

Teaching Matters

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IN THIS ISSUE: MAKING TEACHING ENJOYABLE

CTE View—Dan Bernstein describes two ways he sustains his enjoyment of teaching. Page 2.

CTE News—Seven KU faculty members are participating in the Carnegie Academy for the Scholarship of Teaching and Learning's Institutional Leadership Program. Page 3.

Perspectives—Anthony Walton identifies three principles he has followed after his return to full-time teaching. Tracy Russo suggests additional ways you can make teaching more enjoyable. Pages 4 and 5.

Innovations—Susan Zvacek draws parallels between learning and games. Page 6.

Good Work—An excerpt of Sharon Bass' article "On Design and Liberation," which outlines her redesign of a course with this goal: Could she work smarter and still deliver the experience students needed and deserved? Page 7.

End Note—An engineering professor asks "Are we having fun yet?" and suggests five ways to make teaching more enjoyable for instructors. Page 8.

Learning through teaching model results in improved student learning

In 2007, CTE will co-sponsor presentations by two Carnegie scholars who teach at Georgetown University, Prof. Randy Bass and Prof. Heidi Elmendorf. Recently, Elmendorf's essay "Learning Through Teaching: A New Perspective on Entering a Discipline" was published in *Change* (November/December 2006). Information about Elmendorf's work and results of her study are summarized below.

Elmendorf has implemented an experiential model of learning through teaching. The model gives students an opportunity to use what they are learning in a college classroom to develop curricula, and then teach those curricula in an elementary school. The project was with a science course for non-science majors, but the author believes the underlying principles can be applied generally.

Three questions about student learning guided Elmendorf:

1. Can we apply the common saying "I understood that subject best when I had to teach it" to students in our courses?
2. If so, what differentiates their learning through teaching from their learning through more traditional pedagogies?
3. What is the impact of tightly integrating the cognitive aspects of learning with affective aspects (motivation, confi-

dence, sense of purpose) and metacognitive aspects (perspectives on knowledge and awareness of learning)?

Students in the course chose between participating in a traditional laboratory section or a community-based teaching section. The evidence from the project showed that "casting students in the role of teacher is a remarkably powerful way of making visible, to both the students and their instructors, some invisible shortcomings of traditional educational approaches" (p. 37).

The author attributes students' improvement to several factors, including the following:

- When students teach, the thinness of their knowledge is exposed to themselves and their instructors.
- Students learn differently as teachers than they do as students.
- As teachers, students develop a sense of responsibility, which provides motivation to learn.
- Students had an opportunity to re-learn, to re-visit ideas from new perspectives with new questions and new goals.

Elmendorf's work is an excellent example of how teachers can study their own teaching. Discovering new ways to improve student learning can be one way to make teaching more enjoyable.

—JE

Sustaining the enjoyment of teaching

Dan Bernstein, CTE

Our profession includes a substantial commitment to teaching the next generation of citizens and scholars, and for most of us this activity will continue for several decades. Keeping the experience fresh and inviting for us will likely enhance the value of our teaching for our students, so it is important to use strategies that help sustain our enjoyment of teaching. I have found two general ways to work on this—one involves keeping the student climate in my classes positive, and the other involves maintaining intellectual challenge for me as a scholar.

An important part of any teaching experience is the quality of the relations between learners and teachers. When both partners are in synchrony, there can be a smooth and effortless dance that is enjoyable all around. Without that coordination, you can have a lot of bumping into each other and stepping on toes that slows down progress and results in less pleasure for all involved.

Well coordinated learning is most likely to take place when there is good alignment between course goals and procedures. This begins with the design of course assessments, all those ways that students will demonstrate their knowledge, skill and understanding. When the student performances you ask for have a clear relationship to the intellectual aspirations you have for your class, students can see where their work is headed. In addition, when

the readings, class time and out of class preparation also have tight connections with the exams, projects and papers through which students show their understanding, students feel well prepared. When students observe themselves succeeding, the class climate is much more positive.

Even when there is clear alignment among goals, measures, readings and class time, it is not always easy for students to recognize that inherent order. Another

If teachers frequently look for ideas to make progress in their teaching, their enjoyment of teaching will stay alive longer.

way to generate enjoyable teaching is to make the intellectual structure as transparent as possible. There is certainly value in having students figure things out on their own and address challenging assignments, but clarity of the relations among readings, class time and projects will give students a good start. Puzzles inherent in the subject matter can be fun, but puzzles about what do to and how it relates to the course goals are less helpful. It can be enjoyable for a teacher to work with students on problems and puzzles, especially when students understand where the puzzling fits into the overall plan for learning in the course. Teachers enjoy a class when students use their energy to learn rather than

spend it trying to figure out what to study or to question the teacher about procedures.

