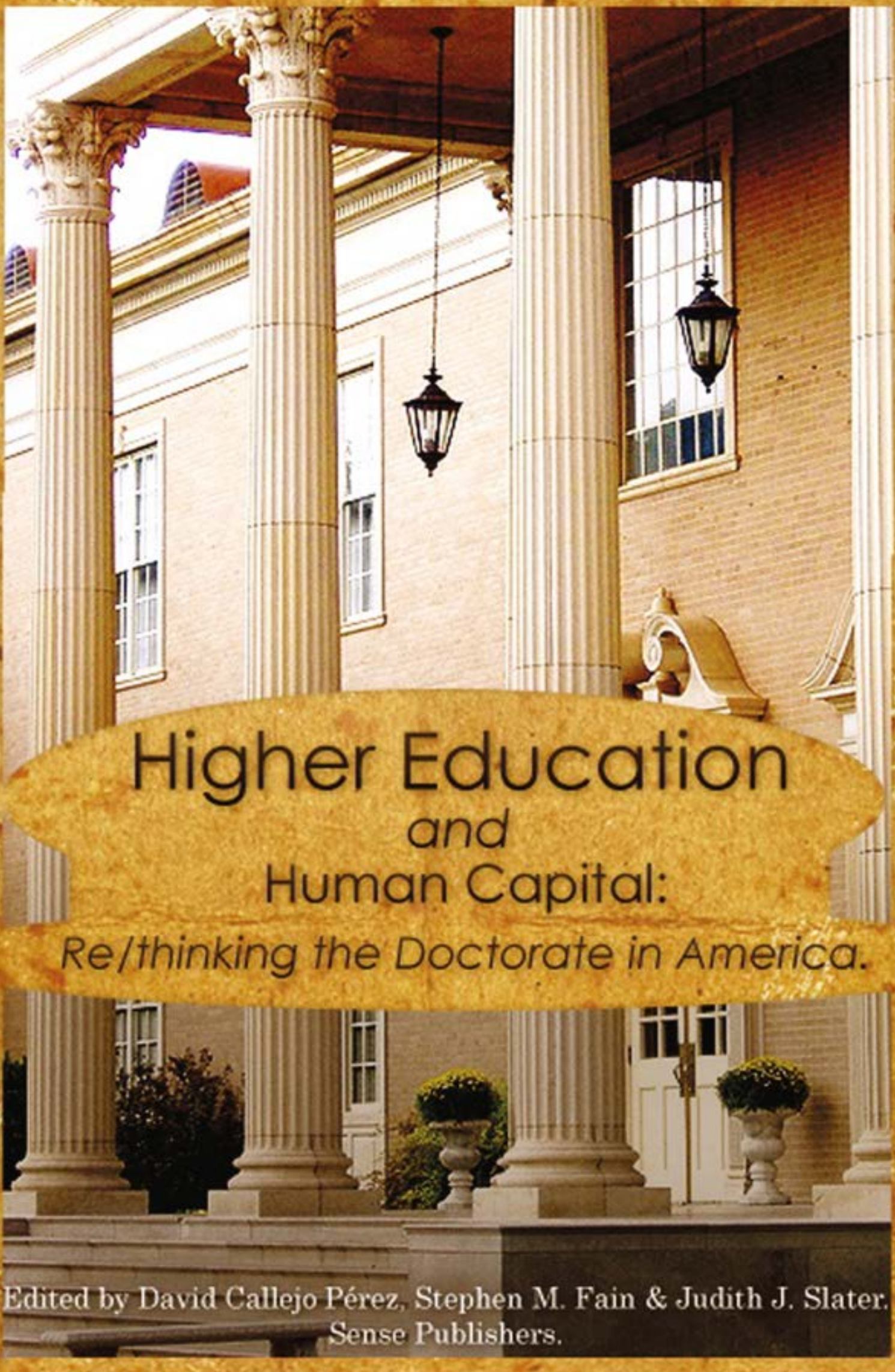
Higher Education
and
Human Capital:
Re/thinking the Doctorate in America.
Edited by David Callejo Pérez, Stephen M. Fain & Judith J. Slater.
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Higher Education and Human Capital

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DAVID M. CALLEJO PÉREZ, STEPHEN M. FAIN
AND JUDITH J. SLATER

INTRODUCTION

The Doctorate and Cultural Capital

Initially, the doctorate of philosophy welcomed the emerging scholar into a special community. With the emergence of research institutions such as Johns Hopkins and the University of Chicago at the turn of 20th century, the scientific model became the norm of the US doctorate for the next 100 years. The purpose of the doctorate in US has historically been to prepare leaders who will work to improve the sciences (social and physical), humanities, and professions. While, the more classical degrees in the languages, humanities, and arts remained grounded in scholarly pursuits of the Humanities; and served to replenish the ranks of the professoriate with elite graduates from elite institutions. The National Science Foundation's 2006 publication *A Brief History of the Doctorate* sheds light on the evolving academy in the United States. With the emergence of pragmatism it is not surprising that a scientific approach muted the humanistic characteristics previously associated with advanced academic pursuits. For example, according to 2006's *A Brief History*:

> Of the more than 1.35 million doctorates awarded by universities in the United States between 1920 and 1999, 62 percent were in science and engineering fields—but more were given out in education than in any other single discipline in every year from 1962 on.
>
> Although men received 73 percent of the doctorates throughout the century, the proportion earned by women rose from 15 percent in the early 1920s to 41 percent by century's end. Among other demographic changes: The proportion of Ph.D.s earned by members of minority groups rose to 14 percent in the period from 1995–99, up from 6 percent in 1975–79. And foreign nationals earned almost one of every three doctorates granted by American universities by the late 1990s, up from one in four just a decade earlier.
>
> Fifty baccalaureate institutions produced more than a third of the people who went on to earn doctorates between 1920 and 1999. Of those 50 institutions, Oberlin College was the only one that does not itself award doctorates. (Oberlin ranked 35th.) Community colleges played an increasing role in the doctoral pipeline, the report found: More than 11 percent of all U.S. citizens awarded doctorates in 1995–99 had attended two-year colleges, up from about 10 percent in the late 1970s. But the overall proportion of doctorate earners who had attended a community college actually fell to 8 percent from 9 percent, seemingly

> because of the significant increase in the number of foreigners in the pool of doctorate earners.
>
> Ph.D. recipients have increasingly had to go into debt to earn their degrees. By 1999, for the first time, more than 50 percent of graduating doctorate earners had accumulated education debt, and the proportion who said they owed more than $20,000 had climbed to 20 percent, up from less than 7 percent a decade earlier.

In other words, what the 2006 Report illustrates is that the Doctorate has now become more commonplace. This shift can be traced to two dimensions associated with the research model; first, the use of students as laborers on highly funded research projects leading to commercial outputs and second, a need to generate high productivity student credit hours at the advanced graduate levels at institutions seeking high academic status. This second characteristic is exacerbated by the effect of ranking systems based on such production (i.e., Carnegie and US News and World Report).

The research model has long driven the idea of the doctorate; it was not mean to be that way. It was traditionally accomplished through critical thought, research, and reflective practice related to expanding existing paradigms of knowledge or to creating new knowledge that impacted society. Doctoral programs in Research Universities stressed the importance of research and study in a social context, grounded in the realities of society. Doctoral students would become part of a community that links scholars with practicing professionals, policy makers and thinkers. Doctoral students were to conduct research, and critically examine their disciplines, fields, or subject areas; expanding their content knowledge through linkages with faculty in opportunities with faculty to conduct research (as a team member or side-by-side) and gain an understanding of the forces that both shape and are shaped by the creation of knowledge and its impact on society. Doctoral Programs were to articulate curriculum as a living shape where students, faculty, and institution melded in a humanist and creative process. The process creates a space where participants risk their beliefs and we embark alongside each other through a curriculum of authenticity undergirded by the relational dynamic between teachers as students and students as teachers.

