FAST start toward Faculty Careers

In its first year, the FAST Program—for Future Academic Scholars in Teaching—facilitates ten doctoral students in their quest to become scholars of teaching and learning as well as disciplinary research scholars.

Natasha Speer, Assistant Professor of Teacher Education, refers to Talking About Leaving: Why Undergraduates Leave the Sciences (by Nancy M. Hewitt and Elaine Seymour, Westview Press, 1997) to underscore the value of a new fellowship program for MSU doctoral students. “Teaching quality and engagement in classrooms is important for keeping undergraduates in the STEM disciplines.”

“There’s a national need for programs like this,” says Rique Campa, who coordinates the program. “Not all Ph.D. graduates will focus primarily on research in their careers. Some will teach at liberal arts colleges; some will go into business. We need to diversify their experiences as part of their professional development. Skills learned while teaching will transfer to many kinds of positions.”

In the last decade or so, awareness of teaching has heightened in higher education, says Kevin Johnston, who directs MSU’s Teaching Assistant (TA) Program. He cites increasing requests for a statement of teaching philosophy in job announcements. “There’s a culture change under way.”

Programs like FAST, as well as increases in career planning workshops and other support for TAs are part of the Graduate School’s “holistic effort to provide professional development for graduate students and create a coherent umbrella for all the training opportunities,” Johnston says (see the January 2006 issue of The Graduate Post http://grad.msu.edu/all/gps06.pdf).

“This program is a step toward improving science and engineering education nationally,” adds Mark Urban-Lurain, a member of the FAST steering committee. “We’re affecting future faculty, and we’re also raising the visibility of research on teaching around campus.”

The idea for the FAST fellowships grew out of the MSU Graduate School and the Center for the Integration
The Graduate Post

of Research, Teaching, and Learning (CIRTL), funded in 2003 by a grant from the National Science Foundation to the University of Wisconsin, Michigan State University, and Pennsylvania State University. CIRTL is creating a model interdisciplinary professional development program in teaching and learning for graduate students, postdocs, and faculty in science, technology, engineering, and mathematics (STEM). Campa and Speer are CIRTL network leaders at MSU.

CIRTL is built on three fundamental concepts, called pillars (http://www.cirtl.net). These pillars also undergird the FAST program.

- **Teaching-as-research** — STEM instructors use research methods to develop and implement teaching practices that advance the learning experiences and outcomes of both students and teachers.

- **Learning communities** — groups are linked for shared learning, discovery, and generation of knowledge.

- **Learning-through-diversity** — the rich array of experiences, backgrounds, and skills among STEM students and instructors enhances the learning of all.

Monthly meetings of the FAST fellows and steering committee members create a learning community dedicated to the scholarship of teaching and learning. Meeting topics include information on where to find research articles on teaching and where to find organizations—like special interest groups in professional associations—of people who talk about teaching. The steering committee also invites guest speakers, usually other MSU faculty, to share their teaching experiences and their research on teaching and learning.

Each fellow is planning a research project that will, according to Campa, essentially turn their classrooms into labs where they will assess the effectiveness of a method they develop to help their students learn. For many of the fellows, the first step was to learn how to conduct this different kind of research. Scholarship on teaching and learning, the fellows found, has new educational terminology and a very different

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**FAST Project: Writing to Learn**

Anne Axel (Fisheries & Wildlife) believes writing is a great way to learn, and her FAST project will test that thesis during a three-week study abroad program in Madagascar. “At first I thought I would ask the students to do reflective writing,” she says. But when her mentor, Laura Julier, Associate Professor of Writing, Rhetoric and American Cultures, suggested that might be too ambitious for a three-week program, Axel decided to require a brief paper before the trip, a daily journal during the trip, and a research paper at the end.

In preparation for the trip, she’ll ask students to read travel journals by Lewis and Clark and by a woman who traveled in Madagascar in the 1900s. And she’ll ask them to write about their expectations for the trip.

The course will take the group to museums, nature centers, and the different forest habitats of the lemurs Axel studies as a doctoral student in wildlife and ecology. Lemurs live in both spiny dry forest and rain forest habitats, she says. With a Fulbright Fellowship, she looks at patterns of distribution in the different habitats and how the presence of human beings and animals alters the landscape.

“The effect isn’t always negative,” she notes. “People protect small patches, and grazing livestock sometimes improve vegetation.”

“Keeping a journal will help students hone their observational skills and their ability to write descriptions and relate the new things they’re seeing to familiar things,” she anticipates. To find out, she’ll survey the students at the beginning and again at the end of the program to see how they’ve changed and assess whether what she did in the class was appropriate and meaningful.