When teachers deliver the same course every year over an extended period, there are valuable savings in time as the amount of new preparation diminishes. There is also a loss in the freshness of teaching with each repetition, and it can be discouraging to hear oneself saying aloud ideas that were generated in the past and have been repeated several times. If a research program consisted only of parametric variations on previously articulated themes, it would also become stale. If teachers frequently look for ideas to make progress in their teaching, their enjoyment of teaching will stay alive longer. Faculty members can treat their teaching as an inquiry into successful learning, and that can provide an intellectual and emotional framework that is very satisfying.

At the same time, we also have to be very clear about the limits of what we can accomplish. Few academics are ever bored; there are more interesting intellectual questions and opportunities than we could possibly pursue in the time available. In research we learn to identify the central problems we want to work on, and we bring our intellectual energy and skills to bear on them. A research program that is spread too thinly across a lot of questions will likely

continued page 3

KU faculty members participate in CASTL program

In November, two faculty members represented KU at the Carnegie Academy for the Scholarship of Teaching and Learning Institutional Leadership Program's first meeting in Washington, D.C. Chris Haufler, professor of ecology and evolutionary biology, and Paul Atchley, associate professor of psychology, participated in the meeting.

Other members of the KU CASTL project team are Ann Cudd, professor of philosophy and director of women's studies; Richard Hale, associate professor of aerospace engineering; Nancy Kinnersley, associate professor of electrical engineering and computer science; and Susan Twombly, professor and chair of educational policy and leadership studies. Dan Bernstein, CTE director and professor of psychology, serves as the team's chair.

KU was chosen for the project based on its record of integrating

teaching and learning into the campus culture. Since many KU faculty members are engaged in answering questions about their teaching, and since a large number of KU faculty members contribute to the ongoing public sharing of intellectual work around teaching, the University was recognized as a potential contributor to the program.

The KU team reported that all the schools represented had similar concerns and issues surrounding the representation of teaching, evaluation of teaching and the creation of a climate in which teaching and learning can improve. Some innovations from those schools will be presented to faculty at KU as potential models to be considered, and some KU innovations will provide new benchmarks for faculty members at our partner institutions. The use of electronic portfolios to represent teaching is one topic that is

receiving a lot of attention at virtually all the institutions. The conversation among the institutions will be continued using an electronic workspace hosted by the Carnegie Foundation.

The CASTL Institutional Leadership program is a three-year partnership between Carnegie and higher education institutions that have shown a commitment to examining teaching and learning. The group will meet yearly to discuss each institution's research on improving teaching and learning, and what they can do to make their findings more visible to the public.

KU is one of 12 universities in the CASTL program that focus on expanding the teaching commons. Other institutions in the group include Indiana University, Georgetown University, the University of Michigan, the University of British Columbia and Seton Hall University.

Sustaining the enjoyment of teaching

continued from p. 2

be both unsatisfying and unsuccessful. When making teaching engaging by asking questions about improving students' learning, it is important to tackle issues one by one. Teaching can be enjoyable when you are solving problems that students have with learning, but it will become overwhelming if you take on everything all at once. Pick an issue

that interests you, read about others' work on the topic and try to make progress with your students' understanding. That will make teaching more enjoyable without adding to the all too common sense of overcommitment that can accompany academic life.

I have found that I enjoy my teaching more when students fully understand the alignment

between their work and my goals for their understanding. I also have found it richly engaging to work continuously on refinements in how I teach, as it gives me an interesting question to answer with each semester of teaching. It can truly be fun to read and think about student work as valuable evidence in my own pursuit of an intellectual question.

Making teaching more enjoyable

Anthony Walton, Geology

Faculty members at the modern university hold a great variety of attitudes toward different aspects of their duties. Some faculty members emphasize their research or creative activities. They find discovery exciting and rewarding. Some enjoy faculty governance or administration. They like seeing their vision of the university come to fruition, although colleagues may say they like power. Some may find teaching in formal classes or introductory courses a distraction from the aspects of their duties they find most interesting. I am one who now finds pleasure in teaching formal courses, both in the classroom and in the field.

