
Proceedings of the 64th Annual Meeting

**MIDWESTERN
ASSOCIATION OF
GRADUATE SCHOOLS**

2 0 0 8

Midwestern Association of Graduate Schools

**Proceedings of the
64th Annual Meeting**

**Great Expectations—Managing the Graduate
School’s Roles and Responsibilities**



**St. Louis Hilton at the Ballpark
St. Louis, Missouri
April 2–4, 2008**

**Executive Committee
2007–2008**

**Gail Scukanec, Chair
University of Wisconsin—Eau Claire**

**Diana Carlin, Chair-Elect
Council of Graduate Schools**

**Mary Beadle, Past Chair
Assumption College**

**Hilary Ratner, Member-at-Large
Wayne State University**

**Dennis Nunes, Secretary/Treasurer
St. Cloud State University**

TABLE OF CONTENTS

Plenary I: The Place for the Graduate School in a University

Perspectives on the unique role graduate deans hold relative to other deans and other central administration staff and how to navigate it to be a successful advocate for graduate education. The keynote presentation was followed by a panel of graduate deans who responded and related their experiences when a graduate school is restructured or challenged with a restructuring and when a graduate school was created or expanded. Audience members shared their experiences with organizational change as it impacted their responsibilities.

The Place for the Graduate School in a University

Keynote: Brian L. Foster 1

Plenary II: Trends in Graduate Education

An examination of the demographic shifts that are taking place among graduate students, new recruitment practices, professional doctorates, and growth in master's degree programs at all types of institutions. The presentation was followed by round table discussions around the topics explored in the presentation.

Ph.D. Completion and Attrition: Analysis of Baseline Data from the CGS Ph.D. Completion Project and the Effect of Interventions to Improve Ph.D. Completion at Duke University

Lewis M. Siegel 8

Trends in Graduate Education

Gail Scukanec 13

Plenary III: What Graduate Students and Faculty want from a Graduate School

Brief statements were provided by a panel of current graduate students and new faculty with regard to what they want and need from a graduate school. The presentations were followed by a question and answer session with the audience.

The Role of the Graduate Dean in the Professional Development of Doctoral Students: An Outcomes-Based Framework

Melissa McDaniels and Ann E. Austin 20

Professional Science Master's Programs: Introduction

Carol Lynch 24

Professional Science Masters Programs: A Graduate Dean's Perspective

Priscilla Kimboko 26

Developing and Sustaining a PSM: The Program Director's Perspective

Edward Caner 36

Recent Trends in PSM Development

Phil Tuchinsky 39

Academic Support Services for Graduate Students: The Why and the How

Christine Jensen Sundstrom 44

Workshops

<i>Pre-Conference Workshop for New Deans/Assistant/Associate Deans</i> Gail Scukanec and Diana Carlin.....	49
<i>Telling the Graduate Story: Inside and Out External Case Study</i> Pam Benoit.....	51
<i>Online Courses and Degree Programs</i> Alan D. Heisel, Ed.D.....	52
<i>Online Courses and Degree Programs</i> Gail Scukanec.....	57
<i>Leadership Roles of the Graduate Dean</i> Robert M. Augustine... ..	60

MAGS Committee Reports

Distinguished Master's Thesis Award Committee	69
Treasurer's Reports for 2007 and 2008	72
Membership Committee Report	74
Publications Committee Report.....	75

Instructions to MAGS Contributors

<i>Instructions to MAGS Proceedings</i>	76
---	----

Editor

Frank A. Einhellig

Associate Provost and
Dean of the Graduate College
Missouri State University
Springfield, MO 65897

Co-Editor

Carla Coorts

Assistant to the Dean, Graduate College
Missouri State University
Springfield, Missouri 65897

Formatting and Design Consultant

Justin Kingery

Teaching Assistant, Department of English
Missouri State University
Springfield, Missouri 65897

The Place for the Graduate School in a University

Brian L. Foster
Provost
University of Missouri-Columbia
114 Jesse Hall
University of Missouri
Columbia, MO 65211-1090
fosterbl@missouri.edu

Abstract

Like the provost, the graduate dean occupies an institutional position that “puts the pieces together.” A provost is responsible for facilitating the discussion about mission and goals, and for bringing the many organizational parts of the institution together to form a coherent whole. Analogously, the graduate dean, as both a dean and an institutional official, brings together the academic deans as a team. More important, the dean is the leader for graduate interdisciplinary programs, for preparing faculty for the many sectors of higher education, for fostering the educational dimension of economic development, and developing the graduate education “story” for the non-academic world. Only the graduate dean can put the institutional pieces of graduate education together to form a coherent, institutional whole.

Introduction

Thank you. I am glad to have the chance to be with you today. As you know, I’ve been a graduate dean. Graduate education is something I really care about, and I appreciate the opportunity to talk with you about it today.

I’d like to begin by discussing my current role as provost—this to provide some institutional context for graduate education. I would like to start with a caveat: that is, many very different kinds of institutions are represented here today. Operationally, the function of the graduate school and the graduate dean may not have a lot in common from one school to another. This is a reflection of size, complexity, degree mix, and so on. But from a broad institutional perspective, there may be more in common than meets the eye. It is this institutional perspective that I’d like to use to lay the groundwork for discussing my job and, by extension, the graduate dean job. I might add that from a broad higher-education perspective, we may see striking complementarities; I’ll come back to that shortly.

Provost’s Perspective: Putting the Pieces Together

Let me start by saying that my job is putting the pieces together to make a coherent, effective institution. But “putting the pieces together” can be seen from different perspectives. Most generally, it can mean putting the organizational pieces together. For example, this could mean putting the colleges together: deans become a team, working as a team with Student Affairs, research units, and others.

There is a broader functional perspective, however, that is far more interesting. That is, we must create coherence in functions that cut across organizational units. For example, faculty governance is an institutional function that cuts across colleges and other units. Curriculum, economic development, international programs, enrollment management, and of course graduate education are other examples. From an even broader higher education perspective, the issues transcend individual institutions to pose the question: how do we manage institutional complementarities? Clearly, higher education institutions have very different roles in, say, preparing the workforce: community colleges, four-year liberal arts institutions, regional universities, proprietary universities, and large research universities all have very different roles in the broad “system” of higher education in workforce development, which is reflected by their program inventory, modes of delivering instruction, and other matters.

The point of all of this, of course, is that higher education is an extraordinarily complex, differentiated system, and putting the pieces together is a matter of great interest to any institution in the “system,” both in regard to putting the pieces together on an individual campus and putting the highly segmented higher education system together to form a coherent whole.

Provost’s Perspective: Broader Functional and Strategic Matters

On any single campus, there are many functional areas that cut across multiple units, with key elements broadly distributed across campus. Perhaps the best example is curriculum—a key element of the instructional plan. This kind of “academic plan” is much more than just a collection of courses. The courses are elements in a structure that have to come together to constitute a coherent whole. A metaphor that I like is that courses are like a pile of bricks, doors, and windows in the yard; the structural question is how to put them together to make a good building. As with most other matters at the University, the provost does not, in an operational sense, put the courses together to form the curriculum, but he or she must be central in the discussion, since curriculum touches everything going on the institution—e.g. tuition revenue, facilities, faculty hiring, and enrollment management.

More broadly, institutions of higher education exist in a rapidly changing environment—and a very competitive one. They need strategic planning to help them achieve their goals in the difficult environment—to provide continuity in disciplined strategic action to create the programs, revenue streams, and other elements of a successful institution while at the same time, assuring adaptability. It is not enough for each unit to pursue its own ends independent of other units. A simple curriculum example: if an institution has a strong Chinese History program, sustaining and enhancing this program will require language programs, Art History, and study abroad (among other things), all elements that come from different units and have to be aligned. Similarly, a strong Natural Resources program would require alignment with Chemistry, Biological Sciences, Geosciences, and Geospatial Science. Again, strategic alignment (a fancier term for putting the pieces together) is critical.

Other examples are easy to find. Closely related is budget—i.e., financial planning. Budget **MUST** be aligned with strategic planning; without a closely aligned budget, there is no strategic plan, and without a closely aligned strategic plan there is no budget. If resource allocation and planning are not aligned with the plan, funding for hiring, facilities, management functions, and other matters will simply not be available in appropriate amounts. Every dollar spent on one place is a dollar that cannot be spent elsewhere. Closely aligned with planning and budget is quality assurance: program reviews, accreditation, continuous quality improvement, and faculty development, for instance, are inseparable from planning and budget.

Again, the point here is that putting the pieces together **IS** the provost's job. It is a matter of making the institution coherent and effective.

Provost's Perspective: Broad Higher Education Issues

Similarly, there is a unique provost's perspective on broader higher education issues that cross the sectors of higher education: community colleges, four-year private institutions, the proprietary sector, the regional doctoral institutions, and the major research universities, among others. The important point is this: the different sectors of Higher Education fit together into a coherent system (or, at least they should fit together) that on the one hand provides access to higher education for a very large portion of the American population, and on the other hand, provides the incredibly wide variety of skills needed for today's workforce.

From the standpoint of graduate education, these are daunting issues. For example, higher education has become an entitlement as a practical matter. As in other areas, entitlements create immense political interest. Thirty years ago, it would have been unthinkable that everyone had a right to a higher education. Today it is a truism...for undergraduate education. Today, the political interest is in undergraduate education, which is a challenge to research and graduate education. The real point is that we have to manage the political dimension of higher education to position graduate and professional education productively in relation to undergraduate issues.

Another source of political interest in higher education is economic development. Much of this issue focuses on research, in particular on creating intellectual property that can be commercialized, and graduate programs are well positioned in this regard. It is true, it should be added, that a great deal of workforce preparation is done at the undergraduate level—indeed, much in the community colleges and proprietary schools. The focus on tech transfer is extremely complex. Since the Bayh-Dole act in 1980, we have been in a volatile regulatory and legal environment—as we sort through conflict of interest and ownership issues, for instance. Tech transfer requires a high level of institutional attention for faculty development and compliance.

One other broad higher education issue that merits attention is the new global environment for higher education. We now compete for students world-wide as the number of very high quality institutions develop in, say India and China, at the same time as European, Australian, and other institutions compete intensely for international students. Moreover, we must engage in the global research environment, though security, export control, immigration restrictions, and other matters are difficult to manage.

The point of this is that, from an institutional perspective, the provost's "putting the pieces together" is critical. My discussion of the graduate dean role will build on my "provost's perspectives," and I'll argue that a graduate dean's job is much like the provost's in this respect.

Graduate Dean's Perspective: Organizational Issues

Much like the provost, the graduate dean pulls the pieces of graduate education together to create a coherent whole. The graduate dean is positioned well to do so in the sense that he/she is both a colleague of the line deans and an institutional official with a university wide perspective. No one else in the university is so situated, and accordingly the dean is a unique asset.

One particularly important area where such coherence is critical is in interdisciplinary studies. It is probably correct to say that interdisciplinary research and graduate education ARE our future. But productively bringing people together from multiple disciplines is challenging. There are, of course, turf control matters. But the major issues stem from difficult, substantive matters relating to research: we socialize our graduate students very well to their disciplines, including such critical issues as how to frame a research problem (very different from one discipline to another), or what constitutes a valuable outcome (again, very different in different disciplines). Productive communication is often made difficult by these differences.

The issue becomes even more complex in view of the fact that the main reason for doing interdisciplinary research is to bring people with different research cultures together so that they can benefit from the complementarity of their different disciplines. That is, it is critical to maintain the integrity of the disciplines in order to benefit from bringing diverse disciplines together. This is a key area for graduate dean leadership along with the research officer and provost, and it spills over into many important academic functions like promotion and tenure, hiring, and resource allocation.

The graduate dean is also a key link to different sectors of higher education. Probably the most important point is that our research universities train the professoriate for all sectors of higher education. Faculty function very differently in different sectors, however, and our graduate education system needs to adapt to this reality much better than it has to date. One prerequisite for so adapting would be for graduate faculty to become familiar with faculty roles in different kinds of institutions...and to come to respect them. Not to do so is for research universities to risk losing the faculty market in some kinds of institutions. Graduate deans need to play a leadership role in dealing with this issue.

Graduate Dean's Perspective: Broad Functional Issues

One of the most important changes in the environment of higher education in recent years is the broad expectation that universities should be a major force in economic development. Certainly, quality education in the “knowledge economy” is critical. Our workforce needs are changing, requiring more sophisticated skills and knowledge at many levels. But given the broader connection to the corporate world, the key role of higher education in creating and commercializing intellectual property is a fairly new perspective. It is true, of course, that universities have had a broad role in economic development for a long time. Their role is much broader than tech transfer, however, and has often been overlooked. In any case, graduate education has a major role in tech transfer, not the least of which is that the workforce in the labs is generally made up of graduate students.

Even more important, the very high-end workforce preparation for economic development—especially in the tech transfer area—is at the graduate level. And the reality is that the U.S. does not produce a viable pipeline for our national science, engineering, math, and technology workforce. We have for many years relied heavily on international students to fill this important workforce niche, but for several reasons (e.g., overseas competition, security issues), that international pipeline is in question. It is not an exaggeration to say that our current meager domestic pipeline for scientists and engineers is insufficient. Without large numbers of international students, our entire science and engineering establishment would collapse. This is a broad social/cultural problem—i.e., the lack of incentive to enter these fields—but the universities must find a way to provide national leadership, and graduate deans must be at the forefront of this leadership effort.

Closely related to the issues surrounding economic development are the dramatic changes we have seen in the research environment. Federal research funding has become increasingly competitive, and this has big implications for graduate education. Most importantly, perhaps, graduate student financial support, especially in the STEM fields, depends heavily on research grant funding. As noted above, visa restrictions and international competition for the best graduate students are highly problematic, along with export control and broader immigration issues. All together, these factors seriously threaten future research productivity.

Other important issues include the strong trend toward interdisciplinary research and education. The disciplines themselves are morphing rapidly—compare, for instance, the disciplinary definitions of Geology, Geography, Zoology, Botany, and Microbiology from twenty years ago to the shape of today's disciplines in those areas—probably more accurately represented as Geological Sciences, Geospatial Sciences, and Biological Sciences. Materials Science and Engineering and Informatics provide other good examples. Graduate deans are key figures in managing these crucial disciplinary changes in the sense of managing the universities' organizational and cultural adjustments to the current disciplinary environment.

One final matter requires at least a brief mention: the globalization of science. This issue is many-dimensional. First, and perhaps most importantly, research in most fields is international in the sense that important work is going on all over the world, and the American scientists MUST interact effectively in that international research environment if they are not simply to be left behind. For that matter, the issue is important in a far broader research environment than science—e.g. including Law, Business, Health, and Social and Cultural Studies. Our workforce MUST have skills to work in international environments. Security concerns, export control, and immigration issues limit international research collaboration in significant ways. Again, graduate deans must play a leadership role in dealing with these crucial and very difficult matters.

The Graduate Dean's Perspective: Broader Strategic Matters

Perhaps the most important development in higher education in the past half-century is the degree to which it has become politicized. Most of the political interest has come from a stunning success of higher education—that is the dramatic growth in participation of the American public and, as I indicated above, the de facto status of “a college education” as an entitlement. The current rhetoric is generally about access, affordability, and accountability, the themes of the multi-year conversation in Washington about reauthorizing the Higher Education Act. From the graduate education perspective, as noted above, the big issue here is that this conversation is almost entirely about undergraduate education, a fact that in effect marginalizes graduate studies.

The flip side of this “marginalization” issue is that we are not very good at telling the graduate education story, especially to those outside of the academy. Legislators, taxpayers, and others often have little sense of what graduate education consists of. One of my favorite moments as a graduate dean was hearing a legislator tell a group of graduate deans that they didn't understand what his constituents thought of graduate education. Most, he said, knew that students usually graduate in four years; it takes graduate students longer, so it must be remedial education! Unfortunately there is more than a grain of truth in the message that we don't tell the story in a compelling way for non-academics. Telling the “graduate” story effectively is a key issue for graduate deans, who must take the lead in increasing public understanding and visibility of graduate education.

Building effective institutions and programs requires both continuity and adaptability. Gaining program recognition and stature takes many years of disciplined investment—e.g. building physical infrastructure, library collections, and human resources. At the same time, the program efforts must be adaptive, taking careful account of the changing environment. In the case of graduate programs, it normally takes decades to achieve high stature, and institutional plans must be built on the unique competitive advantages of the institution. In just this sense, graduate program planning is a broad, institutional effort, and the graduate dean must play a key leadership role, aligning the program development with broader institutional initiatives, working with the chief academic officer, the other deans, and the faculty.

But, again, a strategic plan without a comprehensive financial plan is not really a plan. Each dollar can be spent only once. This is an especially complicated matter for graduate studies, since there is substantial overlap in resources with other programs. For instance, faculty and facilities are shared with undergraduate and research programs, as are business and other support functions. Therefore, planning for graduate education must be aligned with planning for undergraduate education, research, extension, and other parts of the institution. Again, the graduate dean must be the one who brings the broad graduate education financial support issues together in discussions of the broader institutional resource issues.

Conclusions

My main theme, through both the provost and the graduate dean sections, has been “putting the pieces together.” I have not addressed operations such as graduate admissions, centralized recruitment activities, curriculum control, and program review. These are essential operations; their importance goes without saying. These operations could, perhaps, be duplicated in every unit on campus, and that would be very expensive. Most of what I’ve addressed is “institutional”: Graduate Deans’ contributions are necessary to achieve an effective institution.

Put another way, only the graduate dean can:

- Position graduate education in relation to research, undergraduate education, economic development, and other institutional matters;
- Align each dean’s interests with those of other deans;
- Develop a “graduate education story,” both internal and external;
- Stay abreast of big graduate education issues and keep the campus informed and engaged;
- Assure quality in graduate education.

These are, of course, only examples. The big point is that only the graduate dean can put together the institutional pieces of graduate education.

