows at the start of the experience. Yet few college faculty try to discover anything about the prior knowledge or beliefs of their students, despite the importance of prior conditions in determining what they will learn.

**5.) Learning is influenced by both our students’ and our own epistemologies.** Academic motivation is related to underlying epistemological beliefs about learning itself and about how learning works. Many college students complain that they “cannot do math,” cannot succeed in a literature course, or will automatically have trouble with some other academic discipline. When questioned about this belief, what most are really saying is that they think learning ought to be easy but, in these disciplines, it is hard. What they don’t know is that learning and remembering involve multiple, interdependent processes. Some types of learning occur implicitly, without conscious awareness.

Others occur consciously but are relatively easy. Still other types of learning involve considerable effort, and are perhaps even painful and aversive, like learning how to do long division or how to multiply matrices. It is only after an initial investment in the hard work of learning that additional learning in these fields becomes more automatic, and consequently becomes easier.

**6.) Experience alone is a poor teacher.** There are countless examples that illustrate that what people learn from experience can be systematically wrong. There are countless examples of this sort of erroneous thinking in both professional practice and everyday life, where current beliefs about the world and how it works are maintained and strengthened, despite the fact that they are wrong. People,

therefore, frequently end up with great confidence in their erroneous beliefs. Confidence is not a reliable indicator of depth or quality of learning. In fact, research in metacognition has shown that most people are poor judges of how well they comprehend a complex topic.

**7.) Lectures work well for learning assessed with recognition tests, but work badly for understanding.** Virtually all introductory college courses involve a lecture portion, in which a lone teacher mostly talks and writes on the board, while students take notes. This is a satisfactory arrangement for learning if the desired outcome is to produce learners who can repeat or recognize the information presented. But it is one of the worst arrangements for promoting in-depth understanding.

**8.) The act of remembering itself influences what learners will and will not remember in the future.** Asking learners to recall particular pieces of the information they've been taught often leads to "selective forgetting" of related information that they were not asked to recall. And even if they do well on a test taken soon after initial learning, students often perform less well on a later test after a longer retention interval. Principles of learning are difficult to discuss in isolation because learning activities that occur at different times—at the point of initial learning, during the retention interval, and at the point of recall—are all interdependent. They work together to determine what is remembered at some point in the future, well after the first recall test is administered. According to standard "memory trace" theories of how we remember, the act of remembering strengthens some memory traces and weakens—or at least fails to strengthen—others.

**9.) Less is more, especially when we think about long-term retention and transfer.** Some introductory texts in psychology, biology, or economics seem to weigh almost as much as the students who carry them around. Faculty need to consider carefully the balance between how much and how well something is learned. This is especially the case when external bodies like boards and accreditors favor domain coverage, no matter how thin, of more and more content at the cost of deeper understanding. Instructional designers need to make careful choices about how much content to include. An emphasis on in-depth understanding of basic principles often constitutes a better instructional design than more encyclopedic coverage of a broad range of topics.

**10.) What learners do determines what and how much is learned, how well it will be remembered, and the condition under which it will be recalled.** There is an old saying in psychology, "The head remembers what it does." Our most important role as teachers is to direct learning activities in ways that maximize long-term retention and transfer. What professors do in their classes matters far less than what they ask students to do.

As college faculty, we can have a lifelong effect on what our students remember, and consequently on what they will think and do. Or we can have a minimal effect. Most of the difference depends on how we design and direct learning activities. It's time we applied what we know about learning generated in our own cognitive laboratories and applied research settings to systematically enhance teaching and learning practice in college.

From an article by D. F. Halpern in *Change*, July/August 2003.

## ACES Awards for Teaching and Advising

Congratulations to ACES faculty who have been selected for the teaching and advising awards of the College of 2003. They continue to uphold the tradition of excellence in serving the undergraduates and graduate student populations of the College and University. Awards were presented during the ACES Paul A. Funk Banquet.

ACES Senior Faculty Award for Excellence in Teaching: **L. Arthur Spomer, NRES**  
ACES College Faculty Award for Excellence in Teaching: **Dean E. Riechers, Crop Sciences**  
Karl E. Gardner Outstanding Undergraduate Adviser Award: **Bryan A. White, AN SCI**  
John Clyde and Henrietta Downey Spitler Teaching Award: **F. William Simmons, NRES**

## ACES New Student Welcome

September 7, 2004  
7:00 p.m.

Krannert Center for the Performing Arts

## ACES Leaders

Fifteen UIUC students were presented with the Leadership Certificate last month during a program sponsored by the Illinois Leadership Center. To receive the certificate, students completed a series of portfolio of their accomplishments. This was the first time that the certificates were presented in the new program.

ACES students who earned the Leadership Certificate included: Kathyne Stoll, Human Nutrition; Chelsea Statton, Ag Comm; Krista Jurs, Commodity & Textile Marketing; and Christopher Garcia, Ag Comm. Chuck Olson, Jeff Moss and Kirby Barrick served as coaches for one or more students in the program.

## Leakage in the Educational Pipeline

Year 1 - 100 enter High School  
Year 4 - 67 graduate High School  
Year 5 - 38 enter College  
Year 8 - 18 graduate College

from *Change*, March/April 2004

**Mark you Calendar!**  
**ACES Fall Teaching Symposium**  
**Friday, August 20, 2004**  
**Heritage Room, ACES Library,**  
**Information and Alumni Center**

### ACES Convocation

May 16, 2004

**Undergraduate Ceremony – 9:30 a.m. Krannert Center for the Performing Arts**

**Graduate Ceremony – 10:00 a.m. Smith Music Hall**

ACADEMIC PROGRAMS is a publication of the College of ACES, Academic Programs, University of Illinois at Urbana-Champaign. Permission is granted to reprint all or any part of this publication, with appropriate credit to the source and the authors of individual contributions. *Academic Programs* is also accessible at: [http://www.aces.uiuc.edu/Faculty/newsletter\\_archive.cfm](http://www.aces.uiuc.edu/Faculty/newsletter_archive.cfm)

101 Mumford Hall, MC-710

1301 W. Gregory Drive

Urbana, IL 61801