“FAST has been great for me,” she says. “The opportunities to interact with other students interested in teaching and with faculty has helped me think more clearly about my objectives as a teacher: what do I want to accomplish; how do I get there,” she says. “In the end this has great benefits for students.” She is currently teaching courses at Lansing Community College and in the Department of Fisheries and Wildlife. “I’ve already incorporated some of the techniques into my courses.”

She expects to have a faculty position after graduation and would especially like to teach students who are afraid of science. “I want to show them its relevance to everyday life,” she says.

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Coquerel’s sifaka is one of the many types of lemurs that Anna studies.
study design from their dissertation research. The faculty noted the fellows’ ambitious early ideas. “They tended to start with very big questions,” Urban-Lurain recalls.

“Their initial ideas for projects tended to be the sort that would take ten years and a research team with a big grant to accomplish,” Speer agrees. “We worked with them to narrow their focus and articulate a question or issue, to think about data they might collect and how it might refine the question, and how that revised question might refine the type of data they need,” she adds. An ANGEL site enables them to review each others’ proposals and continue discussions begun in their meetings.

FAST steering committee members assist students in preparing applications for human subjects approval. “The IRB process is an important step for STEM students to understand,” says Campa. “We want to make sure they are well prepared for teaching as research activities.” The overall FAST program also has IRB approval as the Graduate School conducts research on the effectiveness of this fellowship program on student readiness for academic careers.

At one monthly meeting, the fellows worked backwards from data provided by the steering committee to determine what question they might answer. “Looking at that real data helped us design our studies to answer the question we were after,” says fellow Denise Lackey. “Our doctoral research tends to be quantitative,” adds fellow Anne Axel. “We had to learn how to think about data and analysis differently.”

Research on teaching likely involves data drawn from interviews and students’ written responses, Speer notes. “The fellows need to learn how to categorize that data before they can count and analyze.” One of their monthly meetings will be a workshop to help them process their data.

The steering committee has helped the fellows find faculty mentors who will work with them on refining their project proposals and guide them through execution of the project and its assessment. Next year the steering committee will collaborate with Duncan Sibley, director of the Center for Research on College Science Teaching and Learning (www.msu.edu/~crcstl), to help identify potential projects and mentors for the fellows.

Proposals for next year’s FAST program were reviewed in March. Ten fellows were selected for 2007-08. Getting more information about FAST to departments will encourage students’ advisors and department chairs to support participation in the program. grad.msu.edu/fast

“Ideally, the FAST program will expand,” Johnston says. “FAST is doing what students need,” he adds. It provides a sustained relationship between faculty member and student on a project; more TAs would benefit from such an experience.”

At the end of the year-long fellowship, fellows are expected to present their project results at a conference or in an academic journal or both. FAST fellows receive $1,000 stipends for travel to present their results or for other costs associated with their projects, plus additional fellowship funds. CIRTL and the Graduate School split the cost of the program. Fellows will also make presentations in a final session for each other and faculty involved in the program.

As the students are learning to assess their teaching, the FAST steering committee plans to assess the program. “We’ll survey and interview the students to determine what they learned, how they change, whether the program affected their behavior in looking for jobs,” Campa says. “We want to know if they found it valuable. We think the experience will make them more competitive for faculty positions.

“The fellows are an insightful group,” he adds. “They brought great experience to the program. It’s been fun to watch them develop.”

“We’re excited about this program,” Urban-Lurain says, echoing other steering committee members. “The students are enthusiastic, too.”

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2006-07 FAST Fellows

Gel Alvarado, Fisheries and Wildlife
Anne Axel, Fisheries and Wildlife
Aladar Horvath, Mathematics Education
Denise Lackey, Human Nutrition
Terri McElhinny, Zoology
Nathan Miller, Zoology
Gabe Ording, Entomology
Markus Peterson, Fisheries and Wildlife
Jana Simmons, Biochemistry and Molecular Biology
Denise Lackey’s (Human Nutrition) FAST project will assess the value of using case studies in health science courses to increase students’ critical thinking skills. “Health science students need to figure out what’s going on,” she says. “They need to go beyond memorization and see the big picture; they need to figure out solutions, not just list symptoms.”

Students need to do the memorization to learn the basics, she adds. “We can assess that knowledge on tests. But then they need to use those basics and go beyond them.” She will test her theory that case studies will help them do that by assessing their critical thinking skills before and after the cases are presented, probably in a nursing course for upper level undergraduates. “They should do better after the case study,” she believes.

As an undergraduate, Lackey, now a doctoral student in human nutrition, encountered case studies in a class and found that the experience helped her go “way beyond reading a book.” As a graduate student she is studying the role of vitamin A in the immune system and how it affects development of the innate immune system.

