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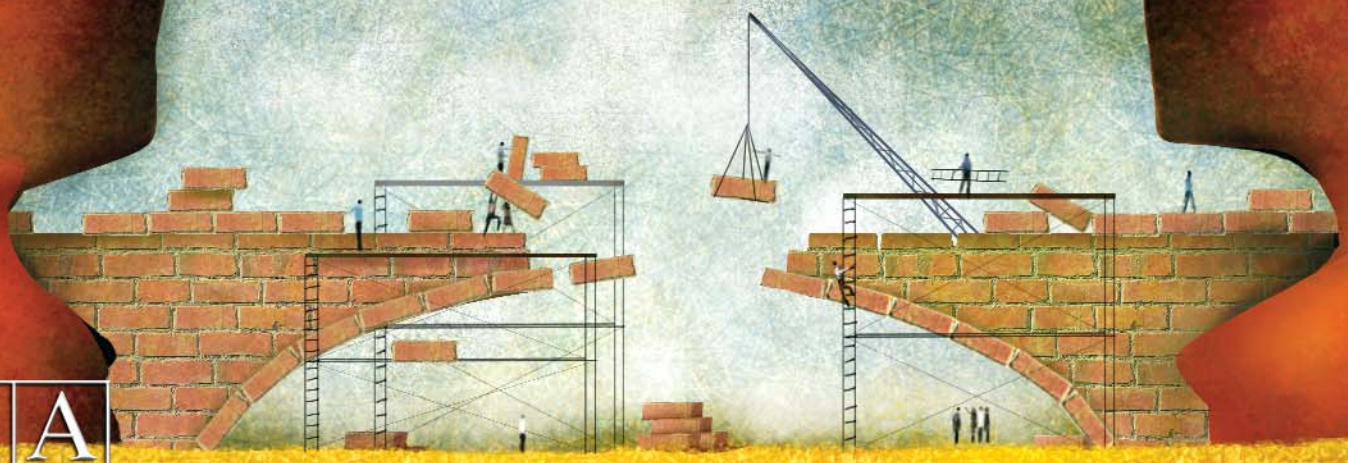
peerReview

Emerging trends and key debates in undergraduate education

Advancing the Conversation Between Graduate and Undergraduate Education



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From the Editor

By the time they earn their degrees, doctoral students are generally well prepared as researchers and scholars in their fields, but are they similarly prepared for other faculty roles and responsibilities? Are they prepared to teach and advise undergraduates, for example, or to perform academic service? The answer, according to a national survey of doctoral students, is probably not. "For nearly every role or task performed by a faculty member," Chris Golde reports in this issue, "there is a significant gap between the proportion of students reporting interest and the proportion reporting preparation."

Whose responsibility is it to prepare new faculty? The fact that a majority of doctoral students express interest in pursuing a faculty career would seem to point to a clear need for doctoral programs to broaden their conception of preparation. And many are doing just that.

But are graduate programs alone responsible for the preparation of future faculty members? Is it necessarily appropriate to build faculty training into graduate programs—possibly at the expense of disciplinary content—or would this task be better left to faculty development programs at hiring institutions? What of the students who do not plan to pursue a faculty job?

Surely graduate students' own institutions have a stake in this preparation, since many graduate students teach undergraduates at some point in their graduate careers—and many continue to do so as adjuncts. Further, what are the responsibilities of colleges and universities that employ graduate students from other institutions as adjuncts? Would they be safe in assuming these faculty are well prepared? These are just some of the pressing questions being addressed through an ongoing conversation between graduate and undergraduate education—both across sectors and within individual institutions.

Together with the disciplinary communities and selected departments, The Carnegie Foundation for the Advancement of Teaching, a key interlocutor in this conversation, has encouraged exploration of a foundational question: what is the purpose of doctoral education? The ongoing work of the Carnegie Initiative on the Doctorate (CID) proposes an answer: "to educate and prepare those to whom we can entrust the vigor, quality, and integrity of the field." Those so prepared are termed "stewards of the discipline," and this issue includes reports on the programmatic innovations underway in three departments participating in the CID.

For its part, AAC&U hopes this dialogue between graduate and undergraduate education will also focus on the core commitments of a liberal education (see sidebar). For, as Carol Geary Schneider notes in the lead article, the next generation of faculty members enters an academy in transition. In order to provide all students with an education of lasting value, an education that empowers participants—in the dynamic twenty-first-century economy; in a diverse, democratic society; in the global community—stewards of the disciplines must also assume stewardship responsibilities for liberal education.

With this issue of *Peer Review*, co-sponsored by The Carnegie Foundation for the Advancement of Teaching, we hope to advance the conversation between graduate and undergraduate education. In addition to thanking The Carnegie Foundation for the Advancement of Teaching for supporting this issue, I would like specially to thank Chris Golde for not only contributing two terrific articles but also providing me with invaluable counsel as the issue went from our heads to your hands.—**DAVID TRITELLI**

Liberal education comes in many shapes and forms in the contemporary academy, but in every one of those forms, its aims include:

- Developing intellectual and ethical judgment;
- Expanding cultural, societal, and scientific horizons;
- Cultivating democratic and global knowledge and engagement; and
- Preparation for work in a dynamic and rapidly evolving economy.

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www.aacu.org/peerreview

Changing Practices in Liberal Education:

What Future Faculty Need to Know

By Carol Geary Schneider, president, AAC&U

Liberal education has been this nation's signature educational philosophy since the founding. It has altered dramatically both in its subject matter and in its practices over the centuries, but through all the changes, it has held pride of place in the academy in part because of its inspiring aims (see editor's introduction) and in part because of its capacity to adapt to a changing world.

Today, liberal education is again engaged in one of those transitional periods that historically have resulted in far-reaching and transformative educational change. Transformative change is not always positive, and the outcome for liberal education in the present era is far from certain. But whether positive or negative, widespread changes in educational practice will assuredly have far-reaching implications for the disciplines that have been central to liberal education in the twentieth-century academy and for the faculty who teach them. For this reason alone, those charged with stewardship of the disciplines need to look beyond their fields to the larger educational landscape and address contemporary trends and contests around undergraduate education.

It is widely understood that a generational shift is underway on our campuses as a large cohort of senior faculty moves into retirement and new faculty arrive to take their places. It has not been noted, however, that these new faculty members are entering their careers at a pivotal moment in the history of American higher education and in the social history of liberal education. If this new generation of faculty members—future faculty still in graduate school and new faculty still in the early years of their careers—will seize the opportunity presented by this transitional era and make a real commitment to the reinvigoration of the undergraduate experience, they can collectively seed a new flowering of liberal education. With an ever-increasing percentage of the population now heading to college, the result could be extraordinary, both for our graduates and, through the quality of their learning, for our society.

But if this new generation does not take up the challenge of educational renewal, we may find, a few decades hence, that the current era of far-reaching change has been primarily destructive, leading to the permanent marginalization of the liberal education tradition—and many of the disciplines associated with it—in all but a small set of colleges and universities.

Both prospects are already fully in view.

Liberal Education in Transition: Which Road to the Future?

Tens of thousands of college and university faculty members across the country—in every discipline—already are engaged in widespread curricular and pedagogical innovations that, collectively, have the potential to produce that twenty-first century flowering of liberal education. AAC&U and The Carnegie Foundation for the Advancement of Teaching—the cosponsors of this issue of *Peer Review*—have joined forces in our enthusiasm for the educational possibilities that these teacher/scholars are creating, and in our shared determination both to foster and to champion a more engaged, integrative, and socially responsible approach to

liberal education. Our common purpose is to provide the advantages of a rigorous, public-spirited, and intellectually challenging liberal education to all college students.

At the same time, we also see widespread resistance to the very idea of liberal education—by policy makers, by the public, and by many students. Many of those in a position to make decisions about the future and the funding of higher education honestly believe that liberal education is a luxury rather than a necessity, and that the right educational focus—for most students and most of the academy—is career training and workforce development.

Those who have benefited from liberal education understand immediately the fallacy in this dismissal. In our knowledge-driven economy, every participant in the workforce will most certainly need the intellectual skills and big-picture understandings fostered by a strong liberal education. Our democracy also depends on citizens' knowledgeable judgment, on their orientation to continuous learning, and on their sense of social responsibility.

But merely saying that liberal education is valuable, or that the disciplines have a role in its achievement, is no longer sufficient to carry the day. The twentieth-century academy did not do a good job of helping the public understand what a liberal education is all about. Nor was it particularly interested in providing evidence to the public about its benefits. Too often, we insisted that liberal education was valuable for its own sake, with the result that neither the public nor, in many instances, our own graduates could explain how liberal education mattered in the world at large.

Compounding the challenge, many of the standard practices developed in the twentieth century have themselves proved an impediment to achieving the larger aims of liberal education. The extreme atomization of the contemporary college curriculum, the Chinese menu designs for course selection both in general education and in the major, and the continuing dominance of the lecture have shifted the burden of intellectual coherence and integration to students themselves. Some students rise impressively to this challenge, but many do not. For a significant fraction of our students, course-taking in the arts and sciences has been an experience of fragmentation rather than integration.

The current landscape, in short, is one of great opportunity and of daunting obstacles. The opportunity emerges from the new significance of higher learning for both the economy and democratic vitality, and from the creativity and commitment of faculty members who already are creating new practices better suited to the needs of today's students.

But the obstacles—external and internal—are also very real. Future faculty members will not overcome them through solid scholarship alone, or even by teaching with creativity and passion. If liberal education is to survive this transitional period, future faculty will need to leave graduate school with a clear understanding of the larger educational enterprise: its aims, its organizing principles, its curricular pathways. They will need to know how their individual disciplines and courses contribute to the larger ends of education, and they will have to help invent better ways of ensuring and documenting that students have actually achieved what is expected of them educationally, across their entire course of undergraduate study.

The Disciplines and the Unraveling of "Breadth and Depth"

For most of the twentieth century, both the disciplines and the academy's commitment to liberal or liberal arts education were ascendant, and most proponents of liberal education assumed, axiomatically, that the intellectual powers cultivated through study in a discipline provided the surest foundation for personal, civic, and professional life.

Over the first few decades of the twentieth century, the newly dominant disciplines fundamentally reorganized the shape and content of the undergraduate curriculum. The old classical curriculum fell away, and so too did the concept of the curriculum as a common program of study. By midcentury, virtually the entire academy had adopted the view—unknown in earlier eras—that the best design for liberal education was one of "breadth" and "depth." In this design, "breadth" meant general education courses in a range of disciplines to provide a broad understanding of science, culture, and society, while "depth" meant focused study within the boundaries of a particular discipline.

Today, this twentieth-century design for liberal education is visibly unraveling, pulled asunder by the combined force of several centrifugal trends. The first trend is the relative decline of the disciplinary major both as a focal point for the undergraduate curriculum and as the centerpiece both of liberal education and "study in depth." A 2001 study by the Carnegie Corporation of New York found that 60 percent of recent college grad-

uates had majored in a professional field, rather than one of the liberal arts and sciences disciplines. This study looked only at the bachelor's degree, however. Once we take into account the fact that half of today's students enroll in community colleges and that the great majority of these students focus on "applied" or "career" fields (often studying subjects that do not transfer to four-year schools), the liberal arts and sciences major looms even smaller on the academic horizon.

Further pressure on the disciplinary major comes from scholarship itself and from the emergence of interdisciplinary topics and fields as a new focus, not just for research but for the curriculum. Interdisciplinarity is springing up both within and across the traditional arts and sciences boundaries. Meanwhile, students themselves are adding further to the multidisciplinary complexity as they increasingly choose two or even three separate majors (often crossing "liberal arts" and "professional" lines).

A second trend is the extreme fragmentation of students' actual curricular experiences, especially in general education. This fragmentation is particularly troubling at campuses where most students major in professional fields and where liberal education is fostered almost exclusively through general or distribution requirements in arts and sciences disciplines. Where higher education once considered general education in the first and second year to be the "core" of a liberal education and a foundation for study in depth, many campuses now find that the students who took their "core" have transferred or dropped out, while their actual graduates have imported their general education courses from somewhere else. With the majority of college students now attending two or more campuses on their way to a degree, this trend toward a shopping cart experience of general education—and de facto, of liberal education—is likely to accelerate.

