

Institutionalizing Change to Improve Doctoral Completion

**Ph.D. Completion Project Interventions
CGS July 2010**

**Dr. Judith Stoddart, Assistant Dean
Dr. Karen Klomparens, Dean, The Graduate School**

Overall Goals

- Raising awareness about *specific* patterns of attrition based on data (rather than on faculty assumptions about why or when students left programs) so that programs could design more effective interventions for their students
- Facilitating the tracking of student outcomes through a common set of metrics
- Helping students better understand the concept of career and professional development, and providing programs that would help them to manage their careers and prepare for a variety of job tracks
- Using data to examine assumptions about admissions profiles of students and success in doctoral programs

Challenges

- Turnover in department leadership (chairs and graduate program directors)
- Faculty resistance to addressing issues that we know affect completion and attrition (integration, professional development, mentoring) but are not part of students' "real" work (in lab, on research and scholarship)
- Faculty and student assumptions about why people succeed (or not)
- Budget reductions—interventions are "extras"
- Time, other priorities, not knowing enough about these topics

Solutions

- Create sustainable programs that cut across both academic and support units on campus: partnerships
- Use a “train-the-trainer” model to involve students and faculty in change
- Provide reliable and regular data on completion and attrition patterns
- Use data to look at underlying assumptions about the “successful” doctoral student
- Do ongoing assessments of all programs and interventions to measure effectiveness (completion, time-to-degree, placement, career satisfaction)
- Make all interventions “research” data-driven, and share data and resources: be supportive, emphasize problem-solving (not problems)
- Link related campus initiatives (e.g., AGEP, I-cubed, PFF)

Sustainable Cross-Campus Programs

PREP programs: A Career and Professional Development
“Curriculum” careersuccess.grd.msu.edu/prep

MSU Graduate Certification in College Teaching:
Creating Learning Communities
grad.msu.edu/collegeteaching/

Retention programs built on NSF-funded projects:
AGEP, I-cubed “CAFFE” grad.msu.edu/caffe/

“PREP” Programs

Planning, Resilience, Engagement, Professionalism

Goal: assess career programs and expand their reach

Interventions:

- Use assessments (short and long-term) to improve impact
- Get students planning professional development early: orientation program (65% increase in attendance with “PREP” workshop)

Results:

- Participation now at capacity (around 4000 students, postdoc and faculty per year; nearly all workshops had waiting lists as long as registrations)
- Increased participation by under-represented groups (now attending programs in higher numbers than their percentage in grad population)
- Expanding capacity: new publication (*Plan Your Work*), new web site, train-the-trainer so that faculty can conduct workshops in colleges and departments

PREP—ongoing activities

- Database tracking attendance, career outcomes, and relationship between clusters of professional development experiences and career outcomes
- *Career Success*: interactive web site where students can create, save, and modify professional development plans, assess transferable skills, learn about and search resources, use interactive learning modules, view webinars, and participate in virtual grad student and postdoc orientations (fall 2010) <http://careersuccess.grd.msu.edu>
- Through NSF I³ CAFFE grant, measure awareness, use, and impact of career and professional development resources and partnerships across campus; recruit faculty partners in colleges
<http://grad.msu.edu/caffe>



Career Success

- [ABOUT CAREER SUCCESS](#)
- [MAKE YOUR PLAN](#)
- [EVALUATE YOUR SKILLS](#)
- [MANAGE YOUR STRESS](#)
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Make Your Plan



Evaluate Your Skills



Manage Your Stress

MSU Graduate Certification in College Teaching

Goal: increase numbers through cross-disciplinary cohorts

Interventions:

- Pilot cohort 1: small group invited from partner departments to work together in spring 2009 attending workshops, creating e-portfolio
- Pilot cohort 2: 2-day institute providing all workshops, time to develop written materials and mentored teaching project, start e-portfolio; follow-up e-portfolio workshops in 2010-11 academic year

MSU Graduate Certification in College Teaching

Results:

- Before grant: 15 students completed 1998-2008
- Pilot 1: 25 students (invited from departments): half completed, 2 received job offers before finishing, 2 decided not to finish the certification, all others still revising e-portfolio
- Pilot 2: 80 students (capped registration so that we can provide follow-up support; 95 on waiting list)

Next steps:

- Offer 2-day institute every year
- Cross-institution research project with Wisconsin (CIRTL): share some workshops and assessments to look at effectiveness of our programs

MSU Graduate Certification in College Teaching

	n=105
female	60.9%
underrepresented groups	32%
international	26%
natural science	29%
social science	20.3%
ag and nat resources	11.6%
humanities	14.4%
engineering	4.3%
business	2.9%
medical	2.9%

“I found it extremely helpful in developing my teaching philosophy and many of the aspects of teaching that I am now thinking about in practice as a new professor.”