In 1999, I stepped down as chair of the Department of Geology and returned to a full teaching load. I had neglected or had not taught some courses for years and faced the need to develop new courses that reflected my current interests, the state of the field, needs of the students and resources available at KU. At first, this situation was a little disconcerting. However, I am at the stage of my career that I can do pretty much what I want, as long as it furthers the general mission of the University. As I have come to understand my situation and adapted to it, I have had more fun teaching in the last several years than I ever had when I was worried about who was casting an evaluating eye over my shoulder. Upon reflection about what I am doing that works for me, some principles have come to the fore.

First Principle: Throw the book away in survey courses.

Well, throw away a substantial part of the book. Geology, like many other fields, is very broad. Meaningful coverage even of that fraction of subject included in textbooks is not possible in a 15-week course. Students in geology survey courses must learn new words and specific but commonly different meanings for familiar words. Important concepts may get buried in a blizzard of terms.

Because I teach what I think is important, I have no compunction about expecting students to see its importance and to learn it. Thus, I can set my expectations high and help students meet them.

Overloading a class is easy, but would it be educationally sound? How many other introductory courses face the same situation? My solution? Figure out what is core material and teach that. Figure out what I like and know well from the rest of the textbook and teach that. Teach concepts using only the necessary vocabulary. Ignore the rest. I suspect that students learn a higher proportion of material and more total material if only part of the subject matter is covered, but covered in adequate depth with excitement and thorough understanding.

KU's BA curriculum should encourage instructors in principal courses to cover philosophy,

methods and standards of a field. As these topics are key aspects of a field, instructors should understand them and teach them well, even if they do not particularly like them. I admit that some subjects require certain material be covered, even in principal courses; general chemistry and calculus come to mind as courses where content is prerequisite to other fields and instructors have less latitude than I do. My first principle may not apply to such courses.

Second Principle: Value your material and the students will also.

If students sense that you are going through the motions with material you do not believe is important or do not understand well, they will not believe in it either, and they are not likely to understand it very well. Because I teach what I think is important, I have no compunction about expecting students to see its importance and to learn it. Thus, I can set my expectations high and help students meet them.

I am amazed at colleagues who take the view that only students who want to attend classes should actually come. If I as a student sensed that an instructor held that view, I would not respect the class content, because the instructor did not think it important enough to make me want to learn it. I would wonder why the instructor was wasting time on unimportant material.

continued page 5

Two additional ways to make teaching enjoyable

Tracy Russo, Communication Studies

Tony's reflection about making teaching more enjoyable strikes a chord with me. I think he's absolutely right with his principles: throwing the book away, valuing the material, and focusing on application. These approaches let us focus on the key objectives and help students learn in a really meaningful way. It IS fun to know that students are responding to us and growing because of our efforts.

I'd add a couple of points to Tony's list based on my own experience. First, it's fun to get to know students as individuals. It's

not always possible or reasonable, of course, given class sizes and other demands, to know many very well. But learning a little about many of them can personalize the material and provide a focus for instructional energy. Acknowledging student individuality and believing, as Tony has indicated, in their potential, lets us see them learn, change, and grow.

That's tied directly to my second addition. Although not all students do respond as we'd like, it's appropriate, it seems to me, to rejoice when they do. Rejoicing

can be public, as when we praise students for their efforts and acknowledge their successes. Rejoicing also can be private, when we reflect on our own efforts and find satisfaction in what we've done. Remembering and naming the fine moments fuels the teaching engine for many days.



Making teaching more enjoyable

continued from p. 4

Third Principle: Application makes abstraction concrete and engaging. I am fortunate to teach geology, a subject that has real-world applications and involves encountering rocks in their native habitat. For several years, I have been privileged to teach a two-week field investigation trip for beginning geology majors. This course is students' first concentrated opportunity to study all types of rocks, tectonic features, geomorphology and a number of other topics extensively developed in future courses. Students feel the excitement of their first studies of real rocks and the opportunity to apply concepts from introductory courses in the field. The

trip gives students an opportunity to form friendships with others who share common interests and will share many classes in the future. These opportunities make the whole trip a formative experience for students. I get to guide them through the excitement of discovery, watch them build confidence as they gain experience and observe the development of enduring friendships. The student response has been gratifying, and the experience has made my return to a normal teaching load a rather pleasant experience. I think that the key aspect is that the course involves application of principles taught in the abstract to real field situations.