Simultaneously, there has been a marked increase in college-level course taking in high school; many college students can now meet several general education requirements with advanced placement and/or "dual-enrollment" courses. Especially at campuses where liberal education and general education have become essentially the same thing, this trend also contributes to the marginalization of liberal education and of liberal arts and sciences disciplines by turning them into high school work.

Finally, the competing pressures for students' time have further fragmented the traditional "breadth/depth" design for liberal education. With many students not only working but also managing families and off-campus homes, part-time study is becoming more and more common. Students with limited resources and heavy work schedules are especially vulnerable here; they may choose their courses primarily to meet scheduling pressures, only to discover that the result is a smorgasbord of disconnected studies, rather than a coherent progression toward intellectual breadth and depth.

New Academy Designs for Liberal Education

In sum, the twentieth-century design for liberal education is in disarray. But hope is on the horizon; the nation's campuses are crackling with a broad array of curricular and pedagogical innovations. In the aggregate, these innovations point the way toward a new approach to liberal education that is better attuned both to today's students and to a world in which complexity and change are the new constants.

AAC&U has termed these innovations a "New Academy" springing up on the boundaries, and increasingly within the departments, of the established academy. This New Academy features "aims across the curriculum," more active connections with the community, intercultural and collaborative problem solving, and a new focus on helping students integrate the disparate parts of their learning.

It is too soon to say that we are about to replace "breadth and depth" with an alternative set of organizing principles. But it is certainly the case that there are already many experiments "across the curriculum" that, if aligned, could create a far more purposeful and powerful cornerstone-to-capstone design for liberal education.

Like the old "breadth/depth" model that rose to challenge the classical curriculum a century ago, these "New Academy" innovations are emerging as the collective product of many different reform agendas. But this time, the reforms are driven not by the need to create departmental homes for research disciplines but, rather, by faculty members' strong interest in helping students to develop the skills and judgment they need for a complex world and to connect their learning with the needs of the larger society.

If we compare the typology of the New Academy with the older designs for "breadth and depth," three themes stand out:

- ***A new focus on inquiry skills and intellectual judgment.*** The New Academy is strongly concerned not just with what students "know"—the implicit agenda in the era of "breadth and depth"—but also with what they are prepared to do with their knowledge.
- ***A renewed concern with social responsibility and civic engagement.*** The New Academy is increasingly concerned with students' preparation and disposition to connect their learning with issues beyond the academy and to take an active role, both as citizens and as professionals, in a diverse, contested, and global community.
- ***A new interest in integrative learning.*** The New Academy is taking seriously the fragmentation of knowledge, not just in our courses, but through the knowledge explosion in the world around us. Many of the most interesting educational innovations clearly are intended to teach students what we might call the new liberal art of integration. Not only do these innovations invite students to integrate learning from different sources, but they also provide models, frameworks, and practice in actually doing so.

The Implications for Graduate Preparation

If these are the promising frontiers for the renewal of liberal education, how might graduate education prepare students to engage and advance them? Here, to launch the discussion, are some suggestions:

- ***Address directly the aims and practices of liberal education.*** At the level of the graduate school, and in cooperation with undergraduate colleges and institutions, offer courses that introduce graduate students to the academic landscape and include a major unit on liberal education as a framework for the undergraduate experience. Examine some of the major reform agendas as new frontiers in the unfinished history of liberal education. Include experiential as well as academic learning about these movements.
- ***Teach the teaching of intellectual skills, argument, and judgment.*** At the level of the graduate department, provide workshops and apprenticeships that help graduate students probe the analytical and inquiry practices of their discipline, and the ways in which the discipline helps novices gain proficiency in those tools. What counts as a good problem in this field, and how would a novice come to understand those expectations? What are the analytical, communication, and research methods of the discipline? How should undergraduate students be introduced both to the methods and to the contests about them? How should the methods of the field be framed in introductory, intermediate, and advanced courses and projects?
- ***Create a citizen's perspective on the work of the discipline.*** At the level of the graduate department, explore with graduate students the societal and civic questions that are important to this field. Civic and ethical discussions might begin with the question, What is happening in this field that matters to our society? What are our obligations—professional, civic, and ethical—to society? How do we address such issues in the context of our teaching? How do we create spaces for nonspecialists to engage our work? In what ways do we include the public in the shaping of our work? How do we serve the public good?
- ***Create opportunities for graduate students to examine the undergraduate experience as a whole.*** Many graduate universities and departments already have created partnerships with neighboring colleges and universities through the Preparing Future Faculty initiative. These partnerships provide opportunities for future faculty to "try on" the many roles, beyond scholarly research, that faculty members actually play—as teachers, as academic citizens, and as advisors. Many departments are now testing more ambitious designs. As they do so, here are some questions to ask: What systemic changes are our partner schools (and our own undergraduate colleges) attempting to make in the undergraduate experience? What could graduate students learn from a comparative study of different reform agendas at different kinds of colleges and universities across the country? Could new forums be created to help future faculty prepare to take leadership roles in the most promising reinventions of undergraduate education?

Few graduate students have opportunities to engage such questions in any systematic or guided way. But with the future of liberal education very much on the line, surely it is time for future faculty (and experienced faculty as well) to do so. This will be an era of fundamental questions about the way our fields do—and should—contribute to the integrity of each student's liberal education. Responsible stewardship for our fields implies that we will be prepared to answer. ■

Doctoral Education and the Scholarship of Teaching and Learning

By Richard Gale, senior scholar, and **Chris M. Golde**, senior scholar, The Carnegie Foundation for the Advancement of Teaching

It is my experience that PhD programs teach students to become researchers, but do not prepare us for careers in teaching. Not only is there little formal "teacher training" available, but also there is no requirement of teaching proficiency for those of us who plan teaching careers. To get a teaching job, I must prove an ability to do research. How unfortunate for my future students.
—Geology student, Survey of Doctoral Education and Career Preparation (www.phd-survey.org)

American academe has long been devoted to excellence in undergraduate and graduate education; our society celebrates the benefits of broad-based liberal learning and integrative undergraduate curricula, and champions the finest in graduate research and scholarship. And yet, in many doctoral-granting departments, the undergraduate and graduate enterprises are separately administered, conceptualized, and executed. This perspective ignores the fact that it is graduate school that prepares future faculty for the challenges of undergraduate teaching and learning. And the reality is that, despite the fact that arts and science doctoral students most often cite "enjoyment of teaching" as the reason for their interest in faculty positions, many report feeling inadequately prepared for their chosen careers (see Golde article, this issue).

Of course, many departments and universities have begun offering meaningful pedagogical preparation to their graduate students, addressing the needs of those who make up a significant part of the teaching force at most research universities. But even asking the question, how can teaching be integrated into doctoral programs? skews the issue by inadvertently emphasizing some kind of competition between teaching and research. A schism between undergraduate and graduate education remains. Instead, graduate programs could reframe research and teaching as complimentary, collaborative, coextensive endeavors by offering graduate students access to and instruction in the scholarship of teaching and learning.

Graduate education is fundamentally about inquiry, and doctoral recipients have developed the habits of mind that promise a lifetime of learning and knowing. These habits which are so valuable in the lab or library can also be brought to the classroom, contributing to disciplinary knowledge in a way that influences the teaching of the field. Graduate students are taught to pursue the disciplinary scholarship of discovery, but they are rarely asked to turn the same curious and critical eye on questions of student learning and effective teaching.

For those who enter graduate education with a desire to teach, examining their teaching and student learning in the same scholarly way as they pursue discovery could offer a valuable bridge between the classroom and the lab, library, and field. Early encouragement of these future faculty members would result in a more coherent doctoral experience; linking teaching and research as shared forms of scholarship integrates two facets of intellectual work. Most new faculty members

spend much of their time teaching, and making systematic investigation of student learning in the discipline integral to doctoral preparation provides them with a new venue for meaningful research. But even those students who do not self-identify as prospective members of the professoriate would benefit from a more scholarly approach to and awareness of teaching as a professional activity, and learning as a site of inquiry.

What Is the Scholarship of Teaching and Learning?

The scholarship of teaching and learning is based on several assumptions. The practices of teaching and learning are rarely transparent. Both are enormously complex and poorly understood; they can, but rarely do, benefit from examination, critique, and analysis leading to improvement. Furthermore, teaching is not simply the mastery of tricks and techniques; it is intellectual work. But learning and teaching are fundamentally embedded in the content, process, and specificity of a discipline and their investigation requires disciplinary expertise; they require disciplinary experts to understand them. The scholarship of teaching and learning is a rigorous investigation into classroom practice, how a teacher teaches, and how (and what) students learn.

The scholarship of teaching and learning begins with observation of student learning and the realization that there is something happening in the classroom that we do not understand. An investigator establishes a hypothesis with clear goals, prepares for the investigation through literature searches and other forms of background research, selects methods of inquiry appropriate to the discipline and the circumstances, gathers data in such a way as to provide significant results, presents the results publicly, and receives peer review and critique so that others can build on the work.

At the heart of all research is the question, how do you know? How do you know the construction of national identity is at work in the plays of the Scottish Enlightenment? How do you know that cyclic AMP and LDL trigger enhanced gap junction assembly through a stimulation of connexin trafficking? How do you know that race is the key arbiter of blue-collar employment outcomes for young black and white men? The scholarship of teaching and learning asks similar kinds of questions and seeks similar kinds of answers. How do you know whether students gain a deeper insight into characters when they role-play and improvise relationships? How do you know whether students learn more about the results of individual research through a poster session in class? How do you know what works to improve student visualization of physics concepts in an online environment? These are questions about teaching and learning—and about understanding in the discipline.

How Can This Work Be Done?

The Carnegie Foundation's work with faculty, campuses, and scholarly/professional societies through the Carnegie Academy for the Scholarship of Teaching and Learning (CASTL) (www.carnegiefoundation.org/CASTL) has taught us that this kind of scholarship can influence the culture of teaching, improve student learning, and encourage a deeper understanding of disciplinary knowledge-building. This has happened for current faculty, and it can happen for graduate students preparing for the professoriate. To that end, we propose four steps to scaffold the training of graduate students: *exposure, encounter, engagement, extension*.

Early *exposure* to the scholarship of teaching and learning is a vital first step and could appropriately be included in all doctoral programs. Indeed, part of developing the habits of mind unique to and representative of stewards of the discipline is understanding the ways in which that discipline and those habits are cultivated, communicated, and transferred to the next generation of scholars. In the first year of study, many doctoral programs provide exposure to the important questions and problems of the field, often in courses devoted to exploring the span, history, and pressing problems of the discipline. What better time for a discussion of the implications of scholarship in and of teaching and learning? Another appropriate time and place for this work would be as part of the pedagogical training provided to graduate students preparing for the teaching assignments included in their departmental responsibilities.

A specific and guided *encounter* with the scholarship of teaching and learning, the next stage, provides graduate students with opportunities to examine and critique

questions and projects. It is important for future faculty to develop a familiarity not only with the scholarship but also with how that scholarship is manifested in various forms and functions. To this end, it is important for faculty mentors to provide examples of scholarly projects, in process and completed, along with the framing observations, initial inquiries, question-narrowing processes, data collection and analysis, and peer review. Instruction in the scholarship of teaching and learning during or immediately following appointment as teaching assistants, graders, lab assistants, or instructors would prove invaluable to those who provide first contact between undergraduates and the disciplines.

Once graduate students understand what such inquiry might entail, it is vital that they be given opportunities for *engagement* in their own design process; specifically, they should be mentored in the process by which investigations are conceived and implemented. This step is best accomplished in groups, with serious attention to support and critique; it is the beginning of going public and of peer review, but it is also an opportunity for the development of a new way of seeing, thinking, teaching, and asking questions about student learning. Following close upon this *engagement*, students would need mentoring (albeit less rigorous) in more autonomous projects. Thus, *engagement* is a two-step process moving from collective to individual inquiry (although *engagement* could also continue as a collaborative effort).