However, this idea has been seriously eroded by the explosion in the granting of doctoral degrees beginning in the early 1970s (20,000 doctorate per year) and culminating in the 2000s with over 46,000 yearly doctorates. In 1980, less than 100 institutions saw themselves as doctoral and research, by 1990 that number had increased to over 200. According to Carnegie Institute for the Advancement of Teaching there are 300 plus Doctoral Granting Sites and about only 25–30% of Degree Recipients Teach or Do Research in Higher Education. An upturn in the economy after 1998 followed by a fast downturn in 2001, changes in technology (i.e., Windows) let students seek alternatives to traditional doctoral programs. During this time, of the 40,000 average yearly graduates with doctorates, many more came from non-traditional programs (traditional Universities with large online programs—Maryland, Nebraska, Penn State; and from non-traditional programs such as Argosy and Phoenix). The growth of online/Internet based universities and for-profit schools that offer doctorates have also been a boon to Doctoral Programs in increasing

retention. However, this has led to a new problem. Diploma mills such as Argosy or Union or Nova Southeastern have begun to outnumber traditional degrees in many professions, such as Psy.D. (Zweback 2008). In the wake of the Alberto Gonzalez scandal, the public learned that Regents University, a Christian non-accredited law school, had more lawyers working in the Justice Department than the top five American Law Schools, including Harvard, Yale, and Michigan.

Another emerging problem is that universities have used the economic downturn to adjust tenured faculty. Several reports from the American Association of University Professors (2009a; 2009b) and the Collaborative on Academic Careers in Higher Education (COACHE) at Harvard University (COACHE 2009; Helms 2010) have pointed at the perceptions and realities of faculty, including that only 30% are on tenure/tenure-leading appointments, the types of institutions that hire, and the beliefs of Generation X faculty. All these go to the heart of the matter. Our doctoral students are different and the institutions they will work in are different. Ironically, we continue to prepare doctoral students like we have in the past, have expectations of them that do not match their identity, and are preparing persons for jobs that no longer exist. A current colleague explained that she felt like an endangered species—watching her tenured colleagues retire and replaced by contract professors. It dawned on her—because you needed tenure or be tenure-line to serve on the five committees her department had to have—she was the last tenured member of her department at a major research university.

Governing Boards and University Presidents have used the economic downturn to re-constitute the university to resemble to for-profit institutions labeled anti-intellectual several years ago. Using the justification of being in-tune with their students' needs, responsibility to their alumni and partners, and improving access; universities have used the faculty and tenure as resistors to change. Because of the bad economic times, universities have allowed a number of their tenure-track positions to die by natural attrition, as faculty members have left or retired (Chronicle 2010). Ironically, as they cite student friendly universities, administration outsources student room and board, activities and healthcare. Another change is that of universities like Arizona, "when the vice provost for academic affairs goes on sabbatical in January, the vice provost for educational technologies, who had been on sabbatical for the fall semester, will come back not only to handle the responsibilities of her own job, but also to oversee those of her colleague (Chronicle, June 2009)." In Minnesota-Twin Cities and at the University of Georgia, the universities are seeking to raise their base teaching load to 3–3 to address economic shortcomings. The *NY Times* quoted a member of the Board of Regents saying "adjuncts are excellent teachers and bring real-world experience to the classroom." He hoped that he could find a way to replace more professors with these good teachers. Some colleges and universities are choosing to fill teaching slots with visiting faculty members and other temporary full-time appointments. They hire these new "limited-term" positions — to cover cuts in so many budgets cuts. The logic is that in two to three years, when the "limited-term" contract runs its course, there may well be money for a tenure-track hire. However, as we have witnessed once these lines are cut, they are never regained or end up in corporate-driven areas. As we know, student enrollment, after all,

increases in times of economic recession. Someone has to teach them, and unless tenure-track professors are prepared to have their course loads eventually doubled or tripled, it will continue to be adjuncts and non-tenure-track full timers. Thus, as many students undertake, work in, and finish their doctoral programs, this is the place where many will seek to work. In our estimation, we have created this book to provide a sense of direction in these changing times, where the authors write in depth about doctoral programs, as advisors, students, recent graduates, and experts; giving the readers a sense of the landscape that encompasses the doctoral degree as cultural capital in higher education.

ORGANIZATION OF THE BOOK

In light of the changing nature of the doctoral degree, the Carnegie Institute for the Advancement of Teaching (which ranks universities according to research production) began two initiatives, one aimed at the idea of university research and the second at the doctorate itself. This book takes on the second idea, the Carnegie Initiative on the Doctorate and asks: How far have we come? If the ultimate value of a doctorate is its Intellectual Capital, then have universities chosen to increase its net worth or remain wedded to the degree as a certification.

Carnegie's Initiative asked that we foster thoughtful deliberations, aimed at achieving an adequate and comprehensive account of the doctoral program's intellectual and performative qualities. It created four rubrics to measure all doctorates of purpose (meaning the direction and understanding of a program's expected outcome), assessment (meaning the strategies for determining how well a program does in achieving its expectations), reflection (meaning a program's on-going habits of reflection about its aims and strategies), and transparency (meaning the extent to which the relationship between purpose, assessment, and reflection in a doctoral program are readily discernable to all elements of the program). For the purpose of this book, the invited authors will revisit each of the four crucial parts of the doctorate (1) Purpose; (2) Assessment; (3) Reflection; and (4) Transparency. Each section will feature essays from doctoral students, doctoral faculty, and assistant professors (or recent graduates) who will address their experiences through narratives and vignettes addressing the question of "how far have we come?"

We are particularly interested in encouraging reflection as an important characteristic of what they imagine to be a successful quality doctoral program; we need to re-visit the inclusion of the core curriculum in the doctorate. Addressing the focus of the doctorate engenders a discussion as to the core values held by any doctoral program (usually described in Doctoral Programs Mission and Goals) and its graduates. We posit that a "good doctoral" experience fosters active engagement in reflection on all elements of our work—the intellectual, advisory, and pedagogical work of faculty, curricular opportunities, as well as the intellectual work of the doctoral candidates themselves—through work that drives research and theory in our respective fields. Specific issues raised in this edited volume include the selection processes, developmental progress expectations, methods of assessment/evaluation, and data on placement, time to degree and completion rates of doctoral

students, experiences as new faculty, and proposed changes for the future. Also, the idea of intellectual capital involves agency into what doctoral work involves in such organizations, institutionalized opportunities for reflection and feedback between graduate students and faculty mentors. While students typically find many opportunities to interact and support each other, departments should structure opportunities to facilitate and encourage discussions among graduate students and faculty about important developmental issues, career goals, etc. Creating community is a strong recommendation from many of the national studies.

The book is divided into four sections addressing how far have we come in doctoral education. The first section, *A General Approach: Comprehensive Analysis of Doctoral Programs*, has three chapters that address the preparation of future faculty, the future of the professoriate, and the fostering of researchers. The first chapter, by Monica Fox, Stephanie, Adams and Ingrid St. Omer, approaches the doctorate degree to positing that informal as well as formal experiences greatly impact the experience; and that an emphasis on these multiple factors will greatly help the success of the graduate. By beginning with the idea of mentorship, we set the tone for our belief that relationships drive all human endeavors. Donna Adair Breault examines the life of the professor and the irony of time. Currently, professors are required to do more work from both the office and home; are victims of the institutional system that requires one to be an expert, and struggle to balance between professional development and duties to the institution. Adair Breault de-romanticizes the faculty myth while at the same humanizing the individual and opening doors to conversations about why this occurs. The last chapter in Section I, *Re/thinking Research Training* by Luis Mauricio Rodriguez-Salazar and Carmen Patricia Rosas-Colin, agrees that there needs to be a path between the loneliness of research and the need to collaborate. They see mentorship of new doctoral students, as a key to building a road and a bridge that will close the gap in preparation of graduates and increase the idea that research is an active and cooperative effort.

