

# Teaching Matters

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## Building on our strength: How research benefits teaching

As a Carnegie I research institution, the University of Kansas offers its graduate students an opportunity to study in a research-rich environment. As we know, several KU graduate programs are nationally recognized for their excellence; many more are well regarded in our region.

Good can always be better, though, as noted in the article on pages 4 and 5. KU faculty Diana Carlin, Mary Lou Michaelis, and John Ferraro respond to suggestions for changes to doctoral education made by Jody Nyquist in a recent article in *Change*.

As Carlin alludes to in her response, many of our graduate students go on to teach in other higher education settings, some at other research universities but most at colleges where teaching (rather than research) is paramount. How does being in KU’s research-rich environment benefit graduate students who are preparing to teach in various settings? More broadly, how does research benefit teaching?

First, there is evidence that a **deep understanding** of a field is necessary to teach it effectively. For several years, many K-12 teacher preparation programs have recognized this fact and have responded by increasing the number of required courses in content areas. Knowing a field well means

understanding its foundations, as well as its current state. Studying at a research university is conducive to this type of learning.

Knowing is not enough, however—what a learner values will determine what he or she does with that knowledge. A value that the research community holds in general, and that it tries to impart to those who study within it, is **critical inquiry**. Our community members continually ask themselves, is this the best understanding we have? This is the question that good researchers pursue, whether they are evaluating a new pharmaceutical drug or analyzing a centuries-old poem.

The inquiry skills used in effective research are much the same as those used in effective teaching. Good teachers continually ask themselves, is this the best understanding that my students can have? How can I best facilitate students’ learning? These are questions good teachers pursue, whether they are teaching a class for the first time or the twentieth.

At KU, our graduate students can develop a deep understanding of their fields and pursue critical inquiry into their teaching and their research. We can build on our strength as we continue to develop exemplary graduate programs and pursue excellence in teaching and research. —JE, DB

## Backward glances and the future of graduate education

Dan Bernstein, CTE

Discussion of teaching within the professional preparation of graduate students raises key issues about relative emphasis and limits of time, energy and resources. Virtually no one emerges from graduate school as a fully formed researcher or teacher or practitioner; there would be plenty left to learn even if an entire graduate career were focused on only one aspect of professional life. As a result, the conversation is really about distributing time across different forms of preparation.

Pursuing any reform agenda for graduate education means identifying and balancing priorities, and the history of graduate education in Europe provides an interesting context for the discussion. The earliest universities were academies with students of a wide age range, and those who held a bachelor's degree were apprentice teachers. To become a Master, you needed an additional degree that gave you entry into the guild of teachers. Everything about the terminal degree was based on teaching, including a ceremonial lecture to begin a career. The word "doctor" is even derived from an ancient Latin verb (*docere*) meaning to teach. Having achieved that degree, you were licensed to teach "philosophy," which in the 1600's meant a curriculum of seven liberal arts.

Unfortunately, the intellectual life of those European universities became stagnant, as pedantic Masters read from prepared texts and learning for students devolved into memorization of

static canon about the world. By the 1800's universities were regarded as backward-looking institutions that preserved old ideas, but there emerged a new vision of universities as sources of discovery. This vision was exemplified by Alexander von Humboldt, whose work inspired the growth of German universities in which advanced research was central to all missions, including

[Graduate] students ... should keep in mind that teaching is itself an intellectual inquiry, and they need to use their research skills in conducting instruction.

teaching. As Humboldt himself put it: "Institutions of higher learning [will] always treat knowledge as an as yet unsolved problem [and] the relation between teacher and pupil thus becomes thoroughly different. The former is not there for the latter, rather both are there for the sake of knowledge." The intellectual vitality and success of the German university model took the European-centered world by storm, and graduate education in the United States was built in imitation of its forms. American research universities now produce PhD researchers who epitomize the vitality of intellectual inquiry.