*Ph.D. Completion and Attrition:
Analysis of Baseline Data from the
CGS Ph.D. Completion Project and the
Effect of Interventions to Improve
Ph.D. Completion at Duke University*

Lewis M. Siegel
CGS-NSF Dean in Residence and Vice Provost
Duke University

The CGS Ph.D. Completion Project is designed to determine patterns of Ph.D. completion in various fields at a number of U.S. universities and to eventually discover best practices that tend to increase the rate of completion for various groups within those fields. So far, quantitative data on completion and attrition at the individual program level has been submitted by 30 institutions. The data cover 5 broad fields, 54 disciplines, and 330 programs, and involves 49,000 students. Data are being collected for students entering in each of the years beginning in 1992-93 through 2000-01. These students have been divided for purposes of analysis into three 3 year cohorts: Cohort A, students matriculating in 1992-93, 1993-94, and 1994-95; Cohort B, matriculating in 1995-96, 1996-97, and 1997-98; and Cohort C, matriculating in 1998-99, 1999-2000, and 2000-01. Data on completion have been submitted by 24 institutions, at the broad field level only, with respect to gender, citizenship, and ethnicity for U.S. students. The demographic database includes 40,000 students. The present report will focus on 10 year completion rates for Cohort A of the CGS study. Program data for this cohort covers 12,000 students, while demographic data are available for about 9,500 students. The distribution across fields is: Math and Physical Sciences, 31%; Social Sciences, 21%; Engineering, 19%; Humanities, 17%; and Life Sciences, 12%.

Ten-Year Completion Rates

While the overall 10 year completion rate was 57% for Cohort A, completion varied by broad field: 63-64% in Engineering and Life Sciences, 55-56% in Mathematics/Physical Sciences and Social Sciences, 49% in Humanities. There was a wide range of completion rates within the broad fields---e.g., 44% in Political Science vs. 65% in Psychology within Social Sciences, and 56% in Electrical Engineering vs. 78% in Civil Engineering. Plots of Ph.D. completion vs. years after matriculation plateau significantly by year 10 in the STEM fields, but not in the Humanities and Social Sciences.

Males complete at significantly (7-9%) higher rates by Year 10 in the STEM fields, while females complete at higher rates (4-5%) in the Social Sciences and Humanities. Annual completion rates tend to be higher for males in early years after matriculation. For example, in Mathematics/Physical Sciences, annual completion rates for women catch up to those for men only in year 6 and are similar after that. In Social Sciences, women catch up in year 5 and their annual completion rates surpass those for men after that.

International students complete at higher rates by year 10 than U.S. domestic students in all broad fields. The differences are greatest in the STEM fields, particularly in Math/Physical Sciences (68% vs. 51%) and Engineering (70% vs. 58%). International students in STEM fields complete with shorter time to degree than domestic students.

Student numbers in some of the broad fields are relatively small for under-represented minorities, so data for individual U.S. ethnic groups should be interpreted with some caution. African American students complete at much lower rates than U.S. whites in Mathematics/Physical Sciences (37% vs. 52%), Engineering (47% vs. 61%), and Social Sciences (47% vs. 57%), but the 10 year completion rates are approximately equal for the two groups in the Life Sciences (60%) and Humanities (51-52%). The time course of completion suggests that African-Americans have a longer time to degree than U.S. whites in the Life Sciences.

Asian Americans complete at significantly lower rates by year 10 than international students in all fields, and at lower rates than U.S. whites in all fields except Mathematics/Physical Sciences where both complete at about the same rate. Hispanic students complete at significantly lower rates than whites in Life Sciences, Engineering, and Humanities, but at approximately equal rates in Mathematics/Physical Sciences and Social Sciences.

The overall rate of attrition for all Ph.D. programs by year 10 is 31%. Attrition rates after 10 years are highest in Mathematics/Physical Sciences (37%) and Humanities (32%), and lowest at about 26-27% in the Life Sciences, Engineering, and Social Sciences. The time courses of both completion and attrition for all students in the STEM fields flatten out before year 10, and a relatively small proportion (9-11%) of the entering cohort remains after year 10. In the Humanities and Social Sciences, in contrast, both completion and attrition continue to rise through year 10, and a much larger fraction of entering students (17-20%) are still pursuing the Ph.D. after year 10. It is interesting that the time course of completion for African American students is qualitatively similar to that for all students in all broad fields except the Life Sciences, where completion is continuing to rise through year 10, suggesting that although completion rates are identical for African Americans and whites at 10 years, the time to degree is longer for African Americans in the Life Sciences.

Although there are many analyses which can be done with current data from the CGS Ph.D. Completion Project (e.g., the effect of institution type---public vs. private; cohort size; year of matriculation; early vs. late attrition), it should be noted that the project is primarily about examining interventions that might improve completion rates and reduce attrition. The participating institutions are conducting exit surveys of completing and non-completing students to gain insight as to factors that influence the decision from the students' perspective. The interventions being studied in the project fall into a wide range of categories, including selection/matching, mentoring and advising, financial support and structure, program environments, research experiences, and curricular and administrative processes and procedures. From the project data, it is hoped that we can determine the relative impact of the various types of intervention, and how efficacy might vary across broad fields and populations.

Examining Interventions to Improve Completion

I now report on the results of a series of interventions designed to improve the rates of Ph.D. completion and reduce attrition introduced at Duke University, where I served as Vice Provost and Dean of the Graduate School from 1991 through 2006. The interventions derived from a faculty consensus on Duke Graduate School goals and policies was reached in the early 1990's: First, Duke departments and programs should admit Ph.D. students based on their potential for highest quality scholarship rather than primarily to meet service needs of departments or faculty; and second, Duke should provide adequate funding and minimize service requirements so that Ph.D. students can have time to be students and complete the degree in a reasonable period of time.

Studies at Duke conducted between 1991 and 1995 showed that there were several issues that needed to be addressed in order to achieve these goals: 1) In interviewing students at Duke, it became clear that many students did not know what they were getting into when they applied to graduate school. There was insufficient understanding of the independence required in graduate vs. undergraduate education. There was shock in discovering the reality of the academic job market. There was little realization by applicants of the actual chances of completion and the length of time to degree. 2) Faculty relied heavily on using quantitative measures to screen applicants. High Graduate Record Examination (GRE) scores and undergraduate grade point averages (UGPA) defined cut-off score below which applications were not read carefully or at all. An analysis of Ph.D. completion rates at Duke showed that in all broad fields, there was little correlation between GRE scores or UGPA and completion, but, faculty, when presented with sets of applications in either a high GRE/UGPA range or in a much lower GRE/UGPA range could pick out students who had significantly higher completion rates than the Duke average simply by carefully reading the application. It was also found that, in spite of the practice of bringing applicants to campus, usually after admission, there was too often a poor fit between actual student and faculty interests. 3) The system of funding allocations to departments to support Ph.D. students had been designed to achieve maximum service at minimum cost.

In an effort to improve completion rates, the Graduate School instituted a number of interventions between the years 1995 and 1998. In order to achieve better informed selection of students, departments were strongly urged to reduce the emphasis on GRE scores and UGPA, and to carefully read the entire application for all applicants, with an emphasis on demonstrated research experience. In an effort to achieve transparency so that all applicants would know what they were getting into if admitted to graduate school at Duke, data for each Ph.D. program on placement of graduates, time to degree, and completion rates was placed on the Web. Departments began to interview students brought to campus before admitting them, seeking an honest exchange of information between faculty and students, rather than just selling the program.

There were significant changes in the way students were funded in departments in Arts and Sciences. A 5-6 year funding guarantee at competitive stipend levels was offered to all admitted students. Departments were given (3 year) budgets based on graduate education quality parameters (such as completion rate, ability to attract students with competitive merit fellowships, size of faculty actually supervising dissertations, etc.) rather than service needs. Student teaching loads were substantially reduced, and more fellowship and Research Assistant years were added. Funding these changes required a significant downsizing of the Ph.D. population in many programs, particularly in the Humanities and Social Sciences. Science departments were urged to give students choice of mentors in years 1 and 2, and not bring in students tied to a specific research grant. The sciences were required to substantially increase external support of their Ph.D. students if they were to avoid downsizing of their graduate programs.

There were a number of programmatic changes as well which were designed to improve the experience of Ph.D. students at Duke. Among these were introduction of field-specific symposia to introduce a variety of career options to Ph.D. students; enhanced students services including a strong investment in subsidizing child care for the neediest graduate students; significant improvements in the training to teach program; and introduction of awards for excellence in faculty mentoring that were highly publicized.

In order to assess the effect of these interventions, Ph.D. completion and attrition rates were analyzed for cohorts of Duke Ph.D. students matriculating in 1992-93, 1993-94, and 1994-95 (Cohort A) and in 1998-99, 1999-2000, and 2000-2001 (Cohort C), and the Duke data compared to national averages for each broad field as determined by the CGS Ph.D. Completion project.

Data for Cohort A, which matriculated prior to the interventions, showed that 10 year Ph.D. completion rates at Duke were already greater than the national average in all broad fields except Engineering. In all fields, the attrition rates after 10 years were also equal to or higher than the national average. Thus, in all fields, there were very few students continuing at Duke after year 10 as compared to national averages. This was particularly striking in the Humanities (5% of Duke matriculants continuing vs. 20% nationally) and Social Sciences (2% vs. 17%). The 10 year completion rates for Cohort A at Duke exceeded the national average in all fields irrespective of ethnicity, gender, or citizenship status, with the exception of female and international students in Engineering.

When the completion and attrition patterns at 7 years for Duke Cohort A vs. Cohort C were compared, there was a significant increase in completion in the latter cohort for the Humanities (35% to 46%) and Social Sciences (51% to 63%) as well as a decrease in attrition (Humanities from 29% to 23%, Social Sciences 34% to 27%). These are the fields where the changes in funding and teaching loads would be expected to have the greatest impact. The improvements were widespread: Of the 15 Humanities and Social Science programs, ten had at least a 10% improvement in completion, and ten had at least a 10% decrease in attrition). Completion did not change significantly in four of the programs, and only one showed a significant decrease. Time courses of completion and attrition showed that completion was

markedly increased in the years 5 through 7 in Cohort C vs. A and the completion rate for those years was double the national average in Duke Cohort C in both the Humanities and Social Sciences. Attrition increased in the peak years 2 and 3 in Duke Cohort C, but rapidly decreased in later years to below both the Duke and CGS cohorts A.

There was no significant change in 7 year completion rates in the broad fields of Life Sciences, Mathematics/Physical Sciences, and Engineering between Duke Cohorts A and C. Attrition did decrease by more than 10%, however, in the latter two fields. It is instructive, however, to compare programs which participated significantly in the interventions cited above, particularly in terms of student selection, reduction in teaching, and giving students some choice in years 1 and 2. Arts and Sciences Biology was one of these, and completion rates and attrition rates improved quite significantly, as did those in Chemistry and Mathematics. There was little change in Physics and Biomedical Sciences, both of which already had funding and teaching/choice practices similar to those described above in Cohort A. Duke departments which did not embrace the changes in selection, funding, and student choice had either no change or decreased completion in Cohort C vs. Cohort A.

Completion rates increased at Duke in Cohort C vs. A for all U.S. ethnic groups, males and females, and international and domestic students in the Humanities and Social Sciences. In the STEM fields, the results were mixed. Previously low completion rates, as compared to the national average, for females and international students in Duke Cohort A did increase significantly in Cohort C, but the effects on most other groups were modest. Perhaps, most notable was the fact that completion rates for females increased by at least 10% in all of the broad fields except Mathematics/Physical Sciences (where the completion rate, already much higher than the national average in Cohort A, did not change significantly in Cohort C). It seems plausible that the Duke investment in child care for needy Ph.D. students may have contributed significantly to the increase in female completion.

The results of the Duke study show that national data on Ph.D. completion and attrition provide important benchmarks for individual programs. More importantly, they indicate that improvements in selection, funding, and freedom of choice for Ph.D. students and introduction of targeted support systems, such as child care, are correlated with significantly improved Ph.D. completion and attrition rates. One must remember, however, that many things were changed in a relatively short period of time at Duke, and so we really have no way to decide which of the changes really had significant effects on improving completion. It is the goal of the CGS Ph.D. Completion Project to come up with some answers to this question.

Trends in Graduate Education

Gail Scukanec
Dean, College of Education and Human Sciences
University of Wisconsin-Eau Claire,
153 Brewer Hall, UWEC, Eau Claire, WI, 54701
scukangp@uwec.edu

Abstract

This session examined the demographic shift within the graduate student population, graduate recruitment practices, professional doctorates, and growth in master's degree programs. Round table discussions followed the presentation.

Demographics (taken from NCES, 2007, and CGS, 2007)

According to the most recent data, it is estimated that 1.6–2.2 million students are enrolled in graduate programs in the United States. Of those students, 59% are women. Approximately 55% of the students in business are male while 74% of the students in education are female. Additionally, 54% of the total students are full time.

Of all US citizens enrolled in graduate education, 28% are members of racial/ethnic minority groups. Women represent 65% of the minority graduate students. Education and business are the two largest disciplines of study for minority students; engineering, physical sciences, and biological sciences are among the smallest disciplines of study for minority students. Of the underrepresented groups, Asian Americans differ from other racial/ethnic minority groups in terms of field of study.

Additionally, 16% of the individuals pursuing graduate education in the US are international students. Of the international students, 48% are studying engineering while just 4% are studying education.

A number of trends are occurring in graduate education in this country. Graduate enrollment has grown 2% annually over the last number of years. There has been a 2% annual increase/year in women in graduate education, a 4% annual increase/year in international enrollments, and a 4% annual increase/year in racial/ethnic minority enrollments. In terms of fields of study, health sciences and education are the greatest areas of growth in graduate education in the United States.

There are a number of concerns related to the future of graduate education and the demographic trends in graduate education. First of all, how do we encourage individuals from underrepresented groups to earn graduate degrees? While an increasing number of minority students are earning graduate degrees, the population is still underrepresented in graduate education at a time when the ethnic/racial population is increasing. How do we meet the needs of the workforce with so few women and racial/ethnic minorities going into science and math?

Are we providing education in areas of need to part-time, non-traditional students? Can we prepare individuals effectively in health sciences to enable us to keep pace with our workforce needs?

The graduate community must continue to monitor enrollment trends and workplace needs and strive to meet the needs of the future in terms of graduate education.

Graduate Student Recruiting

Traditionally, recruiting within higher education has focused on undergraduate students. However there are many reasons why recruiting has become necessary at the graduate level, including the need to get the best students and a more diverse student body, the increasingly more competitive market, and the decreasing undergraduate population. In spite of the need, however, graduate recruiting often suffers from insufficient funding. Primarily undergraduate institutions are often well funded to recruit for undergraduate students and have been for some time. Many such institutions are not willing to reduce undergraduate recruitment funding to support graduate student recruitment but are often unable to identify a source of funding for graduate recruitment.

Graduate recruiting is also different, in a number of ways, from undergraduate recruiting. First of all, it is typically driven by academic program/area of study, and is therefore more focused than undergraduate recruiting. Graduate recruiting also differs from undergraduate recruiting in that the target population is not as clear. A recruiter must identify the target population, which is generally by program. One of the keys to graduate student recruiting is through graduate faculty. However, faculty rarely has sufficient time to effectively recruit. Some institutions (or programs within institutions) have developed affiliation agreements with undergraduate institutions and some have used agents when recruiting in some countries outside the US. Many aggressively follow-up with applicants to encourage them to attend their institution and invite applicants to campus (sometimes with funding) for an "open house". Since funding is often an issue for graduate students, funding packages can be the most powerful recruiting tool.

With limited funding and human resources, graduate recruiters must understand the academic programs of the institutions, work closely with the faculty, prioritize graduate recruitment needs, and work with public relations. Finding the right individual for the job may prove to be a difficult task, but may be one of the keys for effective graduate student recruiting.

Professional Doctorates

According to CGS, there is a long history of professional doctorates, beginning with the medical doctorate (MD) and the dental surgery doctorate (DDS), followed by the jurisprudence doctorate (JD), pharmacy doctorate (PharmD), and the education doctorate (EdD). More recently a number of professional doctorates have emerged, such as the audiology doctorate (AuD) and the physical therapy doctorate (DPT).

There are two basic types of professional doctorates, those linked to professional licensure that do not typically require a dissertation or capstone, such as the MD, and those without the link to professional licensure but often with a dissertation or capstone, such as the EdD. CGS (2008) has identified a number of characteristics of professional doctoral programs. These academic programs typically address an area of practice where other degrees are not meeting needs and they emphasize applied or clinical research or practice. Additionally, professional doctoral programs meet the needs of leaders of the profession who will, therefore, hold the professional doctoral degree.

There are a number of concerns regarding professional doctoral degrees. There may be decreased interest in entering health science fields because of increased cost and time to degree when a professional doctorate is required. Additionally, many of the fields that are moving to professional doctoral degrees are fields underrepresented by racial/ethnic minorities; this underrepresentation may be exacerbated by increased cost and time to degree associated with doctoral versus master's degrees. Further, if less individuals are admitted into professional doctoral programs due, not only to the additional time and cost of the degree programs, but also to the reduced capacity of the academic institutions, the gap between supply and demand will increase.

Some individuals are concerned that professional doctorates are not "real" doctorates, and are driven by professions for status reasons. Further, professional doctorates are often outside the purview of the graduate college or school, so there may be no university-wide oversight of such programs. Add to that the fact that professional doctorates are somewhat problematic for accrediting bodies. Such programs are quite diverse and accrediting guidelines for master's degrees are not appropriate nor are accrediting guidelines for research doctorates. So, the oversight of professional doctoral programs may be problematic, and accrediting bodies will be of little assistance in determining how to evaluate quality in such programs.

Professional doctoral programs are definitely with us; they are on the increase in terms of fields of study and students pursuing degrees. As a graduate community we should be aware of the needs of such programs as well as the potential impact of these programs.

Growth in Master's Degree Programs

Since 1960, the number of college and university degrees earned has increased in the US, with the most marked increase in master's degrees. The 2003 US Census data shows that 6% of adults hold master's degrees. In the 2007 CGS survey of graduate enrollment, more than three times as many students were enrolled in master's programs than doctoral programs and 87% of graduate degrees awarded in 2005-06 were master's degrees.

In terms of trends, the number of enrollees in master's programs increased an average of 3% per year over the past 10 years, but increased 5% from the 2004-05 to the 2005-06 year. Further, the number of master's degrees awarded increased an average of 3% per year over past 10 years though there was only a 1% increase from the 2004-05 to the 2005-06 year.

The largest fields of study and fastest rate of growth over the past 10 years for master's programs were in business and education while the fastest rate of growth over the most recent one-year time frame was in health and biological sciences.

There are some relatively new types of master's degrees that have emerged. The Professional Science Masters (PSM) programs, largely supported by the Sloan Foundation, and the Professional Masters (PMA) programs in the humanities and social sciences, supported by the Ford Foundation, are examples of degrees designed to meet today's workforce needs. Additionally, growth in online programs at the master's level has increased access to graduate education for many individuals.