In Section II: *Rethinking the Concept of Evaluation and Programmatic Coherence*, Martha Combs and J. Randall Koetting's reflective essay takes the reader on a journey through the creation of a doctoral program at a small university by reminding us that the degree is more than a set of standards, courses, and exams—it is a journey to a new way of life. Building on this powerful essay, M.O. Thirunarayanan, proposes that we begin to consolidate degrees. His thought-provoking proposal asks that we look at the criteria for offering a doctoral degree rather than the discipline, allowing recipients to have a voice in their education, and for professional degrees examine the relationship among the institution and where graduates will work. The key to this chapter is that we ask why we offer the degree we offer. In order to bring this section to a close, Sebastian Diaz returns to the ideal set forth by Combs and Koetting. He asks that we use knowledge management as a tool for evaluating advanced graduate programs. Like the impact of Facebook or MySpace on social networking, Knowledge Management can help with our goal to create new knowledge and help it be freely disseminated.

The third section, *Beyond Practice: The Doctoral Degree Beyond the Discipline, Subject, and Field,* begins with the authors examining quality doctoral education

from specific disciplines and fields and asking that we examine the power of these ideas to all doctoral education. In the Ed.D. v2.0, William White and Jason Grinnell delve into the argument between the research and applied doctorate. Taking the field of Education as their foundation they offer that there is much that can be provided by education specialists that can infuse the research doctorate and the production of knowledge—that the degrees need to be seen as part of a larger collective informing knowledge rather than two separate doctorates. In the next chapter, Anthony Normore and Lynne Cook write about the path taken by their institution in the development of their new Ed.D. As discussed in Section II, the authors address the importance of mission, stakeholder involvement, and participation in developing a robust and sustainable degree that will one day produce those who will change and improve our schools. This chapter is also influential because of its ability to allow the reader an insight into the difficult road to grow a program. The third chapter in this section is about the Ph.D. in Mathematics and Science Education. Robert Mayes, Patricia McClurg and Timothy F. Slater describe the experiences at the University of Wyoming in their collaborative development of the Ph.D. in Math and Science Education with the disciplines they work within. With the growing emphasis on STEM disciplines this chapter is allows the reader to understand the idea of knowing and teaching when addressing disciplines in education, and math and science.

The last section: *The Implications of Individual Identity Within the Doctorate*, is the largest—and in some cases the most poignant and personal as researchers recount their personal narratives as students and faculty. Madeleine Grumet (1988) has described narratives as "masks through which we can be seen (p. 67)." We must remember that in narratives, human beings are limited by the boundaries of social and linguistic rules/practices. In this section we begin with Diane Rodriguez and Kenneth Luterbach's chapter on recruiting culturally and linguistically diverse students into Special Education. In this chapter, the authors use their own experiences and knowledge to deconstruct how we treat diversity and language (more politically than as a necessity) for quality education. In this sense, they believe that technology is the key to recruiting and retaining diverse faculty. The highlight of this chapter lies in that the authors ask that we take the same care for graduate programs that we do to recruit undergraduates. The next chapter has Meadow Graham, Sarah Selmer, and Erin Goodykoontz focusing on individual students' experiences and the development of an academic identity. The human element needs to receive the largest consideration in preparing doctoral students, including providing space for narrative reflection and identity. Andrew T. Kemp, Joseph Flynn and Samara Madrid bring those influences that guide our decisions as faculty to light in their chapter on negotiating the tenure-track journey. In the compilation essay (parts appeared in the *Chronicle of Higher Education*), the authors discuss the essence of their unique and collective experiences at Northern Illinois as new faculty from different places, ideas, and areas of study. This potent essay recounts a year in their lives and includes personal narratives of a university shooting, problems in their personal lives, and the realities of work that one is not prepared for in graduate school where one must be patient, collaborative, and reflective. Building on the idea of change and identity, Pablo Toral recounts his experiences as a professor of international relations in a liberal

arts college. The idea that the doctorate is to generate knowledge in research needs to be broadened. Toral writes that we need to embed this approach to develop additional advisory and pedagogical skills. In this sense, this chapter is a personal journey where new faculty must channel the training given doctoral students to devote energy in research to being an advisor and teacher. Since many of the graduates will work in Liberal Arts Colleges and Comprehensive Universities, as advisors we need to understand those institutions' missions in preparing our students. Like Toral's journey of self-discovery, Janice Sandiford reflects on her career as an advisor for over 30 years to provide the reader a new examination of those watersheds of the program, the program of study, coursework, assessment, the dissertation, supervisors, faculty load, and programmatic financial stability. By focusing on these issues, Sandiford tells the reader that we can be honest and transparent with students, faculty and programs. In the last chapter, Joshua J. Ode builds on the arguments put forth by Toral and Sandiford by asking that re/thinking the doctorate involves rethinking our goals as faculty at our new institutions. Like Toral's dilemma, Ode works at a regional university and addresses how a faculty member trained in scientific research can generate research of service and teaching to create impact while continuing to be engaged in one's discipline. In this concluding chapter, Ode provides insight on how the meaning of impact has changed for him as he transitioned from a doctoral student to an assistant professor at a small university and attempted to create an impact at his institution and his field.

CONCLUSION

When we speak of graduate education. Greater efficiencies and general reform drive the critics and thinkers alike and there is very little support for efforts directed at releasing human potentials. Today education is ensnared within a paradigm of efficiencies. Additionally, graduate programs and in particular faculty and tenure, have become straw men attracting criticism from those who seek to direct and control the activities generally associated with the development of a professoriate.

CULTURE: INSTITUTIONAL COHESION AND IDENTITY

Doctoral programs need to be connected and flow from ideas and thoughts about change and practice (both traditional and innovative). Research, Albers (1965) writes, is the ability to search and search again—to see as Hannah Arendt (Passerin d'Entreves, 1993) suggests, the idea of fragmentary historiography, one that seeks to identify the moments of rupture, displacement, and dislocation in history. Such fragmentary historiography enables one to recover lost potentials of the past, in the hope that they may find actualization in the present. For Arendt (1958), "it is necessary to redeem from those past moments worth preserving, to save fragments from past treasures that are significant for us" (p. 4). Only against the grain of traditionalism and the claims of conventional historiography can the past be made meaningful again, provide sources of illumination for the present, and yield its treasures to those who search for them with "new thoughts" and saving acts of

remembrance (Passerin d'Entreves, p. 5). As critics of the preparation of the future professoriate (doctoral programs), we defer to Robert Dahl (1970) who writes that "though you would find it less tidy, it would not be absurd for you to start with your own proposed solutions and work backward" (p. 166). In order for us to become active in doctoral leadership, we need to move away from the current disinvestment occurring in our universities and develop proposals for change in our institutions (Molnar 1986).

We suggest that we look inward and reassess how to measure learning—rather than looking outward at other institutions. As professors we have to keep in mind is that the impetus, planning, and budgetary support for the current curriculum revision taking place in universities comes from outside the universities. The reformers, who are ultimately legally responsible to their benefactor, the federal government and economic interests (including state governments), do not take into account the unique contexts of universities and people that the authors explore in this edited work. Ironically, few doctoral programs have devoted serious time to what their programs are about or what ideals they should be trying to achieve; instead, they often cling to the notion of control while allowing external and impersonal relationships to make the most important decisions about their programs. The major problem with doctoral education today is that too much decision-making takes place in within boardrooms instead of in universities and with faculty. These conversations and their consequences often take professors, programs, and universities by surprise (i.e., accountability for student learning); they often never see changes coming. In the end, some choose merely to accommodate and follow mandates, no matter how obtuse or ill-informed they may be. Others are more sinister, choosing to call themselves "researchers" and stating that their purpose is to drive knowledge when in reality they limit its growth.