A health case study includes patient information, symptoms, and lab data. Some of it is extraneous information. “Getting the final diagnosis isn’t the goal,” she says. “Students need to learn to find what’s related and what’s extraneous.” They need to pull pieces from all areas. Lackey will give them open-ended questions to lead them in the right direction. “I want to help them pull back and see the big picture,” she adds.
MSU CASTL Fellows Engage with Learning

On the surface, a link between a new residential college for undergraduates in arts and humanities and waiting lists for professional development programs for graduate students might not be obvious. But when the Carnegie Academy for the Scholarship of Teaching and Learning (CASTL) (www.grad.msu.edu/castl) called for proposals for its Leadership Program, Stephen Esquith, Acting Dean of the Residential College in the Arts and Humanities (RCAH), and Karen Klomparens, Dean of the Graduate School, made the connection.

Among its goals, the CASTL program (www.carnegiefoundation.org/general/index.asp?key=21) aims to get undergraduates involved in classroom research projects and introduce graduate students to the scholarship of teaching, learning, and engagement. How students learn from social, civic, and political activities is one of CASTL’s themes.

“Engaged learning is a cornerstone of the residential college,” Esquith says.

“We were providing opportunities for graduate students to learn more about teaching,” Klomparens adds, “but we couldn’t accommodate all the interested students.”

So they assembled an institutional leadership team to submit a proposal to the CASTL Leadership Program. They outlined a plan that included fellowships for doctoral students, funded by MSU’s Graduate School, to become scholars of teaching, learning, and engagement and then to carry what they learned into the residential college environment to teach and mentor the undergraduates.

“Graduate students are eager to be better teachers, and they’re willing to put intellectual energy into thinking about teaching,” says Colleen Tremonte, Associate Professor in James Madison College, who worked with graduate students as a Carnegie Scholar in another Carnegie program. “They love to learn themselves, and they want to find the best way to construct a learning environment for their students.”

Judith Stoddart sees the same thing in the graduate students eager for the professional development programs she organizes as part of her appointment as Assistant Dean in the Graduate School. “We fill workshops and seminars with more than a hundred students and still have waiting lists for the programs,” she says.

When the CASTL proposal was accepted as one of seven from institutions (including international universities) addressing the graduate education theme, the MSU team solicited applications from doctoral students interested in the scholarship of teaching, learning, and engagement. They selected ten fellows from 35 applicants, looking for academic achievement, commitment to a career involving teaching, and interest in the areas of world language proficiency, the visual and performing arts, and civic engagement—the pillars of the RCAH curriculum. “We were very pleased with the number and the quality of the students who applied,” Esquith says.

The fellows come from a range of disciplines with interests in languages, aesthetics, music, education, political science, and geography. The fellows are developing scholarly projects of their own that can result in a paper or conference presentation. Topics range from a study of how...
English as a Second Language (ESL) students understand and use English articles (a, an, the) to development of a teaching packet examining conflicts over natural resources through student role play.

That diversity can help the fellows be better teachers, Stoddart says. “You can learn a lot from talking with people who are teaching different kinds of courses with different content.” The CASTL fellows are also learning about curriculum design. “They’re actually designing an innovative curriculum for the RCAH,” Stoddart says.

“The fellows are helping design the roles graduate students will have as mentors, tutors, and group leaders in the RCAH,” Esquith adds. “We think the undergraduates will benefit from this kind of interaction with grad students.” To find out, the CASTL team enlisted MSU’s Center for the Study of University Engagement (CSUE) to conduct assessments. Part of University Outreach and Engagement, led by Associate Provost Hiram Fitzgerald, CSUE developed several assessment tools to evaluate engaged scholarship. The center is also collaborating with the Graduate School to develop a set of competencies and portfolio guidelines to document graduate students’ civic engagement activities in preparation for awarding certification like that for college teaching.

This semester, the program’s first, the fellows and the faculty on the advisory committee are meeting every other week to talk about teaching and learning. They read and discuss scholarly articles on pedagogy theory, ethical issues in classroom practice, and the ways adults learn, drawing from psychology and neuroscience. “We discuss how this research applies to the plans for the residential college and look for new ways of teaching,” Stoddart says. “The fellows are talking about how they’ll measure outcomes of something that may seem vague to them, like civic engagement, and how to assess language learning in less traditional ways.” They also explore models of best practices and ways to assess whether students are learning what teachers think they’re teaching.

“We’re going through the book How People Learn,” adds Mark Sullivan, Associate Professor in the College of Music. A 2000 publication of the National Academies Press, it is a report by the National Research Council Committee on Developments in the Science of Learning. A recent discussion covered the chapter on how students use what they already know to learn new information. “We talked about approaches to improve this process and what might interfere with it,” Sullivan recalls. “And we talked about how to build this knowledge into their teaching practice.”