Indeed, we have learned that it is CASTL's collaborative features that best support individual inquiry; thus, a structure providing individual graduate students with

RESOURCES FOR THE SCHOLARSHIP OF TEACHING AND LEARNING

- ***The Carnegie Academy for the Scholarship of Teaching and Learning (CASTL)*** is a major initiative of The Carnegie Foundation for the Advancement of Teaching. Launched in 1998, CASTL supports the development of a scholarship of teaching and learning that fosters significant, long-lasting learning for all students; enhances the practice and profession of teaching; and brings to faculty members' work as teachers the recognition and reward afforded to other forms of scholarly work.
  www.carnegiefoundation.org/CASTL

- ***The American Association for Higher Education (AAHE)*** has long supported initiatives in the scholarship of teaching and learning, through their publications and conferences, and as The Carnegie Foundation's primary partner in the CASTL Program.
  www.aahe.org

- ***Disciplinary Styles in the Scholarship of Teaching and Learning: Exploring Common Ground*** is a collection of essays edited by Mary Taylor Huber and Sherwyn Morreale and published jointly by The Carnegie Foundation for the Advancement of Teaching and the American Association for Higher Education (2002).

- ***Ethics of Inquiry: Issues in the Scholarship of Teaching and Learning*** is a collection of case studies and commentary edited by Pat Hutchings and published by The Carnegie Foundation for the Advancement of Teaching (2002).

- ***Opening Lines: Approaches to the Scholarship of Teaching and Learning*** is a collection of essays edited by Pat Hutchings and published by The Carnegie Foundation for the Advancement of Teaching (2001).

- ***KEEP TOOLKIT*** is a free set of electronic tools for displaying work in progress, particularly projects for the scholarship of teaching and learning.
  www.cfkeep.org

opportunities for collective projects could prove most fruitful and would fit well with departmental initiatives. For example, a department faced with dropping lower-division enrollment or looking to revamp approaches to integrative general education could work through graduate students to investigate issues of student learning within and between courses. Such projects could target persistent disciplinary questions as well as crosscutting issues, with dissemination through conferences and publications as one ultimate outcome.

Extension is the final stage, not necessary but important as an option for graduate students pursuing this kind of scholarship. *Extension* involves graduate students becoming mentors for the next cohort, extending their understanding through aid and support; they become not experts in the scholarship of teaching and learning but informed assistants in ongoing lines of inquiry. Additionally, after pursing initial projects these graduate students would be well placed to continue this kind of inquiry in faculty positions, extending their influence to others on campus. They would also be able to take advantage of the intellectual support of colleagues and collaborators around the globe. As graduate students embark on this path, they will be able to contribute to forums in their fields and participate in cross-disciplinary meetings like the American Association or Higher Education/CASTL Colloquium, the International Society for the Scholarship of Teaching and Learning Conference, the Association of American Colleges and Universities (AAC&U) Network for

CENTERS AND CAMPUSES PURSUING THE SCHOLARSHIP OF TEACHING AND LEARNING

- The Center for New Designs in Learning and Scholarship at Georgetown University integrates teaching, learning, technology, and research. CNDLS (pronounced "candles") works primarily with faculty teaching undergraduate courses, but also sponsors graduate student programs, including a biology department initiative with instruction in the scholarship of teaching and learning.
  cndls.georgetown.edu

- The Center for the Integration of Research, Teaching, and Learning (CIRTL) at the University of Wisconsin–Madison promotes the development of a national faculty in science, technology, engineering, and mathematics (STEM). It is committed to implementing and advancing effective teaching practices for diverse student audiences as part of their professional careers through the systematic and reflective use of research methods to develop and implement teaching practices that advance the learning outcomes of students as well as teachers. Graduate students are an integral part of CIRTL's mission.
  www.wcer.wisc.edu/cirtl

- Howard University is integrating the scholarship of teaching and learning into their Preparing Future Faculty Program, and recently joined the AAHE/CASTL Campus Program as a Core Member, with an explicit focus on PFF.
  www.gs.howard.edu/pff

- Indiana University has been a leader in the scholarship of teaching and learning for many years and has a well-developed program of support for faculty and graduate students.
  www.indiana.edu/~sot

- The Center for Teaching Excellence at the University of Kansas provides workshops on the scholarship of teaching and learning. Some portfolios of work by graduate students are featured on its web gallery.
  www.ku.edu/~cte/gallery/index.html

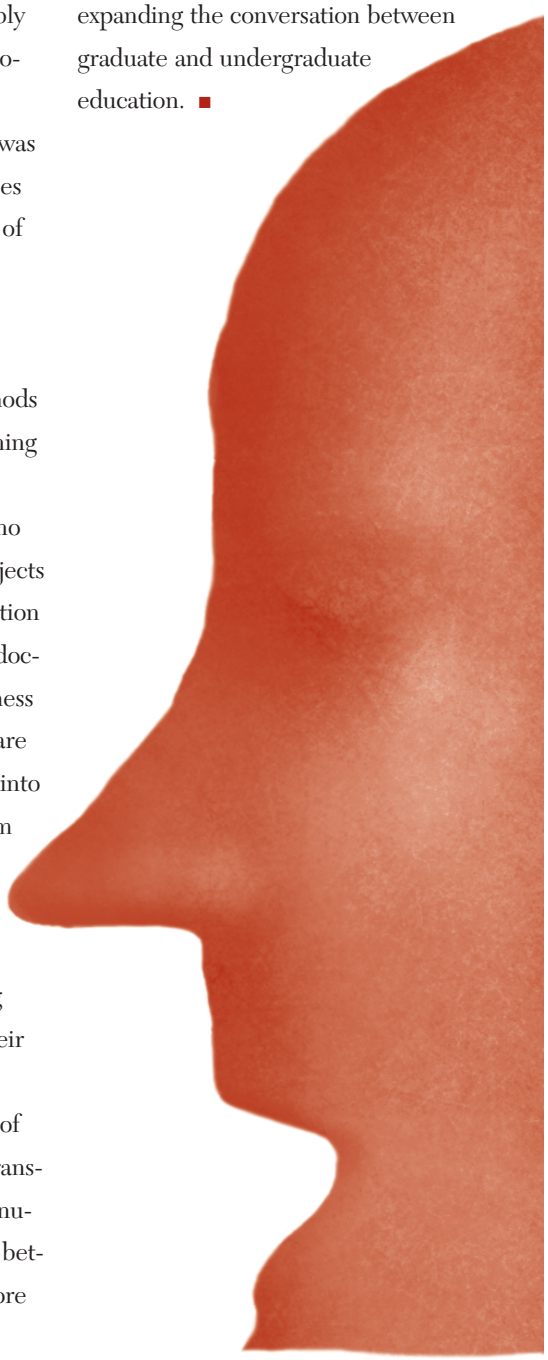
Academic Renewal meetings, and numerous other disciplinary and interdisciplinary venues.

Individual departments could encourage this work through the doctoral program and as a part of teaching support services. Faculty buy-in and mentorship are vital to success and communicate a dedication not only to teaching as a worthwhile activity but also to teaching excellence and deep learning as a valued goal. Departments whose graduate students routinely do a lot of undergraduate teaching (e.g., fine arts tutorials, English composition classes, science labs) are particularly well situated to capitalize on this structure. Groups of committed departments might work collaboratively; indeed, allied departments are important in this regard for both campus coherence and interdisciplinary support. Natural allies include disciplines with long associations—such as theater and communications, biology and environmental sciences, or ethnic studies and American studies—as well as disciplines with similar course structures—such as chemistry and physics labs, or history and literature discussion sections.

Disciplinary and interdisciplinary centers, especially in science and technology fields, also could support this work. Humanities centers abound, and the best are attuned to the needs of both teaching and scholarship. Ventures such as the University of Wisconsin's Center for the Integration of Research, Teaching, and Learning and Georgetown University's Center for New Directions in Learning and Scholarship provide opportunities for collaboration and for connections between teaching and research. Likewise, centers for teaching and learning, which have become important trading zones for the discussion and improvement of practice, could be instrumental, especially those already working on TA training. There are other important precedents, most notably the Preparing Future Faculty (PFF) program, cosponsored by the Council of Graduate Schools and AAC&U, which was profoundly influential on many campuses and continues to influence the training of graduate students.

What's Next?

The good news is that models and methods for approaching the scholarship of teaching and learning in graduate education are already taking hold, and the students who are creating and executing research projects are realizing tangible benefits. Participation in the scholarship of teaching provides doctoral students with a heightened awareness of their charge and responsibility; they are able to transform their love of teaching into skills built on knowledge that allow them to contribute to their discipline and transmit their passion to another generation of students. Involvement in the scholarship of teaching and learning makes students better researchers in their own field; they are able to develop the habits of self-reflection and assessment of their own practice and its impact that translates directly into work in the lab or manuscript. Furthermore, these students are better prepared to enter future careers, more ready for the rigors of college teaching, and more aware of the realities of student learning. But perhaps most importantly, by improving teaching and learning through scholarly inquiry we make students' engagement with the material more visible, and hence more fruitful. It is an important step towards enriching and expanding the conversation between graduate and undergraduate education. ■



General Education for Graduate Education

A Theory Waiting for Practitioners

By Catharine R. Stimpson, dean and university professor, Graduate School of Arts & Science, New York University

In 1922, T. S. Eliot, nearing the end of that great and influential poem, "The Waste Land," wrote, "These fragments I have shored against my ruin." Significantly, "The Waste Land" and general education for undergraduates appear during the same historical period, that of modernity. Both embody one of modernity's most pervasive features, the fear that a vital unity of experience, perception, and values in culture and society has disappeared, and the consequent yearning for its return.

Once innovative, "The Waste Land" and general education for undergraduates are now established, the poem in the Western literary canon and general education in American higher education. Indeed, general education students read the poem. The fact of being established does not automatically drain something of its generative power. "The Waste Land" still shocks readers and inspires writers, and the possibilities of general education can still attract institutions that do not carry it in their curriculum—such as universities outside of the United States and graduate schools inside it.

A New Idea

Around 2001, I invented the term "general education for graduate education" and began to argue for its creation, especially in my 2002 essay "General Education for Graduate Education."* My motives were simple. More and more intensely I had been deploring the lack of unity of experience among graduate students. Dividing them were multiple diversities—those of demography, language, and the offerings of their undergraduate curriculum. As undergraduates, some graduate students had had the benefits of a solidly-constructed general education. Others had had no requirements whatsoever. Still others, international students, might have devoted most of their pre-baccalaureate years to disciplinary adventures. In graduate school, all entered into a disciplinary program that drove them well beyond the demands and discoveries of a major and divided them further. Even if a graduate student were to enroll in an interdisciplinary program, he or she, while conversant with two or more disciplines, would still be studying within disciplinary structures. Similarly, bilingual or multilingual speakers still act within linguistic structures.

This demographic, linguistic, and educational diversity has had bad consequences for graduate students and graduate education. It has bred intellectual and social insularity, which has deadened curiosity, clamped down on inosculation, and quickened suspicions about disciplines other than one's own. Once inculcated, these unappetizing traits carry over into postdoctoral life. In academic life, they hamper faculty members from working together for a common good as academic citizens and as participants in faculty governance. Outside of

* *Stimpson, Catharine R. 2002. General Education for Graduate Education.* The Chronicle of Higher Education. *49:10, B7.*

academic life, they may link inquiry too closely only to a particular profession or task. These traits also breed contempt for general education in the undergraduate curriculum, which perpetuates pre-baccalaureate fragmentation, with all that *that* means for graduate education and for the preparation of the next generation of scholars, intellectuals, and teachers.

I do not suffer from the illusion that general education for graduate education will remedy all the ills of graduate education, but it will ameliorate its atomization and increase its capacity for creating new combinations of people and ideas. Despite the difficulties of scheduling, general education would have at least one common required course at the beginning of both master's degree and doctoral degree work. It could easily be created out of the history of colleges and universities and of advanced inquiry itself. This course might either be a panoramic history or a close-up. If the latter, it might organize itself around a central figure like Aristotle, an interdisciplinarian if there ever was one. The history of Aristotelian thought is a demanding, compelling narrative of the creation of knowledge, its transmission throughout time and in several languages, the changes that transmission causes, and the resistances any set of ideas provokes over time. Today, but not yesterday, for a student of women and gender, Aristotelianism provides a case study of what happens when biology is wrong, wrong, wrong.

A Seedbed

General education for both graduates and undergraduates is a curricular question, and on matters of the curriculum, the faculty is rightly in control. Adamant about this principle, I suspect courses that deans or other administrators run. Yet, within an institution, even deans ought to be able to plant seedbeds, a term that I learned from that indomitable public servant, John Gardner. In spring 2001, with the help of private donors, I initiated a small experiment, the "Graduate Forum," to explore how a range of graduate students might learn together.