Doctoral faculty have unique insights on their students' creative thinking, problem solving, and most importantly, the connections they make to themselves, others, texts, and the world. Narratives (rather than quantitative data) make excellent records of how learners think and provide an alternative assessment that can show growth among students (Kohl, 1967; Meier, 2002). Student work is more than merely a benchmark; it is the foundation of growth toward learning. Significance of learning cannot be determined by the size of the quantitative measurement (statistical) but by what it represents. Concurrently, we must run away or dismiss the use of data; we need to think about data as a living and dynamic history of our programs. As Dahl (1970) writes, revolutions emerge from individual solutions to common problems. We need to consider all solutions—search out multiple successful ways to measure impact.

Eisner (1979/2008, p. 203–210) suggests that:

> Tasks used to evaluate what the students know and can do need to reflect the tasks they will encounter in the world outside schools, not those limited to schools themselves. Evaluation tasks should think about more than one possible solution and one possible answer to a problem.
>
> Tasks should have curricular relevance, but limited by the curriculum itself.

Tasks should require students to display sensitivity to configurations or wholes, not simply discrete elements.

Tasks should permit the student to select a form of representation they choose to use to display what has been learned.

The tasks used to evaluate students should reveal how students go about solving a problem, not only the solutions they formulated.

Tasks should reflect the values of the intellectual community from which they are derived.

Tasks need not be limited to solo performance. Many of the most important tasks we undertake require group efforts.

Guided by Eisner, we posit that doctoral education and its outcomes are a process, a series of authentic conversations, which are public and open. Doctoral education should be rooted in a strong commitment to contribute positively to the challenges confronting universities today. It has to address the social, historical, psychological, political, economic, and philosophical context of the professoriate. Advisors and students need to (a) engage in an active process of questioning that examines what is visible and hidden in an aesthetic method, intended to foster close links between theory and practice, (b) develop leadership skills to affect change, and (c) prepare for a wider understanding of research, teaching and service, confronting the complexity of the professoriate in traditional and non-traditional educational settings.

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SECTION I:
A GENERAL APPROACH: COMPREHENSIVE ANALYSIS OF DOCTORAL PROGRAMS

MONICA F. COX, STEPHANIE G. ADAMS
AND INGRID ST. OMER

1. CREATING COMPREHENSIVE EDUCATIONAL EXPERIENCES FOR THE 21ST CENTURY PH.D.

INTRODUCTION

What does having a Ph.D. say about you or about your accomplishments? The current process for obtaining a Ph.D. confirms that you can follow directions and complete a task, can pass courses and a comprehensive and/or qualifying exam, can conduct independent research, and can one's research findings. But what else does it say? Does having a Ph.D. mean you are a good teacher, advisor, mentor, grant writer, or independent thinker? Does it mean you are ready to guide the next generation of Ph.D.'s? Upon graduation, there is variability in the skills demonstrated by new Ph.D.s? Whose responsibility is it to train Ph.D. recipients in areas in which they are weak? Does this responsibility rest on the major professor, the dissertation committee, the department, or the institution?

Many have approached doctoral education as a "sink or swim" exercise. The strongest, most determined doctoral students are those who not only survive the process but identify effective practices that help them to be successful during the Ph.D. process and beyond. This random approach of pursing a Ph.D. is no longer sufficient. Doctoral training should not be left to chance. Given the purpose of a Ph.D. and the leadership opportunities given to Ph.D.s in academia, industry, government, and non-profit sectors, one would expect training of doctoral students to be more consistent across disciplines, departments and institutions within the United States. Although programs such as *Preparing Future Faculty* (Preparing Future Faculty, 2009) and *Re-envisioning the Ph.D.* (Nyquist & Woodford, 2000) provide resources for students considering or pursuing Ph.D.s., students who actively seek such resources are the most likely to benefit from the guidance offered on these websites. For the reasons listed thus far, this chapter presents information about the origins and the purpose of a Ph.D.; provides stories about the Ph.D. experiences of the authors along with common themes across these experiences; presents the skills needed by Ph.D. students upon completion of their degrees; and offers alternative models and additional measures that might be used by departments and institutions to level the playing field for all those pursuing doctoral degrees.

ORIGINS AND PURPOSE OF THE PH.D.

The Ph.D. has held much prestige across the world for centuries and the goal of the Ph.D. has changed over time. The first doctoral degree was granted in Paris in

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the 12th century (Bourner, Bowden, & Laing, 2001). The first Ph.D. was granted in Germany in the early 19th century. The original purpose of the doctorate was to grant a license to those who desired to teach and to allow individuals to issue legal opinions. According to Wellington, Bathmaker, Hung, McCullough and Sikes (2005), the term "Ph.D. degree" did not acquire its modern meaning as the highest academic doctoral degree until the early 19th century. As Wellington et al. (2005) explain, prior to the 19th century, professional doctoral degrees could only be awarded in theology (Th.D.), law (J.D.), or medicine (M.D.). Bourner et al. (2001) found the differences between the Ph.D. and professional doctorates to occur when examining career focus, research type and focus, and delivery methods. Related to training and research, Bourner, O'Hara, and France (2000) emphasize the practitioner centeredness of professional doctoral training as opposed to the knowledge generation orientation of the Ph.D.

Regardless of field, the Ph.D. represents attainment in scholarship and confirms students' abilities to conduct original research and their potential to become experts in their disciplines or research areas. The degree is granted chiefly in recognition of the candidate's high attainments and ability in a specific field, as shown by work on the required examinations covering both the general and the special fields, and by the preparation of a dissertation. More specifically, during a doctoral experience, a student identifies a research problem and studies it until he/she demonstrates an ability to produce research that is considered to be significant within the academic community. This determination is made towards the end of a student's experience by a small group of committee members, who, dependent upon current views and expectations and prior experiences, determine if a student's work fulfills the requirements of a department or of the graduate school. The criteria, however, as to whether a dissertation is barely acceptable or stellar varies greatly across academic programs and by field (Lovitts, 2007). Knowledge within the dissertation may be disseminated via a document that may be read by some academicians, primarily within the area in which the doctoral student received his/her doctorate.

Although research is mandatory within Ph.D. programs, other activities are optional. Among these optional activities include teaching and grant writing. Such professional development activities vary by university and by discipline and are initiated usually by students. Without formal pedagogical training, many Ph.D. students model the practices of their professors and resort to lecture as their primary way of presenting content to their students (Rugarcia, Felder, Woods, & Stice, 2000; Cox & Cordray, 2008). Researchers have found that most graduate students with teaching experiences often receive limited pedagogical training (White, 1993; Bomotti, 1994; Rushin et al., 1997; Shannon, Twale, & Moore, 1998; Golde & Dore, 2001), little useful information in their pedagogical training sessions (White, 1993; Tang & Sandell, 2000), and little to no mentoring from faculty supervisors within the courses they are teaching (Baiocco & DeWaters, 1998).

Researchers have identified general expectations of many Ph.D.s. Astin and Wulff (2004) note that future faculty will need to possess several characteristics beyond the ability to publish and to present research. Among these skills include communicating with individuals inside and outside of the academy; being effective teachers; and

comprehending teaching and learning processes. Despite these recommendations, many assumptions about doctoral education still exist. Among these include the following:

> Students who obtain Ph.D.s want to become professors.
>
> Only the best doctoral students become professors.
>
> The career paths of Ph.D.s are linear (i.e., Ph.D. to assistant professor, associate professor, and full).
>
> Ph.D.s choose the best job offer without considering relationship and family concerns.
>
> Professors enjoy higher levels of job satisfaction than other employment groups (Nerad, 2009, p. 80)

Without effective mentoring and discussions with faculty about these assumptions, it is easy to understand why Ph.D. attrition rates have remained at 50% for decades (Lovitts, 2001). It also illustrates the dichotomy that exists between the traditional nature of graduate programs and the current realities of professional life.

AUTHOR REFLECTIONS ON PH.D. EXPERIENCES

Before proposing ways to enhance the experiences of Ph.D.s, the authors reflected upon their personal doctoral experiences. The purpose of this was to understand similarities and differences in their experiences and to determine the positive and the negative aspects of their experiences. Details about these responses are presented below.