One of the unstated fringe benefits of our profession is to be with bright young students who are at the peak of their optimism as they look forward in time. Those students spend money and time to have us as faculty help prepare for their futures. In my introductory class, I set a goal of teaching students to see the Earth, not the world, in effect, adding a new dimension to their powers of observation. I believe that enhancing their observatory powers will help them in a variety of ways in the future. Accepting our role as facilitators of youth, exciting them about our subjects and watching them grow makes teaching fun.

Games and learning: Parallels and extensions

Susan Zvacek, IDS

Do you ever wish that students approached their coursework with the degree of enthusiasm they show for playing games? What is it about games, anyway, that makes them so darn fun? This isn't an idle question, considering the time, effort and money that goes into designing an online or video-based game. It's a safe assumption that the folks who do this for a living have some pretty good ideas about what makes games fun and, believe it or not, they consider "learning" a significant part of an enjoyable gaming experience.

Think about the games you've most enjoyed playing—electronic or otherwise. The same elements that make those games fun and motivational—that is, make you willing to stay up late playing them—include things like a significant goal that can be broken into smaller sub-goals, challenges that

aren't too hard or too easy, decision-making that produces meaningful results, feedback on your performance that helps you to improve, and the opportunity to explore and make a few mistakes without serious risk. This sounds suspiciously like what a great class offers, right?

So, how can you fold these fun elements into your courses without compromising their scholarly rigor? Let's start with the goals ... Although the goal of the Grand Theft Auto video game isn't one (we hope) that our students aspire to in real life, in the game environment it becomes a meaningful objective. Shouldn't it be possible, then, to generate interest in the real-life goals of courses in which students gain skills they can use in their future careers? The key is keeping these long-term goals front and center, focusing on their

relevance to the wider world, and reminding students how the sub-goals they're accomplishing will bring them to the final outcome.

On a day-to-day level, having challenges of appropriate difficulty also generates interest and can heighten motivation. Too easy or too hard and motivation wanes, but successfully working through a knotty problem is fun.

Encouraging students to take risks without serious consequences early on will build creativity and problem-solving skills, to boot. Finally, don't forget that interaction with others can be another fun-producing factor. (Would *you* play Monopoly solitaire?)

Marshall McLuhan put it rather bluntly when he said, "Anyone who makes a distinction between games and learning clearly does not know the first thing about either one."

Faculty members awarded Faculty Fellowships, Teaching Grants

The CTE advisory board recently identified recipients for Spring 2007 Faculty Fellowships and Teaching Grants.

Four faculty members were awarded Faculty Fellowships:

- Helen Alexander, ecology and evolutionary biology, to develop a biostatistics lab and create materials to evaluate learning.
- Ruth Ann Atchley, psychology, to develop a laboratory-based

course and plan a cognitive neuroscience teaching lab.

- Deborah Smith and Maria Orive, ecology and evolutionary biology, to track learning and retention of a fundamental biological concept across three undergraduate biology courses.

Teaching Grants were awarded to the following faculty members:

- Helen Alexander, ecology and evolutionary biology, for statisti-

cal software to support student learning by analyzing real data sets.

- Meredith Kleykamp and Tracy LaPierre, sociology, for a project to help students learn statistics by making more content available outside the classroom.
- Svetlana Vassileva-Karagyozova, Slavic languages and literatures, for materials that integrate language, literature and film.

Reflections on design and liberation

Editor's note: The following essay is an excerpt of Sharon Bass' article "On Design and Liberation" in the 2004–05 edition of CTE's Reflections From the Classroom.

This business of being a master teacher, a great teacher, even a passably good teacher requires a focused strategic approach because we have to be effective in our classrooms and within our disciplines. And we also have to do many other things.

We have to keep up with what's going on in our own field. I have to help in my unit—advise students and serve on committees. It's the same with the university and our local community. In my unit, we often work with professional counterparts. I also have to take care of myself, and I have a family who deserves more than a shadow of a slice of me.

These competing interests drove me to redesign one course as a test: Could I work smarter and still deliver the experience students needed and deserved?

I began with a few questions: Do my students really need to complete 15 assignments? How fair was it to have them work on the next assignment before I had evaluated the previous one? The subtext, as you may recognize, was how could I get out from under the weight of so much grading?

The redesign began with a CTE seminar. I didn't have time for it, but I didn't have time not to do it. The first semester I dropped all the way down to 13 assignments. I almost declared victory and went home.