I do not suffer from the illusion that general education for graduate education will remedy all the ills of graduate education, but it will ameliorate its atomization and increase its capacity for creating new combinations of people and ideas.

The Forum consists of a highly diverse group of ten students from across New York University. They have come from biology, cinema studies, economics, education, the real estate institute, neural science, history, literature and languages, public policy and public health, and religion. They are nominated for membership by a dean, a faculty member, or themselves. Each potential new member is interviewed by a group of current members, who could offer lessons in fairness and judiciousness to some faculty hiring committees. A membership ends after two years or with graduation, whichever is less. The criteria for selection are curiosity, an interesting graduate school record, and the willingness to think beyond one's discipline and yet to understand one's own disciplinary roots, paradigms, and methods. The Forum meets at least once a month for dinner and discussion. Because its members are graduate students, they have partnerships, marriages, divorces, and children. Indeed, we now have a group of delicious Forum babies. The graduate school of arts and science provides administrative support and an academic facilitator, J. David Slocum, our associate graduate dean for academic and student life and a film scholar who teaches in NYU's cinema studies department. A modest Web site (www.nyu.edu/graduate.forum) lists members and crystallizes their discussions. Each student receives $1,000 per year as a stipend. I attend most meetings, and, in them, find both instruction and

delight. At one session, a graduate student from economics was talking about the principles of game theory and took us through some of its classic exercises. After playing one game, I was told, to my edification, that my partner and I acted like "perfect capitalists."

From conversations and formal evaluations, this is what I have gathered that the Forum has accomplished. The first members were asked to help design the group, to serve as co-architects, a job they took seriously. They oscillated between two models. In the first, each member would present his or her work, baring some of its roots, methods, and paradigms, and stimulating connections among the disciplines. An example: a presentation by a doctoral student in literature about the German philosopher Martin Heidegger, focusing on his theories of technology, led to an exploration of the meaning of technology for each student's own discipline. In this model, the group does not have a common set of texts but a common set of disciplines to explore. The second model asks each member to contribute a perspective on a common theme. The Forum has chosen the first model, but from time to time it takes up a common theme—the nature of interdisciplinarity itself (a slippery subject) or the academic "star system." The Forum is also becoming an inspiration for and "mother ship" of other forums. The next one has selected the second model and will be devoted to the visual arts and visual representations. The graduate school will offer it in collaboration with NYU's Institute of Fine Arts.

The founding members struggled with other issues as well. The Web site was vexing. Forum talks, presenting a student's work, often in early form, could be risky. Would it be too risky to post even parts of them? In part, the danger lay in making public very new work. But in greater part, the danger lay in shifting one's language from that which a disciplinary group would accept to that which a more general, interdisciplinary group would accept. Would an interdisciplinary language seem too simple, even too unprofessional, to a disciplinarian? The task, then, was to combine two forms of originality, sophistication, and subtlety: that instantly understood by a companionable community and that eventually understood by a broader community. And, no matter what the language might be like, would intellectual property laws and protocols protect one's thoughts? Yes, the answer was, they would. Another issue concerned the appropriate balance between "the talk" and "conversation," especially when the conversation might reveal some profound ignorance among some members about "the talk," a common danger and frustration of interdisciplinary meetings.

Despite these difficulties, I am heartened by the shimmering of hope in Forum meetings and conversations. One member praises its "curiosity and border-hopping." Another speaks of it as a site of "cross-pollination" of ideas. Still another writes of Forum presentations forcing clarity upon him about his own axioms and assumptions. Interestingly, but perhaps not surprisingly, the social virtues of the Forum are as welcomed as its academic and intellectual ones. A doctoral student in an interdisciplinary program noted that her program brings the humanities and social sciences together, but that she had never before engaged the sciences. Members tell of the pleasures of making friends with different ideas, and of being able to present ideas that will be questioned but not subjected to sarcasm or hostility—in brief, the pleasures of belonging to a generous and civil community of inquiry.

The Forum's Library, the Forum as Library

We are building our own small collection of readings, "The Graduate Forum Library," mostly about interdisciplinarity. I fancy that it might eventually provide materials for the syllabus of a credit-bearing general education for a graduate education course; but for now, like all libraries, it serves as a symbol of learning. It is also a material site that is wildly diverse in its holdings—some of them whole, some of them shards and fragments—but held together and shored up by the shared values that led to the Forum's formation: a belief in both the fundamental significance of creativity and learning, and the possibilities of communities that engage in them. In one evaluation, I read that the constant question of the Forum—often implicit rather than explicit, but there nonetheless—was, what is knowledge? I felt, at that moment, a stab of gratitude for what I took to be an endorsement of a small but burgeoning experiment in general education for graduate education. ■

Teaching the Teaching of Literature

By Christine Farris, associate professor of English, and **Mary Favret**, associate professor of English, both at Indiana University-Bloomington

Ten years ago, in an effort to improve our job placement program, the English department at Indiana University-Bloomington invited the chairs of English departments at small Indiana colleges to read and critique job letters and vitae prepared by our job seekers. These chairs then spent an afternoon explaining to all interested graduate students how they made hiring decisions. The encounter was revelatory. Over and over these chairs told students what even one year at a research institution had begun to obscure for them: to be hired you need to be smart about your teaching; and what you will teach, if hired, will probably be both literature and writing. These seasoned members of the profession challenged our students with questions that, to our dismay, they were not prepared to answer: How do you plan to teach? What do you plan to teach? Where has your research positioned you as a teacher?

Sparked by this job forum, students began to ask themselves and us how they could better prepare to be college teachers. With support from the Association of American Colleges and Universities's and the Council of Graduate Schools's Preparing Future Faculty initiative and our graduate school, we introduced an experimental reform. Rather than tinkering with the job placement program, which shapes the end of a student's career, we sought to restructure their teaching experience, an earlier and more integral part of graduate training. This is not to say that our job seekers had not been trained to teach; but teacher training had been tied almost exclusively to composition courses.

Teaching *literature* to undergraduates is what brought most students to graduate school, yet we had no systematic training in how to teach a literature course. Graduate students could be assigned as section leaders for large literature classes starting in the second year of their contracts, but there was no specific preparation for this job. Teaching literature, the structure seemed to say, was part luck, part osmosis: having been an undergraduate, having taken graduate seminars and taught composition, you should be able just to figure it out. Trained to teach in general at the same time they were trained to teach composition, many students assumed pedagogy was a concern only in writing courses. They could assume, unless they specialized in composition and literacy studies, that pedagogy stood remote from their chosen area of research, from their pleasure in the profession. Students came to believe that their capital on the job market depended only on their scholarship, and despite our protests to the contrary, the structure of the program justified this belief. If our PhDs are to meet the challenges of a variety of types of English departments into the twenty-first century, their education will have to forge a stronger connection between scholarly work and teaching, and a greater number of faculty will need to become involved in teacher preparation.

Proseminar in Teaching

We developed a semester-long proseminar in the teaching of literature and culture. Second- and third-year graduate instructors now have the option of

enrolling in this course, which prepares them for teaching the following semester a section of the freshman-level "Introduction to the Study of Literature and Writing." This latter course is typically organized by a topic and taught by a member of the faculty as a large lecture, with six discussion sections led by associate instructors. In the proseminar, the graduate students produce, in collaboration with a faculty member, a common syllabus for the upcoming freshman course, which they will all teach together. Each proseminar thus is designed in anticipation of an actual, not hypothetical, undergraduate course; the ideas and reflection that begin in the proseminar extend in the following semester into the day-to-day realities of the classroom.

So far about ten different versions of this proseminar have been offered. The reading lists have included possible texts for the undergraduate syllabus, relevant critical and theoretical essays, as well as pedagogical materials related to reading and writing about the given topic. While investigating the intellectual and pedagogical issues related to their topic, instructor and students also design a syllabus, course readings, and a structure of progressive writing assignments. The most generative collaborations have emerged from topics that not only attract graduate students from a range of sub-specialties, but also pose a real teaching problem: For instance, how do we responsibly teach texts that celebrate violence? Why ask freshmen to focus on such a topic? In the best cases, participants in these courses on the teaching of literature are expected to develop a two-way understanding of the pedagogical implications of a particular area of literary and cultural study, as well as the theoretical challenges of teaching undergraduate English.

In addition, the proseminar requires graduate students to produce written work related to but independent of their part of the course preparation. So far, some students have produced papers on pedagogy, some on the political or moral issues presented by the texts they have decided to teach, others on the challenges of incorporating writing assignments. Still others have used the materials taught and discussed in the proseminar as a way of interrogating theory or of re-envisioning their own research. In a few cases, students have taken what they learned and developed independent new courses, which they have taught elsewhere in the curriculum.

These ten collaborations over six years have succeeded on many fronts: we have exposed doctoral students to new ways of thinking about language, texts, and culture as they design and teach a freshman course with a seasoned scholar/teacher; we have enabled them to enact and test critical theory in the classroom; and we have put both traditional and new inquiry in English studies in dialogue with undergraduate reading and writing practices. Students who have taken the graduate course are now able to express forcefully how they approach the teaching of literature and culture. Faculty admit that they discovered a new energy in teaching both freshmen and graduate students by designing these collaborative courses. And crucially, we have begun to redress the unbalanced division of labor in the department, which left writing program administrators responsible for pedagogy. No longer can graduate students assume to be inoculated for all time in matters pedagogical by teaching freshman comp.

Extending the Reform

Ten experimental courses in six years have touched only a fraction of our doctoral students. During our ongoing partnership with the Carnegie Initiative on the Doctorate, we intend to extend the reform, making it available to all doctoral students. Before we can adequately prepare all degree candidates to teach literature, we have to link this program to other undergraduate courses that are taught regularly and have ample enrollments. We'd like to see a version of this proseminar on the teaching of literature coordinated with the four survey courses the department offers in world literature in English, from the middle ages to the present day. Such collaboration would have the benefits of the current version, but it would also expand the graduate student's expertise in helpful ways, breaking down the British/American/world distinctions and stretching the historical frame to accommodate more than a century's worth of literature—a common range for a graduate exam in the modern periods. The surveys themselves, we believe, would only improve. Such a change in the curriculum should benefit both the graduate and the undergraduate programs.

Yet even this addition would not give adequate room to all our graduate teachers. We would have to alter our undergraduate curriculum considerably to make room for such teaching assignments. And further change raises further questions. To what degree should the demands of the graduate program influence the structure of our undergraduate offerings? In the past, we have had only faculty or our own PhD recipients teaching courses to majors. Are we willing to change that? In our desire to open up more occasions for faculty-graduate collaboration in the classroom, and more opportunities for graduate students to learn the art of teaching literature, we open up a host of problems, logistical as well as ethical. Given the number of requirements a PhD candidate has to fulfill, what incentive will he or she have for taking another course on pedagogy? If we require such a course, where in the curriculum do they get to teach, and who will teach them? Can we spare the faculty for these proseminars? So far we have recruited the best teacher-scholars in the department; they have been very eager. But will we always be able to staff the course so selectively? And who will teach those composition courses while all our graduate students are busy teaching literature courses? Up to now, our department has fought hard to resist hiring on temporary, non-tenure-track lines. Do we sacrifice this stance to provide more and better teaching opportunities for our graduates, while exploiting someone else's graduates?

Some tricky questions have already reared up in the current experiment: Which topics work best—for attracting both graduate students and undergraduates? Will the collaboration result in a better or even a good undergraduate learning experience (from the evidence we have, the results have varied significantly)? There is evidence of strong bonds forming between graduate students and faculty in these proseminars, but does that occur at the expense of undergraduates? In the freshman course especially, there is also the danger that faculty and graduate students, in their excitement, will overload new undergraduates with the collective weight of their scholarship. Whose education is this, in the end?

We set out on this reform aware of some of these potential problems; over the last six years, we learned about a few more. But we feel strongly that these are precisely the issues to share with graduate students hoping to enter the profession of teaching English. They are the sort of questions we need to pose to ourselves, again and again. The future of our profession demands that we give the highest priority to thoughtful teaching and that we enlist graduate students in that task. ■

The Carnegie Initiative on the Doctorate

The Carnegie Foundation for the Advancement of Teaching believes that it is timely to return to first principles and ask, "What is the purpose of doctoral education?" Taken broadly, we believe the answer is to educate and prepare those to whom we can entrust the vigor, quality, and integrity of the field. These people are scholars first and foremost, in the fullest sense of the term. Such leaders have developed the habits of mind and the ability to do three things well: creatively generate new knowledge, critically conserve valuable and useful ideas, and responsibly transform those understandings through writing, teaching, and application. We call such people "stewards of the discipline."