Dr. Adams' Doctoral Process

I entered Texas A&M University (TAMU) in January, 1995 to obtain a terminal degree. I was interested in a terminal degree and a career in industry. I had hopes of becoming a corporate trainer or working at a corporate university. I was interested in combining topics in the fields of engineering and business. My specific areas of interest upon my arrival at TAMU were total quality management and engineering management. I chose to study at TAMU because they offered a number of degrees that would prepare me to meet my career goal while focusing on my desired interests. At the time I was admitted I was interested in either the Ph.D. in Industrial or Interdisciplinary Engineering or a Doctor of Engineering (D.Eng.) degree.

Initially, I thought the D.Eng. would be the right degree for me as it focused on preparing individuals for professional engineering careers in business, industry and the public sector. It was not intended to be a research degree or as preparation for a faculty position. It was designed for individuals who wanted to make and to understand technological advances implemented through business and industry require direction by persons possessing both high technical competence and professional understanding of the social, political and institutional factors involved. The D.Eng.

Program emphasized engineering practice, public service and the development of leadership potential, not basic research.

There were advantages to each and what I needed was time to sort it all out. My advisor, who ultimately became and still is a mentor, allowed me to do just that. She encouraged me to research other institutions that offered programs in my area of interest, study the types of courses their students took, where their graduates went after graduation and the various requirements of their programs. In parallel with this task she encouraged me to really examine the three programs so I could make an informed decision.

At the conclusion of my first semester she challenged me to write a paper summarizing what I had learned from my research, and once completed, I decided on the Interdisciplinary Engineering (ITDE) degree. The ITDE degree was developed to accommodate students who wish to study in fields or disciplines that cross departmental, college, or school lines. In my case, my degree was comprised of courses in engineering, business, and education. I believed that this degree would give me more options in the long run. Due to the flexible nature of the program, I was allowed to craft a program that spoke to who I was at the time, an engineer with an interest in management, in how people work together and a desire to improve these experiences in the workplace.

In hindsight I appreciate her approach to my admissions process. I was admitted fully funded and provided time and opportunity to find my niche. I think more programs should consider this approach. I was fully funded and my funding was flexible enough that it allowed me to find my passion and pursue it. As I moved forward the remainder of my doctoral process was fairly traditional. I formed a committee whose background matched my interests. My committee members were from the following backgrounds: industrial engineering, management, systems engineering and electrical engineering. I was still required to complete courses, pass a comprehensive exam, present a proposal and conduct research.

My research project grew from my interest in teams. Initially, I was interested in the role that team played in the creative process. I performed a review of the literature, identified an instrument to use and data collection site. I was encouraged that things were coming together so smoothly, or so I thought. Just as I was about to begin my data collection process at a Fortune 100 company, their leadership changed and all external access was closed. I was left to rethink my project and begin again.

During this time my mentor suggested I begin teaching. Since I had no immediate interest in an academic career, the opportunity to teach did not really grab me. Little did I know she was setting me up. After a few semesters of teaching she began planting the seed that I should consider a career in academia. Slowly but surely she made sure I got the preparation I needed to be a viable candidate for an academic position. As a part of our fellowship we were required to attended professional development seminars focused on teaching and research. In these seminars we discussed the following types of topics: preparing a strong vita, the academic job search process, institutions types, preparation of a good syllabus, teaching pedagogies, writing for publication and grant writing and awarding processes.

My mentor also encouraged me to publish early on whether it be conference proceedings or journal publications. As my doctoral studies neared completion I began my job search. I was primarily applying for corporate training positions. My mentor suggested I also apply for academic positions. As I began to tailor my job search materials for an academic position, I realized that all along she had been preparing for this process. I was ready.

I ultimately received three offers: two academic and one industrial. Much to my surprise, the choice was more about institutional fit than about industry versus academia. In the end I chose an academic position. I have no regrets about my choice and in hindsight, I have done relatively well as a result of my choice. There are, however, some additional skills I wish I had had such as having had more opportunities to identify and to hone the skills necessary to be a successful faculty member. Specific skills include grant management, managing graduate students and lab resources and structuring articles for publications. I also wish I had had an opportunity to really dissect and publish more articles.

Dr. Cox's Doctoral Process

Prior to pursuing my doctoral degree, I obtained a B.S. in mathematics and a M.S. in industrial engineering. I wanted to obtain a Ph.D. in engineering education, but no formal department of engineering education existed at the time. For this reason, I chose to pursue a Ph.D. in Leadership and Policy Studies and develop projects focused upon Engineering Education. During my first year as a Ph.D. student, I received funding to mentor a group of seven students from New York City who were members of a program designed to increase the retention of students from diverse populations. From my 2nd to 5th years of doctoral study, I received a graduate research assistantship within an on-campus Engineering Research Center (ERC). Here, I worked with assessment and evaluation experts, bioengineering, educational technologists, and learning scientists, and eventually became the Student Leadership Council Chairperson for students across four research universities. My office was not located in my department, but was in a nicer location within a new building on campus.

I completed core education courses in my department and completed three graduate courses in my cognate area, sociology. I completed my qualifying exam after two years and passed the first time I took it. No faculty in my department specialized or had interests in my research area. For this reason, I added three outside committee members to my dissertation committee in addition to three departmental committee members. Five of six committee members were full professors. Because of my involvement in the ERC, I had numerous academic mentors who represented diverse areas of expertise. One mentor was in my home department and two lead projects on my ERC research team. Working with these individuals made me comfortable working in an interdisciplinary realm.

My dissertation project developed from the three years of research that I have conducted and published in the ERC. I talked to the thrust leader of the Assessment and Evaluation team, and he helped me to align my interests with the goals of

the ERC. I ended up conducting a five-part validation tool that I used to collect classroom observation data. I presented much of my findings at the American Society for Engineering Education and co-authored an article in The Journal of Engineering Education. Participating in the ERC gave me an opportunity to interact with faculty. I enjoyed the autonomy of an academic career, and I loved creating new ideas and presenting these ideas to a larger audience.

Upon graduation I applied for one position and obtained it in the area of engineering education. Because I had a clear goal prior to entering my doctoral program, I had no apprehension about the job search and alignment of my interests with career goals. Working at an NSF Center gave me several leadership opportunities so that I could "hit the ground running" as a faculty member.

As a new faculty member, I was successful in several ways but was not prepared in other ways. During my first two years as a faculty member in a new discipline, I extended my dissertation work to new contexts and received federal funding for my projects. With these projects, I attracted several doctoral students, and my research laboratory grew quickly. This growth, however, was something for which I was not prepared, since other faculty at my institution had told me about the difficulties of receiving research funding. Another surprise for me related to variations in doctoral students' motivations and abilities. I loved research as a doctoral student, but many of my students did not. As a result, their enthusiasm for conducting research that was important to me did not always match my expectations. Since, prior to becoming a faculty member, I had not advised students, I was not prepared for the personal and professional challenges associated with mentoring and advising. For this reason, I had to adjust my expectations and mentoring styles to accomplish the overarching goals for my research group. Even now, I am astonished at how much doctoral students depend upon their advisors for guidance.

Dr. St. Omer's Doctoral Process

My doctoral process was unusual in a number of ways. Unlike most doctoral students, I had returned to school following approximately five years in industry. The decision to return was a function of my realization that my personal reward system was not suited to the corporate climate and of prodding from my Master's project advisors. These advisors were a husband and wife team who had submitted my name for an institutional fellowship program. After much thought and another year of financial preparation, I arrived in the program. The initial transition was something of a struggle. My department required a qualifying exam which was based on the core sophomore courses. Exam questions were submitted by the faculty members currently teaching those courses. Although I thought I was prepared, the qualifier was a humbling experience. Clearly, I had forgotten how to take a test, and the nomenclature used for some of the questions was unfamiliar to me. Failing an exam was a new experience for me, one that had me questioning my decision to return to school. After the initial discomfort, I developed a new plan to sit in on the classes whose nomenclature I did not recognize and, I passed the exam the following semester.

