Teaching at USMA

Vol. 8 No. 8 *Center for Teaching Excellence* *February 2003*

http://www-internal.dean.usma.edu/centers/cte

TALENT @ West Point
Saturday, 5 April 2003

Our conference on **T**eaching **A**nd **L**earning **E**ffectively using **N**ew **T**echnologies is now online! Thanks to the generosity MAJ Steve Schweitzer who contributed his design skills, we have a great site, not only linked to our CTE internal and external pages but also on the West Point homepage. You can also access it directly at

http://www.dean.usma.cte/talent/index.htm

As you review the program, you'll note that many of your colleagues will be presenting our work with technology at USMA in the morning sessions and providing workshops in the afternoon for participants to get practical information to enhance their ability to employ technology effectively for student learning. This is a great opportunity for you to not only learn about various initiatives at USMA that you may be unaware of but also to increase your ability to utilize specific technologies in your own teaching.

We only recently began announcing our conference externally to our civilian colleagues at regional colleges and universities, but their registrations are already arriving, and this promises to be a great event. However, please keep in mind that our intention is that this be a developmental opportunity for USMA faculty members as well as a public service to our regional neighbors, so we hope that USMA registrations will keep pace with those from our neighbors.

Any questions about this event should be directed to Anita Gandolfo at the CTE, but you are also welcome to send comments and/or inquiries to members of the conference planning committee:

COL Blackman of D/Chem&LS
LTC Heidenberg of D/Math
LTC Naessens of D/Physics
COL Ressler of D/EECS
Prof. Tendy of DPE
Prof. Welton of D/Law

What Research Says About Improving Undergraduate Education

(Continued from our January newsletter)

Last month, we began this article from the AAHE Bulletin that identified attributes of quality undergraduate education. In this month's newsletter, we conclude the article with the second third categories of those attributes, a quality curriculum and quality instruction.

A quality curriculum requires:

- ♦Coherence in learning
- ♦Synthesizing experiences
- ♦Ongoing practice of learned skills
- ♦Integrating education and experience

♦ **Coherence in learning.** Students succeed best in developing high-order skills (e.g., critical thinking, effective written and oral communication, problem solving) when such skills are reinforced throughout their education program. This means, at a minimum, that students should be presented with a set of learning experiences that consist of more then merely a required number of courses or credit hours. Instead, the curriculum should be structured in a way that sequences individual courses to reinforce specific outcomes and consciously directs instruction toward meeting those ends.

(Continued on page 3)

Also in this issue:

Teacher Thinking

From *150 Ways of Knowing* by Lee Shulman

(*Professor Shulman coined the phrase "pedagogical content knowledge" to distinguish between the college instructor's understanding of his or her discipline and the presentation of that understanding to undergraduates. In this description of "teacher thinking," Shulman identifies some of the details of pedagogical content knowledge—or "teacher thinking.")*

The ability to represent the subject matter is an aspect of the individual's knowledge of the subject matter.

Teachers must be concerned with

- The representations of the content students hold.
- Evaluating their own understanding
- Generating representations that take into account the students' understandings.

The **level** of understanding of the content by the teacher is crucial to his/her transformation of subject matter into instruction.

Teacher thinking is not the level of sophistication or the amount of information known by the teacher, but concerns the multiplicity and **diversity** of the representations of the content by the teacher.

Teacher-thinking is a process of **personal reflection**, assessing the structure of knowledge and the interrelationships between ideas. Teacher-thinking is developed by this transition process.

Expert Teachers

- Are aware of their personal constructions
- Able to access this information
- Reorganize the relationships with the assimilation of new information
- Ultimately be able to illustrate the connections among information in varying degrees of complexity

To illustrate the difference between the work of the content expert and the teacher, Shulman offers this example:

Scientist vs. Science Teacher

Scientist

Organizes subject matter as factual information used to formulate and discover new information by applying this information in unique ways.

Science Teacher

- Organizes scientific information in ways to demonstrate the methods of science.
- Shows how facts are interrelated.
- Presents this in a manner which is coherent with the experiences of the student.

How do these principles apply to your discipline and the courses you teach?

How do we discover "the representations of the content students hold"?

How can we generate "representations that take into account the students' understandings"?

As Shulman indicates, teaching a subject requires a different way of thinking about the material than we are accustomed to from our graduate studies or our publication and research. And, perhaps, when students don't "get it," the problem may be a lack of sufficient ***"Teacher Thinking."***

What Research Says About Improving Undergraduate Education

(Continued from page 1)

♦ **Synthesizing experiences.** Students also learn best when they are required to synthesize knowledge and skills learned in different places in the context of a single problem or setting. Such experiences can occur apporpriately at multiple points in a student's career and should not be confined to upper-division or bassclaureate programs.

♦ **Ongoing practice of learned skills.** A common reseraach finding in K-12 and postsecondary education is tht unpracticed skills atrophy quickly. This is particularly the case with such core skills as computation and writing, which, if not reinforced, will inevitably deteriorate without use. Good practice consistent with this principle requires multiple opportunities to exercise higher-order communication (written and oral), critical thinking, problem solving, and basic quantitative skills. It also requires that students demonstrate such skills at appropriate levels as a condition for graduation.

♦ **Integrating education and experience.** Classroom learning is both augmented and reinforced by multiple opportunities to apply what is learned. In professional curricula and programs, opportunities for this abound through formal practice, internships, or cooperative education arrangements, but they generally are lacking for undergraduate education as a whole. These kinds of settings are those in which the greatest amount of learning often occurs and where student interest is highest.