The Carnegie Initiative on the Doctorate (CID) is a multi-year research and action project to support departments' efforts to more purposefully structure their doctoral programs to prepare stewards of the discipline. We have selected eighty-four participating departments in six fields of study: chemistry, education, English, history, mathematics, and neurosciences. The participating departments are critically examining their programs, implementing design experiments to improve their programs, and assessing the impact of the changes they are making.

Details of the initiative, including a list of participating departments and commissioned essays about the future of doctoral education in the six fields, are available online.

www.carnegiefoundation.org/cid

Broadening the Existing Intergenerational Structure of Scholarly Development in Chemistry

By Brian P. Coppola, Arthur F. Thurnau Professor and associate chair of chemistry, and **William R. Roush**, Warner-Lambert/Parke Davis Professor and chair of chemistry at the University of Michigan

Who discovers new knowledge, what are the structures that support its discovery, and what infrastructures enable new discoverers to join in? The answers to these questions vary wildly across different disciplines. New knowledge in the classics, for example, takes place primarily, if not nearly exclusively, at academic institutions. New knowledge in chemistry, on the other hand, is created in academic departments as well as in the laboratories of companies—Pfizer, Eli Lilly, Dupont, Dow, Abbott, General Electric, Procter and Gamble, 3M, et al.—and increasingly at places known as biotech, materials, or nanotechnology start-up companies. Such corporate settings are a significant source of employment for our discipline's annual output of about 2,200 PhD students, whom we consider to be the most important products of our scholarly research programs.

In academic settings, the models for doing discovery research vary considerably. At the University of Michigan, there are thirty-five faculty members in the Department of Classics and twenty-four graduate students in classical studies. If you removed the students from the classics department today, it is safe to say that new knowledge in the classics would be discovered tomorrow. In chemistry, although we have about the same number of faculty (thirty-nine), we also have, in residence, 290 graduate students, seventy-five postdoctoral students, and a steady state of about 100 undergraduate research students. If students were removed from chemistry department today, we daresay that new knowledge in chemistry would be reduced considerably, if not disappear, tomorrow. Although the goals for how new scholars are educated in these two departments probably overlap greatly, the tactics for how scholarship is developed must clearly be different.

In chemistry, there is a historically robust and finely grained model of scholarly development. This model casts a broad net into the first-year college classroom and, within the same eight- to twelve-year time period that has been used for 150 years, transforms some of these novices into stewards of the chemical profession. First-year undergraduate chemistry courses resound with the rhetorical designs of "discovery laboratories" and "teaching chemistry by doing chemistry," and, accompanied by the widespread availability of undergraduate research experiences, the chemistry discipline provides actively and early the opportunities for the next generation to display its stewardship potential.

When undergraduate chemistry research students join research groups, they are residing immediately in an intergenerational community of widely ranging experiences. And while a faculty member (the research advisor) sets the overall direction and scope of the work and ensures adequate space, money, and scientific resources, the graduate students (at doctoral departments) are often responsible for supervising the day-to-day scientific and scholarly development of the undergraduate students. This is only one link in the chain, though, since a faculty research director interacts with all of the students to varying degrees, postdoctoral scientists take on certain immediate tasks on a day-by-day basis in the laboratories, senior graduate students mentor their junior colleagues, and undergraduates are moving through

the infrastructure of scholarly development according to their own gifts and experiences. In chemistry, developing disciplinary stewardship for conducting research is a highly evolved and finely articulated process where the epistemological knowledge is inherited through the intergenerational community described here.

Chemical Sciences at the Interface of Education

If the strategy of forming intergenerational communities has evolved in response to the need to advance disciplinary stewardship for conducting scientific research, can this deliberate design be adapted to advance understanding in areas where this system did not arise? Interestingly, in 1988, the National Science Foundation created its Vertical Integration of Research and Education in the Mathematical Sciences (VIGRE) program in mathematics based on this hypothesis. In forty mathematics departments, the VIGRE program has catalyzed the kind of intergenerational team structure that is *de rigueur* in the physical and biological sciences. In our department, we have asked the same question: can we advance our understanding of other professional aspects of the discipline—in particular teaching and learning—by using the same intergenerational strategy that we understand so well from chemistry research?

Over the last six years, the department has demonstrated that an ordinary idea derived from chemistry research can have an effect on undergraduate education: faculty who wish to pursue instructional development work can do so by forming "research groups" of undergraduate, graduate, and postdoctoral-level chemistry students who wish to add future faculty development to their education. When scholarly development is viewed as an intrinsic outcome of a well-applied model, students have educational opportunities in teaching and learning that closely parallel their research. The outcome is an infrastructure for the design, implementation, documentation, and assessment of undergraduate and graduate instructional development done by faculty and students that mirrors a proven and productive model of research development. In 1998, one of us (BPC), as a Carnegie scholar, used the early development of this concept to tie together ideas from the Scholarship of Teaching and Learning program and from the national Preparing Future Faculty (PFF) program. The department is also representing this mechanism for undergraduate instructional development as part of our contribution to the Carnegie Initiative on the Doctorate. We call our program Chemical Sciences at the Interface of Education (CSIE).

Can we advance our understanding of other professional aspects of the discipline—in particular teaching and learning—by using the same intergenerational strategy that we understand so well from chemistry research?

At the beginning of the CSIE pipeline, undergraduate students demonstrate their potential for taking on teaching responsibilities in Structured Study Group (SSG) sections. Once identified, they are mentored to assume instructional activities. As SSG leaders, they learn about design, implementation, and assessment in our informal weekly seminar. Higher-level and more independent projects become available (e.g., Pipeline for Student Success, Michigan Mathematics and Science Scholars, educational research collaborations) for those who wish to take their teaching education further. These undergraduates are coauthors of papers as well as presenters at and organizers of symposia at national meetings. They are becoming important resources for faculty at their graduate institutions and (with *continued mentoring* from Ann Arbor) some have been agents of change within their own PhD programs at other institutions.

Broadening Graduate Education to Improve Undergraduate Instruction

Using funding from the U.S. Department

of Education's *Graduate Assistantships in Areas of National Need* (GAANN) program, the chemistry department has also adopted the familiar strategy of a graduate training grant program in order to add future faculty development for those PhD students interested in academic careers. Teaching and carrying out research on teaching and learning, graduate students (singly and in teams) have worked with chemistry faculty and collaborators in education to implement and assess instructional projects. These graduate students take courses in educational design and assessment, write proposals for projects, present their results, and organize symposia at national meetings. In an externship program modeled after work in the national PFF program, graduate students spend ten to fourteen days at another institution, where they share contemporary ideas on research and teaching and gain a perspective on faculty life at an institution unlike their own. In 2003, the first three students who joined the program received their PhD degrees. All three presented full chemical research theses plus two or three chapters on the educational research they conducted as a part of their programs. Graduating at 4.75, 4.75, and 5.25 years, their stay in Ann Arbor was not extended by adding these activities, nor was their laboratory research compromised.

The structure is beginning to prove robust. Moderate to large-scale undergraduate instructional development now takes place through teams of faculty and students (postdoctoral, graduate, and undergraduate). Some of these innovations are driven by faculty interests in modernizing and/or otherwise modifying our courses. In one year, far less time than it would have taken for an individual faculty member working in isolation, a team comprised of three faculty, a postdoctoral member, six graduate students, and four undergraduate students have created and evaluated a "one-room schoolhouse" or "studio" version of general chemistry for an experimental group of fifty first-year students. Graduate students have initiated other course proposals according to their interests; for instance, our college has permitted these students to design and implement courses in the small first-year student seminar program.

How we understand and advance knowledge about teaching and learning pales in comparison to how we understand and advance knowledge in the sciences. Particularly because of federal funding, the single training model that has emerged for educating the next generation of scientists is one in which faculty members carry out basic scientific research with intergenerational students, within a context of scholarly development. Without such an efficient system for identifying and educating new scholars, research, like teaching, might be stuck in continuous cycles of what Stanford's Larry Cuban calls "reforming… again and again" as each generation would not learn from, build on, or pass on its knowledge as productively as they do today. Instead, in ways too familiar in teaching and learning, innovations would arise, flourish under their innovators, and then die with them. By rethinking the problem of advancing undergraduate education, and creating a program that takes the advancement of teaching and learning as its goal, we have found that the powerful system of intergenerational scholarly development can be broadened to educate better the next generation of faculty—while simultaneously providing the current faculty with a previously unrecognized source of energy and creativity for carrying out their responsibilities and obligations. ■

AAC&U CALENDAR

In addition to its annual meeting, AAC&U offers a series of working conferences and institutes each year. Additional information about the upcoming meetings listed below is available online at www.aacu.org/meetings.

Network for Academic Renewal Meetings

October 21–23, 2004
Diversity and Learning: Democracy's Compelling Interest
Nashville, Tennessee

November 11–13, 2004
Educating Intentional Learners: New Connections for Academic and Student Affairs
Philadelphia, Pennsylvania

2005 Annual Meeting

January 26–29, 2005
San Francisco, California

On the Ecology of Mathematics in a Public University

By Peter March, professor and chair of mathematics, The Ohio State University

To understand the relations between undergraduate and graduate education in mathematics, one must understand the niche that mathematics departments occupy in the ecology of their institutions. It is a question of properly reconciling the two great academic missions: teaching and research. While acknowledging the importance of research, undergraduate students, parents, and legislators quite rightly place a high premium on the quality of undergraduate mathematics teaching. And while recognizing the fundamental importance of teaching, faculty, postdoctoral fellows, and deans equally rightly place a high value on the conduct of top-notch research in mathematics. Fortunately, excellent programs of teaching and research need not be mutually exclusive. Indeed, in the best of circumstances, they are mutually supportive and they intersect, roughly speaking, in the program of graduate education.

Graduate education is the critical link in the social and intellectual fabric of the mathematics discipline, and it is funded to an overwhelming extent by undergraduate instruction. On one hand, federal funding for graduate education in mathematics has increased dramatically in the last five years. Still, total federal support is proportionally less than that for graduate education in the biological or physical sciences and it remains inadequate to the task. On the other hand, demand for mathematics instruction at the university is so great that it cannot be met by the regular faculty alone; teaching assistants (and postdocs and part-time lecturers) are needed to supplement the instructional capacity of most math departments.

The income derived from meeting the huge demand for mathematics instruction at all levels finances the mathematical enterprise in a public university. Indeed, the income from instruction typically exceeds the cost of maintaining the department; mathematics is an institutional "cash cow." Be that as it may, instruction is the fiscal mechanism that provides for graduate education, postdoctoral training, and a rich intellectual environment for research in mathematics. Exploiting this niche correctly by cultivating the relations among research and graduate and undergraduate education is the key to the health and prosperity of the department and the discipline.

Mathematics at The Ohio State University

The Ohio State University is a large, public land-grant institution committed to excellence in research and teaching. Currently, it is an ambitious and rapidly changing institution that aspires to become a truly great university. In a departure from its history as an open admissions school, Ohio State recently adopted a more selective admissions policy that has dramatically improved the quality and graduation rates of the undergraduate student body. Still the university quite properly admits students from an enormous variety of backgrounds, which results in a heterogeneous student body, from the point of view of mathematical preparation. But regardless of students' preparation or intended major, successful completion of required mathematics courses means that the department must provide a variety of course options for its many students.

Last year, the department taught approximately 30,000 students at all levels (some students more than once, of course). Of these students, slightly more than 300 were declared mathematics majors, and another 120 were graduate students in the PhD program. Thus, the vastly greater part of the instructional mission is service teaching for other departments. Instruction on this scale is an enormous responsibility that is taken very seriously by the department. The curriculum ranges from remedial mathematics, through the standard undergraduate courses for science and engineering students, to upper division courses for math majors, basic graduate courses, and topics courses that explore the frontiers of current research. In addition to the mathematical preparation of science and engineering majors, undergraduate-level instruction includes the critical tasks of cultivating mathematically gifted high school students, preparing future grade school teachers, educating future professionals in actuarial science, and preparing high performing honors students for graduate study in mathematics.