Master's degrees are a huge enterprise in higher education. As more types of programs are developed, more fields require the master's degree for entry level work, more students pursue master's degrees for advancement, and more students seek master's degrees offered through alternative formats, the graduate community must strive to continue to provide quality education that meets the needs of the adult learner.

References

A Report to the Board of Trustees from the Task Force on the Professional Doctorate, the Higher Learning Commission, North Central Association of Colleges and Schools, June 6, 2006.

Bollag, B. *Credential Creep*, *The Faculty: The Chronicle of Higher Education*, June 22, 2007.
<http://chronicle.com/weekly/v53/i42/42a01001.htm>

Redd, K. (2007) *Graduate Enrollment and Degrees: 1996-2006*. Council of Graduate Schools.

Siler, W. and Randolph, D.S. *A Clinical Look at Clinical Doctorates*, *The Chronicle Review: The Chronicle of Higher Education*, July 21, 2006.
<http://chronicle.com/weekly/v52/i46/46b01201.htm>

Task Force Report on the Professional Doctorate (2008) Council of Graduate Schools.

Trends in Graduate/First-Professional Enrollments, National Center for Education Statistics Indicator 9 (2007) retrieved March 20, 2008 from:
<http://nces.ed.gov/programs/coe/2007/section1/indicator09.asp>

Graduate Student Recruitment: Summary of Roundtable Discussion

Individuals gathered to discuss graduate student recruitment presented the following as important consideration/actions in order to recruit graduate students:

- The University of Indianapolis reported that an effective strategy being used to secure the attendance of the top applicants admitted from the pool was to invite the candidates to campus to meet current faculty members, review research interests, and establish strong bonds with the candidates. The programs using this approach reported that it was effective with securing the attendance of the best applicants.
- Several institutions reported attending the national conference on graduate recruitment and noted that a top technique promoted by this group was the use of rapid response from the program's faculty to the applicant. A key to success was to link the applicant with the faculty member doing research in the area of interest.
- Several institutions reported that the National Association of Graduate Admission Professions (NAGAP) also provides workshops on recruitment strategies that have known effectiveness with increasing applicant pools. These members urged institutions to insure that their admissions professionals attended that conference.
- Several institutions noted the challenge to minority and international recruitment. Issues related to the importance of having minority graduate faculty, an on-going cohort of minority students, and programs and services that support minority participation.
- Participants discussed the value of having the admission fee available to provide recruitment resources to the individual programs. Those institutions that make these funds available discussed the link between securing a strong applicant pool and earning the financial benefits that active recruitment provides. Those institutions that have no access to application fees have no financial incentives to offer programs that are reticent to fully engage in recruitment.
- Participants discussed the critical importance of having marketing professionals available to work with the Graduate School and graduate programs to develop effective marketing materials that are targeted at this adult audience. Developing a well integrated and comprehensive marketing plan ensures better results.
- Participants discussed the critical role that web sites play in the marketing of graduate programs and those institutions that offer professional support to create well designed and well organized web pages are highly desired. Participants noted that created "home grown" sites is no longer an effective use of web resources; professional look and design is critical.
- Participants discussed the changing technology tools and discussed the role of pod casting, Face Book, My Space, and related web tools as the communication method of choice among students and that email is not the tool of choice, but highly relied upon in the recruitment process. Having guidance on how to integrate the technology tools helps to plan for the ever changing future.

- Participants discussed the critical importance of targeting their best undergraduates and providing this group with information on graduate school and its opportunities is an essential part of recruitment. Workshops on going to graduate school, the importance of undergraduate research participation and related activities prepares these students for advanced study. Included in this discussion was the role of the Honors College.
- Participants discussed the value of high-cost recruitment agents such as Hobson's, Gradschools.com, Peterson's, etc. These agents received mixed reviews from the participants with many noting that when they tracked the number of students who attended based on the linkage to these expensive recruitment agents, the number did not usually justify the investment. Participants noted that sometimes the students recruited from these agents are related to the value of the agent by specific disciplines. Other participants believed that these agents had been useful with keeping their institution in the public eye.
- Participants noted that People Soft and related admission software can provide a quick response rate using programmable response software. This approach has been useful to programs that did not have a well developed method for responding to inquiries.
- Participants discussed the critical role that the setting of tuition plays with the ability to recruit. The discussion included the influence that the Graduate School has over the setting of tuition and how this decision can negate all efforts to recruit if the tuition is no longer in line with those of competitors.
- Participants discussed the use of 4+1 and 3+2 programs with attracting candidates to graduate study. A number of disciplines have successful advanced graduate enrollments using this combined approach.
- Targeting the strongest undergraduates at their own institutions
- Using current technology tools such as pod casting, and options such as Facebook and MySpace
- Having marketing professionals assist with recruitment efforts
- Linking applicants to faculty doing research in the student's area of interest
- Making sure the web site is a marketing tool and pertinent information is accessible on the site
- Offering 4+1 and 3+2 programs to entice graduate students to stay at the institution
- Tuition costs relative to location and program
- Funding of various recruitment activities
- Recruiting fairs and purchased lists of names are not felt to be particularly effective ways to recruit graduate students
- Graduate programs would be well served by finding out why admitted students did not choose to attend an institution

A number of individuals mentioned the various seminars that are consistently available now regarding the topic of graduate recruitment. These seminars can be very helpful to a graduate professional who is just beginning to be involved in graduate recruiting.

Graduate Student Support

A group of individuals from seven institutions discussed a number of issues related to graduate student support and reported the following:

- None of the universities provided any form of vision coverage
- Services of university counseling centers are available at most institutions for graduate students as well as undergraduate students. Some institutions offer workshops on stress management and/or conflict resolution
- Generally, the same health insurance package was available to graduate students as to undergraduate students. Some cover costs of health insurance for graduate assistants though coverage for spouses/dependents of the graduate assistants was generally not available or prohibitively expensive
- Two of 7 institutions had some form of dental coverage
- Child care was available at a discount rate and based on income for graduate students at just 1 of the 7 institutions

It was pointed out that students often request higher stipends and summer fellowships. Further, graduate assistantships without health insurance coverage often complain about this and institutions without child care often present a number of problems for graduate students.

*The Role of Graduate Deans in the
Professional Development of Doctoral Students:
An Outcomes-based Approach*

Melissa McDaniels, Ph.D.
Michigan State University
mcdani73@msu.edu

Ann E. Austin, Ph.D.
Michigan State University
aaustin@msu.edu

Abstract

This session provided participants with a framework that graduate deans and other stakeholders could use to think about the professional development of doctoral students who aspire to become faculty members. Four broad categories of competencies were presented, and a lively discussion occurred about the opportunities and challenges for using such a framework to think about the goals of doctoral education in participants' institutions.

Forces Changing the Academic Workplace

At the beginning of the 21st century, colleges and universities are encountering an ever-changing external environment. Fiscal constraints, combined with demographic changes and technological advances, are leading to significant changes in the nature of faculty roles in the academic workplace.

With an increasing attention to teaching outcomes (rather than teaching processes), the specialization and interdisciplinary nature of knowledge, new institutional forms and delivery types, as well as a shift in the mix of academic appointments, aspiring faculty members will need to start developing a set of foundational competencies that will enable them to negotiate this environment of rapid change.

Competency Framework

This framework of foundational competencies was developed after reviewing the theoretical work on the socialization of doctoral students for the professoriate (across disciplines), as well as U.S.-based empirical studies on doctoral education undertaken over the past decade. This presentation included a summary of the full framework, originally published in Austin & McDaniels' 2006 chapter in *Higher Education: Handbook of Theory and Research* entitled, "Preparing the professoriate of the future: Graduate student socialization for faculty roles." [The full citation for this chapter is included in the reference section of this document. The authors encourage those interested in learning more about the framework to read this chapter and contact the authors directly with any questions.]

It is important to note that this framework focuses on competencies doctoral students will need to develop in preparing for faculty roles, although we posit that many of the competencies presented will be relevant for individuals seeking careers as leaders in other industries. These competencies in this framework fall into four categories: *conceptual understandings, knowledge and skills in the areas of faculty work, interpersonal skills, and personal attitudes and habits.*

Conceptual Understandings

Deep *knowledge of a discipline* – its theories, assumptions, and methods – is, not surprisingly, a foundational competency all doctoral students need to develop to earn their degrees. In an era of the increasingly specialized nature of knowledge, doctoral students will also be working at the borders of other disciplines, and need to be prepared to recognize the values and perspectives of other traditions. Next, aspiring faculty would be well served to have a more complete understanding of the *purpose and history of higher education* in the United States. The more doctoral students have an understanding of the traditions of research, teaching, and service, as well as the core values of higher education (e.g. academic freedom, civil discourse), the more prepared they will be to understand the importance of these traditions and values in their roles as faculty members. Although doctoral students are trained in research and doctoral institutions (Carnegie Foundation for the Advancement of Teaching, 2008), not all individuals with interest in an academic career will secure faculty positions at these institutional types. Thus it will be to a student's advantage to understand the *range of institutional types (and related missions)* in which they may find work as a faculty member. Finally, a doctoral education should be the venue for students to *refine their professional identities as scholars.*

Knowledge and Skills in the Areas of Faculty Work

A student's doctoral program is the foundational period during which a prospective faculty member can start to build an understanding of the four primary areas of faculty work – teaching and learning, research, outreach & engagement, and institutional service. Students can gain this knowledge through the formal curriculum, working with mentors, and through general observations of the faculty around them.

Aspiring faculty must develop an understanding of *teaching and learning processes* in higher education. Through structured preparation programs and/or experiences as instructors, doctoral students need to develop pedagogical content knowledge, an understanding of curriculum design, and an appreciation for classroom diversity, and the opportunities and challenges it poses. Second, students also need to develop a foundational understanding of the *research process* itself. Students need to learn how to: frame a research question, design and implement research projects, collect and analyze data, present results, and give and receive feedback. Third, doctoral students need to be cognizant what it means to be a good *institutional citizen*. They need to understand the service roles they may expect to perform as a faculty member, and the skills needed to undertake those roles successfully. Fourth, *engagement with local, national, and international communities* is becoming an expected component of faculty work at many institutions. A doctoral program is one place that prospective faculty can learn about pedagogical approaches such as service learning, and start

thinking about how the knowledge they produce as scholars might be applicable to helping communities address pressing issues.

Interpersonal Skills

Solid interpersonal skills facilitate an individual's ability to develop the conceptual understandings mentioned above, as well as skills and knowledge in the areas of faculty work. Being able to clearly *communicate* orally and in writing, as well as being able to *collaborate and work in teams* with *diverse others* is key for the success of future faculty members.

Personal Attitudes and Habits

Finally, graduate school is a time for doctoral students to refine an important set of personal attitudes and habits that will propel them during their careers as faculty members. Having an understanding of the key *ethical issues* in one's discipline; and the ethical guidelines laid out by municipalities and professional associations, as well as the ability to act within these parameters and with concern for others is very important. Faculty in the 21st century will also need to be very *self-motivated to continuously learn* about ethical issues as well as disciplinary developments throughout their careers. Third, a doctoral program is a venue in which to start cultivating professional networks that will be beneficial to him or her throughout the career. Finally, doctoral programs are spaces within which individuals can develop their *intellectual passions*, while considering issues of *work-life balance*.

Questions for individual reflection and group discussion

- After the framework was presented, session participants discussed the following questions:
- Do these competencies resonate with your understanding of the goals of doctoral education? Why and why not?
- How applicable are these competencies for students seeking careers in industry, NGOs, other? Why and why not? What might you add?
- Can you see yourself adding the competency-based approach to your academic plan? What opportunities and challenges might be involved in this process?

Conclusions

We believe this framework provides a way for professionals interested in the improvement of the doctoral experience to build upon the recommendations of Dr. Brian Foster at the 2008 MAGS conference when he urged us to think about new ways to tell the "graduate education story." This framework of competencies can serve as both a tool for many stakeholders (including, deans, chairs, advisors, other faculty, and doctoral students themselves) to engage in individual and program assessment (see Table 1), as well as a common ground from which to think about how institutions' approach to doctoral education can evolve within the context of the constantly changing environments of higher education in the United States and internationally.

References

Austin, Ann E., and Melissa McDaniels. "Preparing the professoriate of the future: Graduate student socialization for faculty roles." In *Higher Education: Handbook of Theory and Research*, edited by John Smart, 39-89 (The Netherlands: Springer Press, 2006).

Austin, Ann E., & Melissa McDaniels. "Using doctoral education to prepare faculty to work within Boyer's four domains of scholarship." In "Delving further into Boyer's perspective on scholarship." *New Directions for Institutional Research*, edited by John Braxton, 51-65 (San Francisco, CA: Jossey-Bass).

Carnegie Foundation for the Advancement of Teaching (2008). Carnegie Classifications. Retrieved from <http://www.carnegiefoundation.org> on June 20, 2008.

Professional Science Master's Programs: Introduction

Carol B. Lynch
Senior Scholar in Residence and
Project Director, Professional Master's Programs
Council of Graduate Schools
clynch@cgs.nche.edu

Abstract

The Professional Science Master's (PSM) is a relatively new degree; program planning originated in 1997 with grants from the Alfred P. Sloan Foundation to a number of research universities, and a single large grant from the W. M. Keck Foundation to endow a new university dedicated entirely to professional programs in the biosciences (the Keck Graduate Institute). This short chapter constitutes a review of the PSM concept and will be followed by three chapters discussing rationales and challenges for the establishment and maintenance of PSM programs from the perspective of a graduate dean, a program director and an employer.

Background and Review

Chapters on aspects of the PSM have appeared in previous MAGS Proceedings (Lynch, 2006; Klomprens, 2006; Strausbaugh, 2006; Langenberg, 2006; Lynch, Koch and Eloë, 2007). The PSM is often referred to as a "destination master's" in that the degree is designed to provide graduates access to satisfying, scientifically based careers in business, government or non-profit sectors. It is not designed for entry into (or out of) PhD programs, although a small number of PSM students do decide to pursue a PhD. PSM programs are targeted at specific employment sectors, (e.g. biotechnology, financial mathematics, optics and photonics), are frequently interdisciplinary, and contain a substantial component of "professional development" skill requirements such as communication, ethics, project management, finance and marketing, legal and regulatory affairs, etc. The availability of PSM programs helps retain students who are not interested in a PhD research career in science careers by offering them an alternative degree leading to well remunerated employment with excellent prospects of career advancement. As such, these programs are increasingly attracting working and returning students seeking better career options.

For a number of years, the Council of Graduate Schools has been involved in the advancement and promotion of the PSM, which it considers the most important new initiative in master's education. We expect the PSM to be established as a regular feature of graduate education.

PSM programs have good arguments for institutional and state support because while the academic job market remains static, employers are eager, sometimes desperate, to hire technically trained individuals who possess the array of skills necessary to hit the ground running as a new employee. In addition, recipients of master's degrees, and particularly PSM graduates who most often intern with local employers, tend to remain within the state where

they received their degrees. PSM programs serve a student population which we would not likely otherwise lose from science, and provide a highly trained workforce to fuel regional (and by extension national) economic development and innovation.

References

Klomprens, K.L. (2006) Professional Master's Programs: Perspective from a Graduate Dean. *In Proc. of the 62nd Annual Meeting of MAGS*, pp. 70-75.

Langenberg, D.N. (2006) The Professional Science Master's Degree: What Next? *In Proc. of the 62nd Annual Meeting of MAGS*, pp. 76-77.

Lynch, C.B. (2006) Professional Science Master's Degrees: Perspectives from the CGS PSM Advisory Board. *In Proc. of the 62nd Annual Meeting of MAGS*, p 69.

Lynch, C.B., S.J. Koch and P.W. Elo (2007) Professional Science Master's Programs. *In Proc. of the 63rd Annual Meeting of MAGS*, pp. 70-81.

Strausbaugh, L.D. (2006) Starting a Professional Science Master's Degree, It's not for the faint of heart! *In Proc. of the 62nd Annual Meeting of MAGS*, pp. 78-84.

Professional Science Masters: A Graduate Dean's Perspective

Priscilla J. Kimboko, Ph.D.
Dean of Graduate Studies and Grants Administration
Grand Valley State University
401 W. Fulton Street, 336 DEV
Grand Rapids, MI 49504
www.gvsu.edu/gsga
kimbokop@gvsu.edu

Abstract

Professional Science Master's (PSM) programs offer a unique opportunity for master's-focused institutions to play a strong role in the regional economy. They link the university and the PSM STEM students with business, industry, and government. Grand Valley State University has PSM degrees in biostatistics, biotechnology, and bioinformatics that fit within the life sciences developments within Michigan. The full implementation of these three interdisciplinary programs was delayed because they emerged just as major institutional reorganization and leadership changes were underway. The programs share staff and courses, and faced further challenges including professional content, industry connections, and an unexpected student demographic. The graduate dean identifies strengths, challenges, and advice arising from this process.

Context for Development of GVSU PSM Programs

As a new founding Graduate Dean at Grand Valley State University in 2000–01, after ensuring that the institution joined the Council of Graduate Schools (CGS), it was my pleasure to inform CGS that GVSU should qualify for participation in the call for proposals issued to master's-focused universities. A review by CGS of the data on graduates in the sciences and math over the prior three years resulted in an invitation to apply for recognition of GVSU's professional science master's programs. This university is a regional public master's I university (using Carnegie classifications) that has traditionally focused on its founding mission of undergraduate liberal education and teaching. Since its establishment in the 1960's, however, it had developed a significant complement of master's degrees to address local professional development needs in west Michigan. Thus, GVSU has master's degrees in education, business, accounting, computer information systems, engineering, social work, nursing, physical therapy, occupational therapy, public administration, physician assistant studies, and criminal justice as well as health sciences, biology, communications, and English. This graduate programming grew primarily on the side and out of sight of the university's core culture, which continued to emphasize its liberal undergraduate education teaching mission. Enrollment growth at the university spurted dramatically in the 1990s and early 2000s, reaching over 23,000 in fall 2007. Within this growth graduate enrollment also reached 3,700 or more in fall 2007. The unduplicated headcount of graduate students annually at GVSU is over 6,000.