The current initiative, as expressed by Prof. Nyquist in this issue (p. 4), holds that the community has need of PhDs who can be more than just research spe-

cialists. The range of skills needed throughout society, in and out of the academy, includes capacities that are not typically part of graduate curricula. Prof. Ferraro and Prof. Michaelis comment (p. 5) that all graduate programs face the dilemma of somehow finding time to prepare graduate students for their roles as team-based practitioners and teachers while also sustaining the vigor of their intellectual inquiry into their field of study. In the context of the observation by Dean Carlin (p. 5) that most KU PhD students do not end up in academic jobs at research universities, this would be a good time for programs to consider recovering some of the original purpose of the PhD.

It will be important to make those adjustments in PhD education in a way that preserves the revitalization of intellectual life initiated by the 19th century German universities. Students who include more explicit preparation for instruction within their graduate programs should keep in mind that teaching is itself a form of intellectual inquiry, and they need to use their research skills in conducting instruction. Deep knowledge of a field is the beginning point for teaching, but the selection of teaching methods and finding out whether teaching results in student understanding requires reflection on the effectiveness of practice. Who better to take on that intellectual challenge than someone prepared with the best possible skills for inquiry, an American graduate student?

## “Uncovering Courses” tops CTE’s spring schedule

This spring, CTE will offer new workshops, Lunch & Conversation sessions and Tuesday Teas.

### Workshop: Uncovering Courses, March 25

The Department of History, in conjunction with CTE, will sponsor presentations by Lendol Calder on “Uncovering Courses” on March 25 and 26. Calder is chair of the history department at Augustana College and was a Fellow at the Carnegie Academy for the Scholarship of Teaching and Learning. He regularly speaks about introductory and survey-level teaching and shares his research on replacing “coverage” with “uncoverage” in courses.

On Tuesday, March 25, from 2:30 to 4:30 p.m., he will present a workshop that explores the tradeoff between coverage of a topic and depth of students’ understanding. Calder has a unique approach to structuring courses that helps students develop critical thinking skills. On March 26, he will facilitate a Lunch & Conversation session at CTE and present a workshop to history department faculty.

The March 25 workshop will be held in 330 Strong Hall. To register, contact CTE at 785-864-4199 or cte@ku.edu.

### Tuesday Teas

In response to feedback from our faculty survey last fall, CTE is offering a new program, Tuesday Teas, to allow more faculty to participate in discussion forums. Two TT sessions will mirror two L&Cs; the others are one-time events. No registration is needed.

All will be held at CTE in 135 Budig from 3:30 to 4:30 p.m.

**Technology Outside the Classroom—January 28** with Rick Hale, aerospace engineering, and Joann Keyton, communication studies. A discussion of when to use technologies and why to use them (*not* a how-to session).

**Evidence for Evaluating Teaching—February 4.** Dan Bernstein, CTE. What it means to be a good teacher, as well as how to evaluate teaching.

**Teaching Extended Classes—February 11.** Bruce Frey, psychology & research in education; Steve Kapp, social welfare; and Renate Mai-Dalton, business. Ideas on how to keep long classes (two hours or more) moving well.

**Students, Teachers, and Power Relationships—February 18.** Cheryl Lester and Dan Carey, American studies. How to balance power in a classroom.

**Peer Reviews of the Intellectual Work in Teaching—February 25.** Dan Bernstein, CTE. Moving beyond classroom performance in peer reviews.

### Lunch & Conversation

L&C returns with six new sessions. As noted, two L&Cs mirror Tuesday Teas; others are one-time offerings. No registration is needed. All will be held at CTE in 135 Budig from noon to 1 p.m.

**Technology Outside the Classroom—January 29.** Reva Friedman-Nimz, teaching and leadership, and Rick Hale, aerospace engineering (TT repeat).

**Evidence for Evaluating Teaching—February 3.** Dan Bernstein, CTE (TT repeat).



Lendol Calder will lead workshops and discussions on “Uncovering Courses” on March 25 and 26.

**Integrating Visual Material to Enhance Student Learning—February 5.** Lee Skinner, Spanish & Portuguese. Using the Internet during class and creating assignments centered on web-based activities to enhance learning.