In support of its teaching mission, the department commits substantial fiscal and human resources to the assessment, placement, and advising of students through its online Math Skills Assessment Test, summer orientation advising, course office, counseling office, and teaching assistant support office. Five years ago the Mathematics and Statistics Learning Center (MSLC) was created to provide tutorial and learning support services to undergraduates taking freshman and sophomore courses in the mathematical sciences. The MSLC handles roughly 60,000 student-hours of tutorial contact per academic year. Approximately twelve FTE staff and the equivalent of two FTE faculty administrators are required to make the wheels of this undergraduate program turn.

To meet the demand for mathematics instruction, the department employs some 160 Graduate Teaching Assistants (GTAs). Since this number is larger than the current size of the mathematics graduate program, the department employs qualified graduate students from other disciplines, particularly education and engineering. In exchange for fifteen to twenty hours of work per week, GTAs receive a tuition waiver, a stipend, and some limited benefits. For more than a decade, Ohio State has admitted all new mathematics graduate students on fellowship in the summer quarter before the start of the new academic year. They enroll in a mandatory ten-week teacher training course as well as preparatory courses and problem-solving courses, as needed. Summer quarter also provides students a chance to settle into their new environment, make connections with one another, and build camaraderie. By the time they graduate with the PhD, roughly six years later, our students will have had more than 700 hours of classroom experience. Thus, they leave Ohio State trained both as creators and communicators of mathematics.

New Projects

In recent years, three projects have focused attention and resources on mathematics graduate students at Ohio State. In 2000, a Selective Investment award from the university added $500,000 from central funds to the department's permanent budget. As part of the matching for this award, the college and department provided $150,000 per annum for Graduate Research Assistantships. In 2002, through the National Science Foundation's Vertical Integration of Research and Education (VIGRE) program, the department was awarded a five-year, $3.9 million grant for a comprehensive program linking research and education at the undergraduate, graduate, postdoctoral, and faculty levels. Finally, in 2003, Ohio State was selected as a Mathematics Partner Department in the Carnegie Initiative on the Doctorate (CID), a national program of the Carnegie Foundation for the Advancement of Teaching.

The major components of the VIGRE program—Invitation to Research, Working Group Rotations, and Professional Development Seminars—were designed to provide opportunities for students and faculty to work together in novel settings that increase collaborative interactions. Working groups, for example, are relatively small, self-organizing groups of undergraduates, graduates, postdocs, and faculty who work together for one or two academic quarters on a specific research project. The aim is to provide students with a hands-on research experience significantly earlier in their mathematical careers than is typical in the standard graduate program. But working groups achieve important subsidiary outcomes, since postdocs are provided a chance to mentor graduate and undergraduate students and faculty are challenged to present their research work in a novel, accessible fashion. Although it was not an explicitly stated goal, some of the more successful working groups have

resulted in published original research.

While all components of the VIGRE program are open to every graduate student, financial support from the VIGRE grant is limited to U.S. citizens, nationals, and permanent residents. In thinking of ways to provide an opportunity for some form of non-teaching support to every graduate student, the department formulated a program of Special Graduate Assignments (SGA). Roughly speaking, an SGA is a one-quarter sabbatical for graduate students. Students must apply and indicate clearly how the time release from teaching responsibilities in a specific quarter will enable them to pass through a critical transition point in their graduate career. SGA awards are competitive, and a brief activity report is required on completion, thereby modeling the academic grants process.

Our participation in the CID came at a time when the department was deeply occupied with bringing the VIGRE program online, making constructive changes on the fly, integrating the VIGRE components into the regular graduate program, and implementing the SGA program. In considering what we might undertake as our department-wide experiment, we were struck that the timing was, perhaps, unfortunate, as it might have been better to have the CID work precede VIGRE. That would have allowed us to conceive of a VIGRE program in light of the CID's fundamental question—what is the purpose of doctoral education?—and its suggestion that the answer lies in preparing "stewards of the discipline." Our acceptance of the concept of stewardship, which we discuss below, led us to ask ourselves how we would know if our graduate program, and its VIGRE-related elaborations, was adequate to the task. It seemed clear that we couldn't know in the absence of a well-thought-out assessment of the graduate program.

By assessment we mean a set of clearly articulated goals for the graduate program; a set of measures, surveys, and data collection mechanisms that quantify the extent to which goals are attained; and feedback mechanisms that permit constructive changes in the program. The scope of the assessment, we thought, should be comprehensive, ranging from recruitment of prospective students to tracking of alumni. While our thoughts on the subject are still forming, it seems clear that such a comprehensive assessment will be our CID experiment.

Stewardship

Fiscal and logistical issues, however important they may be, ought to be considered in the context of the fundamental question posed by the CID: what is the purpose of doctoral education? Surely the purpose is not to provide inexpensive teaching labor to public universities, nor is it simply to reproduce the professoriate. If that were the case, then the discipline would stagnate and wither. The CID's question is compelling because to address it seriously one must look beyond the easy answers. The CID frames the question in terms of the concept of "stewardship of the discipline," a fruitful idea that bears some elaboration.

Mathematics is not a static accumulation of definitions and theorems but, rather, a vital and creative discipline. It is archived in the professional literature but resides in the minds of practitioners. Here the term "practitioner" is broadly meant to include students and teachers at all levels, researchers in industry and academe, and the educated public. Stewardship of the discipline refers to the creation, cultivation, and communication of mathematics—acts that are necessary, all three, if the discipline is to flourish in its practitioners.

As a living discipline, mathematics is created and maintained by relatively small but highly interconnected global networks of researchers. It is an enabling discipline that plays a critical role in the development of science, technology, and society. But with extremely rare exceptions, it can only be learned through apprenticeship to an active researcher in the context of a supportive graduate program.

The idea of stewardship can have a salutary influence on graduate education, for it tends to shift the discussion from process (courses, breath requirements, exam structure, and the like) to goals: what qualities does one want freshly-minted PhDs to possess, and are those qualities sufficient to secure the future of the discipline? That is, it shifts the discussion from things to people, an altogether good thing. From this point of view, the goals of the CID and those of the VIGRE program are in excellent alignment.

Academic mathematicians enjoy a rich research environment because of the service-teaching needs of the arts, sciences, and professions. This is our ecological niche, and our narrowest interests as researchers are served by doing this service teaching well. But our broadest interests are served by correctly exploiting the niche. For if done well, it provides funding for graduate education, links research with undergraduate education, and assures a healthy future for the discipline. ■

What Campuses Are Looking for in New Hires

By Virginia M. Coombs, provost and vice chancellor for academic affairs, University of Wisconsin-River Falls, and chair, American Conference of Academic Deans

Members of the Board of the American Conference of Academic Deans (ACAD)* were asked to respond to the following question: ***In addition to the disciplinary requirements for faculty positions, what other qualities and contributions are you, as the dean or chief academic officer, looking for in new faculty hires?*** The responses, offered in the context of the interview that the dean has with the candidate, are summarized below.

Evidence of Quality Teaching

Most candidates will be asked to teach a class during the campus visit. This gives the faculty a chance to evaluate classroom presence, subject-matter knowledge, and adeptness at employing good pedagogy. Often the dean is not present for this activity and relies on the one-on-one interview to engage candidates in conversations that reveal

- a passion for teaching;
- the skill to accomplish teaching beyond the lecture method;
- knowledge of interactive teaching strategies that produce active student learning;
- the ability to articulate a teaching philosophy.

The candidate may also be asked about

- the development of written and oral communication skills;
- the integration of appropriate technologies in the classroom;
- the ability to teach beyond the area of disciplinary expertise;
- the relationship between general education and the major;
- participation in team-teaching situations or in a first-year seminar.

Contribution to Campus-wide Curricular Initiatives

Exploring the candidate's willingness to contribute more broadly to the institution's curricular goals, the dean might focus on

- ideas about curricular innovation;
- campus diversity initiatives;
- the ability to think in interdisciplinary modes, which correlates with the ability to teach beyond one's disciplinary expertise;
- familiarity with newer pedagogies such as service learning, cooperative learning strategies, and learning communities.

Scholarly/Creative Activity

Every campus has its own definition of scholarly/creative activity as well as its own expectations for faculty in fulfilling these responsibilities. The relationship among teaching, scholarly/creative activity, and student learning often defines the expectations for a new faculty member. The range of expectations is broad and includes

- developing a clear scholarly agenda in the first year;
- engaging in scholarship that enriches teaching and learning;
- involving undergraduate students in research projects;
- collaborating with colleagues in scholarly endeavors.

(The areas of campus or community service and academic advising are not typically a part of first-year expectations. In fact, many institutions "protect" first-year faculty from these obligations so they can attend to teaching and scholarship.)

"Fit"

The dean not only assesses the candidate's "fit" with the institution and program, but understands that the candidate also is considering the "fit." The dean should be prepared to talk about the institution's commitment to its faculty beyond the starting salary. The savvy dean will spend some time commenting on the various professional development programs and other forms of support available to faculty members.

Clear Expectations

The hiring process requries a great deal of time and energy on the part of everyone involved. Clear expectations, accurate information about institutional support, and above all a sense of excitement and energy for the institution lay the best foundation for a successful hire. When hiring is done thoroughly and well, there are no surprises for the candidate or the institution.

* *I am indebted to the following members of the ACAD Board for their contributions: Pearl Bartelt (Central Connecticut State University), David Burrows (Beloit College), Laurie Crumpacker (Wheelock College), Michele Dominy (Bard College), Howard Erlich (Ithaca College), Susan Gotsch (Whittier College), Samuel Hines (College of Charleston), Kathleen MacDonald (St. John's University), Richard Smith (Millsaps College), and Vera Zdravkovich (Prince George's Community College).*

The Responsibility of Doctoral Programs for the Career Preparation of Future Faculty

By Chris M. Golde, senior scholar, The Carnegie Foundation for the Advancement of Teaching

As doctoral students begin graduate school and contemplate their future careers, many, if not most, imagine that they will become faculty members. Despite more than a decade of reports describing the arduousness of the path and revealing the relatively small proportion of students who actually secure tenure-track positions, the next generation is undaunted in their desire to pursue a faculty career.

In many ways, that is good news. American colleges and universities must continually be replenished with passionate, committed scholars and researchers. The undergraduates of tomorrow deserve to be challenged and inspired by teachers who are familiar with the latest discoveries and well versed in contemporary pedagogical practice. But can we be confident in this vision of the future? Are research universities and graduate programs preparing doctoral students who will be the engaged educators every professor wants as a colleague and every parent wants teaching their child?

In 2001 my colleague Tim Dore, a chemist now at the University of Georgia, and I published the results of a national survey of doctoral students. More than 4,000 doctoral students in eleven disciplines at twenty-six universities responded to a lengthy survey that covered many aspects of their experiences as students, as well as their perceived preparation for their careers, particularly for faculty careers.*

Findings

We learned from our survey that students enter graduate school holding idealized, and in some ways unrealistic, views of faculty life. Perhaps unsurprisingly, the graduate school experience provides a somewhat rude awakening to many. The lives they see their professors leading do not match the image in their minds. Many adjust their vision—replacing the "Mr. Chips" picture of life led by the gifted teacher who inspired them to go to graduate school with the publication- and grant-seeking life they see their advisors lead. Others are discouraged; they look at the untenured research faculty and opt away from such careers. Still others find their passion for their field undaunted.

We also found a mismatch between the aspects of faculty roles that students reported being interested in and looking forward to, and the ones for which they reported being prepared by their programs. These data (see table 1) tell us two things. First, doctoral students are interested in the variety of faculty roles; they do not aspire solely to be researchers. In fact, taken in

* Our findings are detailed in *At Cross Purposes: What the Experiences of Today's Doctoral Students Reveal About Doctoral Education.* This report is available online at www.phd-survey.org

the aggregate, doctoral students are interested in—and, one can assume, understand—the various aspects of teaching. A substantial proportion of students are interested in service roles. The application of research and expertise in broader disciplinary and public contexts has definite appeal. And while it may not be surprising that campus service roles—here represented by a question about committee work—are the least enticing, the responses to another question reveal significant interest in campus life: 69 percent reported interest in becoming involved in activities with undergraduates outside of class.