GVSU has taken an active role in west Michigan economic development and has pursued ways to contribute to a range of economic development initiatives through the Michigan Life Sciences Corridor, Smart Zones (incubators for health and biotech industries), and partnerships with the Van Andel Research Institute (a world-class privately funded cancer facility) and the Medical Education and Research Consortium, which engages Michigan State University, GVSU, and Spectrum Health and St. Mary's, the two major health providers actively engaged in health professional education. GVSU also built a new classroom and laboratory building contiguous to Spectrum Health and the Van Andel Institute for the health professional programs and the West Michigan Science and Technology Initiative; the Cooke-DeVos Center for Health Sciences opened in Fall 2003. As GVSU interacts with these partners it continues to seek ways to promote and contribute to these efforts. It was within this dynamic local and regional context focused on the growth of the health care, clinical research, and biotechnology industries that the university considered the feasibility of developing professional science master's programs.

Role of the Graduate Dean

Every institution has a unique culture, and the roles for the Graduate Dean, College Deans, and other governance groups will vary in terms of how new graduate programs are developed. In the case of GVSU in the 2001–02 academic year, the Graduate Dean was new to the campus, in a newly created role on the campus (serving as the “founding graduate dean”), while the Dean of the Division of Science and Mathematics (S&M) was the senior dean on campus, with over 20 years in his role. In her short tenure at GVSU, the Graduate Dean had discovered a very strong commitment by the university leadership as reflected in its strategic plan to building and/or strengthening capacity to engage in the economic development initiatives in the state of Michigan and west Michigan, in particular, focused on health care, biotechnology, and life sciences research. In conversations with the Dean of S&M and the Acting Provost, she presented the Professional Science Master's model, reviewing the types of interdisciplinary programs found at other institutions, and posing the question whether there was any interest at GVSU to assess the feasibility of one or more PSM programs. At the time, the university's portfolio of graduate programs included many strong professional programs but only three programs that met the CGS eligibility criteria for “science masters.” In response to the interest expressed by the Provost and S&M Dean, the Graduate Dean contacted CGS to verify that GVSU, a new member of CGS at that time, could indeed apply. Based on a review of the data on science graduates for the past three years and GVSU's master's focus, CGS extended an invitation to GVSU to begin the process of establishing a PSM program.

Role of the Dean of Science and Mathematics

The Dean of the Division of Science and Mathematics was well placed to facilitate the development of PSM programs. His Division had recently completed the development of new master's programs in Engineering and in Biology and had three master's degrees in the health professions (Occupational Therapy, Physical Therapy, and Physician Assistant Studies) as well as a small Biomedical Sciences master's degree and a Computer Information Systems master's degree. As a long-standing member of the GVSU leadership, the Dean had a wide range of

active connections in the local life science research and health care organizations, serving on several boards. The Division encompassed a wide range of basic sciences, mathematics, and computer and biomedical sciences as well as health professions and engineering. As such, many of the competencies and disciplines likely to be tapped for a PSM program were housed within this single academic home. This dean was able to activate a broad group of faculty from across his Division to consider the proposal, and they almost unanimously agreed to proceed.

In addition, the Dean committed funding support to entice faculty members to work on the PSM proposal at an accelerated rate, including working over the summer, when many faculty members typically are not actively present on campus. These faculty members were drawn from the departments of biology, biomedical sciences, statistics, computer information systems, and chemistry with occasional representation from other fields. Further, he was able to assemble an active, interested array of leaders in the health and life sciences fields including the major health care organizations, the local privately funded cancer research institute, pharmaceutical companies, and a range of small- and medium-sized biotechnology and life-science related businesses. From this process the university team identified three inter-related but distinct programs in Biostatistics (a small but growing field as reflected in several small local consulting businesses), Biotechnology (within a cell molecular biology framework), and Medical and Bioinformatics (to serve both the life sciences and growing health care sector). CGS approved all three proposals, with the Sloan grant to support the program feasibility studies and all the related program curriculum development.

The Graduate Dean participated fully in this process, serving to remind the faculty about the CGS/Sloan-endorsed model, which was new to many of the science and mathematics faculty as well as to the community partners.

Steps in Program Development

Every university has its own flow of curriculum review. It may be that in some institutions that process moves along quickly, particularly for new graduate programs that are considered by a Graduate Council. At GVSU, however, the curriculum review process was funneled through a single University Curriculum Committee (UCC) that reviewed and approved every curricular matter. Approval for new programs required a two-stage process: 1) a prospectus and, after approval of the prospectus, 2) the preparation of the full plan. This singular committee review process led to a long pipeline and timeline for any matter to be reviewed and approved. Items not in the queue by August might not even be considered by the UCC during that academic year.

Planning and Implementation Issues

Coordinating the new PSM proposals with the CGS rapid-movement grant cycle while working through the much slower GVSU curriculum approval process posed a major challenge to the GVSU team. The CGS approvals occurred late in April, and the planning/feasibility studies were due to CGS by the following October, when the planning grant recipients were required to submit their requests for funding for the implementation phase of new program development.

Within that time frame there was no way at GVSU to gain internal approval of the prospectuses, much less be positioned to implement the programs. Working on three programs at one time was also a big bite, and, to make this more palatable within an underfunded university context, many steps were taken to link the three programs together, such as by sharing core courses.

Creating these shared resource links and gaining senior administrative support and funding commitments on the basis of prospectuses that had not yet been approved through the UCC was facilitated by the S&M Dean. However, taking these extraordinary steps caused some internal resistance to the PSM program proposals and plans as they moved through the Division Curriculum Committee (DCC), the Executive Committee of the Senate (ECS), and the University Curriculum Committee (UCC). To expedite this development process, the S&M Dean assigned his Associate Dean to shepherd these three proposals through the faculty development committees, the DCC, and the UCC. She worked closely with the faculty committees for each program, as well as with the Graduate Dean, throughout this development process. Key faculty members from the participating departments and programs served as the voice for the PSM programs and the link between their home departments and the interdisciplinary program planning committees.

As a result of this coordination and these linkages, the work of the faculty committee was consistent with the CGS standards for PSM programs, and a strong case was made for these new programs through the extensive needs assessment surveys and the input of the advisory board members. The CGS model and its emphasis on several key components, such as the professional skills and similar “plus” courses, also ensured that these were strong, well-articulated proposals and that some content not typical of science and mathematics programs were included in the plans.

The CGS/Sloan grants encouraged early institutional commitment to these new programs in a manner that was not common at GVSU. Fortunately the S&M Dean was highly respected and had demonstrated his ability to deliver on his commitments. Thus, the university designated several new faculty and graduate assistantship lines as well as funding for a program coordinator and clerical support person. While faculty lines are usual with new programs, including the graduate assistantships and other administrative support staff was not typical. The administrative position was initially filled in part with the matching funds required by the grant; it was the continuation of the position after the grant expired that was unusual for GVSU. These commitments were kept despite some major institutional changes that took place during the course of the planning and implementation of these programs.

Major Institutional Changes since PSM Inception

One of the ongoing challenges in higher education is the shift in priorities that occurs in institutions when the executive level leadership changes. At GVSU, this type of change was occurring at the same time the PSM programs were being instituted. The original administrative commitments required by CGS to gain grant support for the program planning

and subsequent implementation were put in place by a new President and an Interim Provost. The Interim Provost was replaced by a new Provost the following August. In her first year at GVSU, the new Provost initiated a new strategic plan, and once that was in place, her second year involved a proposal to completely reorganize the academic structure of the university to better support the strategic plan.

These changes led to the resignation of the Dean of the Science and Math Division, who had been so instrumental in the development of the PSM programs. Those programs were under consideration by the University Curriculum Committee when he stepped down. The reorganization folded the basic science and mathematics programs, including biology, biomedical sciences, chemistry, mathematics, and statistics into a new College of Liberal Arts & Sciences (CLAS). The professional programs were spun off, and the School of Computing and Information Systems was combined with engineering into the Padnos College of Engineering and Computing (PCEC). As a result of these changes, the PSM programs were left without their previous Dean's oversight and his interest, commitments, and connections in science, mathematics, technology, and health care. The PSM program courses and faculty now spanned different departments and, in the case of Medical and Bioinformatics, different colleges. After one year reporting to this new Dean, the Associate Dean, who had shepherded the PSM prospectuses through the long curriculum review process, received a year-long sabbatical and was unavailable for the last stages of the curriculum review.

The Coordinator for the PSM program had come to GVSU from industry, downsized when Pfizer closed its doors in the nearby community. Although his connections with the pharmaceutical industry were strong, he had almost no academic experience. Nevertheless, he was expected to coordinate marketing of the programs, oversee the last details of the curriculum approval process, and coordinate the work of the interdisciplinary committee, much of which had been closely handled by the now retired Associate Dean. Within this new organizational structure it was not clear where the PSM Coordinator should report, as the new Dean of CLAS was busy trying to organize a much bigger set of programs and the new Dean of Engineering had authority over only one of the several PSM disciplines. Neither of these two new deans had any knowledge or exposure to PSM programs, and the CLAS Dean has a background in the humanities—rhetoric—not the natural sciences and mathematics.

The new Provost had a budget officer not particularly enamored with the PSM financial commitments, and significant renegotiation was required to retain the resources committed by the university for program implementation. In fact, the Dean had used some of the faculty lines to make other hires, based on a longstanding position-swapping practice that he had been able to carry out under the prior administration. The swapping occurred when the development of the programs was delayed and faculty needs in other programs were more pressing, a constant situation in an institution growing at the pace that GVSU had experienced. No doubt if he had maintained his role as Dean, he would have been successful, as before, in garnering new funding to permit the planned-for hires for the new PSM programs. That did not occur, however, and as a result program growth has been limited by lack of faculty.

While the Graduate Dean has argued for and actively supported these PSM faculty position requests, both in her role as grant PI and her role as graduate dean, her advocacy has not been welcomed by the new Provost, who expects her College Deans to be the ones putting forth such requests.

These funding matters were also significantly impacted by the sluggish Michigan economy and the declining support for higher education institutions in the state. Some key decisions were made about the PSM programs based on the financial constraints faced by the university. One such decision was to design the new PSM programs for part-time students (the typical profile for most master's degrees at GVSU) rather than full-time students. As a result, the curriculum and funding proposal were set up for part-time delivery. With this design, the speed with which the university offered courses and hired new faculty could be spread over a longer time span. This anticipated (and effectively caused) relatively slow growth and small programs.

A final change was the physical location of these interdisciplinary programs. When the new Cooke-DeVos Center for Health Sciences [CHS] was opened, spaces were earmarked for the PSM programs—offices for the faculty and coordinator, laboratories for the Biotechnology program, and computer labs for the Biostatistics and Medical and Bioinformatics programs. Pressures on the university were such that the slow start of these programs led to their displacement from their designated offices and constant pressure on the laboratories, which lay vacant at the same time as the neighboring incubator for startup life sciences and medical device industries, housed on the fifth floor of the CHS. The initial office for the PSM Coordinator and his half-time clerical assistant was in the Biology Department, located on GVSU's Allendale campus. Because the PSM programs initially had limited needs for the clerical assistant's help, most of her time was devoted to the large Biology department. Subsequently the new CLAS Dean moved the PSM Coordinator to the Cooke-DeVos Center for Health Sciences (about 16 miles away in Grand Rapids) but kept the clerical assistant in the Biology Department in Allendale. In effect, the PSM coordinator lost his clerical support.

This litany of institutional changes and challenges may be unique to GVSU and its culture, but every institution will have ongoing changes in personalities and priorities. The goal of the Graduate Dean in this type of environment is to maintain a strong presence and a focus on implementing these programs, allowing them to thrive and demonstrate the strength and value of the PSM model. The degree to which the Graduate Dean has authority over these decisions varies from place to place; but in any environment the Graduate Dean can serve as an advocate, convener, and supporter for the PSM programs. The PSM programs at GVSU were established despite all these institutional and contextual changes.

Key Strengths of the GVSU PSM Program Plans

The three PSM programs share a common format, which includes a core of courses (14 credits) that introduces the students to each field—biotechnology, bioinformatics, and applied statistics—as well as ethics and professionalism and professional practice seminars. Each program also has program-specific “directed” courses, an internship, and a capstone course.

This common core is seen as a way to engage students from different backgrounds in teams that involve having each student bring background knowledge and skills to the team. Most courses involve students in such team assignments and also include extensive professional communication and problem-solving exercises. The professional skills content is emphasized throughout the program.

The GVSU PSM programs have enjoyed strong engagement by a range of core faculty members and administrators, despite the rough spots in program implementation. The PSM Coordinator, who works with all three programs and each program director, has participated in the bi-annual national as well as regional PSM meetings.

Administrative support has been ongoing from the Graduate Dean, who serves as an advocate and resource expert on the PSM programs. She has taken steps to educate the two new deans regarding the PSM model and has met on a regular basis with the program directors and PSM coordinator.

There has been positive interest and support from the health care, research, public health, and some science and technology industries in terms of participation on advisory boards and internship and placement opportunities.

Challenges and Hurdles

Start up was particularly slow for these programs. Delays in marketing occurred because clearance to advertise the programs was not given until after the UCC approval process was completed, and the director of the biostatistics program was not on board due to two failed searches (this talent is in high demand and salaries were not initially competitive). The PSM Coordinator came to GVSU from industry, and while that perspective was valuable, he had limited academic experience and knowledge of how to develop a marketing plan for the programs.

The initial design for part-time students assumed that most of those interested would be working professionals seeking to upgrade their skills. However, the first influx of applicants was young recent graduates eager to attend full time. Reconfiguring the class roll out, faculty mix, and planned course delivery for a full-time student population required resources that were not readily available. In addition to the full-time domestic students, an influx of international students applied for admission to the programs as a result of a university-wide international recruitment initiative. These students, too, placed a unique set of demands on these new programs.

The “shared” courses, seen originally as a wise and cost-efficient strategy for program delivery, now serve as a major constraint on growth, as faculty growth has not kept pace with student enrollment. This is in part a result of the very dismal Michigan economy. In addition, there are faculty who teach courses in the program who do not have a full understanding of (or maybe belief in) the PSM model. As such they may not adhere to the program design that calls for

professional content (communication, team work, problem solving, and ethics) to be embedded in each course.

The two new Colleges have different priorities than did the Division of Science & Mathematics, and these new programs are not at the top of their priority list. These cross-college, interdisciplinary programs sometimes “fall between the cracks” when the two college deans seek new faculty lines and other resources. The role of the Graduate Dean is limited by the lack of direct decision-making authority relative to the three degree programs, although her advocacy for them with the Provost continues.

Two other features of the PSM model that continue to challenge the GVSU programs are the “plus” content and the business, government, and industry connections. The description of the PSM as advanced science/mathematics preparation with business content led to an impasse when the courses with that content reached the University Curriculum Committee. The business faculty took exception to this description, yet was not willing to allow these students to enroll in business school courses. The model of an “executive business certificate” as offered by our neighbor, Michigan State, also was not one that could be replicated within the resources available to this program. GVSU business faculty expressed no interest in working with the PSM faculty, unless they were paid for their time. Discouraged by this impasse, the faculty went back to the drawing board and finally agreed that the courses would offer not strictly business content, but rather professional practice skills for the scientist in business, government, industry, or non-profit organizations. As such, they draw on individuals—scientists—who have worked or currently work in those settings to inform their students and use real-world scenarios and case studies to engage the students in learning these critical concepts and skills.

The second ongoing challenge for the GVSU programs is maintaining connections with industry, government, and business advisors. These connections are vital to the success of the PSM programs on two levels. The first level is the Industry Advisory Board, which engages representatives from the wide range of industries where PSM graduates are likely to find employment to ensure that the knowledge and skill sets offered by the programs are relevant to the needs of employers; this advisory role is a way to keep refreshing and improving the programs. The second level is the programs’ need for internship opportunities. As the numbers of students increase and the local economy declines, this has become a particularly big challenge. Internship opportunities and placements are a sensitive and increasingly competitive process. Thus, the programs’ growth is limited by the internship openings for students. The pressure on the PSM Coordinator and Directors to find and grow internship options is great. The students’ preference for paid internships is also a limiting factor, as many other professional programs offered by GVSU (education, social work, public administration, and the health professions) assign students to work in the field without pay. Few master’s programs can count on paid internships.

Reflections and Advice from the Graduate Dean

The introduction of a new program model is an exciting yet challenging process. Working on the development of the PSM programs at GVSU since their inception has renewed my understanding of the importance, yet limitations, of the planning process. One never knows what changes may arise within the implementation window that will displace the trajectory of the planned change. In reflecting on this PSM case study, as presented in this brief report, it appears that others may choose to make their own conclusions about the lessons of the GVSU experience.

For my part, I would like to suggest that there are certain elements of our experience from which other Graduate Deans can learn.

A faculty team is key to a successful PSM program. It is not wise to build a PSM program on the interests or strengths of just one faculty member or administrative champion. Otherwise the departure of the single champion may lead to the demise of the program. So, it is important to build a strong core team of faculty engaged in the planning and implementation of the program. Although the Dean of Science and Mathematics stepped down before the PSM programs were in place, he had built a solid team of committed faculty members from a variety of disciplines who were able to continue the work of implementation under new leadership. Had he and the Dean of Graduate Studies been the only proponents of the new programs, PSM degrees probably would not be granted at GVSU today.

Ideally, all the faculty who teach courses in the program will be inculcated into the core concepts of the PSM model. The same is true for administrators, from the dean level through the department chair to the program director. This core team can meet frequently to work on issues that have arisen within each program or among them (when resources are shared). Such meetings also serve to refresh everyone on the core elements of the program.

The Graduate Dean can serve as a communication facilitator. College deans have a broad set of issues to deal with and may be less likely to focus on the success of the PSM programs, particularly if they span more than one college. Even if the Graduate Dean is not directly responsible for the program as the "appointing officer," he or she can maintain and facilitate communication among all the administrators and faculty involved, drawing on the CGS resources materials and events to inform others.

It seems wise to plan for a full-time program unless steps are taken to limit enrollment to working professionals who will only attend the program on a part-time basis. Planning for full-time delivery will ensure that the resources are appropriately budgeted and that faculty lines and related needs are in the plan, giving the program greater flexibility to grow at its own pace. In the event that the program attracts full-time students, there should be a clear path for them to finish the degree at this rate. The program plan should extend beyond the first three years (the window required for a final program plan on our campus). This roadmap for growth will be

of great value to those implementing a new program, who sometimes get caught up in the initial demands of program development.