Between the fellowship and my research assistantship, I was able to make the financial adjustments necessary to adequately restructure my existence. My initial research project was based on the project associated with the assistantship. However, a year into the project, I realized that it was not an area with sufficient interest to carry me through other three or four years. At that point, I spoke with my advisors about my true interests. The new plan for research incorporated the statistical process control and design of experiments experience that came from my industrial experience. My advisors agreed despite their lack of exposure to these areas. The graduate curriculum was flexible enough to allow me to complete courses in a variety of departments that supported the research. I have come to understand that this is not always possible at many institutions.

It was unfortunate that shortly after implementation of the new research plan; I developed health problems that went undiagnosed for many years. I was extremely frustrated by the lack of coverage provided by student health insurance, and I incurred significant unexpected debt. The one time I remember having a true disagreement with my primary advisor revolved around the impact of my health and my ability to complete the experiments that I proposed. As an engineer with "real world" experience, I was confident in my ability to know my limitations and to develop solutions that would allow me to continue. Convincing the faculty of this ability was more of a challenge than I expected. Further complications arose from the accelerated rise in administration of my primary advisor, a rift in the relationship between my advisors and other faculty on my committee, and the potential departure of another committee member. The navigation of these situations was based on my experience in the corporate environment. I worry that students often fall through these kinds of cracks.

I was successful in completing the work and proud of my accomplishment despite the obstacles that arose. I was pleased that I had managed to finish my degree, so journal publications were relatively low on my priority list. I began my faculty process when I was asked to stay on as a visiting faculty member in the vacuum created when my advisors changed institutions. The teaching aspect of this position was less jarring because of my prior service as a teaching assistant with complete responsibility for a lab. The service and research aspects were less defined, and I received little guidance from my department colleagues, the college, or the institution. I sought some input from the teaching and learning center, and the graduate school, but at the time, no formal orientation existed. In retrospect, it would have been helpful to understand the non-entity status of the position. My frustration led to my acceptance of a post-doctoral position at a large university where the chair of the department included me in all communications and activities with new faculty hires. I learned a great deal from that inclusiveness about the expectations of tenure-track faculty at a research university. It was also at that point in my career that I made the decision to accept a position at an institution whose engineering program focused at the baccalaureate level. Three key factors in that decision were my ongoing health concerns, the weight of expectations at such an institution, and my awareness that I was already at least ten years older than most assistant professors. Shortly before departing for my new tenure-track position, my health condition was finally identified.

In hindsight, my personal anxiety concerning the intersection of expectations and personal limitations allowed me to settle for what I thought would be closer to my personal expectations of the professoriate. I think of the university as primarily an institution of higher learning and yet, recognition of good teaching is sometimes a scarlet letter. I have since learned that department chairs and deans are critical to the success of new faculty. Although unwritten in faculty guidelines, journal publications are the measuring stick for the science, technology, engineering, and mathematics (STEM) Ph.D. As someone who conducts engineering education research in addition to discipline- specific research, I have found that not all research funding is the same. In general, those individuals from whom I learned the most about navigating the academic environment where people that I met at conferences or through personal networks.

In both industry and academia, the expectations of graduates depend on a number of skills that are not required to successfully complete a Ph.D. program. As with the National Research Council's Engineer of 2020 evaluation, it is time to rethink the skills necessary for success for our graduate students. I was given a copy of a book entitled *The university: An owner's manua*l by Henry Rosovsky at some point in my career. In it, he describes graduate students as the intellectual children of faculty. I am struck by the irony of the analogy. Much of his discussion focused on the joy of developing minds and the rewards of faculty life. Conversely, as in today's society, there exists too large a fraction of neglect and abuse that comes from the "sink or swim" mentality. The 2007 Council of Graduate Schools report Graduate Education: The Backbone of American Competitiveness and Innovation contains a number of recommendations on increasing interest in STEM graduate education, reducing attrition, fostering global education of culture and language, and encouraging students to use "their knowledge and skills in a real-world setting to gain scholarship and experience through service to the community, the state, the nation, and the world." Unfortunately, the structure of many of our graduate programs is narrow in scope, rigid in structure, and elite in admission. Hazing is the term that most often comes to mind.

Common Experiences

Common themes have emerged from the doctoral process of the authors. First, the authors desired to do something different from traditional models of doctoral education presented within their respective disciplines and departments. Because of this, they had to engage in individual and multiple mentoring experiences and networks that would help them to identify the postdoctoral paths that would complement their academic decisions. Second, the authors were not limited to their primary disciplines and to exposure of only academic experiences during their doctoral processes. These interdisciplinary exchanges allowed them to meet and to collaborate with diverse groups of researchers across multiple domains. Third, although the authors were exposed to publishing venues as graduate students, they were not prepared fully for post-graduate publishing cultures within their respective disciplines. Fourth, despite the positive impact of advisors and individuals in the lives of the authors, they still had challenges as faculty. In other words, nothing fully prepared

the authors for the experiences that they had to face as new faculty. Finally, despite the exposure of the authors to academic and non-academic environments, they still chose to enter academia after graduation instead of another environment.

Despite the commonalities of the authors' experiences, there were also several differences in the experiences of the authors. Each person began her doctoral process after different prior experiences. As such, the perspectives they their brought to their programs affected their graduate school activities, their research, and their subsequent career choices. The authors also had different advising experiences. These experiences greater impacted their successes as graduate students and laid a foundation for initial accomplishments as faculty.

EXPECTATIONS OF A NEW PH.D.

The reflections of the authors demonstrate the importance of diversifying the experiences of students during their doctoral processes. Whether pursuing a career in academia, government, business, or the non-profit sector, new Ph.D.s, particularly those in STEM, could benefit from added exposure to teaching, professional skills, research skills, and industry expectations. Teaching activities for a doctoral student may include developing and managing a course, creating course learning objectives, teaching with technology, and understanding classroom assessment. Related to classroom assessment, Ph.D.s could learn to evaluate themselves and their students' learning both formatively and summatively. In addition, the relationships between teaching and mentoring could be explored. Professional skills such as communication, time management, team building, negotiation, entrepreneurship, and project management could be primary emphases within the doctoral process. In addition to the general research skills that are obtained by students during their doctoral experiences, skills such as grant writing, writing for publication, lab management, strategic planning, advising, fiscal management, and resource management could be introduced.

Skills needed for successful careers in industry include resource and time management, team building, leadership and communication, fiscal and lab management, self-assessment, writing for publication, and strategic planning. For most businesses, having a highly skilled workforce is a real source of competitive advantage in a global economy. A company with knowledgeable and creative workers has a competitive advantage that is often difficult to duplicate. The next generation of engineers must be equipped to deal with unfamiliar problems in unfamiliar settings, and prepared to work with people who come from a culture different than theirs. Preparing young engineers to work in a flat world is no longer something that engineering schools can leave to chance (Friedman, 2005). Schools must become proactive in providing global experiences for engineering students. Schools can no longer promote global experiences to those who have the time and resources to go abroad. This ideal is compatible with the National Science Foundation's mandate to better prepare "future generations of U.S. scientists and engineers to gain professional experience beyond the United States' borders early in their careers." The global economy demands engineers successfully negotiate and understand different cultures.

In response to recommendations for expanded competencies for doctoral students, Table 1 was created. Current demonstrations and proposed additional demonstrations of competencies are presented in this table for the development of research, teaching, industry, and professional skills competencies. Of the four areas, research competencies are most formal and consistent across departments. Possible reasons for not including additional competencies, particularly within STEM fields, are a lack of consensus about the inclusion of teaching and professional skills training in predominately technical areas.