But, I test-drove the new product. Better, but what was I thinking? Almost immediately in the roll-out semester, I spotted places where the work could be better grouped in ways that made more sense, to me and to students. I began right then with a redesign of the redesign. By mid-term I began the next syllabus. That meant I bought all sorts of time the following semester when I would have been mired in syllabus preparation, trying to remember what changes needed to be made.

My major effort went into identifying priorities. In three months none of us can teach everything a student might need to know. I had spent 15 years trying—to remedy the deficit, introduce new material and move into the future. Of course it was impossible, so they left my classes with a deficit as well.

The next year I rolled out the course with four assignments. These four assignments covered the knowledge previously required of students, but students and I could manage these four assignments. I had done what journalists are supposed to do: I had cut. Fewer assignments. Fewer thou shalt and shalt nots. More active classes solving problems. More instruction with discussion and improved feedback.

This experience led me back to basics and thinking about teaching with specific goals in mind. Some experts call this backward design. Most of us engage in backward design instinctively or in part. The idea is to begin with the desired learning outcome and

then build the course backward to achieve that outcome.

For me this meant that all assignments had to help students learn and help students know how each assignment contributes to the final goal. While previously I had a day-by-day account in the syllabus, what students needed was a clear map and transparency about why they do what they do.

Graded work had to be returned within a week of the submission (sometimes I slipped to 10 days). If I could not deliver on this, then the assignment had to be reworked. The result was that my teaching improved. And somewhere along the way, I found out how to restore the course to students. The work inside the class became more active, the exchanges more productive. There was more buzz in the room. The experts call this "engagement." I call it fun.

Focus led to better organization and better organization led to greater clarity in presentation. Student evaluations on organizational ability, fairness and access all improved. The truth be told, I spent less time in office consultations, less time in grading, less time on email and had more time for the other parts of my professional and personal life.

Some days I regret that I didn't arrive at this point sooner. Other days, I recognize that it's all part of a process and that perhaps I could not have arrived at this place without those earlier experiences. This connected, reflective detachment is liberating and empowering.

Five ways to make teaching fun

In an article for the *National Teaching and Learning Forum*, engineering professor Joseph A. Untener described an experience he had touring a commercial facility. It was clear to Untener that the tour guide was not enjoying the activity; however, the guide indicated that he was certain everyone on the tour was getting a lot out of it. Untener thought about this experience and applied it to his teaching: “Perhaps there were times when I thought I was pulling off a similar trick. Times when I thought to myself that even though I wasn’t enjoying the class session, the students were having a great experience” (p. 6).

This led Untener to develop the following thesis: No one in the classroom is ever having any more fun than the person in the front of the room. He states, “When I am teaching a class, I set the maximum level of enjoyment” (p. 6).

The author advocates changing approaches to teaching in five ways:

1. **Bring new material into the classroom.** Notes yellowed with age can’t excite you, and probably won’t stimulate enthusiasm for your subject on your part or on the part of your students. Untener relates that in one lab, a professor asked him why he changed lab activities since they were well-designed and were all new for the students anyway. His response was that he changed them because they were old for him. “There were no surprises in the experiments and consequently the very thing that makes learning fun was missing” (p. 7).
2. **Experiment with a wider variety of approaches to teaching.** If you typically lecture most of a class period, mix in some discussion or have students work in small groups.
3. **Find new ways to have students run activities.** Student-driven sessions put them in the front of the room with the opportunity to have the most fun for a while.
4. **Bring as many students as possible as close to your level as possible.** Untener envisions a bar graph with his enjoyment level as the first and highest entry, and then each student’s entry follows his. He views it as part of his job to maximize the height of those bars all the way down the line.
5. **See it as your responsibility to make sure the classroom stays enjoyable for you.** If you’re not enjoying the class session, it’s doubtful students feel good about it.

Untener adds that he doesn’t see it as his responsibility to motivate students, which he believes is intrinsic. He does, however, accept a significant role in student learning and believes that people find enjoyment in learning. He concludes that his task is to enable a “rigorous academic experience that is also one that students enjoy naturally—that is to say, enjoy because they are doing something that appeals to their interests and their sense of wonder” (p. 7).

Resource: Untener, Joseph A. (2002). “Are we having fun yet?” *National Teaching and Learning Forum*, 11 (6) 6–7.

Teaching Matters is published by the Center for Teaching Excellence and distributed to KU faculty at no charge. Its purpose is to disseminate information to faculty about teaching, learning, and faculty enrichment opportunities.

The staff welcomes your comments and suggestions. We will upon occasion invite the submission of articles of special interest to the academic community.

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