Finally, the Graduate Dean and College Deans should take active roles in building and maintaining relationships with industry, business, and government leaders. These individuals can play an important role in identifying mid-level managers who could serve as advisory board members and potential internship placement supervisors. Thus, the administrative leadership can help program faculty and directors make good connections that will serve the students. Otherwise, it may be hard for PSM faculty and directors to discern from the outside of an organization whom to contact or where to turn for such connections.

Developing and Sustaining a PSM: The Program Director's Perspective

Edward M. Caner
Lecturer, Dept. of Physics
Director, Science and Technology
Entrepreneurship Program (STEP)
Case Western Reserve University
emc15@cwru.edu
step.case.edu

Case Western Reserve University is a highly-ranked private research university located in Cleveland, Ohio with a projected \$900M budget for FY 2008. It is home to colleges of Arts & Sciences, Engineering, Medicine, Nursing, Dentistry, Business, Law, Applied Social Sciences, and Non-profit Organization. There are 2,400 full-time faculty, 4,186 Undergraduates, and 5,766 Postgraduates.

CWRU's College of Arts and Science is home to five PSM Programs: Entrepreneurial Biotechnology, Physics Entrepreneurship, Chemistry Entrepreneurship, Statistics Entrepreneurship, and Math Entrepreneurship. In developing and sustaining these programs, we apply basic principles of innovation and entrepreneurship—in essence the same material that we teach to our students—which can be summarized as follows: We pay constant attention to the **Needs** of our stakeholders, our various **Approaches** to curriculum and administration, the **Benefits Per Costs** of the program for various stakeholders, and the **Competition**, including **Alternatives**. Furthermore, we try to ensure that there are “**Champions**” in place.

Needs

Our main stakeholders are industry, students, and the university. In order to properly evaluate the needs of these stakeholders, we must continuously redefine their profile. For instance, the specific needs of startups are always changing with trends in funding and evolving management practices. This affects whom we recruit as students and what we teach them. Currently, students are looking for interdisciplinary programs that will give them flexibility in their careers. Industry—especially small companies and startups—is looking for well-rounded individuals who can perform well under a nebulous job description. At the moment, startups are hot in Cleveland, especially in the areas of medical devices (including medical imaging) and biotechnology, and many are looking for students who can write Small Business Innovation Research (SBIR) grants.

Approach

Our approach is the Professional Science Masters (PSM) from the angle of entrepreneurship administered as a thesis “track” of the Master of Science in each respective department. From the entrepreneurship standpoint, we are able to administratively operate leaner than other programs because, in the spirit of teaching students to be entrepreneurial, we place various burdens on the shoulders of the students. These include internships and career services. Students must find their own internships and are required to know a great deal about their industry, as well as the people who are important players. Because we are a “track” in each respective department, we are able to maintain a flexible curriculum (which is what both students and industry “need”) and avoid many problems associated with accreditation. As a thesis-based degree, we have fewer credit hours (30 semester hours) than other professional programs such as an MBA, and thus are less expensive. Like most professional degrees, we do not offer support in the form of assistantships. However, we are able to offer some financial aid because of our lean operations.

Benefits per Cost

We provide industry with young flexible risk-takers who have significantly increased grant and funding activity (including SBIR) for several local companies at a very low cost. The benefits for the students include high-paying jobs, generally in high-risk, high-reward situations that give them a better return on their tuition investment than an MBA or a traditional MS, as well as earlier entry into the job market and/or a “jump” in their career paths.

Competition/Alternatives

Traditional MS degrees in the fields of engineering and medicine will always compete with our program. Students are influenced by countless items during the decision-making process, including frivolous opinions of friends and relatives. For instance, it is often assumed that the Cleveland is not a good place for jobs in small companies and startups, but in fact Cleveland is a hotbed for such activity. According to a recent survey of STEP students by the Kauffman Foundation, STEP students land higher value positions in Cleveland than in Boston or Silicon Valley. We make an attempt to track prospective students who decide not to enroll. We also try to track other programs’ tuition costs and financial aid packages, as well as employment statistics.

Champions are perhaps the biggest factor for both development and sustainability of PSM programs. It is critical to have a faculty champion who is available as an advisor/mentor to the students in each department. Sub-champions are important as well. These include people who do not necessarily have the time to commit, but they are supportive in many other ways, including politically.

The value of PSM Programs has been outlined above. One additional value not mentioned is that which the PSM brings to our university in the form of diverse connections to industry while infusing industrial elements into each participating academic department.

Some PSM Pitfalls in Development and Sustainability

- A steady stream of donations will not occur until donors have seen progress for many years—often more than seven or eight years. This is counter to a common misconception that a grant can jumpstart a new program and the program will be sustainable in five years through alumni and industry donations.
- It is better to recruit a fewer number of students who fit the ideal profile than many students who are marginal. The few great students will make headlines. Marginal students will consume resources and possibly force the program out of “lean mode”. Interviews and statements of purpose are critically important.

Major Institutional Changes at CWRU since PSM Inception

Since the first PSM was established on campus in 2000 (Physics Entrepreneurship Program), CWRU has had three presidents and three provosts, while the College of Arts and Sciences has had three deans. This has been very challenging to say the least, and the program was forced into abeyance in 2005 because of this. We have since emerged stronger than ever.

References

Innovation: The Five Disciplines for Creating What Customers Want (Carlson, C. and Wilmot, W.)

Recent Trends in PSM Development

Phil Tuchinsky, Ph.D.
48371 Bayshore Dr.
Belleville, MI 48111
(734) 699 - 3578
phil@tuchinsky.org

Introduction

I am a retired applied mathematician, active in my field after a full career in the automotive industry. Although I am involved nationally in the PSM community, it is the mathematics-focused PSM programs I know and understand best. I will focus here on that PSM arena. I intend to discuss two PSM-related topics and make these points:

- In business and industry, I will describe an important source of demand for mathematical PSM graduates:

Business intelligence (BI) is the use of applied mathematics and advanced computing to solve business problems. A few examples of BI problems are evaluating financial risks in product development; forecasting the consequences of management decision options, managing networks of people, tasks, organizations or suppliers while considering rapidly changing technology, analyzing large volumes of data, text documents or internet interactions for marketing insights, etc. BI is a young, growing and important field of business and industrial endeavor, profitable and important for competitiveness in the global economy. PSM graduates fit very well into positions in this field.

BI has deep roots in the history of mathematics, but came together as a discipline in the mid-1990s (when my BI career began). Today, it is just beginning to gain recognition as an academic discipline. Nevertheless, PSM-savvy universities are preparing excellent candidates for BI positions. I often advise BI colleagues that the mathematical PSM programs are ideal places to find new talent. BI workgroups hire many mathematical PSM graduates.

- When I look at BI efforts in business and industry with academic eyes, I find a young, exceptionally vital quantitative discipline that offers important new ideas for solving BI problems:

Complex dynamic systems became an academic discipline with the founding in 1984 of the Santa Fe Institute (<http://www.santafe.edu>). Complexity research programs are well established at some leading universities, but still emerging at many others. Fresh and surprising research achievements in this field have gained scientific and public attention, demonstrated its vitality and created expectations that complex systems thinking will significantly influence the world.

Complex systems researchers disagree on the characteristics that make a problem or system complex and subject to complex systems methods. Nevertheless, their field's applicability is clear: I will discuss the common ground between academic complex systems research and challenging categories of business and industrial problems. Business and industrial researchers increasingly collaborate with academic complexity centers. Universities with strong complexity programs are creating the first graduate programs in the field. I will describe a PSM in Applied Complex Systems now proposed at the University of Michigan.

Business Intelligence (BI): A market demanding mathematical PSM graduates

In the mid 1990s, when the necessary commercial desktop computing hardware, computer network communications services, high-volume data management options and advanced analysis and data visualization software all came together, many large business and industrial enterprises added "**business intelligence**" (BI) or "**business analytics**" activities. These work groups in research and operational organizations brought an applied mathematics and data-driven analysis approach to business and financial problems in strategic planning, transactional operations management, marketing research and segmentation, risk analysis, systems engineering, purchasing, warranty management, technology management and capabilities analysis, supply chain management and logistics, etc.

Dow Chemical Company, Ford Motor Company and General Motors Corporation are examples of very large global manufacturers with established business intelligence organizations that return significant value-added. All use complexity and data-integration methods with other modeling approaches. Ford has about a hundred employees involved in business intelligence work. Comparable numbers at Dow and GM are consistent with the size of their businesses. Dow has integrated BI into its corporate business process by creating a centrally managed organization and geographically distributed staff that serves the entire corporation. The integration of BI into the business plan is less formal at Ford and GM, where multiple groups perform the work.

Large pharmaceutical firms are involved in BI; a typical problem is risk management in drug development. Retailers (for example, Wal-Mart) make use of BI methods, for example to manage inventory across a large network of retail outlets and track profit margins. Banks and insurance companies, health care organizations and other providers of sophisticated computer- and data-centric services have equally significant needs for business intelligence methods. Comerica Bank and Watson-Wyatt are examples of service-sector businesses with BI activities and a commitment to these technologies. In the banking industry, advanced models for credit-worthiness evaluation are a typical focus of BI work.

BI consulting services are also growing and finding success. One university-based model is worthy of special mention: Central Michigan University in Mt. Pleasant, Michigan, has created CMU Research Corporation (<http://www.cmurc.com>), a non-profit subsidiary that seeks to

work with business and industry to enhance economic development and encourage the use of advanced technology. Among several activities at CMU-RC, Business Intelligence Services has become successful and significant. CMU-RC carries out BI projects for large industrial clients, using a small analytics staff and the university's faculty and students as resources. After my retirement from Ford Motor Company, I joined CMU-RC on a part-time Senior Research Fellow. In this role, I interface between CMU-RC staff and business clients to coordinate projects.

BI workgroups generally pay their way very well by helping management make better decisions that add value. They enhance the global competitiveness of their employers. BI staffs are gaining recognition and growing. Their management seeks outstanding, quantitatively prepared candidates for BI positions. Of course, traditional mathematics, science and engineering graduates often succeed in BI. However, the graduates of mathematics-focused PSM programs have nearly ideal preparation for BI work. Trained in applied mathematics, computing and business at the graduate level, they are ready to communicate in the commercial world with management and technical staff. They expect to perform as self-starters on project-based teams. They generally have demonstrated these abilities in industrially sponsored projects or internships.

We should not be surprised that graduates of the mathematical PSMs are in strong demand. Business Intelligence workgroups are an important and growing component of that demand.

Complex dynamic systems: An applicable discipline whose coursework belongs in many PSM programs

Complex systems research begins with a systems thinking perspective. It sees the behavior of systems as emerging from interactions among all the parties involved. A typical agent-based modeling approach involves modeling the people, organizations or other parties involved in a problem as entities with unique goals, options, evaluative criteria and behaviors. Simulation software in which these agents interact then provides a model in which system behaviors emerge.

The results are often unintuitive. Major research insights achieved in the field, such as

- the discovery of non-linear and regions of chaotic behavior in very simple discrete model examples;
- the value of emergent-behavioral analysis in addition to the traditional reductionist view of practical systems;
- the "butterfly effect" in which apparently tiny inputs (e.g. the flapping of a butterfly's wings), amplified non-linearly by the system, have very large consequences (e.g. strong storms on the other side of the world);
- "small world models", in which distant nodes in very large complex networks prove to be connectable with relatively few links (e.g. any pair of people in a vast social network of "person A knows person B" links have few degrees of separation);

- “edge of chaos”: systems often have regions of chaotic system behavior and tend to operate in practice on the boundaries of those chaotic regions;

demonstrate that complex dynamic systems are likely to surprise us. Certainly, complex systems methods offer fresh ways to investigate and understand system behavior.

The complex systems interest group at the University of Michigan includes faculty and graduate students from many disciplines; their interests and collaborations are often interdisciplinary. The list of disciplines, professions, schools and programs in which faculty are participating in complex systems research includes at least mathematics, all the physical, life and social sciences, computer science, all branches of engineering, many branches of medicine, public health, social work, natural resources, linguistics, business, law and public policy. We also see the beginnings of complex systems thinking in the humanities (for example, in the analysis of writing style).

Interest in complexity soon took root in business and industry. In all the business arenas in which BI methods are applied, large companies encounter complex problems involving nonlinear behaviors and many kinds of uncertainty. Sources of complexity include:

- mixed objectives that must be balanced;
- diverse agents / actors (people, organizations, suppliers, unions, local and global markets and political entities, to name a few) with varying motivations;
- constraints and time delays of many kinds, arising in diverse resources, for example, supply chain distribution systems;
- regulatory and environmental pressures and requirements;
- many kinds of financial risks with varying probabilities of occurrence.

These sources of non-linear system behavior closely resemble the ones that inspire university researchers to create and apply complex systems methods. Researchers in the academic and commercial worlds also share a need to integrate and analyze many kinds of demographic, geographic and transactional data, interfaced with scenario development, assumptions and desired outcomes. Census, demographic, sales, operational and warranty data are among the large business data streams that inform the business analyst about customers, their preferences, habits and activities, current and past business practices, competitors, product and service supply options, current and past demand and many other dimensions of business. Academic researchers similarly mix census, demographic, economic and network data to study (for example) land use dynamics and apply medical data to study of the spread of diseases. The academic and business contexts have much in common.

I conclude that every mathematical PSM program would benefit its students by including existing complex systems courses, at least as cognates. Other PSM programs may find the same advice valuable. Universities that offer PSMs but lack a complex systems interest group may soon feel the need to encourage that development.

A complex systems PSM proposal at the University of Michigan

The University of Michigan, a pioneering center for complexity research, has an excellent reputation in the field. The Center for the Study of Complex Systems (CSCS; <http://www.cscs.umich.edu>) is the hub of a broad interdisciplinary community of complex systems researchers from many university departments and schools. CSCS in late 2007 submitted a proposal to create its first graduate degree programs, M.S. degrees in Complex Systems and Applied Complex Systems. The latter follows the Council of Graduate Schools guidelines for a PSM and requires courses in systems thinking, complex systems methods (including integrative laboratory courses), applied mathematics and business. As a volunteer, I helped develop this proposal. We are optimistic that these proposed masters programs will win approval and welcome their first students soon.

Academic Support Services for Graduate Students: The Why and the How

Christine Jensen Sundstrom
Coordinator, Graduate Support Program
University of Kansas
Applied English Center
Lippincott Hall
1410 Jayhawk Boulevard, Rm 204
Lawrence, KS 66045
cjensen@ku.edu

Abstract

To address the concerns of increased time to degree and degree completion rates, I developed the Graduate Support Program (GSP) with the support of the Graduate School and the Applied English Center, the intensive English program. Using three major components—courses, a support group, and workshops, the graduate support staff have increased the likelihood of students completing their degrees and have increased faculty awareness of problems that need to be addressed within their departments. The courses include semester-long classroom courses as well as an individualized tutorial course in the areas of graduate and professional writing and presentations. A problem-solving approach is used in the writing support group, *Dissertation Blues*. The workshops target graduate students or their faculty mentors or both.

Introduction

In the graduate arena, the phrases time to degree and degree completion rates seem to be heard almost as frequently as *the* and *and*. Whether you think the secret to improvement in these areas lies in screening and recruitment that will net the “right” students or in supporting the students we have, I think an academic support program plays a role. It is in this context that the Graduate Support Program (GSP) was developed at the University of Kansas.

Claims for Success

Why do I make such a bold claim for the role of such services? Using the data we have compiled so far on the success rates for the students who enrolled in the program, we have found that for the most recent years:

- c. 80% of the more than 200 students who have enrolled in the thesis and dissertation writing class or thesis and dissertation writing tutorials successfully completed end of degree projects including comprehensive exams, proposals, theses, dissertations, or research articles either during their time enrolled or after that enrollment
- c. 75% of those who had previously failed a comprehensive exam successfully completed the exam during work with us
- c. 70% of those who enrolled because they had not been writing for 1-5 years successfully completed their projects

Issues the program addresses

Such a program is a relatively easy way to address the more central problem of poorly written documents caused by students' lack of familiarity with graduate and professional genres, international graduate students' lack of familiarity with U.S. versions of these genres, and the higher standards and expectations for end-of-degree projects vs. earlier class papers. In addition, it can address certain problematic issues including students' lack of progress related to such issues as lack of guidance, overburdened faculty, unsatisfactory interactions with faculty advisor, experience of working with new junior faculty unfamiliar with the institutional culture of that particular department.

Major Program Components

The program consists of three major components: instruction, a writing support group, and workshops. The program not only offers these services directly but also supplies information on other services available to the graduate students on campus and serves as a catalyst for change in departments.

In the instructional component, three of the four courses offered are classroom courses, all are offered as credit-bearing, graded Graduate Studies classes. The professional writing class, intended for students early in their graduate careers, focuses on the skills students will need to succeed with writing in their classes. Students learn effective organization strategies including outlining, making concept maps, or writing abstracts first to derive their arguments. They learn specific strategies for summarizing without overusing sources and how to critique other research in their fields. Their final paper is a literature review with an underlying argument. In the professional presentations class, students learn to present everything from a poster session to a short research presentation based on their own work to prepare them for presenting in department seminars, at conferences, and in their own oral defenses. The thesis and dissertation writing class is intended for students writing their proposals or theses and dissertations. Students learn how to write effective literature reviews, study the traditional structure of theses and dissertations and how non-traditional theses and dissertations are structured. Students study samples in their fields while they are writing their own chapters. All of these classes include individualized components in which the instructors react to content and organization as well as editing and proofreading concerns.

The fourth class, thesis and dissertation writing tutorials, are individualized classes where the student and instructor meet one on one on a weekly basis to review what the student has written that week. Students submit their writing to their instructors electronically, 1-2 days prior to the meeting. Despite the name, the class enrolls students writing comprehensive exams, grant proposals, and research articles as well as the expected proposals and theses and dissertations. Some of these tutorials are essentially distance education, since they are with students in other states. For those students, the meetings are either by phone (even Skype) or online.

The success of the courses seems to be a result of four aspects: the instruction is in the form of classes, we use a highly individualized approach, we use field-specific samples to guide our work with the students, and the instructors know graduate and professional genres. We are careful to send students back to their advisors to get the answers to the questions that can only be answered in their departments; in fact, we frequently have meetings or conversations that include our instructor, the advisor, and the student.

Although our International Teaching Assistant (ITA) training course was not developed as part of the Graduate Support Program, we include information on that course in the flier describing services since we strongly believe that taking this course will improve the teaching of ITAs.