**Supporting the Research Writing Process—February 24.** Lea Currie, KU Libraries, and Michele Eodice, Writing Center. How to integrate the research and writing process to enhance student learning. Special focus on research methods, documentation and citation strategies, as well as how to avoid plagiarism.

**Meeting the Challenges of Studio Teaching—March 4.** John Boulton, music and dance; Shannon Criss and Steve Padgett, architecture; and Tanya Hartman, art. Ways to nurture students’ creativity and how to evaluate students’ performance in the studio.

**Uncovering Student Learning—March 26.** Discussions with Lendol Calder continue.

## Polishing the jewel: KU faculty members respond to proposed changes to graduate education

For many years, doctoral education in the U.S. has been one of the jewels of higher education. Recently, several groups examined it, from KU's Provost's Task Force on Graduate Education to the Carnegie Foundation. Members of these groups, and others, have concluded in general that it's time for some changes.

As Jody Nyquist states in her article, "The PhD: A tapestry of change for the 21st century," the PhD "has been done magnificently. But changes in society create new requirements, and we need to honestly assess the efficacy of the PhD now to ensure that its recipients continue to make the kinds of contributions in the public and private spheres that the nation needs to remain strong" (p. 14).

The author's statement is based on two separate studies, one which included interviews of 400 various stakeholders: those who aspire to the PhD, prepare PhDs, fund PhDs, hire PhDs, and influence PhD education. From these studies, she asserts that "the goal of producing researchers and scholars, while critical, is not sufficient by itself. The range of skills needed to function effectively today has increased enormously, especially for those who will occupy leadership positions" (p. 14). New recipients of PhDs must move from a research and writing focus into a multidimensional range of activities, such as teaching, working on committees, writing reports, training and managing workers, planning and

budgeting, and recruiting.

"Furthermore, the PhD recipient is called upon to make connections between and across disciplines and among sub-disciplines that were isolated from one another as he or she earned the highly specialized PhD" (p. 14).

Nyquist specifies seven points of agreement from studies, which have recommended that doctoral education should match aspirations of doctoral students; respond to needs and demands of a changing academy, broader society, and globalization; provide systematic, developmentally appropriate supervision and opportunities for professional preparation for a variety of careers within the academy, and for a rich array of career options outside of academia; increase retention rates of doctoral students; educate more minorities and women in some fields; encourage more creative and adventurous research and interdisciplinarity; and limit the open-ended nature of time-to-degree.

... the PhD has been done magnificently. But changes in society create new requirements, and we need to honestly assess the efficacy of the PhD now ...

To identify what doctoral programs must do to meet these demands, the author lists ten core competencies of successful PhDs:

1. **Disciplinary knowledge**—what is known, plus creative and

adventurous ways of discovering new knowledge, the foundation of the PhD.

2. **Commitment to an informed career choice** based on exposure to a broad array of opportunities and paths.

3. **Teaching competency, broadly considered**—in one-to-one interactions in the classroom; preparedness to be a leader, a faculty member, a project manager, a motivator and an evaluator of others' learning in the government, nonprofit, corporate, or academic sectors.

4. **Understanding the diversity** of present and future students and present and future workforces.

5. **Understanding the mentoring process** necessary to provide leadership for future generations in academia or the workplace.

6. **Ability and preparedness to connect one's work to that of others** within and across disciplines, within and across institutions, and within and across private and public sectors outside the university.

7. **Global perspective**—the importance of doctoral work in relation to a global economy, sensitivity to cultural differences.

8. **Ability to see oneself as a scholar-citizen** who will connect expertise to the needs of society.

9. **Ability to communicate and work in teams** and explain work to public audiences and to those who set policies.

10. **Understanding of ethical conduct** as researchers, teachers, and professionals, including issues of intellectual property.

Three members of the KU task force have responded to parts of Nyquist's proposals, as follows.