The second thing these data tell us is that, in general, the conception of "preparation" held by doctoral programs is quite narrow. The proportion of students who report that their program has helped to prepare them for these various tasks and roles is disappointingly low. For nearly every role or task performed by a faculty member, there is a significant gap between the proportion of students reporting interest and the proportion reporting preparation. The gap is small for conducting research, but much larger for many teaching and service roles.*

There are those who respond to these data by pointing out that the goal of doctoral education is to prepare excellent researchers and scholars; doctoral education is *not* skill-based career preparation. However, researchers and scholars must understand and take into account the uses and applications of the knowledge they create. Moreover, they must be able to transmit that knowledge by communicating with others in a variety of settings: with students in classrooms, with colleagues from other fields on interdisciplinary research teams, and with policy makers. Teaching, whether in an article, classroom, or grant proposal, is an integral part of investigation and scholarship. Researchers must be able to contextualize

** In part, this may reflect the fact that the survey was completed by students in their third year and above; thus, most had had several years of graduate school and, in many fields, postdoctoral training ahead of them.*

TABLE 1

Level of interest contrasted with perceived preparation for selected faculty roles and tasks

Tasks & Roles	Interested and looking forward	Prepared by my program	Gap in percentage
Conduct research	74.2%	65.1%	9.1
Publish research findings	71.3	41.9	29.4
Collaborate in interdisciplinary research	61.2	27.1	34.1
Teach discussion sections	80.9	57.9	23.0
Create inclusive classroom climate	74.2	28.0	46.2
Teach lecture courses	70.1	36.1	34.0
Advise undergraduates	69.9	26.8	43.1
Incorporate information technology in classroom	41.4	14.1	27.3
Apply expertise to community beyond campus	52.1	13.8	38.3
Service to discipline: Review papers, serve on disciplinary society committees	41.6	19.1	22.5
Serve on departmental & university committees	28.5	12.7	15.8

Note: The percentages represent the proportion of respondents saying "very much." Other choices were "somewhat" and "not at all."
N = 2505; Those interested in faculty career.

their work, both within their discipline and the world, and to explain its importance to others.

University-level teaching is a complex act, and the student respondents were able to identify the ways in which their programs had prepared them—and the ways in which their preparation fell short. Some of these data are presented in table 1; many more are in the project report. It is important to recognize that some departments and disciplines focus attention on preparing their doctoral students as teachers. The field of English, for example, is most likely to offer a course on pedagogy lasting at least one term; 79 percent of students in English said that this was available in their departments. Students from other teaching-intensive fields also reported the availability of such a course in their departments: mathematics (58 percent) and sociology (60 percent). By contrast, chemistry (28 percent), biology (30 percent), and art history departments (33 percent) did not routinely offer such preparation to students.

How do students' desires and perceptions change over time? Although we did not follow students over time, we asked them to think back to the start of their programs and recall whether their interest in a faculty career had increased, decreased, or stayed the same. Approximately one-third (35.4 percent) said their interest had declined, but another fifth (21.1 percent) reported that their interest had increased. The trend (although the differences are not statistically significant) is that those toward the end of their studies are more likely than those at the start to desire a faculty career, and there is a dip in the middle years. About half of the respondents see this goal as realistic, and more of those at the end of their graduate school careers than those at the beginning see this goal as realistic.

Surprisingly, comparing the students at each stage of graduate study does not reveal differences between them in either the level of interest or the level of perceived preparation for various tasks of faculty work. The big exception is preparation to conduct research; in this case, student interest and preparation both rise over time in a linear way. Perhaps what is most important here is the contrast with teaching, advising, and service. This finding reinforces the perception that attention to preparation for teach-

RECOMMENDATIONS FROM "AT CROSS PURPOSES"

For undergraduate institutions:

- Provide better information to predoctoral students so they can have realistic expectations of graduate school.
- Create an advising office for predoctoral program students. Do not rely on faculty to provide accurate information to students.
- Invite alumni who are in graduate school to come back and talk to students.
- Create research opportunities to allow students to experience what graduate school will entail.

For graduate institutions:

- Expose students to various career paths by encouraging internships, inviting alumni to speak to students, and encouraging students who seek positions outside academia.
- Expose students to the breadth of the academic profession, including the range of roles played by faculty and the variety of institution types.
- Make available and publicize opportunities to help students explore and prepare for a variety of careers, in and out of academia.

For graduate students:

- Provide accurate information to prospective students, including information about the quality of preparation, the culture and climate of the department, levels of financial support, and the quality of teaching and advising. By reflecting the full range of experiences available in the program, the good and the bad, current students can help prospective students make sound enrollment decisions.
- Talk about what does and does not work in the program with faculty and fellow students. Initiate conversation about changes.

ing, advising, service, and governance is at best sporadic and haphazard. By contrast, research is an activity in which students gain increased proficiency over the course of their time in graduate school.

Conclusion

These data provide a rich profile of a large number of students at a moment in time. The current state of affairs is clearly unsatisfactory—at least to students. And we argue that students have a clear-headed view that should serve as a wake up call to faculty members and administrators at colleges and universities. Responsibility for change, however, rests on many shoulders. We generated a number of recommendations for students, for those at colleges who are sending students to graduate school, and for those at PhD-granting institutions (see sidebar, previous page).

The data from our survey are intended to prompt all members of a department to ask, In what ways does our doctoral program meet student needs, and in what ways does it not? Asking this question in a spirit of collaborative inquiry, reshaping doctoral programs with creativity and with deliberate speed when necessary, and making the rationale and structure of the program transparent to all will ensure that the next generation of faculty members are prepared to tackle their myriad roles as engaged scholars. ■

Preparing Future Faculty

Preparing Future Faculty (PFF) programs encourage higher education institutions to broaden the preparation of doctoral students who aspire to become faculty. PFF programs ask faculty, not just those at doctoral institutions, to bring their intellectual and experiential knowledge to the professional development of the next generation of academics. Through PFF, graduate students receive an education informed by the kinds of responsibilities in teaching, research, and service faculty members will encounter at a variety of institutions.
Additional information is available online at www.preparing-faculty.org.

Occasional Papers Available Online

The following are available for download from www.aacu.org/pff/PFFpublications.

What Colleges and Universities Want in New Faculty
By Kathrynn A. Adams
To supplement the rich personal and programmatic experience found in PFF programs, and to highlight what colleges and universities want in new faculty, Adams conducted a review of the research literature. Her findings reinforce the lessons learned by most PFF participants: Institutions expect the faculty they hire to be effective teachers, competent researchers, and active participants in academic life. They also expect graduate schools to prepare their students to conduct a sophisticated job search and to know the many options they have for an academic career.

Engaged Graduate Education: Seeing with New Eyes
By James L. Applegate
In this provocative paper, Applegate presents a vision of what disciplinary societies can—and should—do to support PFF programs and similar educational reform agendas at both the undergraduate and graduate levels. The main thesis is that college and university initiatives to improve the quality of education should be reinforced by comparable initiatives in the disciplinary societies. Improvements in the quality of education are most likely to come about, he argues, by changing "both campus and disciplinary cultures."

The Preparing Future Faculty Program: What Difference Does It Make?
By Leigh DeNeef
Regular assessment has been a feature of PFF since the initiative was introduced in 1993. A great deal has been learned about good practice in the operation of PFF programs and how different participants—graduate students, graduate faculty, and faculty from partner institutions—judge the value of their experiences. Only recently, though, have these new programs produced enough alumni who have found faculty positions and have gained enough experience to assess the value of PFF in their early faculty careers. PFF alumni in early stages of their faculty careers reported three major benefits: 1) a richer experience in graduate school; 2) significant aid in securing their present positions; and 3) a faster and surer start of their careers.

Reshaping Graduate Education in History

By Arnita A. Jones, executive director, American Historical Association

While we strongly believe that PhD training should continue to emphasize research scholarship, we are aware of the fact that most of those who receive PhDs in history will devote more of their time to scholarly teaching than to research scholarship. PhD programs should give much greater recognition than most of them have previously given to the problems that confront new PhDs in their careers as college teachers.

—The Education of Historians in the United States, *1962*

Many aspects of doctoral programs in history have been remarkably stable since 1882, when The Johns Hopkins University became the first American institution to grant the PhD. The Second World War and the ensuing explosion of access to higher education precipitated changes in both the size and the demographic shape of the undergraduate population—so much so that leaders of the American Historical Association (AHA), in the late 1950s, launched a major study of what would be necessary for graduate programs to meet the growing need for undergraduate teachers. The primary change in history graduate education during these years, however, was the dramatic growth in the number and size of programs. The AHA's final report, *The Education of Historians in the United States* (Perkins and Snell 1962), was the only such effort in the discipline for the remainder of the twentieth century.

Earlier this year, the American Historical Association published *The Education of Historians for the Twenty-first Century* (Bender, Katz, and Palmer 2004), a report four years in the making and based on a wide-ranging survey and assessment of current practice in the field. The study was a major undertaking. Why did we do it? Quite simply, because so much of the context of history graduate education had changed. Scholarship in the discipline in the latter half of the twentieth century had expanded to embrace many areas of investigation generally neglected by earlier generations, and whole new fields had come into being. We wanted to understand the impact of the intellectual changes in the discipline on the curriculum of doctoral programs. We also knew that the university itself had changed dramatically since the great expansion of graduate education beginning in the 1960s; it had become more demographically diverse and, as decades wore on, more determined to follow a corporate organizational model. We wanted to investigate how those changes had played out in our field.

Finally, we had to own up to the fact that the job market for history PhDs had been in a perpetual state of crisis—though in some years worse than in others—for about three decades. The impact of a protracted and accumulating surplus of history doctorates was clearly eroding working conditions, leading to lower salaries for historians relative to many other fields in higher education and creating a growing cadre of casual workers who live precarious and often unrewarding professional lives. We knew that all but a few of today's graduate students in history will have careers very dif-

ferent from their graduate instructors, and we believed that the AHA should help them negotiate that uncharted terrain.

The concerns of professional historians are only part of this story, however. Others—students, their parents, the public, legislators, and policy makers—measure our success by our teaching. The nation's need for more accessible higher education has led to the growth of community colleges and urban commuter universities as well as a more vocational orientation. In an era of heightened accountability in colleges and universities, historians are not alone in facing scrutiny over the effectiveness of their teaching; but history, in general and at all levels, has been the focus of an intense public concern about the degree of historical knowledge possessed by students in precollegiate and undergraduate education. Addressing that concern is, as they say, both a challenge and an opportunity.

Survey Findings

We aimed first of all to consult widely in the historical profession and beyond, reaching out to leading researchers on history education as well as various stakeholders in the graduate education enterprise such as department chairs, directors of graduate study, and graduate students. Also consulted were all of AHA's standing committees and divisions. The keystone of the effort, however, was a forty-page survey sent to all 158 history doctoral programs (and returned by 105, or two-thirds, of the recipients).

What we found gives reason for guarded optimism. Change, particularly in the direction of more support for preparing history doctoral students to be good teachers, is in the air, even if it often coexists with inertia in many doctoral programs. Perhaps not surprisingly, students seem more aware of the need for change and are more intentional in preparing for teaching, sometimes taking matters into their own hands. But we also found that history graduate students typically receive little mentoring about what it takes to become a successful graduate teacher. Designing a course syllabus, learning the skills and techniques for the classroom, or assembling a teaching portfolio are most commonly left to the student's own volition. Advisors and directors of graduate studies, who often admit they do not know how graduate students receive such information, rarely take the initiative in preparing students to teach.

Change, particularly in the direction of more support for preparing history doctoral students to be good teachers, is in the air, even if it often coexists with inertia in many doctoral programs.

Eighty-seven percent of doctoral programs reported that students are encouraged to teach at some point during their course of studies, although only 15 percent of departments require it. A majority of students teach at other institutions during the course of their degree work, however, even though they have to secure these opportunities for themselves. A substantial majority of history doctoral programs reported that their university has a teaching center devoted to improving undergraduate instruction, but fewer than one-third of departments said they work directly with that center to devise programs for history graduate students. A startling two-thirds of these departments either do not believe these programs effective or do not know whether they are.*

Sadly, considering where a large number of students will ultimately find employment, very few departments reported that their students have any exposure to teaching at the community college level. Fifty-four percent of all departments reporting believe their students are as well or better prepared for teaching than were their students of a decade earlier, while 27 percent of departments anticipate future changes in how they train students for college

* *For a complete compilation of the data from the departmental survey, see Bender, Katz and Palmer (2004), Appendix C.*

teaching. A striking 50 percent report that they have already made such changes. On site visits we found more reason for encouragement, from well-run and locally valued Preparing Future Faculty programs to laboratories for developing and enhancing techniques for teaching with technology. Our report (Bender, Katz, and Palmer 2004, 100-101) commends these developments and recommends that departments should have not only formal programs for preparing students as teachers but also that such "preparation should have a degree of mentored progression, moving beyond the immediate needs of the T.A. to the teaching responsibilities of the future faculty members."