“Great use of time and I now feel as though I have a cohort to travel through the program with—a community.”

Lace Svec



INTRODUCTION EDUCATIONAL PHILOSOPHY PORTFOLIO

[Home Page](#) | [Portfolio](#) | [University Graduate Certification in College Teaching](#)

Disciplinary Teaching Strategies

This competency involves the skills and knowledge required to develop, design, and run a college course. Here I have discussed methods for determining and writing learning objectives, as well as the various teaching techniques that I will use to fulfill and assess these objectives in a classroom.

Adult Students as Learners: Creating Learning Environments

In this competency, I have discussed some aspects of student learning in college classrooms and how I will use this information to design a more effective learning experience for these students.

Technology in the Classroom

In this competency, I have discussed some of the technologies that are available for teachers to utilize when developing a course. I think this competency must be continuously be maintained throughout my career.

Professional Development: Understanding the University

In this competency area, I have addressed professional aspects of working as a professor in an academic institution.

Assessment of learning (mentored teaching experience)

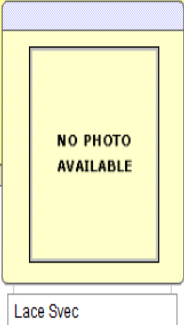
In competency I have considered the assessment of learning and have also conducted a mentored teaching project in which I examined the assessment of a specific skill in a classroom environment.

FONT SIZE PRINT

Lace Svec

▸ [Disciplinary Teaching Strategies](#)

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[Home Page](#) | [Portfolio](#) | [University Graduate Certification in College Teaching](#) | [Disciplinary Teaching Strategies](#)

Disciplinary Teaching Strategies Interpretation

It is critical for teachers to develop strategies to promote learning in their students. These strategies will play an important role from creating a syllabus, choosing a textbook, developing lectures and activities, and creating assignments and tests. I think it is critical that there is a large amount of overlap in the skills that are presented and required for each aspect of the course, so that students will be prepared for what will be presented in assessments. To do this, I think teachers must complete several things when developing a course:

- 1) Define strong, clear learning objectives
- 2) Consider how students learn and identify and practice a variety of teaching methods to help students reach these objectives
- 3) Assess their teaching methods and how effective they are in getting students to reach their teaching objectives.

1) Learning objectives

The most important step in developing a course is defining specific learning objectives. These objectives help instructors focus their course and provide an easy mechanism for assessing the success of both the course and the students. I will prepare objectives with both the information and skills I want the students to learn. For example, some objectives may relate to a specific piece of information that is critical to moving forward, such as the definition of natural selection. On the other hand, I may also write an objective that I would like students to analyze a piece of data and discuss what information it would give the student about natural selection. In this way, the students will be prepared for what types of skills they need to work on and I will focus the course teaching to these types of skills. It has been extremely helpful in focusing the content and format of my lectures to first create an outline of several objectives to map out both the information and how it will be presented. By combining information and skill objectives, I can provide students both with the basic knowledge required to move forward to future courses, and the thinking skills required within the discipline. I will create broad objectives for the course overall, and also smaller objectives for each lesson. These objectives may differ based on the level of the course. In upper division course, I would develop more complex objectives for the majority of the information and these would likely relate more to what a professional in a similar field would be required to do. I think students in upper division courses should be required to apply, analyze, and synthesize a greater percentage of the course content than students in lower division courses. The use of these skills will only be required for a few critical topics such as natural selection in a lower division course. For example, in an upper division course, I may require students to evaluate scientific papers or to synthesize information from several data sets. In contrast, students in a lower division course would be asked to summarize information within a scientific paper or discuss the meaning of one piece of data.