**Diana Carlin**, Graduate School: The goals and competencies outlined by Nyquist relate to the KU Task Force on Graduate Education's recommendations. The report shows KU needs improvement in key areas such as mentoring, preparing students for non-research faculty positions (most of our doctoral students don't go to major research universities), and preparing students for non-academic careers. In a knowledge-based society, there is a growing need for researchers in all sectors, and students should be made to feel that non-academic careers are valued.

Nyquist's list is widely accepted in graduate education circles nationally. We are beginning to recognize at KU that we need to "reinvision" graduate education along these lines if KU is to continue to attract top graduate students and retain top graduate faculty. The Graduate School needs to drive change through programs such as Preparing Future Faculty and Preparing Future Professionals, but departments are ultimately responsible for implementing the goals and competencies. This is not your advisor's graduate school!

**Mary Lou Michaelis**, pharmacology and toxicology: Nyquist's assertions are certainly provocative with regard to what the future demands of PhDs. Many KU faculty are committed to providing better mentoring, increasing retention, and educating more minorities and women in some fields. On the other hand, economic realities of lack of support

for graduate students certainly limit the extent to which adventurous and interdisciplinary research can be undertaken. With regard to the core competencies, Nyquist is a master of understatement when she refers to the list as "somewhat daunting." Graduating individuals with the full package of competencies in less time and in the face of information overload in all disciplines may require supernatural intervention. At the very least we will need a crystal ball. Though few would argue with the ideals, strategies for accomplishing them are yet to be invented. Nevertheless, I enthusiastically await a world led by products of this re-invented PhD!

**John Ferraro**, hearing and speech, KU Medical Center: I generally agree with the seven main points regarding the aspirations of doctoral programs. There is no question that doctoral programs must strive to meet the "needs and demands of a changing academy, broader society, and globalization." In health sciences these needs and demands extend into the clinic, as well as the classroom and research laboratory. Many health-related professions are abandoning the PhD in favor of other doctoral designates as the highest degree for clinical practice. These newer programs have emerged, ostensibly, to accommodate an expanded knowledge base necessary for the entry level clinician/practitioner. What many of us feel has been "lost in the shuffle" during this transition, however, is the importance of research training and the application of the scientific method to clinical situations. These elements are inherent to the PhD degree, and this

model must continue to be available to students in our disciplines, even for those who choose clinical versus academic/research careers.

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Nyquist concludes, "What matters most is what happens next." Significant changes to graduate education at KU, whatever they may be, will require substantial support from the faculty. Our responses to the need will shape the future of graduate education at the University of Kansas.

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#### GOALS FOR DOCTORAL EDUCATION

Studies of doctoral education generally agree that it should:

- Match the aspirations of doctoral students;
- Respond to needs and demands of a changing academy, broader society, and globalization;
- Provide systematic, developmentally appropriate supervision and opportunities for professional preparation for a variety of careers within the academy and a rich array of options outside of academia;
- Increase retention rates of doctoral students;
- Educate more minorities and women in some fields;
- Encourage more creative and adventurous research and interdisciplinarity;
- Limit the open-ended nature of time-to-degree.

Source: Nyquist, J. D. (2002, November/December). The PhD: A tapestry of change for the 21st century. *Change*, 12-20.

## Virtual seminars can support goals of graduate study

Susan Zvacek, IDS

Leading a graduate seminar can be rewarding, thought-provoking, exasperating, and exhilarating—all at the same time. The good news, however, is that new tools for collaboration and intellectual exploration can alleviate some of the potentially frustrating elements of this teaching challenge. Technologies for working in an online environment provide an opportunity to maximize the impact of the graduate seminar, while retaining the valuable aspects of face-to-face interaction inherent in the seminar experience.

If we assume that the goals of the graduate seminar typically include building student skills in collaboration, socializing students into the research community, improving critical thinking skills, and providing experience presenting evidence and arguments, then combining real-time course meetings with virtual interactions makes sense. In addition, hybrid course formats (a mix of real-time class meetings and asynchronous online activities) are especially suited to graduate study, where students are highly motivated and the learning objectives have moved beyond basic intellectual skills to higher-order thinking.