Quality undergraduate instruction builds in:

- ♦Active learning
- ♦Assessment and prompt feedback
- ♦Collaboration
- ♦Adequate time on task
- ♦Out-of-class contact with faculty

♦ **Active learning.** At all levels, students learn best wheny they are given multiple opportunities to actively exercise and demonstrate skills. For example, students learn more when they participate in frequent discussions of presented class material, produce considerable written work, and apply learned material to new settings or contexts, rather than when they simply listen to lectures. Rather than being based entirely on information recall, student assessmetn should require active demonstrqtion of synthesis and application.

♦ **Assessment and prompt feedback.** Frequent feedback to students on their performance also is a major contributor to learning. Typically in college classrooms, students receive little formal feedback on their work until well in the term. Learning is enhanced when students are provided with information about their performance, both within courses and through advisement Processes and integrative experiences that give them an opportunity to assess more broadly what they have learned. Early and frequent assessment at the classroom level also allows faculty to determine the different abilities and backgrounds that are present among students and may suggest strategies for dealing with this diversity.

♦ **Collaboration** Students learn better when engaged in a team effort rather than working on their own. Teamwork increases active involvement and provides multiple opportunities for feedback. At the same time, it actively reinforces communication and problem-solving skills. Moreover, it is the way the world outside the academy works—a world that students eventually will face. Research also suggests that collaboration is a useful model for faculty/student interaction; rather than being judges of student performance, the best teachers act as coaches, working with students as joint participants in achieving learning goals.

♦ **Adequate time on task.** Research also confirms that the more time devoted to learning, the greater the payoofs in terms of what and how much is learned. How an institution defines its expectations for the ways students and instructors use their time can powerfully influence the quality of learning that occurs. At the same time, visibly emphasizing time on task helps students learn how to plan and manage their time more effetively and how to focus their energy.

♦ **Out-of-class contact with faculty.** Frequency of academic out-of-class contact between faculty members and students is a strong determinant of both p rogram completion and effective learning. Knowing well a few faculty members enhances students' intellectual commitment and encoruages them to think about their own values and future plans. Through such contact, students are able to see faculty members less as experts than as role models for ongoing learning.

Conclusion

Multiple sources of research suggest that these twelve factors are important individually and are mutually reinforcing. It is difficult for a college or university to be engaged seriously in one of these activities without being engaged in most of them.

Also highly correclated with such practices are "student-centered" faculty attitudes. It is important to note that the majority of these practices are regarded highly by students themselves, and the institutions that engage in them receive higher satisfaction ratings from their graduates than those that do not♥

Reminder

The CTE May "brown bag" sessions (1 & 2 May) will focus on the implications of this article on the attributes of quality education for USMA. Does this article provide guidance for continued development of our academic program? Plan to join us for this discussion.

Coming Events at the CTE

(Please note the schedule changes)

Our February Brown Bag will be one session only on Thursday, 27 Feb. at noon in Thayer 120

The Teachers We Never Forget

In his recent essay, Dr. Robert J. Sternberg, American Psychological Association President-elect, described those teachers we never forget as "transformational mentors" who inspire their students in significant ways. This session is designed for participants to share stories of such teachers, as we try to identify some common themes in this shared experience. What are the qualities of those "teachers we never forget"? Are they the "experts" described in the article on page 2 of this newsletter? Or are there other qualities that are common to "transformational mentors"? Join us for this information conversation over lunch on 27 February.

Longitudinal Study of the Class of 2001

Our discussions of the CTE report on our *Longitudinal Study of the Class of 2001* will be on Wednesday, 5 March and Thursday, 6 March [not Friday as originally announced] at noon in Thayer 120. Anyone who has not seen this report and would like a copy to read in preparation for this discussion should contact Anita Gandolfo at the CTE.

119 Thayer Hall
Director:
Dr.Anita Gandolfo, x6155

Secretary:
Ms.Maretta Melvin, x7947

CTE ADVISORY COMMITTEE

LTC Hampton	D/BS&L
COL Blackman	D/Chem
Prof. Evans	D/C&ME
COL Ressler	D/EE&CS
MAJ Jebb	D/English
Prof. Saldivar	D/FL
Prof. Bucher	D/History
Prof. Malinowski	D/G&EnE
MAJ Hughes	DMI
LTC Heidenberg	D/Math
Dr. Tendy	DPE
LTC Belknap	D/SE
LTC Meese	D/SocSci
LTC Naessens	D/Physics
Prof. Welton	D/Law
Ms. Swik	Library

A Questionable Quotation?

The well-known educator Stephen Brookfield asserts that

"*The best learners... often make the worst teachers. They are, in a very real sense, perceptually challenged. They cannot imagine what it must be like to struggle to learn something that comes so naturally to them."*

This seems to me to be too broad a generalization. However, the element that I believe is most important to note in this is the difference between content expertise and pedagogical expertise (as identified by Lee Shulman on page 2 of this newsletter).

In addition, Brookfield's comment identifies one of the most important prerequisites for pedagogical expertise—that is, appreciating the difference between the understanding of the instructor and that of the learner. Too often inexperienced instructors fail to consider the learner's lack of experience with the course material.

What do you think? Send your thoughts on this to me (Anita Gandolfo) at any time. Perhaps we can expand this into a discussion in a subsequent newsletter.