Table 1. Current and proposed demonstrations of doctoral competencies

Area of competency	*Current demonstrations of competencies*	*Additional demonstrations of competencies*
Research	Research assistantship Preliminary exam Qualifying exam Dissertation	Proposal writing Undergraduate research mentoring and advising Peer-reviewed publication Research lab management (i.e., strategic planning, fiscal management, and resource management)
Teaching	Teaching assistantship	Course development and management Classroom assessment Teaching with technology Development of pedagogical content knowledge
Industry	Degree completion	Industrial internship or industry exchange Industry portfolio Basic project management
Professional Skills	Informal seminars or hands-on opportunities	Reflection of application of professional skills within research, teaching, and industrial experiences Formal seminars in which students engage in professional skills applications

ALTERNATE MODELS

Nerad (2009) recommends that doctoral programs explore multiple options for the future. To ensure that doctoral students have comprehensive experiences that prepare them for academic and non-academic careers, the authors propose alternate doctoral education models which are presented in the following section. These suggestions include data tracking by departments, the use of multiple mentoring models, the development of doctoral portfolios, and the creation of teaching certificates.

Field Research Projects

The Field Research Project (FRP) would be an opportunity for doctoral students to pursue an independent, well-defined study of a topic related to their engineering disciplines. Similar to the NSF Grant Opportunities for Academic Liaison with Industry (GOALI) program (NSF, 2009), which allows students to conduct research within an industrial environment, field research projects would occur either during the academic year or during the summer. A FRP would be narrow enough for completion during the allocated time, yet broad enough to present a variety of research challenges that could not be solved solely within an academic institution. During the FRP intensive period, students will work with a faculty mentor who monitors their progress and suggests appropriate data sources (e.g., local companies and organizations, government and business offices, libraries and archives) and with individuals representing different areas of expertise within the company (e.g., technicians and managers). Via these interactions, doctoral students can gain an understanding about the relationships that occur within a company along with the resource requirements to complete projects within industrial settings. At the end of the program, students will create a portfolio and will give formal presentations within both industrial and academic settings. In this way, faculty, undergraduates, and graduate student peers can be exposed vicariously to an industrial environment.

Doctoral Student Exchanges

Although study abroad and college exchange experiences are common within undergraduate education, they are not encouraged as much within doctoral education. Doctoral students, however, can engage in such experiences to become familiar with the research and teaching environments of institutions with diverse missions. For example, a doctoral student at a research intensive university interested in working as a faculty member at a predominately teaching university might spend a semester as an apprentice student teacher at a minority-serving institution or at a liberal arts college. On the other hand, a student who wants to be a researcher at a research intensive university can spend a semester conducting research at a comparable university and can co-mentor students in the lab of a senior researcher. Through this experience, a student can examine the realities of working with students at various stages of their educational careers, can understand how to develop and to manage a research program, can teach an undergraduate class or lab session, can attend a faculty or departmental meeting, or can participate in a summer research project under a mentor/advisor who is a faculty member at the participating institution. The exact nature and frequency of the visits would be determined by students, their advisors, and participating institutions.

Annual Symposium

A Symposium for doctoral students and faculty advisors from multiple institutions could be held annually so that students and faculty can share ideas about the most effective doctoral education practices. The Symposium will create opportunities for community building and continual professional development for doctoral students.

Included will be workshops and seminars on graduate school issues and strategies; technical engineering design sessions, discussion groups on community building within and among doctoral students; faculty mentor training. Also, students and faculty may form Virtual Communities across participating institutions. This Virtual Community might also support group-to-group interactions such as large-scale distributed meetings, collaborative work sessions, seminars, lectures, tutorials, and training. Symposium host sites could rotate among interested institutions.

Doctoral Learning Communities

Cohorts of doctoral students would be involved in learning communities at their doctoral institutions. Students could create social networks to foster regular social interactions among the doctoral students throughout their doctoral experiences and beyond. In addition, students could engage in brown bag and research seminars. Ultimately, learning communities would be supportive settings that allow students to identify themselves as scholars and to form relationships within their respective fields. Interdisciplinary learning communities could also help students to connect with faculty, to interact with peers, and to form study groups that will help student realize their academic goals and form a helpful network of peers.

Data Tracking

Enrenberg et al. (2009) recommend that departments collect data about students throughout their doctoral process. Millett and Nettles (2009) further identify three metrics for students' success in doctoral education- (1) students' rate of progress, (2) their degree completion, and (3) their time to degree. Information about students' characteristics, their progress in the program, and their post-graduate activities could also be obtained. By collecting data at several points within a program and following up with students about the information that they provide, an advisor or a graduate committee can give formative feedback to students about their progress before they enter their postdoctoral careers. They can also increase the completion rates of students and identify the activities that are most likely to benefit diverse groups of students.

Multiple Mentoring Models

Research indicates that retention of students increases as they experience quality mentoring primarily during the first year of graduate school. At the earlier stages of the academic pipeline, networking, mentoring and exposure to career opportunities are important to success in graduate studies and as faculty vying for tenure (Aspray & Bernat, 2000). Rather than working with one mentor, students may engage in a multiple apprenticeship model. Golde, Bueschel, Jones, and Walker (2009) identify four features of such a model for doctoral students. Features of this model include intentional pedagogy, multiple relationships, collective responsibility, and relationships characterized by respect, trust, and reciprocity. By including additional mentors in the lives of doctoral students, they may be exposed to skills outside of a traditional classroom environment.

Doctoral programs can provide training for faculty members on how to develop and to sustain mentoring relationships with doctoral students and could develop peer mentoring programs for students across multiple engineering programs. The doctoral peer mentoring relationships would foster a network of support for students, would aid in the academic, emotional and socio-cultural adjustments of students, and would provide advice and support and for students.

Portfolio Development

To demonstrate multiple competencies, doctoral students can submit a comprehensive portfolio that represents research, teaching, professional skills, and industry proficiency. Although the dissertation can be a primary component of this portfolio, additional elements may include course development materials, a description of an industry project, and application of professional skills within a variety of contexts. This portfolio could be electronic and be used within an interview to demonstrate students' acquisitions of multiple skills.

Teaching Certificate

In addition to the dissertation, colleges can require students to obtain teaching certificates. The course that students take to obtain the certificate would introduce students to common pedagogical practices and assessment techniques. To obtain the certificate, students would have to design their own course and implement concepts introduced within the college-level course. They would receive formative feedback via senior instructors who have been identified as effective teachers and would be evaluated summatively by their students.

CONCLUSIONS

Both anecdotal and empirical findings confirm that the experiences of doctoral students differ greatly. Much of the success of these students depends upon informal and formal connections to network during their doctoral experiences. Additional competencies within doctoral education, particularly for STEM students, are needed to more comprehensively prepare Ph.D.s for academic and non-academic careers. These competencies relate to formal assessments of students' engagement with teaching, industry, and professional skills. Additional ways to engage students in diverse experiences include the formalization of teaching certificate programs and mentoring, the creation of comprehensive portfolios, and the formation of doctoral learning communities and institutional exchanges.

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DONNA ADAIR BREAULT

2. THE INTENSIFICATION OF THE PROFESSORIATE

Pedagogical Casualties in an Era of "Prestige-Seeking Universities"

THE NATURE OF WORK IN THE ACADEMY

According to the National Study of Postsecondary Faculty (NSOPF), university professors work long hours. In their 1998 survey, the majority of faculty reported that they worked over fifty hours a week (54.8% for males, 52.8% for females). This average is more than ten hours greater than the non-academic workers in the United States at the time. Jacobs (2004) notes that professors began working longer hours in the 1990s with the rise in public criticism regarding the actual hours professors spent in classrooms. Further, many universities began to increase their level of expectations for faculty research. Technology has also drastically altered the nature and amount of work professors do on a weekly basis. E-mail has become such an integral part of a professor's work that it has drastically increased the amount of time that professors work from home.