The writing support group, Dissertation Blues, is a problem-solving support group where we focus on such issues as political problems including strained interactions with the advisor or other committee members, writer's block, where to get resources, whether the academic life is the right match for the student. Sometimes these meetings include programmed sessions on such topics as using technology to make writing documents easier, using cohesion in writing, and completing your degree efficiently.

The third component of the program, the workshops, usually include sessions for either graduate students or graduate faculty members. For students we have had such sessions as *Extreme Dissertation Issues* and *Choosing a Researchable Topic*. We targeted new graduate faculty with a session entitled *Models of Mentoring*. In the next session to be offered, *Collaboration between First Generation, Second Culture, and Returning Graduate Students and Their Mentors*, both graduate mentors and the mentees will be invited to attend.

Clearinghouse for Graduate Support Services

One of the other functions of the program has been as a means of providing information to graduate students on the resources available to them from such disparate sources as the Writing Center, the Center for Teaching Excellence, the ombudsman, and through statistical support services.

The Program Launch

In 2003, I proposed the graduate support program to the Dean of the Graduate School and the Director of the Applied English Center, my immediate supervisor. Although it seemed apparent to me that this program would be useful to all students, since my teaching position was housed in the intensive English Center, the courses were launched as Applied English Center courses open only to international graduate students or pre-graduates. Within a year of the inception, there were so many requests from native speakers for these services that they were allowed to enroll and the courses were reconstituted as Graduate School courses (now Graduate Studies) at the behest of the Graduate Student Support Services faculty advisory committee.

Funding

Our funding structure is somewhat unusual. The Applied English Center and hence the Graduate Support Program staff members do not have state-funded positions. As a consequence, the funding is derived from the tuition paid by the graduate students we teach, Applied English Center support for the administrative function, a one-time stipend for a GTA in a semester when I needed to teach an overload, and the equivalent of the salary for one course per year plus student tuition from an NIH grant that funds pre-med minority students. Many models could be used to set up such a graduate support program and those models would have funding structures that reflect the administrative structure and the level and type of institutional support available. I argue that we cannot afford not to support graduate support services since they are both a key to success and a strong marketing tool that should enable our institution to compete for the best students.

The Population We Serve

When I describe the students we serve, usually the first surprise is that more than half the enrolled students are domestic despite the fact that the program was started within the intensive English program. Students enroll for several reasons: a colleague has recommended the course, they are stuck with their writing, they are perfectionists, they want the structure of deadlines, they want to be less isolated, they have failed a comprehensive exam, an advisor has recommended it, or they are not sure whether they want to complete their degrees. About a fourth of the population are weaker or what could perhaps best be called less well informed writers who may have failed a comprehensive exam or a proposal defense. Half of the students are average writers, and the final one fourth write as well as you and I. These strong writers serve as great models, raising the bar for the other students in the classes. Since the heart of the writing instruction is in the individualized meetings, it is easy to accommodate writers who are at different levels.

Designing a Program

In designing such a program or support services, I think there are two key components, engaging the key players and using a well thought out process. Campuses will be unique, but some of the key players might be experts in graduate or professional writing and second language writing, counseling and psychological services, departmental instructors that teach excellent disciplinary writing courses, the ombudsman, student services including those for students with disabilities, statistical support and career services personnel, grant writing experts, and those in charge of programs such as those emphasizing the ethical conduct of research and Preparing Future Faculty or Preparing Future Professionals. In addition, it may be useful to involve instructors of technical support programs where students can learn to use ENDNOTE or some other powerful bibliographic program, Power Point, text coding programs, concept mapping program, and using word for managing long documents.

Interviewing graduate students can make you acutely aware of the support that is not available to them in their departments for whatever reason, they might be working with a new faculty

member or they might be in a 3-person department. In addition, tapping strong graduate faculty members and administrators can be a means of expanding your own knowledge and of building support for such a program.

Processes will also differ significantly by institution and depending on who is putting such a program together. I'll describe the bottom-up process that I used.

- Write a formal proposal to those who might support such a program either in name or with funding or to those who might be willing to field such a program if it is a top-down process. Assess the best structure and the funding channels available.
- Once approval is received, hold a meeting with key players to find out who already offers what, what the most immediate needs are, and to decide who will do what. Further discuss the structure and funding channels.
- Develop courses, a writing support group, or workshops or whatever services fit the model you have decided upon. I suggest starting small, launching only one course in a given semester and then moving on to develop the next when that one is successful.
- Develop a flier of services offered. In order to get the word out you will most likely need both a hardcopy flier and an electronic advertisement.
- Assemble an advisory committee of the service providers, faculty members, and administrators who might or do support the program.
- Identify the most effective communication channels for letting graduate students and graduate faculty know about the courses. I use the graduate faculty and graduate student lists housed in the Provost's office. Information is provided 2-3 times per semester. I hand out fliers at the Graduate Orientation when I speak briefly there. We provide brochures to any departments that desire those to hand out at their own orientations.
- Look for opportunities to support the program via grants.
- Design workshops and identify potential workshop leaders or participants.
- Lobby for sessions in graduate faculty, graduate student, and GTA training sessions to get the word out.

Summary

In four years, enrollment in our courses has gone from 8 to more than 50 students per semester in the spring and fall semesters and perhaps 40 in the summer. These students enroll in between 2 and 6 hours, with an average of 3 or 4 hours. Approximately 128 out of 140 students per year enroll voluntarily. Last year 12 were placed in courses as part of the NIH grant or by a Special Education faculty member who had his entire PhD cadre kick off their graduate careers by taking the Professional Writing course.

Next steps

We are compiling data on the first four years and one semester of the program in order to have a better overview and to be able to more easily evaluate the program. In the meantime, we applaud the students' successes.

Pre-Conference Workshop for New Deans/Assistant/Associate Deans

Gail Scukanec
Dean, College of Education and Human Sciences
University of Wisconsin-Eau Claire
153 Brewer Hall, UWEC,
Eau Claire, WI, 54701
scukangp@uwec.edu

Diana Carlin
CGS Dean-in-Residence & Director of Int'l Outreach
Council of Graduate Schools
One Dupont Circle, NW, Suite 430
Washington, DC 20036-1173
dcarlin@cgs.nche.edu

One of the roles MAGS plays, which by many is considered the most important role, is to provide networking opportunities for new individuals involved in the administration of graduate programs. To promote that role, this year's MAGS executive committee decided to hold a pre-conference workshop for new deans.

Twenty-five new deans, assistant/associate deans, directors and coordinators attended the session and sat at large round tables. Participants were asked to discuss, with those at their table, some of the major challenges they have faced in the early days of their new positions; each table decided upon one major challenge to present to the entire group.

As expected, to individuals to the graduate community found that many of us in graduate education face similar issues. Major challenges identified included:

- 1) Institutional priority is very often undergraduate education which may mean less support for and attention to graduate education;
- 2) Institutions are often in transition around the administration of graduate education—should there be a graduate school, should it be combined with another unit (research, international studies, other), where should graduate admissions be housed?
- 3) How can graduate deans ensure quality in programs across campus? This is the responsibility of the graduate college, but what authority does the leadership of the college have?
- 4) Technology and system migration is generally focused on undergraduate students and issues. Graduate colleges often are not involved in decision making processes regarding new systems, generally have few staff and cannot afford to hire additional staff for migrations, and automatic processes often do not work at the graduate level.

Of course, many other challenges were discussed, topics often had many subtopics, and the discussion could have continued indefinitely. The major take-away from this session was that this discussion was invaluable to new deans. An email will be sent to attendees of the session so that the networking initiated in this session can continue, as desired, by attendees. Meanwhile, the sentiment was that MAGS should continue to provide this type of opportunity for new folks involved in the administration of graduate programs.

Telling the Graduate Story: Inside and Out
External Case Study

Pam Benoit
University of Missouri-Columbia

You have been given the task of increasing the visibility of the Graduate School with state legislators. They have focused their attention primarily on increasing access to higher education and reducing the cost of undergraduate higher education in the state. Higher education is seen as a private benefit rather than a public good and the state has other pressing financial commitments including K-12 education, health care, and prisons. A small percentage of legislators have graduate or professional degrees and a 1/3 of the legislators have one or more degrees from your institution.

Consider the following questions:

- 1) What data do you need to collect about graduate education to make your case about the importance of graduate education in your state?
- 2) What are your goals? What should be your first goal?
- 3) Who can assist you in accomplishing your goals? How can you mobilize your supporters?
- 4) What strategies can you use to promote your position(s)?
- 5) How can you sustain your relationships with legislators?
- 6) What kinds of communication can you use to accomplish your goals?
- 7) What pending legislation in your state has implications for graduate education? How can you have an impact on this legislation?

Online Courses and Degree Programs

Alan D. Heisel, Ed.D.
Associate Professor and Chairperson
University of Missouri-St. Louis
Department of Communication/590 Lucas Hall
One University Boulevard
St. Louis, MO 63121-4400
heisela@umsl.edu

Abstract

The presentation focused on the role of the graduate school in the facilitation and advocacy of online graduate courses and graduate degree programs. Facilitation of online graduate education was addressed by juxtaposing centralized and decentralized administrative structures. Although the structures represent a false dichotomy, the distinction provided a context to introduce various attributes of each approach and their relative strengths. Participants were advised to develop individualized administrative structures that address the unique needs of their institution. Regardless of the nature of the administrative structure, advocacy of online graduate education was emphasized as a primary responsibility of the graduate school.

Introduction

Two important activities that contemporary graduate schools should list among their administrative responsibilities include the facilitation and advocacy of online graduate courses and degree programs. Institutions vary in regards to the units responsible for the administrative activities associated with online education, but graduate schools are charged with the task of overseeing graduate education and therefore, have a special obligation to participate in and/or directly supervise online graduate courses and graduate degree programs. Whether an institution has a large number of graduate degree programs and courses available online or just a few, this flexible and convenient format continues to serve an increasingly important and growing part of the graduate student body. As a consequence, graduate schools need to collaborate and provide appropriate expertise and resources to facilitate the development and implementation of online graduate courses and degree programs. Through advising and policy-making, facilitation promotes development and helps to remove obstacles to effective delivery. However, while facilitation will help to insure active and effective development, graduate schools must also serve as advocates of online graduate education. By promoting the format and encouraging departments and individual faculty to develop appropriate degree programs and courses, a climate of innovation and opportunity can develop. Strategies for facilitation and recommendations for the promotion and advocacy of online graduate education are discussed.

Facilitation

Centralized and decentralized administrative structures provide the framework for this discussion of facilitating online graduate courses and degree programs. While the administrative structures in most institutions will reflect characteristics of both centralization and decentralization, comparing and contrasting these concepts is a useful way of evaluating what it means to facilitate online graduate education. For the purposes of this discussion, centralization is conceptualized as highly structured model in which a single unit is responsible for developing and instituting policies including content and delivery requirements, while decentralization reflects an unstructured, distributed network in which individual faculty and departments are responsible for content, delivery, and the development of policies appropriate to their respective disciplines.

In a centralized model, the graduate school would define the fundamental expectations for all online graduate courses and degree programs, and individual faculty and departments interested in developing online graduate courses and degree programs would collaborate with the administrative unit before implementation. The strengths of the centralized model lie in the uniformity and efficiency offered by a centralized command structure. Centralization insures that there is a basic standard to which all new and existing online graduate courses and degree programs are held, and provides support to make sure that the standard is met. Because all of the related activities are overseen by a single administrative unit, centralization provides easy access to resources and support to faculty and departments interested in online graduate education while promising greater quality control to administrators.

Decentralization represents a stark contrast to centralization. Nevertheless, the strengths of this model help to highlight the limitations of a centralized model. In a decentralized model, the role of the graduate school in online courses and degree programs would be minimal. Individual faculty members and departments develop and implement online courses and degree programs based on needs and expectations that are discipline specific. This strategy allows for development of online courses and degree programs that may differ across departments and colleges but nevertheless utilize strategies and applications that are appropriate to their respective disciplines. For some disciplines, streaming video and interactive applications will be essential for an optimal student experience. For others, such applications may be inappropriate or unavailable. The decentralized model provides greater flexibility to individual departments, allowing for unique and specialized courses and programs in lieu of a uniform, standardized format. In addition, decentralization promotes more rapid expansion than its counterpart.

Because individual departments determine what is appropriate based on their disciplines, it eschews the necessity of making discipline-specific requirements meet the expectations outlined by a centralized administrative structure that may not easily take those requirements into account. As a result, individual departments and faculty have the potential to rapidly develop online graduate courses and degree programs, but the institution has less control over the quality of the online graduate courses and their consistency across disciplines. Instead,

departments and faculty are responsible for insuring a high-quality learning experience. There are no administrative controls specifically designed to monitor the online graduate courses, and quality control is monitored in essentially the same way that traditional graduate courses are evaluated.

Centralization or Decentralization

Whether centralization or decentralization is appropriate to a particular institution depend on the current administrative structure and environment, as well as the goal-state for the institution. If an institution has been largely decentralized, one can expect faculty resistance to a more structured environment—particularly among individual faculty and departments that have already been successfully innovating and developing online graduate courses. Thus, a relatively steady and progressive move toward centralization is recommended as an overzealous attempt to significantly alter the existing structure may, in effect, kill the golden goose. In such cases, innovating faculty and departments should be actively involved in helping to shape the policies that are to be implemented by a centralized administration in order to insure that they do not inhibit existing online efforts while simultaneously promoting new efforts.

In an institution that has been unsuccessful at establishing a core of graduate online degree programs and courses within a centralized administrative structure, decentralization has several advantages in the short term. Decentralization can promote rapid expansion of online graduate courses by eliminating procedural requirements that might be imposed by a more centralized unit. The primary difficulties associated with decentralization deal with variation among online graduate courses and perceptions of appropriateness. With decentralization, an online graduate course offered by the Department of Communication might look very different from one offered by the departments of Business Administration or Social Work. However, the advantage is that the individual units develop courses based on expectations of their respective disciplines and therefore, tailor their online offerings to meet the needs of graduate students in their discipline. Although innovative faculty and departments may develop online graduate courses in relative isolation, it does not mean that there are no quality controls. Indeed, competence and ability to innovate will reduce the likelihood that individuals with perhaps less than ideal motives would be inclined to attempt it anyway. In other words, decentralized structures tend to promote rapid expansion of online graduate courses and degree programs among those who already possess the interest in developing such courses and the necessary technical skill and content expertise to do it. In contrast, centralized structures tend to buttress technical skill and experience, providing infrastructure to faculty and departments to facilitate growth.

As already mentioned, the goal-state of the institution is an important consideration. Will decentralization save administrative costs? Will it promote growth? Will centralization improve the online graduate student experience? In terms of expansion, centralization and decentralization promote growth in online graduate courses—albeit in very different ways. Centralization makes the most sense when there is an established core of online graduate

courses and degree programs that can form the framework for a lean, systematic, and efficient centralized administrative structure. If there is not a sufficient core, a centralized structure might be premature and inhibit growth. In terms of goal-state then, there are two important questions:

- 1) Is growth desired or do current offerings reflect a sufficient/appropriate state?
- 2) Does great disparity exist between current offerings or are the discrepancies limited to expected, discipline-specific variation?

Depending on the answer to the first question, a greater or lesser degree of centralization may be advisable. If there is great disparity between offerings that cannot be explained by reasonable and expected differences in disciplines, greater centralization is probably warranted.

One final thought to consider is the nature of the faculty. Goal-states are temporary and remain only so long as the balance of forces is maintained. As circumstances change, so does the goal-state. The nature of the faculty has a profound impact on the health and vitality of any graduate online initiative. Hiring faculty who are interested in and who possess the expertise necessary to develop online graduate courses is particularly conducive to success in online graduate education. Also, economic factors are also involved. To maximize the returns that an investment in online graduate courses and degrees promise, these offerings should allow the institution to tap into new markets where it did not previously compete. Whether this is occurring or not also has an impact on the goal-state.

Advocacy

For online graduate education to be a success there must be a unified sense of support for the endeavor at an institutional level. Graduate schools serving as the centralized administrative structure for online graduate education need to take a leadership role in promoting the benefits of this format and defending it against critics. It is not enough to simply provide the resources needed to develop online graduate courses and degree programs. Policy and decision-makers at the institution must actively and vocally support the goal-state for online graduate education if it is to be fully realized. Advocacy can take many forms, but a high-profile campaign that emphasizes the importance of online graduate education is essential.

UMSL – A Department Chair Perspective

The Department of Communication at the University of Missouri – St. Louis began offering hybrid undergraduate courses in 2001, following the implementation of a system-wide application based on Blackboard. By 2002, the department offered its first course completely online. Individual faculty members were primarily responsible for these developments. In 2003, a new position was created in an effort to promote expansion of online course offerings. The Coordinator of Online Education was to be responsible for developing and implementing new courses as well as working with faculty to modify existing courses to fit the unique requirements and benefits of the online format. In addition, a small “instructional support” fee

was added to online course offerings at that time. In less than two years, the department was offering half a dozen undergraduate courses online and had implemented its first online graduate course. By 2008, the department had developed and implemented nearly two dozen undergraduate courses online.

Much of the development and expansion within the department occurred in a relatively isolated state. Although other departments and programs had offered some courses online, we modeled our development on research based in communication and online education. The result has been a highly successful online program that provides unique advantages to students beyond simply flexibility and convenience. Although there are several units at UMSL that offer complete degrees online, the Department of Communication has been largely prevented from offering its MA in Communication completely online due to difficulties associated with staffing and implementation of certain courses. Nevertheless, the department has been extremely successful in its online endeavors.

The majority of the successes were developed in a state of relative decentralization. This freedom allowed the department to capitalize on the strengths of new faculty and deliver hybridized and eventually fully-online courses. However, this circumstance is changing. A trend toward centralization has become increasingly more evident. Recently, the university approved guidelines for "best practices" in online education, and began moving responsibility for policy to Continuing Education and Outreach. Although such a move is appropriate in many respects, the graduate school will need to play an active role in policies associated with online graduate courses and degree programs lest the courses become indistinguishable from undergraduate offerings. As a department, centralization is seen as a generally positive development, with some reservations. Specific policies and practices need to be negotiated, and the role of the graduate school remains unclear. There appears to be a sufficient core of offerings distributed across units to justify the move, so a positive if not linear improvement in the state of online graduate course offerings is expected. Indeed, the president of the University of Missouri system recently made online education a primary focus, delivering the high-profile advocacy necessary for institutional success in online education.