How can online tools improve a graduate seminar? Three characteristics of the virtual environment mesh well with the goals described above: **extension** of the student's experiences, facilitating new **interaction** modes, and encouraging student **autonomy**.

Extending the range of students' experiences is possibly the

most influential element of the virtual format. Through online databases and resources otherwise difficult to acquire, students can practice locating and evaluating primary and secondary sources. These digital literacy skills have become critical abilities for anyone trying to build a literature review or simply gain a better understanding of a body of knowledge. The instructor may also extend the circle of seminar discussants by inviting colleagues in other locations to participate. This helps students contact others working in their field and develop a network of colleagues. Finally, extending the seminar experience can overcome the constraints of "real time," by encouraging and expecting students to integrate what they've learned and apply it at times not listed in the official course schedule and in situations outside of the classroom's walls.

Much has already been written about the influence of e-mail and the Web on teacher-student and student-student interactions. Specific to the seminar, however, electronic discussions provide advantages not otherwise gained in a traditional classroom setting. The most obvious of these is having time to reflect on what is being "said" in a discussion and to prepare a well-reasoned response. This certainly also applies to the teacher, who has time to consider student messages without the pressure to reply immediately (and brilliantly!) before providing guidance, asking follow-up questions, and redirect-

ing or focusing fuzzy ideas. Additionally, one danger of the seminar is that students may be overly influenced by the physical presence and subtle body language of a teacher and attempt to say what they think the leader wants to hear. While the online environment won't eliminate this, it will reduce the potentially intimidating effect of the teacher's presence on some students.

Finally, a virtual environment can assist students to become autonomous learners who rely more on their own resources and their peer collaborators than they might in a completely face-to-face setting. By expecting students to make time for coursework and holding them accountable for a final product, the teacher prepares students to not only complete a project without an externally imposed schedule, but to develop habits of self-discipline that will prove valuable in any profession. For graduate students, who often have competing priorities—jobs, families or social obligations—the anytime/anywhere nature of online collaboration with peers is an added bonus.

These characteristics (extending experiences, providing new interaction modes, and enhancing autonomy) can improve the graduate seminar. For more information on utilizing online tools to enhance your teaching, contact Instructional Development and Support at 4-2600 or [ids@ku.edu](mailto:ids@ku.edu).



## Preparing graduate students for their professions

Eric J. Munson, Pharmaceutical Chemistry

Most faculty and graduate students associate graduate education with lecture halls at the University of Kansas. However, graduate students also need to know how to present their research to peers in the form of seminars and/or posters, especially at national and international conferences. One way in which the Department of Pharmaceutical Chemistry has promoted graduate education in the pharmaceutical sciences is by establishing professional organizations and conferences where graduate student participation is an essential component of meetings.

In 1996, the Department of Pharmaceutical Chemistry at the University of Kansas, in cooperation with several universities in Europe and Asia, established the Globalization of Pharmaceutics Education Network (GPEN). GPEN was set up for the sole purpose of “fostering and facilitating scientific exchange in the fields of pharmaceutics and biopharmaceutics at an international level.” The rationale for establishing GPEN was in part based on the fact that pharmaceutical and

biotechnology companies, which hire many of the graduates of these universities, have become highly globalized. Therefore, the founders of GPEN felt that graduate students in pharmaceutics/biopharmaceutics needed increased exposure to science and culture at an international level. The most recent GPEN meeting (GPEN2002) was held at The University of Michigan, and consisted of two days of scientific presentations by graduate students from the participating institutions and one day of short courses taught by faculty from these institutions. Approximately 200 graduate students and faculty from 30 universities in 13 countries participated in GPEN2002. The Department of Pharmaceutical Chemistry was represented by 12 graduate students and eight faculty. Previous GPEN meetings have been held at the University of Kansas (1996), the ETH in Zurich, Switzerland (1998), and Uppsala University in Uppsala, Sweden (2000). GPEN2004 will be held at Kyoto University in Kyoto, Japan.