2) Student learning and teaching methods

To help students reach these learning objectives, teachers must consider the methods required for students to learn. It is important to be aware that the way information is presented greatly affects what the student will recall. Student learning is strongest when they can connect new information to previous knowledge. They must also be able to connect information within the lecture and course to other things that they relate to. I think there are several ways to achieve these types of connections in students. First, within lectures, I typically present a number of pictures or stories to connect the information to things they may already know. Examples of this method can be seen in the lectures I have conducted and presented as artifacts for this competency. Additionally, activities can be used to help students make connections on their own and to reiterate the skills that you would like the students to learn. I developed an activity with this issue in mind, which has been added as an artifact. In this activity, students would be required to analyze a couple of data sets with some information from previous lectures and then discuss what the data is telling them. In this way, they can begin thinking about the new topic on their own and connecting the information to a previous section within the class. I think by varying teaching methods within a course, such as using in-class activities or more standard lectures, it will be easier to reach a variety of students and their learning requirements. As a result, I will attempt to overlap the information presented in activities with what has been conducted in homework and lecture, so that all types of learners can access the information in the way that they prefer.

3) Assessment

When developing a lesson plan and syllabus for a course in a teaching class I am participating in this semester, I have found that one of the best ways to start a lecture is to create a number of questions I would like the students to answer about a topic. These questions can be used to ascertain whether the objectives for the lesson have been met. I will use both formal and informal assessment throughout a course. As assessments must test both information and skill objectives, students will need to practice. So, throughout a course, these skills can be informally assessed in questions or activities that relate to how they will be formally assessed. For these informal assessments, I will have the opportunity to demonstrate expectations to the students and they will be exposed to how they will be assessed in the future. These informal assessments will also be critical to determining whether or not my teaching has been effective. Also I can modify my teaching based on the results of these assessments by adding more opportunities to practice a certain skill or clear up any information that students did not fully understand. Since assessments will be guided by my objectives, they will also greatly differ between different courses. Because there will be more analysis, synthesis, and evaluation objectives in a upper division course. I will design larger and more complex assessments such as debates or research papers to determine if students have mastered these

UNIVERSITY GRADUATE CERTIFICATION IN COLLEGE TEACHING: E-PORTFOLIO EVALUATION TEMPLATE

E-portfolio component	<i>Comprehensive</i>	<i>Developing</i>	<i>Cursory/Unacceptable</i>
Disciplinary Teaching Strategies			
Description of competency	Articulates issues and challenges in teaching the student's specific discipline(s), and identifies specific skills or abilities that are important for demonstrating this competency	Articulates teaching issues and challenges, but does not clearly relate them to the discipline Specific skills or abilities are identified, but they are not clearly connected to the competency area	Issues and challenges are vague, and there is no connection to the discipline Skills and abilities are not identified and connected to the competency area.
Artifacts (e.g. syllabus for teaching course, your own syllabi, assignments, evaluations)	Documents participation in the disciplinary teaching course or workshops, and provides examples of a variety of your own teaching materials	Documents participation in the disciplinary teaching course, but does not provide your own examples	Does not provide documentation for this competency
Artifact rationales	Relates each artifact to your own description of the competency, explains why it demonstrates a specific skill or ability you have identified	Describes artifacts but links to the specific skills and abilities are vaguely expressed	Describes artifacts but does not connect them to skills or abilities
Interpretation	Builds on your description of the competency, explains why it is important for effective college teaching, describes how you have met the competency (e.g., workshop, activity, assignment, activity) and what you have learned about your own teaching practice through this competency, and provides specific examples of how you would use what you learned in future courses	Builds on your description of the competency, explains why it is important to effective college teaching, describes how you have met the competency (e.g., workshop, activity, assignment, activity) but does not demonstrate what you have learned about your own teaching practice through this competency, or provide specific examples of how you would use what you learned in future courses	Restates the description of the competency and describes activities No reflection on current or future practice
Adult Students as Learners: Creating Learning Environments			
Description of competency	Articulates specific issues and challenges in creating learning environments for college students, and identifies specific skills or abilities that are important for demonstrating this competency	Articulates teaching issues and challenges, but does not clearly relate them to college learners Specific skills or abilities are identified, but they are not clearly connected to the competency area	Issues and challenges are vague, and there is no connection to the problems of college learners Skills and abilities are not identified and connected to the competency area
Artifacts (e.g., workshop materials and agenda; related assignments or activities)	Documents participation in workshops or other activities, and provides examples of materials you have created to address the skills and abilities identified in your description	Documents participation in activities that address the competency, but does not provide your own examples	Does not provide documentation for this competency
Artifact rationale	Relates each artifact to your own description of the competency, and explains why it demonstrates a specific skill or ability you have identified	Describes artifacts but links to the specific skills and abilities are vaguely expressed	Describes artifacts but does not connect them to skills or abilities
Interpretation/reflection	Builds on your description of the competency, explains why it is important to effective college teaching, describes how you have met the competency (e.g., workshop, activity, assignment, activity) and what you have learned about your own teaching practice through this competency, and provides	Builds on your description of the competency, explains why it is important to effective college teaching, describes how you have met the competency (e.g., workshop, activity, assignment, activity) but does not demonstrate what you have learned about your own teaching practice through this competency, or	Restates the description of the competency and describes activities No reflection on current or future practice