“These readings provide grounding,” Tremonte says. “They give the fellows the language for their scholarship of teaching, learning, and engagement and provide background in theory.” Discussions carry over to the program’s ANGEL site, where students as well as faculty post new articles they find and carry on lively discussions. “They get into ethical topics like how to be inclusive and culturally sensitive in the classroom, and practical issues like what kind of data

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Connection between Undergraduate and Graduate Learning

**Doug Estry, Associate Provost for Undergraduate Studies & Dean of Undergraduate Education**

In my former position as Associate Dean in the College of Natural Science, I worked closely with the Graduate School to advance those aspects of graduate training that would enhance the graduate students’ understanding of teaching and learning. In particular we wanted to increase awareness of and access to the significant body of scholarly work that has transformed our understanding of student learning.

In a research extensive institution, an important part of undergraduate learning comes at the intersection of graduate and undergraduate education. The places where our faculty and graduate students pursue new knowledge and understandings are the same places where undergraduates gain a deeper appreciation for the various ways of knowing. As John Dewey noted in 1938, “...there is an intimate and necessary relation between the processes of actual experience and education.”

In our classrooms, initiatives like CIRTL, FAST, and CASTL are having important impacts. For our graduate students, these programs are reinforcing the fact that competency in a discipline is based on a deep foundation of knowledge and, importantly, given the rapidly expanding body of knowledge in any one discipline, that students must develop the tools and learning strategies needed to be life-long learners. For both current and future undergraduates these programs are resulting in learning environments that are transformed into places of discovery and deep inquiry where there is an expectation that they will actively engage in the learning process.

I am looking forward to continuing work with the Graduate School at this very important intersection of graduate and undergraduate learning.
they need for their projects and how to collect it,” Tremonte says. “The readings help them move between their own graduate studies and thinking about teaching and what they’re doing as teachers.”

The fellows are now forming affinity groups based on the kind of project they are proposing. One group is working on a photo-voice project with Pennie Foster-Fishman, Associate Professor of Psychology. Another group is working on assessing language proficiency and second language acquisition. And a third is focused specifically on civic engagement and outreach.

The groups meet regularly to work on their proposals. “They’re spending a large part of this semester framing their projects,” Tremonte says. “They started out in one direction, and as they read and discussed the research on teaching and learning, they’ve often moved in new directions.”

“It’s exciting to talk to committed graduate students who are excited about research on teaching,” Sullivan adds. “Explorations on teaching are often utilitarian and focus on immediate goals.”

“This is an exciting new program,” Tremonte adds. “The fellows have input and ownership at multiple levels, and they’re making a real contribution to the RCAH.”

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**CASTL Project: Incorporating Performance**

Kathryn Edney (American Studies) has taught IAH 201 several times. The four-credit, semester-long course covers major issues in the development of U.S. society and culture from the Revolutionary War to the Viet Nam War. “I’ve been teaching the ‘traditional version’ of the course,” she says, but now she wants to help students see how the components of the course are interrelated.

“I ask, ‘Why do you think I assigned this?’,” she says. “How does it fit with the rest of the class?” Her goal is to get students to see the whole picture, to develop a scaffold on which they can build their knowledge.

The readings and discussions with other MSU CASTL graduate fellows and faculty are helping. “No one teaches you how to teach,” she says. “Often we assume we know what our students know about a subject and that they know what the teacher is trying to do.” Approaching teaching and learning through scholarship helps articulate things often taken for granted, she adds. “It’s more than commonsense ideas about teaching, more than how to run a class. We’re learning how we teach, what works, what our own strengths are.”

With her CASTL fellowship, Edney is exploring ways to incorporate performance into the class. The project is still in early planning, but she thinks that having students “perform their knowledge” in some way—writing, perhaps—will help them become confident in expressing what they think and why.

“It’s exciting to be in on the ground floor of the CASTL program,” she says. “It’s great professional development. It will give us an edge over other Ph.D. grads who don’t have this experience.”
The Graduate Post

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On the web at http://grad.msu.edu/gradpost.htm

Please address correspondence to:
The Graduate Post
110 Linton Hall
East Lansing, MI 48824-1044

Spring 2007 Issue

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FAST start toward Faculty Careers

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Thank You!

A big THANK YOU to Janet Rohler (Office of the Vice President for Research and Graduate Studies)! Janet served as guest writer for this edition of The Graduate Post. We appreciate her efforts in interviewing individuals and writing up the feature articles.

Graduate Student Recognition

Travel Grants Recognition and Research Enhancement Awards are now listed exclusively on the web at http://grad.msu.edu/gradpost.htm.

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To serve as an advocate for graduate education to the University and beyond and to enhance the quality of graduate education at MSU in all its diverse dimensions.

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Michigan State University
118 Linton Hall
East Lansing, MI 48824-1044