Concluding Remarks

It was argued in this presentation that the two primary concerns for administrators dealing with online graduate education are (1) How to facilitate the development of new courses and degree programs as well as support and promote those that currently exist?, and (2) How to best provide appropriate support to online graduate education through institutional activity and high-profile activity? Institutional characteristics will make the answers to these questions vary to a certain degree, but graduate schools need to play an active role in facilitating and advocating graduate online education rather than simply abdicate responsibility to another institutional entity. Indeed, the graduate school should have ultimate authority over issues specific to the graduate education, regardless of delivery format.

Online Courses and Degree Programs

Gail Scukanec
Dean, College of Education and Human Sciences
University of Wisconsin-Eau Claire,
153 Brewer Hall, UWEC
Eau Claire, WI, 54701
scukangp@uwec.edu

Abstract

Online education is an expanding enterprise at both the graduate and the undergraduate level. This workshop was designed to present information on current statistics in online education in the U.S. and to present and discuss best practices in online education.

Growth of Online Education

It is easy to understand the significant growth that has occurred in online education. As an increasing number of adults with busy and full lives have looked for educational alternatives—education that is accessible and convenient—online education has met the needs of many of those adults. In fact, online education provides a viable learning environment for many people who could not otherwise pursue further education and is more convenient than traditional formats for many others. In fact, improved student access is considered the single most important reason for offering courses and/or programs online. In terms of statistics, between 3½ and 4 million students took an online course in the U.S. during the fall of 2006, which represents nearly 20% of all students and was a 9.7% increase over the number of online course enrollees during the fall of 2005. That growth rate far exceeds the 1½% growth rate from fall, 2005 to fall, 2006 in the total number of students enrolled in higher education in the U.S. And, while there has certainly been an increase in graduate level courses and programs offered online, two-year associate institutions currently have the highest growth rate for students taking online courses and account for 50% of all online enrollments. (Online Nation, 2007).

How have institutions handled the growth in the number of students accessing online courses and programs? Not surprisingly, much of the growth has been fueled by new institutions entering the online market. However, it is believed that the emergence of new institutions entering the market is coming to a halt. Further growth in online opportunities will likely continue through these newer institutions expanding their programming and more traditional institutions becoming more involved in this enterprise in order to remain competitive in today's market.

Online Best Practices

Online education has existed for a significant enough period of time for researchers to determine best practices in online teaching and learning. Best practices have been discussed along the following five dimensions: institutional context and commitment, student satisfaction, faculty satisfaction, learning effectiveness, and evaluation and assessment (Abel, 2007). In terms of institutional context and commitment, it is important to assess how online learning fits within the vision and mission of the institution. Within that context, the institution must have a means for maintaining academic oversight and assure the integrity of student work and faculty instruction. Student satisfaction is always central to the success of an educational endeavor, particularly in the current competitive marketplace. Therefore, to ensure student satisfaction, when providing online course work and/or programs, institutions must provide students with clear information on technical competencies necessary for online courses as well as information on necessary technologies students must have available to them. It is also crucial that the institution provide students with technological support. Since online education is often serving non-traditional students, support should not be limited to the traditional daytime hours; it should be available 24/7, in other words, whenever students might be involved in activities related to their courses. And, finally, students must have access to student services. Sometimes it is suggested that offices must, therefore, be staffed all hours of the day. That is not generally the case; if students can be educated through technology, surely they can register, interact with financial aid staff, access schedules and syllabi, etc., through technology.

Another area that must be considered when providing education online is faculty satisfaction. In order to ensure faculty are encouraged to facilitate learning through technology, faculty must be provided support in online pedagogy. There are many ways this can be accomplished, but faculty should be assisted with instructional design and professional development. An effective online course is not simply a traditional course formatted for online offerings. The course may need to be redesigned to not only be as effective as the traditional course, but to utilize the unique benefits the online environment can bring to the course. Additionally, faculty must be provided with the equipment necessary to deliver online courses and with technical support. And, a sometimes overlooked factor, issues of faculty workload, tenure and promotion must be considered. Online teaching differs in a number of ways from traditional face-to-face teaching. Teaching online, particularly the first time a faculty tackles this new format, should be considered in terms of workload if the institution wants to encourage its faculty to continue to offer courses in the online environment.

Learning effectiveness is important in online education as it is in any educational endeavor and the quality of learning online must be comparable to learning in a traditional format. Building community among learners impacts learning, therefore, it must be intentionally facilitated in online environments. Opportunities for interaction (synchronous and asynchronous) between students and between student and faculty must be provided and are often required in the online format. Additionally, hybrid or blended programs, programs that include both traditional face-to-face instruction and online instruction, allow for development of

community in a manner most of us are more familiar with. And finally, technology should be utilized to enhance learning effectiveness through opportunities not afforded in the traditional format. If used to its fullest, technology may result in greater learning effectiveness than traditional course work.

The last area that must be considered in terms of best practices is the area of evaluation and assessment. As with all courses and academic programs, student learning outcomes must be developed and then assessed in online courses and programs. Program evaluation and student learning outcomes assessment should be used to improve programs as well as to improve use of technology. Additionally, program review of online programs should take place in the same context as programs offered through traditional formats.

Conclusion

In conclusion, online education enables many individuals to pursue higher education, but it is much more complex than traditional education being offered in an online environment. It is our responsibility, as a graduate education community, to ensure that the use of technology actually enhances the educational experience for students. Information is readily available to assist us in that endeavor.

References

A Synthesis of Sloan-C effective Practices [electronic data file] (2005). Sloan Foundation http://www.sloan-c.org/publications/books/v9n3_moore.pdf

Online Nation: Five Years of Growth in Online Learning, [electronic data file] (2007). Sloan Foundation. <http://www.sloan-c.org/publications/survey/survey07.asp>

Principles of Good Practice: The Foundation for Quality of Southern Regional Education Board's *Electronic Campus*, retrieved March 19, 2008: <http://www.ecinitiatives.org/publications/principles.asp>

Best Practices for Electronically Offered Degree and Certificate Programs, Commission on Institutions of Higher Education, New England Association of Schools and Colleges, retrieved March 19, 2008: http://www.neasc.org/cihe/best_practices_electronically_offered_degree.htm

Abel, R. (2007) Implementing Best Practices in Online Learning: A recent study reveals common denominators for success in internet-supported learning, EDUCAUSE Quarterly. <http://connect.educase.edu/Library/EDUCAUSE+Quarterly/ImplementingBestPractices/39928>

Leadership Roles of the Graduate Dean

Robert M. Augustine
Dean
The Graduate School
Eastern Illinois University
1201 Blair Hall
Charleston, IL 61920
rmaugustine@eiu.edu

Abstract

Graduate Schools at comprehensive institutions have comprehensive functions. At Eastern Illinois University, the Graduate School is composed of four separate divisions. Each division has a unique mission that serves the overall mission of advanced study. A director provides leadership for each division. The four units include the Graduate School led by the Dean and the Director of Graduate Admissions. These leaders focus on developing and maintaining superior graduate degree options. Another unit is the Office of Research and Sponsored Programs. The Director of that office provides leadership to advance scholarship and research. The third division is the Office of International Programs. This is a dual unit with two directors. The Director of International Admissions provides leadership to advance international diversity that serves both undergraduate and graduate study. The Director of the Office of Study Abroad provides leadership to advance the mission of global knowledge and citizenship. Study abroad is an area of advanced study primarily for undergraduates. The Dean's role is to produce results or outcomes to verify fulfillment of the mission of each of the divisions. This paper identifies results or outcomes that must be achieved in order for the Graduate School to remain a viable and effective unit at Eastern Illinois University and some of the leadership processes used to achieve the results.

The Graduate School's Leadership Role

To offer a well-focused review, this paper is limited to a discussion of leadership to achieve results in two areas, resources and quality. These were selected because achieving results in these areas led by the Graduate School at Eastern Illinois University is essential for the units to remain healthy and viable as administrative units and ultimately for the University to retain strong programs of advanced scholarship. The results or outcomes include annual increases in resources to support each mission and annual demonstrations of quality maintenance or advancement.

Leadership to Increase Resources

The first question identified for this session was how to have the greatest impact on the University as a Graduate Dean and what do these leadership roles look like. Regardless of the joint challenge of economic downturns of the state of Illinois coupled with the demand for resources from fellow units across the university, as a Graduate Dean I have the most

significant impact on the University when I successfully secure additional resources to advance the divisions of the Graduate School. Additional resources ensure quality and advance opportunity for student and faculty which further advance the units that I lead. My success requires consistent models of collaboration with all of the primary constituents who are stakeholders in the Graduate School's mission and its divisions. These include Graduate Coordinators, Chairs of Graduate Programs, and the Deans of the Colleges and Schools. It also includes collaborations with the vice presidents or their designees, numerous campus offices including technology offices, financial aid, career services, marketing and publicity, and enrollment management. Also included are faculty members who serve on advisory committees and who participate in the programs advanced by the divisions. Students who are engaged in the degree or learning programs advanced by the unit are also critical to its function as are alumni with graduate degrees or international ties. Other partners are external agents and university service units.

Leadership to achieve resource increases in the divisions of the Graduate School at Eastern includes three critical areas. If I am unable to deliver increases in these areas, the viability of the divisions is impaired. These are the critical areas:

- In graduate education leadership for resources must successfully result in assistantship stipend increases coupled with increases in the number of awards.
- In international education leadership for resources must successfully result in scholarships to competitively attract students to the programs because of the higher cost of these programs to students.
- In research and sponsored programs leadership for resources must result in internal awards that successfully promote faculty and student scholarship and link scholarly effort with successful external funding.

Graduate Assistantship Stipends and Awards

The outcome or result for increasing stipends was to secure an annual stipend increase equal to the rate negotiated for faculty and to build that increase as a permanent budgetary allocation. To achieve this outcome I used three successful patterns for resource acquisition described by Hayworth and Conrad (1997). The models adopted from these authors I refer to are the Task Force Model, Collaborative Opportunities Model, and the Development Model. The Task Force Model was used to secure support among multiple vice presidential divisions. The Task Force included 7 members and used position papers to communicate permanent solutions for ensuring competitive stipends and how competitive awards enhance program quality as recommended by Hayworth and Conrad. The first paper was a simple brief on national stipend levels that communicated how annual stipend increases equal to those of the faculty would, over a period of fiscal years, maintain stipend competitiveness. The second paper included a summary of the teaching, research, and service assets that teaching and research assistants contribute to the University and how these assets impact undergraduate learning and faculty scholarship. The papers were presented in a series of meetings to academic and business councils. The best practices model was endorsed by the Graduate Council, Deans Council, and Presidents Council and the Provost implemented the plan.

The outcome or result for increasing the number of awards was the funding of multiple new assistantship programs. These emerged as Presidential Awards, Summer Research Awards, Financial Aid Awards, Service Unit Awards, External Assistantship Awards, and a process for increasing awards through grants and contracts. To achieve this outcome the Collaborative Opportunities Model also described by Hayworth and Conrad (1997) was implemented. The Dean met collaboratively with agents who might provide additional resources for graduate assistantships and outlined how a collaboration with the unit would provide opportunities for the sponsoring unit and the university. As noted earlier, six collaborative awards emerged over a three-year period that added more than 120 new awards to the University.

- Presidential Awards was a permanent allocation from the president to create a series of competitive awards to support the teaching mission of the university. The President's opportunity was to select 3 of the recipients.
- Summer Research Awards was a permanent allocation from the provost to fund about 40 summer awards to support faculty research. The Provost's opportunity was to track the outcomes of the research projects and ensure faculty productivity.
- Financial Aid Awards was a collaboration with the Financial Aid office to create assistantships from unallocated financial aid resources and distribute these awards based on enrollment demand. The Financial Aid Office earned a Graduate School Award for this contribution
- Service Unit Awards: This was a collaboration with service units on campus that want graduate assistants rather than student workers. The collaboration allows the program to provide the stipend and the Graduate School ensures the tuition waiver.
- External Awards: This is a collaboration with departments that offer graduate degrees. These units may negotiate stipends paid by external agents and the Graduate School will offer the tuition waiver.
- Research and Sponsored Programs created programs to encourage grant writers to include assistantships

The outcome or result for increasing assistantships and scholarships for graduate study was the creation of a Graduate Alumni Advisory Board, an Outstanding Graduate Alumni Awards Program, and creation of a philanthropy development plan for graduate study. The ultimate result was increased resources for graduate study that included the first privately funded fellowships, a Graduate Alumni Fund, and several privately funded graduate scholarships. The models and processes are reviewed in the next section.

International Scholarships

The outcome or result of resources for international education was the creation of scholarships for international students and study abroad students. Begun in 2004, the units now have 5 new awards available with additional negotiations in process; however, this is far below the number needed. The model used emerged from guidelines on philanthropic developed by Panas (2002) and Dykstra, Hoeflich, and Ragan (2005) which I call a Development Team that included the

dean, directors, support staff and liaisons with the philanthropy and alumni offices. This model was piloted earlier in the Graduate School to assist with scholarships for graduate study and was highly successful. The Team established a regular meeting schedule with the Vice President for External Relations and her directors who manage philanthropy and alumni relations. A multi-year plan was developed that included the creation of strong friends of international education who agreed to serve on the Alumni Advisory Board. The plan also required negotiating a staff position dedicated to development. That staff member now served on the University Development Committee and maintains regular communications with the Alumni Advisory Board, the Director of Development and the Director of Alumni Relations. The Board launched its new International Alumni Recognition Program called the EIU Global Ambassadors Program, and also hosted alumni events at international sites.

Features of Panas (2002) that are critical to success for development include focusing on the benefits of philanthropy to the donor rather than to the institution. Refocusing my efforts in this way increased my ability to help donors recognize their own potential to change lives by meeting their scholarship recipients, meeting others who had established awards and re-introducing award recipients who have earned their degrees and are now successful. The second feature of philanthropy that advanced our efforts was to focus on our success and how the donor would be successful with us rather than trying to discuss needs or funding woes. Features of Dykstra et al. (2005) that were critical to our success was to have a staff member dedicated to development. The communication and events needed required dedicated staff who retain regular communications with the program's friends and who is seen as the alumni and donor linkage to the University.

Research & Sponsored Programs Proposal Initiative Funds

The outcome was the creation of a new university-funded internal grants competition called PIF Awards: Proposal Initiative Funds. These awards were partially based on guidance from Bauer (2001) who noted that there were 6 ways to foster grants opportunities at universities. These included technology support programs, non-technology support tools, newsletters, matching grant seekers with funding sources, subcontracting consortia, and financial programs to support grant-seeking opportunities. At Eastern we determined that we lacked the final category, a competitive program that provided faculty with the resources to seek external funding.

The PIF program addressed that need and we amplified that outcome to compete for new resources to start the program. The PIF program provides a competition at two levels. These include a Type A or Type B Award. Type A are an internal allocation of up to \$1,500 linked to an external award of \$20,000. Type B awards are an internal allocation of up to \$7,500 with an external award of \$50,000. This program has increased the number of proposals for external funding and advanced scholarship across the university. The Model used was the creation of a Research Advisory Board focused on advancing the research mission. The Board brought the proposal for the PIF Awards for University-wide debate which resulted in their funding and adoption by the Provost. The Board has also become a permanent part of the Research

Office's cadre of advisory groups. Bauer (2001) offers a much broader application, but we decided to begin with this well focused proposal and to consider expanding it later as a comprehensive research development program.

Leadership to Increase Quality

The second question identified for this session was how to work with colleges and schools in order to advance the quality of the programs linked to the mission of the graduate school. Regardless of the various philosophies of the deans who lead the colleges or the chairs and coordinators who lead individual programs, as a Graduate Dean I have the most significant impact with these leaders when I clearly define the quality expectations and the processes for achieving these expectations. My success requires consistent communication about criteria that reflect quality and processes to achieve those criteria. Almost all members of the academy are involved with establishing and monitoring the criteria.

Leadership to achieve quality in the divisions of the Graduate School at Eastern includes three critical areas. If I am unable to clearly define and demonstrate quality in these areas, the viability of the divisions is impaired. These are the critical areas and the results expected:

First Choice Graduate Programs

Results or outcomes achieved include establishing a comprehensive program for quality assessment titled First Choice Graduate Programs at Eastern Illinois University. This program established the criteria that define quality graduate study at the University and offers a process to achieve the First Choice Designation or to seek a review to identify strengths and weaknesses. The basis for the criteria included guidelines from Conrad and Haywoth (1997), Borchert, M., Sims, L., Denecke, D., Tate, P. (2005), The Higher Learning Commission (2003) and Rhodes (2001). The program for First Choice Designation also includes access to new resources that are not attainable by programs that have not achieved the criteria.

The Leadership Model used a campus-wide Advisory Groups & Discussion Model. The Council on Graduate Studies organized three consulting groups to develop and respond to the criteria and processes. The Dean of the Graduate School and the Executive Committee of the Council served on each of the Consulting Groups. The first included a Graduate Leadership Consulting Group composed of the chair and vice chair of the Council on Graduate Studies and one Graduate Coordinator from each for the four academic colleges. The second was a Chair Leadership Group that included eight chairs of departments that offer graduate programs who were recommended by each college dean. The third was an Administrative Consulting Group composed of the four college deans, the Dean of Continuing Education, Dean of the Honors College, and a representative from the Vice President for Academic Affairs Office. Each group was provided with a copy of the criteria. A meeting was then held to allow for critique and recommendations. The recommendations were summarized and the document changed based on input from each group. There was a follow-up review period for further input. A final document was derived following the consultations. Recommendations and subsequent drafts were shared and critiqued electronically. After all of the consulting groups had completed their

work, the document was prepared for campus-wide distribution and discussion. The document was later approved by the Council on Graduate Studies and implemented.

The results achieved include five programs identified as meeting the criteria, five in the process of improving their programs, and ten others seeking reviews in the next fiscal year. Applicant pools, candidate pools, and theses have improved in number and quality since implementation.

Criteria for Quality Study Abroad Programs

In a process similar to that outlined for graduate study, the Director of Study Abroad held campus-wide discussion to identify criteria for rigorous faculty-led study abroad programs based on the work of Williamson (2004). The criteria were adopted by the International Programs Advisory Council. Since implementation, the number of faculty-led programs has increased to the desired goal of EIU being 4th among public institutions in Illinois to send students abroad. According to the most recent analysis, only three public institutions send more students abroad and these are all Research I and II institutions. In addition, a document to evaluate the quality of these programs was also implemented and indicates that students verify the rigor of the program. .