Writing Groups

Goal: ameliorate mid-program attrition around significant milestones

Interventions: English, Genetics, Neuroscience and Sociology: train current ABDs to facilitate writing groups focused on a significant milestone: 2nd-year paper, comp exams, dissertation proposal. Coordinated by GS and MSU Writing Center. Neuroscience conducted a writing “clinic” for peer-reviewing articles before they were submitted to journals.

Results:

- All Sociology participants passed 2nd-year paper, most with no revisions required.
- Genetics dissertation proposals passed with no revisions required.
- 4 Neuroscience students published peer-reviewed articles.
- Students and facilitators reported that participants’ “writing and confidence level improved dramatically.”
- Both participants and facilitators felt better connected to department.

Writing Groups

Some participant comments:

“I feel the end result was a much easier to read and more directed proposal. My committee was very impressed with the proposal and passed me with no conditions. The writing group was very helpful with the structure and arrangement of the proposal.”

“the group helped me to network and meet more people in the department. The group really helped me prepare for the scariest part for me-- faculty feedback--by doing run-throughs and asking good questions. .. it helped me grow as a "colleague" through the discussion and editing process.”

“by the end I was able to synthesize a lot of information into a concise response, and felt more confident about my conclusions.

Next steps: Continue program with GS and WC and expand to other departments

Faculty Train-the-Trainer

Goal: expand programs; create faculty buy-in; develop mentors

Interventions:

- Conflict Resolution Train-the Trainer programs
 - General session at MSU, Texas (hosted by Rice), Stanford, Montreal-- Prof. Society
 - Work with ombudsman offices

Next steps:

- CAFFE Faculty “Fellows” in Graduate School
- Connect CAFFE to NSF Science and Tech Center (BEACON) and the partner institutions (Washington, Idaho, Texas, North Carolina A&T)

The Power of Data

GradInfo: Centralizing and Maintaining Timely Data

Program assessment: Linking Impact to Outcomes
(completion, TTD, placement, career satisfaction)

Admissions Files: What Predicts “Success”

Admissions Data

Goal: link admissions profiles with completion data to find predictors of “success”

Collected admission information for the 1996-2003 cohorts and matched them with completion outcomes.

Admissions committees in participating departments identified “predictors of success” used in admissions decisions:

- type of undergraduate and master’s institution,
- undergraduate and master’s GPA
- GRE scores
- prior research experience
- prior professional experience
- match between previous major and doctoral degree program

Chemistry Comparing completers versus non-completers:

- No difference in GRE scores
 - Doctoral GPA (finishers and non-finishers) positively related GRE-Q scores
- No difference for Chem vs Non-Chem B.S. degree prior to admission
- No difference in master's received within versus outside of US

Among finishers only:

- Time to degree (TTD) lower for international students
 - International finishers have higher overall GRE score, higher GRE-Q and higher GRE-A versus domestic students
- TTD negatively related to Doc GPA (i.e., higher GPA = finishing sooner)

English Comparing finishers versus non-finishers:

- No difference in GRE scores
- 50% of domestic students finish; 30% of international students finish
- No difference when looking at previous degrees (entering with or without master's)

Among finishers only:

- TTD not correlated with GRE scores or doctoral GPA
- TTD is longer for domestic finishers than international

Our Partners—THANK YOU!

- **Departments:** Chemistry, Electrical Engineering, English, Genetics, History, Microbiology, Neuroscience, Pharm-Tox, Philosophy, Plant Biology, Sociology
- **Other offices and programs:** Office of Planning and Budgets, Women in Science, Advance Grant, Teaching Assistant Programs, CIRTL, Ph.D. Career Services, Center for Research on Science Teaching and Learning, AGEP, CAFFE