Conclusion

The AHA hopes to do more than simply recommend. Early in 2004, we held at our Annual Meeting the first of what we hope will be many meeting sessions or summer workshops to provide concrete help to departments wishing to improve their doctoral programs. We plan as well to provide a dedicated space on our Web site for departments to post information that will help students evaluate the appropriateness of specific programs for their individual career goals. We are eager to cooperate with other efforts to improve graduate education in history, and already are working to that end with the Carnegie Initiative on the Doctorate as well as formal Preparing Future Faculty programs around the country. ■

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Capitalizing on Unintended Consequences

Lessons on Diversity from Texas

By Richard A. Cherwitz, professor of communication studies and founder of the Intellectual Entrepreneurship program, the University of Texas at Austin

Following the June 2003 Supreme Court rulings on affirmative action, a strong sense of relief prevailed on college campuses that advocate for diversity in higher education. This was, perhaps, especially true at the University of Texas at Austin (UT); for the first time since the Fifth Circuit's *Hopwood* ruling, the Board of Regents authorized UT to add "race and ethnicity to the criteria considered for student admission and for awarding of scholarships and fellowships in those cases when an individualized and full-file review is conducted as part of the selection process." Nevertheless, a cautionary note must be sounded regarding the prospect for increased diversity in graduate education at UT and throughout the United States. The lesson to be learned from Texas is that it is not predominantly the admissions process that accounts for a dearth of minority students in graduate school; rather, it is the lack of a substantial minority applicant pool that prevents more than incremental progress toward diversity.

The applicant pool for programs in arts, sciences, humanities, and social sciences is characterized by a paltry number of underrepresented minorities. In fall 2003, for example, only 6.3 percent of the 18,000-plus applicants to UT's graduate school were Hispanic, African American, or Native American—a statistic comparable to that at many other graduate institutions. Never in the past ten years, which includes the pre-*Hopwood* period, has this percentage risen to double digits. Further, more than 60 percent of these minority applicants were in less than 20 percent of the institution's available degree programs. While tinkering with the admissions process and offering additional scholarships and fellowships might make some difference, no profound increase in diversity will occur until significant progress is made in convincing talented minorities to pursue graduate study. Nationally, top-notch graduate institutions play numbers games, waging war with each other to redistribute an already undersized minority applicant population and then declaring victory when statistically insignificant gains are made. The Supreme Court did not and cannot arm us with the ammunition needed to address the real cause of inadequate diversity.

Why do many talented minority students choose not to seek advanced degrees? Having taught undergraduates for a quarter of a century and designed programs during my graduate deanship that attract minority students, I have some personal insights. Many Hispanic and African-American undergraduates admit not giving serious thought to pursuing a graduate degree in traditional academic fields, preferring instead to enter law, medicine, or business. In the words of one undergraduate, "I want to make a difference—to do something meaningful." Not only money and prestige, but also awareness of the societal impact attracts students to medicine, law, and business.

By contrast, graduate education in traditional academic fields is incorrectly perceived as esoteric, as disengaged from a wider community. Except to become

professors, some ask, why earn an advanced degree? What can one do with it? Additionally, graduate education is shrouded in mystique, operating under a Darwinian assumption that only the best survive. Accurate or inaccurate, this unattractive picture of graduate education entails significant debt, uncertainty about completion and time to degree, fears regarding prospective employment, and uncertainty about community relevance.

Intellectual Entrepreneurship

Graduate education need not be this way. At UT we are experimenting with "Intellectual Entrepreneurship" (IE), a new vision of graduate education that challenges students to be more than the sum of their degree-earned parts.* IE challenges graduate students to become "citizen-scholars." The IE philosophy asks students to consider what matters to them most and uses the answers to shape their intellectual and academic development. Thus, it provides a mindset and an impetus for acquiring and producing knowledge in academic disciplines. It also underscores the enormous value to society of the arts, sciences, social sciences, and humanities. By engaging students in community projects where they discover and put knowledge to work, as well as requiring them to identify and adapt to audiences for whom their research matters, IE confirms that traditional areas of scholarship are as vital as the so-called "applied" fields of study. Thus, IE works to debunk the myth that "basic" and "applied" research are at opposite ends of a continuum. For IE participants, graduate degrees are not rewards; they are tools for creating intellectual and practical possibilities and for fulfilling one's passions.

What does the IE philosophy of education have to do with increasing diversity? It demonstrates that attracting minority applicants necessitates more than targeting a population. Implementing changes in education that benefit all may have the unintended—but important—consequence of helping minorities. For example, IE was devised in 1997 to increase the value of graduate education. Yet in 2002–2003 we discovered that 20 percent of students who had enrolled in IE classes were underrepresented minorities, while this same group comprised only 9 percent of UT's total graduate student population. Minorities (many of whom are first-generation students) reported that, by rigorously exploring how to succeed, IE helped them learn the unspoken rules of the game by demystifying graduate school and the academic/professional world.

More importantly, however, students reported that IE provided one of the few opportunities to contemplate how to utilize their intellectual capital to give back to the community as well as to advance their academic disciplines—something that motivates many first-generation students. The spirit of intellectual entrepreneurship, unlike the remedial tone of "professional development," resonates with and meets a felt need of minority students. Rather than assuming that students have deficiencies that can be corrected by spoon-feeding them technical skills, IE facilitates exploration and innovation. It implores students to create for themselves a world of vast intellectual and practical possibilities, developing the toolkits, networks, and other resources needed to bring their visions to fruition.

Because typical professional development and community outreach initiatives are primarily about enrichment—i.e., they add skills and experiences on top of already acquired disciplinary knowledge—they may have less capacity to tap into and harness student aspirations to discover and own; hence, unlike IE, the philosophy of professional development may not have as much propensity to foster citizen-scholarship. UT students assert that IE has been an important mechanism for improving their odds for completing a degree, increasing their chances for professional and academic achievement, and leveraging their knowledge for social good.

This attitude toward students and the manner in which it supplants traditional top-down, patriarchal methods of education seems especially attractive to minority students. After all, while minority graduate students know they are intellectually smart enough to succeed and may not wish to be "given" special assistance, they often desire—as do other students—opportunities and experiences allowing them to own and discover the value of

** Information about Intellectual Entrepreneurship can be found online at http://webspace.utexas.edu/cherwitz/www/ie.*

their graduate education and to be accountable for it by giving back to the community.

Pre-Graduate School Internships

The potential of the IE philosophy of education to increase diversity in graduate school is perhaps best documented by the "IE Pre-Graduate School Internship" that I began in 2003–2004. This initiative, targeted at UT's brightest sophomores and juniors, underscores the principle of the unintended consequence. Internships pair undergraduates with a faculty mentor and a graduate student buddy. Interns work with their mentors on research projects, observe graduate classes, shadow graduate student teaching and research assistants, and participate in departmental events and disciplinary conferences. Students also take part in workshops where they discuss their experiences and explore their futures.

Rather than focusing on students already interested in graduate study and helping them negotiate the application process, the IE Pre-Graduate School Internships provide an opportunity for students to discover their passions, the value of academic disciplines, and the culture of graduate study. Interestingly, approximately 25 percent of interns are underrepresented minorities, and nearly 40 percent are first-generation students; many did not seriously contemplate graduate education prior to their enrollment in the internship.

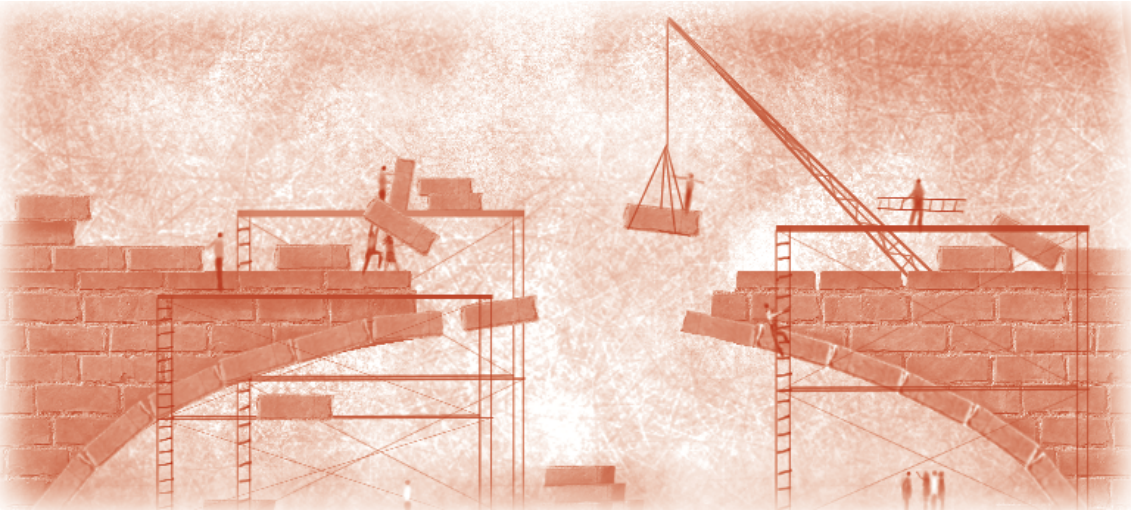
Interns report that, for the first time in their undergraduate experience, a "space" was provided to reflect upon the role education plays in meeting their goals. IE empowered them to view academic disciplines not as artificial containers into which students are placed, but as lenses through which to clarify their visions and as tools by which their goals might be realized. The value of IE as a mechanism for increasing diversity, therefore, inheres in its capacity to help students discover otherwise unobserved connections between academe and personal and professional commitments.

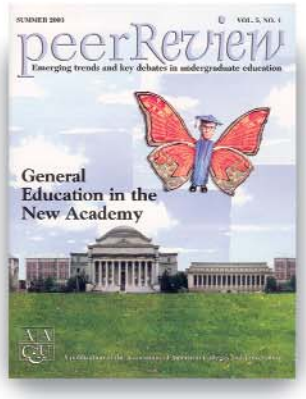
Conclusion

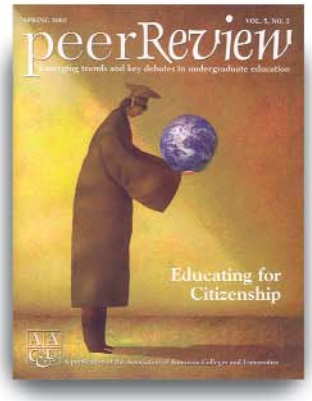
From the Texas experience we have learned that to increase diversity the applicant pool must be expanded; graduate education must be made transparent, relevant, and capable of fulfilling students' passions and goals. Diversity requires more than the obvious admissions-related issues; it requires bold, concerted, and centralized efforts across academic geography.

Facing budgetary cuts and pressures to decentralize the administration of education, large research universities will be tempted to revert to a bunker mentality, leaving critical initiatives in graduate education to the freelance efforts of each academic unit. This approach, however, will prevent capitalizing on IE's most powerful lesson: only when we transcend disciplinary boundaries, thinking as a university community, do we create the intellectual synergy for solving complex problems, saving money, and accruing unintended consequences.

I challenge my colleagues throughout the nation to tackle diversity as a whole university, not as a loose confederation of programs. Let us acknowledge that the Supreme Court's decision focusing on admissions will not automatically eliminate a problem that has defied solution for so long. ■







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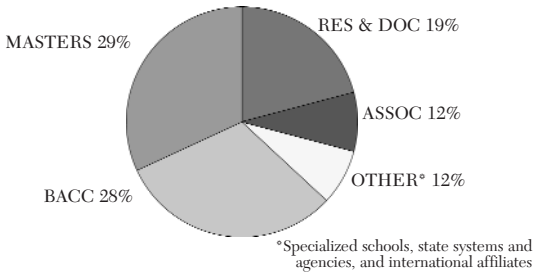

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