Criteria for Research and Sponsored Programs

In the area of research and sponsored programs, criteria for quality in scholarship are under campus-wide discussion by the newly established Advisory Council. The Council has approached this process by following Bauer (2001) and reviewing the mission of scholarship and sharing their discussions with the Administrative Councils of each of the colleges to identify programs to advance scholarship and criteria for measuring their success. Emerging support programs include a staff position to support faculty who need assistance with developing aspects of their proposals, a proposal to grant released time from teaching for those who meet certain scholarship criteria, and resources for intensive development to create more competitive grants. Our goal, not yet achieved is to increase annual productivity by two million dollars while simultaneously increasing publication and presentation rates.

Summary

I believe that I have the greatest impact on the University as a Graduate Dean when I find ways to successfully bring additional resources to the programs managed by the divisions and when I develop clear criteria that defines quality expectations. The models of leadership I have used include:

- Task Force Model
- Collaborative Opportunities Model
- Development Team Model
- Review Board Model
- Advisory Board Model

The role I provide in leadership may be summarized as follows:

- Knowledge about the topic: It is critical that I know what issues impact the result being sought and how other institutions have advanced this issue.
- Research: It is critical that I bring data to support the position being advanced.
- Advocacy: I must demonstrate the outcomes that will be achieved and then, if this is approved, I have to achieve them.
- Collaboration: Almost everything I wish to achieve depends on strong collaborative ties with other university agents.
- Follow University Structure: Knowing and timing the distribution of reports and presentation to University committees/councils impacts my outcome
- Success: I have to be successful.

References

Bauer, D. (2001). *How to Evaluate and Improve Your Grants Effort*. Westport, CT: The Onyx Press.

Borchert, M., Sims, L., Denecke, D., Tate, P. (2005). *Master's Education: A Guide for Faculty and Administrators*. Washington DC: Council of Graduate Schools.

Dykstra, L., Hoeflich, S., Ragan, M. (2005). *Fundraising*. Workshop Presented to the Council of Graduate Schools 45th Annual Meeting, Palm Springs, CA.

Haworth, Jennifer Grant and Conrad, Clifton, F. (1997). *Emblems of Quality in Higher Education: Developing and Sustaining High-Quality Programs*. Boston: Allyn and Bacon.

Panas, J. (2002). *Asking: A 59-Minute Guide to Everything Board Members, Volunteers, and Staff Must Know to Secure the Gift*. Medfield, MA: Emerson & Church, Publishers.

Rhodes, Frank H. (2001). *The Creation of the Future: The Role of the American University*. Ithaca: Cornell University Press.

The Higher Learning Commission. (2003). *Handbook of Accreditation*. Chicago, IL: The Higher Learning Commission.

Williamson, W. (2004). *Study Abroad 101*. Kalamazoo, MI: Agapy Publishing.

MAGS Committee Reports 2007–2008

Distinguished Thesis Committee Report

Submitted by Peggy Harrell, MAGS Distinguished Thesis Award Committee Chair

Treasurer's Report

Submitted by Dennis Nunes, MAGS Secretary/Treasurer

Membership Committee Report

Submitted by Pamela Benoit, MAGS Membership Committee Chair

Publications Committee Report

Submitted by Frank Einhellig, MAGS Publications Committee Chair

MAGS/UMI Distinguished Thesis Awards 2008
Presented by the Midwestern Association of Graduate Schools and
ProQuest UMI Dissertation Publishing

There were a total of 49 theses submitted for the 2008 MAGS/UMI Distinguished Thesis Awards. Nominated theses were sent to the members of the selection committee for review at their respective institutions. All manuscripts received multiple reviews with many receiving very high scores. Reviewer comments indicated high-quality work on the part of the students nominated. In March 2008, committee members discussed the reviewers' scores and comments for the highest rated manuscripts and selected the following award two recipients. These students were honored at an evening banquet held on Wednesday, April 2, 2009.

R. MATTHEW OGBURN, University of Missouri-St. Louis

Anatomical Variation in Cactaceae sensu lato

Advisor: Peter F. Stevens

Abstract

Interpretation of the evolution of Cactaceae, a speciose and physiologically, ecologically, and morphologically distinctive angiosperm group, depends on a solid understanding of phylogenetic relationships both within and outside of the clade. Molecular approaches have begun to resolve these relationships and reveal 1) that *Pereskia*, the leafy genus long interpreted as the sister group of all other cacti, is likely paraphyletic, and 2) that Cactaceae is nested within a paraphyletic Portulacaceae as a member of the 'ACPT clade' (Anacampseroteae, Cactaceae, Portulaca, and *1alimum*). This information provides a framework for asking questions about important steps in the evolution and radiation of cacti. I examined vegetative anatomy in the ACPT clade, focusing on the outgroups of Cactaceae, with the goals of identifying potential synapomorphies at varying hierarchical levels, comparing conflicting phylogenetic hypotheses, and examining hypotheses about cactus evolution.

Results indicate that *1alimum* retains many plesiomorphic characters and is likely sister to other ACPT. Relationships between Cactaceae, Portulaca and Anacampseroteae are still unresolved, with no morphological characters unambiguously favoring one arrangement over the other, although a sister-group relationship between Cactaceae and Portulaca appears unlikely. Furthermore, the gain of stem stomata and delayed periderm in *Pereskia*, although important precursors for the shift to stem photosynthesis in Cactaceae, are common also in the outgroups of Cactaceae, and were thus not likely in themselves to have been key traits that facilitated the radiation of cacti. Other stem characters were identified here unite the Andean/southern *Pereskia* clade with core cacti, and that show the potential of having important physiological implications for the evolution of stem-based photosynthesis and stem succulence. Such characters may have interacted with delayed periderm and stem stomata, and include a greatly thickened stem epidermis, hypodermal druses, large and persistent mucilage cells, and radial layering of outer cortical cells.

Slave to Freewoman and Back Again: Kitty Payne and Antebellum Kidnapping

Advisor: Nancy Marie Robertson

Abstract

In 1843, an African-American woman known as Kitty Payne and her three children arrived in Adams County, Pennsylvania, newly emancipated by Mary Maddox of Virginia. Two years later, in July of 1845, a gang of men burst into the Paynes' home at night and kidnapped the family, dragging them back south to slavery.

The story of Kitty Payne and her children echoed and replayed itself thousands of times in the years before the Civil War. Between 1670s and 1860s, a race-based system of slavery for Africans and African Americans developed in, initially, the British colonies and then the United States of America. Not all persons of African descent came to or lived in America as slaves. Those who were enslaved sometimes obtained freedom through manumission or escape. This created opportunities to kidnap free blacks and sell them as slaves, regardless of their previous status. In effect, kidnapping became a reverse Underground Railroad, carrying its victims into bondage. As the price of slaves rose during the first half of the nineteenth century, so did the profit and temptation of kidnapping.

Kitty Payne's gender, geographic location, and legal status, as well as the details of her abduction, make her representative of kidnapped free African Americans. Like many African Americans of her time, Payne left no written documents and may have been illiterate. Thus her story is revealed, not in the historian's traditional sources, but through a variety of methods that uncover the voices of the illiterate. The majority of kidnapped free African Americans disappeared silently without a trace. Unlike most victims, Payne successfully battled a white man in a southern court and eventually received her freedom. Payne and her story speak for those whose voices kidnapping and slavery stole.

2008 MAGS/UMI Thesis Awards – Honorable Mentions

Forest M.R. Brem, Southern Illinois University–Carbondale

Comparing Batrachochytrium dendrobatidis Infection Prevalence among Habitats Before, During, and After an Epizootic in Central Panama

Nicholas Miller, University of Dayton

Optical Sparse Aperture Imaging

Brooke Schneider, Wayne State University

Pathways to Disability in African American Elders: The Role of Cognition, Illness Burden, and Health Behaviors

Distinguished Master's Thesis Committee

- Peggy Harrel, University of Southern Indiana, Chair
- Richard Adler, Minnesota State University – Moorhead
- John Karkheck, Marquette University
- Priscilla Kimboko, Grand Valley State University
- Jolynn Kuhlman, Indiana State University
- Edward Mykytka, University of Dayton
- Sara Rosen, University of Kansas
- Steven Sarratore, Indiana University – Purdue Fort Wayne
- David Wilson, Southern Illinois University – Carbondale

*Midwestern Association of Graduate Schools
Treasurer's Report 2007
Period Covered: 1/1/07 to 12/31/07*

FY 2006 04/05-04/06:

CURRENT ASSETS (as of 12/31/06)

Checking Account (12/31/06)	\$ 33,808.11
Investment Account Balance, \$20K + \$1752.48 (09/10/06)	\$ 21,752.48
TOTAL ASSETS (12/31/06)	\$ 55,560.59

FY 2007 01/01/07-12/31/07:

REVENUE (1/1/07 to 12/31/07)

Membership Dues, 2007	\$ 9,300.00
Membership Dues, 2008	\$ 4,075.00
Conference Registration	\$ 17,925.00
Conference Sponsorships	\$ 4,800.00
SUBTOTAL REVENUE	\$ 36,100.00

DISBURSEMENTS/EXPENSES (1/1/07 to 12/31/07)

2007 Conference Expenses	\$ 33,997.99
Site Visit (\$422.90)	
Hotel (\$29,576.74)	
Exec Dinner (\$1,922.77)	
Speaker Travel (\$1,402.50)	
Printing (\$624.71)	
Shipping (\$48.37)	
2007 Conference Refunds	\$ 400.00
2006 Proceedings	\$ 1,415.35
MAGS Thesis Award (Travel Expenses)	\$ 1,000.00
2008 Conference Expenses	\$ 3,483.89
June Executive Meeting (\$3,198.82)	
Conference Calls (\$46.80)	
Executive Meeting-CGS (\$238.27)	
SUBTOTAL DISBURSEMENTS/EXPENSES	\$ 40,297.23

CURRENT ASSETS (as of 12/31/07)

Checking Account (12/31/07)	\$ 29,610.88
Investment Account Balance, \$20k + \$2,405.05 (09/10/07)	\$ 22,405.05
<u>ENCUMBRANCES</u> (as of 12/31/07)	\$ 652.56

TOTAL CURRENT ASSETS (12/31/07) **\$ 52,015.92**

*Midwestern Association of Graduate Schools
Treasurer's Report 2008
Period Covered: 1/1/08 to 3/21/08*

FY 2007 1/1/07 to 12/31/07:

<u>CURRENT ASSETS</u> (as of 12/31/07)	
Checking Account (12/31/07)	\$ 29,610.88
Investment Account Balance, \$20K + \$2,405.05 (09/10/07)	\$ 22,405.05
TOTAL CURRENT ASSETS (12/31/07)	\$ 52,015.92

FY 200801/01/08-3/21/08:

<u>REVENUE</u> (1/1/08 to 3/21/08)	
Membership Dues, 2007–2008	\$ 11,150.00
Conference Registration	\$ 20,360.00
Conference Sponsorships	\$ 1,050.00
SUBTOTAL REVENUE	\$ 32,560.00

DISBURSEMENTS/EXPENSES (1/1/08 to 3/21/08)	
2007 Proceedings	\$ 1,537.00
Registration Refund	\$ 200.00
SUBTOTAL DISBURSEMENTS/EXPENSES	\$ 1,737.00

<u>CURRENT ASSETS</u> (as of 3/21/08)	
Checking Account (3/21/08)	\$ 60,583.43
Investment Account Balance, \$20k + \$2405.05 (09/10/07)	\$ 22,405.05

<u>ENCUMBRANCES</u> (as of 3/21/08)	\$ 149.56
-------------------------------------	-----------

TOTAL CURRENT ASSETS (3/21/08)	\$82,988.48
---------------------------------------	--------------------

Membership Report 2008

The Membership Committee (Pam Benoit (University of Missouri), William Weiner (Marquette University), and Shelley Martinez (University of Michigan) reviewed applications submitted for membership from three institutions: Old Dominican University in Columbus, OH; Lewis University in Romeoville, IL; and Metropolitan State University in St. Paul, Minnesota. The membership committee has assessed that these institutions meet the criteria for membership in MAGS: 1) any institution having regional or professional accredited status by agencies acceptable to the Association, and now granting graduate degrees, 2) have reported this recommendation to the Executive Committee, and 3) and recommend to the MAGS membership that they be approved for membership.

The Membership Committee prepared a short survey for members to solicit feedback about factors that could increase attendance at the MAGS meeting and would like to encourage members to complete the survey.

The Membership Committee has drafted letters to potential new members. Two letters have been drafted. One letter will be sent to institutions that are currently members of CGS but not members of MAGS and one letter has been written to institutions that are not members of either CGS or MAGS to encourage them to become members of MAGS.

Membership Committee

- Pamela Benoit, University of Missouri–Columbia, Chair
- William Weiner, Marquette University
- Shelly Martinez, University of Michigan

MAGS Publications Committee Report

The *2007 Proceeding of the Midwestern Association of Graduate Schools (MAGS)* 63rd annual meeting was produced in print format and distributed by mail and also at the annual meeting (Indianapolis, IN) in April, 2008. The *2007 MAGS Proceedings* also has been posted on the *MAGS* website (<http://associations.missouristate.edu/mags/>). The website now has electronic files for last seven years, starting with the *2001 Proceedings* and all subsequent years.

Prior to the presentations made at the 2008 annual meeting, the speakers were apprised of the expectation that a text version of their presentation should be submitted for publication in the *Proceedings*. Further, at the time of each presentation each speaker was provided a copy of the Instructions for Contributors to the Proceedings which included the timeline for submitting manuscripts.

The Publication Committee recommended to the MAGS Executive Committee that, starting with publication of the *2008 Proceedings*, the paper version of this publication should no longer be done, but the website posting of the *Proceedings* would continue. This action was proposed as a cost-saving measure. It also seemed feasible based on the increased use and acceptance of internet-based journals. The Executive Committee was in agreement with the Publication Committee recommendation and put the recommendation to eliminate the paper-copy of the Proceedings to the vote of the membership at the MAGS Business Meeting of April 4, 2008. By vote of the membership, the paper version of the *Proceedings* will be discontinued and starting with the *2008 Proceedings* only an electronic posting of the *Proceeding* papers will occur.

Carla Coorts has been fulfilling the role of the MAGS webmaster for several years. We would like to express our sincere thanks and appreciation to Carla for her excellent and responsive service as webmaster. We also thank Missouri State University for hosting the *MAGS* website.

Instructions to Proceedings Contributors to the Midwestern Association of Graduate Schools

Introduction

The instructions and timelines that follow ensure appropriate continuity and timely publication and distribution of the Annual Meeting *Proceedings* of the Midwestern Association of Graduate Schools. These guidelines achieve the goal of consistency but allow freedom for the presentation of the array of topics that constitutes the *Proceedings*. The *Proceedings* include the text of keynote and plenary sessions, summaries of workshops, panel presentations and small group discussions, the Association's committee reports, and other items of concern as appropriate to support the goals of the organization. Authors should be aware that the text of oral presentations may need some modifications for clear communication as a publication in the proceedings. They should revise the presentation to make it suitable for publication.

All Manuscripts

All manuscripts must be submitted electronically in Microsoft Word format (.doc) or rich text format (.rtf). PowerPoint or similar presentations are not acceptable. The Publications Committee may edit the manuscript for clarity and formatting.

Keynote and Plenary Manuscripts

Manuscripts for traditionally delivered keynote and plenary presentations should be prepared using these guidelines:

- **Title**: Use the title published in the Meeting Brochure, typically ten or fewer words.
- **Authorship**: Provide your name, title, institution, address, and email address.
- **Abstract**: The first section should be an abstract of no more than 100 words.
- **Line Spacing**: Single spaced.
- **Paragraphs**: Double space between paragraphs; do not indent.
- **Headings**: Use of headings to identify main topics is encouraged. Justify headings to the left and in bold.
- **Citations**: Use the author and date system; i.e., "Jones (2008) reported that..." or "MAGS is a growing organization (Jones, 2008)." Use et al. for three or more authors.

- **References.** Provide full citations in a “Reference” section as the last section of the text, listing things alphabetically by the author’s name.
 - The form for journal references should be as shown in these examples:
Jones, A.S. 2008. Planning for the future of graduate education. *Journal of Graduate Education* 28: 1-10. (28 is the volume and 1-10 is the page sequence.)
 - For two or more authors, the respective format would be:
Jones, A.S. and H.L. Smith; or, Jones, A.S., H.L. Smith and B.J. Zang.
 - References for books should be by author:
Jones, A.S. 2008. *Book Title Capitalizing The First Letters*. Publisher, City, State abbreviated.
 - Listing of a chapter in a edited book would be by the author of that chapter, according to the format:
Jones, A.S. 2008. Title of article. Pp. xx-xy. *In* Smith, J.A. (ed.). Title of Book. Publisher, City, State.
- **Length:** Limit the manuscript to ten or fewer single-spaced pages.
- **Figures/artwork:** Limit graphs and figures to those supported by Microsoft Office.

Workshop and Panelist Presentations

Manuscripts for workshops and panelist presentations that were delivered as a traditional keynote or plenary session presentations should be prepared according to the Keynote and Plenary Manuscript guidelines outlined above. These manuscripts may include a summary of relevant discussion when a discussion option was included in the presentation. Manuscripts for Workshop or Panel Presentations that used a discussion format should be prepared according to the guidelines for Small Group Discussion Manuscripts outlined below.

Small Group Discussion Manuscripts

The following guidelines apply to interactive meeting sections that are under the direction of a facilitator, who is responsible for formulating key questions for discussion, moderating the discussion session, and providing a written summary for the *Proceedings*. After the title and authorship (facilitator), the manuscript presented to the *Proceedings* should start with a statement of the topic and a bulleted list of questions that served as the focus of the discussion. These elements should be followed by a concise summary (250-500 words) inclusive of the salient points, comments, or questions that arose during the group discussion. If desired, references can be included in a standard reference list according to the format specified for other manuscripts in the *Proceedings*.

Time Table

Manuscripts are due **60 days** following the annual meeting.

Submission

Submit all materials for publication electronically as specified above to *FrankEinhellig@missouristate.edu* or *CarlaCoorts@missouristate.edu*.