The Internal Association for Pharmaceutical and Biomedical Analysis (IAPBA) was originally organized by faculty in the KU Department of Pharmaceutical Chemistry to promote educational and scientific exchange within the national and international pharmaceutical analytical communities. Recently, it co-sponsored the Second North American Bioanalytical Forum (NABF 2002). NABF 2002 was able to sponsor the participation of more than 20 faculty, postdoctoral fellows and graduate students from the KU bioanalytical community. In addition to this series, the IAPBA is responsible for organizing the biannual symposium series known as the International Symposium on Pharmaceutical and Biomedical Analysis (PBA). This symposium is held every other year in North America. It has similar goals as the NABF but is focused more broadly.

By encouraging graduate students to participate in international conferences, we help prepare them for success in part of their future professions.

## Ambassadors serve as liaisons from departments to CTE

Departmental Ambassadors are an integral part of the Center for Teaching Excellence. The Ambassadors articulate faculty needs and perspectives and advise us about programs and activities. Their feedback is an essential part of how we plan and implement

what we do. In addition, the Ambassadors are resource people about CTE and about teaching for their colleagues.

Currently, 58 departments have identified a faculty member who serves as an Ambassador. These individuals were chosen by

their department chairs because they are strong advocates for KU's teaching mission and, equally important, they are respected by colleagues for their teaching.

To learn who your Ambassador is, log on [www.ku.edu/~cte/about/ambassadors.html](http://www.ku.edu/~cte/about/ambassadors.html)

## Seven ideas for graduate seminars

Ann Volin, CTE

Graduate seminars have been among the best learning opportunities that I have had at KU. The chance to gather with a small group of like-minded graduate students and study our favorite subjects to our heart's content—this is graduate school learning at its finest.

What makes seminars successful includes clear goals, adequate preparation and follow-up. Often professors begin seminar preparation with their experience as a student as the sole blueprint. Augment that experience with the following ideas. They can streamline student benefits and increase student learning in your seminar.

1. Model your professional leadership. You are undoubtedly an expert about the seminar topic; thus, your presentation of the seminar material should model relevant skills for teaching, learning and presenting in your profession. A seminar offers the chance for you to relay to graduate students the professional expectations of your discipline. Don't assume that they know what these are—make them explicit.
2. Set clear course objectives. Articulate not only what you plan to achieve for the semester, but also what each session will accomplish so you can judge whether your plan will achieve its intended benefits.
3. Make behavioral intentions clear. What are your expectations for student learning? Do students know what behaviors, attitudes and ideas you hope to address through this seminar? These fundamentals can be taken for granted in a seminar that assumes advanced students, but again, make even these basics overt.
4. Structure each class meeting. Allowing classes to “go with the flow,” which may sound like an idealized intellectual process, leads away from course goals. You have limited time for intense learning in a seminar.
5. Plan student-led discussions. Students can—and should—lead discussions based on papers they have written or topics they have researched. Teachers can coordinate, facilitate and comment on presentations. An interactive format is crucial; there must be a reason for students to attend class instead of reading material on their own. Watch out for sessions that center on a presenter and fail to draw out the group's expertise.
6. Encourage students to help each other. No doubt many students are in class because of their deep interest in a subject. By joining their peers, they “own” material in a way that professors cannot create on their own. Let seminar interactions feed off skills that each student brings to the seminar. Through these interactions, graduate students become each other's professional colleagues.
7. Finally, have an obligatory follow-up. Not only do graduate students need the opportunity to practice and demonstrate skills, but they also need feedback. If that feedback exists in a vacuum—for instance, at the end of the semester when there will be no opportunity to correct and modify skills—it is less than optimal. Figure in a realistic revision that will demonstrate the application of the feedback.

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*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.

Editor: Judy Eddy

Center for Teaching Excellence  
The University of Kansas  
1455 Jayhawk Blvd., Room 135  
Lawrence, Kansas 66045-7604  
785-864-4199

cte@ku.edu  
www.ku.edu/~cte

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