While a fifty-hour workweek is average in the professoriate, a number of professors responded that they work more than sixty hours a week. Longer hours are more often the case for professors who work in research institutions and particularly those who have not yet achieved tenure. Further, academic couples often put in more hours than other academics. While most academic couples noted that their combined work equalled more than eighty hours a week, 17% of the male professors and 25% of the female professors who were part of an academic couple indicated that they and their spouses worked more than 100 hours a week combined.

Regardless of whether a professor spends forty, fifty, or sixty hours a week working, survey results indicate that they often feel that they do not have enough time to do their work. In particular, professors noted that they did not have enough time to stay current within their fields (Jacobs, 2004). Professors feel that they are not getting enough done professionally often indicate that they are not satisfied in their jobs. Additional analysis of the survey data indicated that faculty who felt much of their time was spend on institutional demands rather than personal or professional choices were often dissatisfied with their jobs and, in particular, their workloads. In contrast, professors who spent more time on their research were less likely to complain about their workloads because they typically indicated that their research gave them professional satisfaction (Jacobs & Winslow, 2004).

Further, the heightened demands for service and the degree to which the changing work of the professoriate reduces professional autonomy weighs heavily on faculty.

D.M.C. Pérez et al., (Eds.). Higher Education and Human Capital: Re/thinking the Doctorate in America, 19–30.

For example, professors involved in professional development school partnerships often feel as if they are forced into working with individuals who do not share their vision for teacher preparation and who have no interest in the aims of the partnership. In addition to engaging in challenging collaboration without any sense of collegiality among partners, these professors are adding a tremendous amount of service to their workload without any real compensation in terms of promotion and tenure. In essence, the majority of their "work" is not honored within the partner schools or within their universities in terms of the reward system. In one particular study, the spouses of professors who were involved in a professional development school noted that their spouses were highly stressed because of their workloads, they had less time to spend with their families, and were frustrated over the personal sacrifices they had to make for the sake of their university service (Bullough, Birrell, Young, Clark, Erickson, Earle, Campbell, Hansen, and Egan 1999).

Work in professional development schools is just one example of sources of intensification, and there are a number of other external factors that influence the nature of work for professors and possibly result in the following: reacting to external mandates for accreditation or certification, establishing and sustaining superficial relationships with liaisons or districts, chasing grant money or providing services as a result of earned grants. Often these service requirements have little or nothing to do with a professor's research agenda, fragment the professor's time and energy, and otherwise disrupt his or her professional trajectory. In particular, professors in the service-heavy disciplines such as teacher education and educational leadership are highly susceptible to these sources of extensive service given the degree to which they must supervise in the field and develop close ties with schools and districts.

Although difficult to measure, the feeling of guilt inherent within scholarship plays a part in the lives of many professors – particularly those facing increased demands to publish. Even when course loads are reduced to support scholarship, professors do not necessarily stop thinking about their work and what is left to be done when they leave their offices or attempt to engage in their personal lives. In essence, guilt is an inherent part of the daily lives of many professors even after they literally or figuratively leave their offices at the end of the day or the week. Professorial tasks blur the boundaries between work and home to the degree that professors often feel that they are constantly working. They may be thinking about a manuscript as they prepare dinner, put children to bed, or otherwise go out and try to relax. This tendency, while not officially added to the formal hours of the work week, certainly plays a critical role in the level of stress a professor may feel – particularly if that professor is frustrated that he or she cannot finish that specific project because of other unrelated but nevertheless necessary tasks.

THE PROFESSOR IN THE "PRESTIGE-SEEKING UNIVERSITY"

While the work load at most universities has increased in recent years, the work load of professors in what Brewer, Gates, and Goldman (2002) classify as "prestige seeking universities" has become even more significant because these universities are attempting to compete with flagship universities that have historically maintained far greater support structures through which they have achieved their rankings.

According to the authors, prestige-seeking (PS) universities do not define their goals in terms of what they do or whom they serve. Instead, they define their goals in terms of what others are doing better than them as measured by the various rankings. Brewer, Gates, and Goldman (2002) note, "In spite of the perceive deficiencies in existing measures, the PS types are fixated on these relative measures of excellence and prestige" (p. 42).

The authors continue by noting that prestige-seeking universities compare themselves to other institutions on almost every dimension for which data can be found. Because they do not currently have prestige within any aspect of their operation, none of their programs are sacred. All programs in a prestige-seeking university are at risk of dissolution if such an act would provide support for areas in which the institution is more likely to achieve prestige. Because the aims of a prestige-seeking university are based on value-less indicators such as indiscriminate rankings, it does not matter whether a particular program is consistent with any larger ideal. Prestige and prestige-seeking universities have no common benchmarks, so leaders within the institutions set goals and make significant operational decisions based upon those goals in order to imitate and/or become better than comparative institutions.

Prestige is achieved within universities according to three routes: student quality, research, and sports. As such, the Research II (or research intensive) institutions are the most vulnerable to this organizational phenomenon. These universities have the capacity to increase their standings in all three areas, but they are often expected to do so without the organizational support and resources historically afforded to Research I (or research extensive) institutions. Because these institutions are often trying to be as good as or better than their research extensive counterparts, their professors are often judged according to higher standards for research and scholarship in spite of the fact that they do not have the same institutional support as those for whom they are being compared. Further, the doctoral students at research-intensive institutions are often practitioners who have no intention of pursuing careers in the academy. As such, they are less likely to be full-time students offering research support and also less likely to seek out publishing opportunities with their advisors.

Because prestige is based upon how one compares to others, the distinction is, at some level, always a moving target. Thus, most institutions that value prestige find themselves constantly competing for it. For institutions that are new to this game, a large focus of their energy may be directed toward seeking prestige, and their efforts can appear schizophrenic as the rankings for which they are competing change. In contrast, the authors note some institutions eschew the various rankings and focus on their reputations. Reputation-oriented universities focus their efforts on the needs and interests of their constituents. Further, they judge their progress according to the satisfaction and success of their graduates. According to the authors, reputation-oriented universities are more student-centered, dynamic, and responsive to change. In contrast, prestige-seeking universities see their students as valuable only to the degree that they can bring greater prestige to the university. In other words, while universities oriented toward strong reputations see themselves serving their students, universities seeking prestige see their students serving them. By organizational necessity, this mindset often trickles down to the relationships professors have with students.

INTENSIFICATION IN THE ACADEMY

Since Michael Apple first introduced his intensification thesis in 1986, a number of scholars have examined the phenomena of intensification of work for teachers in K-12 settings (Acker, 1999; Apple and Jungck, 1996; Ballet, Kelchtermans, and Loughran, 2006; Campbell and Neill, 1994; Easthope and Easthope, 2000; Hargreaves, 1992, 1994; Helsby, 1999; Troman, 1996; Troman and Woods, 2001; Woods, 1999). According to Apple and these other scholars, the nature of work in schools has changed to such a degree that teachers – in their efforts to keep up with ever-increasing demands – have become deskilled and deprofessionalized. As Apple (1986) and others have noted, intensification does not merely imply more work. It also involves a separation between one's work and the meaning behind it. Organizational structures and institutional cultures, when intensified, promote a technical way of being for teachers.

This chapter extends the work regarding intensification to explore the nature of this organizational phenomenon within universities and to specifically examine the effects this intensification has on how professors advise their doctoral students in prestige-seeking universities. A number of parallels can be drawn between the intensification as it has been identified at the K-12 setting and the intensification found within universities, and while this intensified environment affects all aspects of a professor's work, the critical work of advising becomes particularly susceptible.

Effects on Teaching

First, like K-12 teachers, professors have less reflective time to think about their teaching and scholarship. When thinking becomes a luxury within the academy, professors are not the only ones who suffer. Students suffer because the professors do not teach as well. If professors do not have time to reflect about their teaching, they do not have time to explore new materials for courses, to develop more meaningful assignments, or to otherwise consider different ways to approach the subject of the course. As a result, they are less likely to modify courses between semesters based upon self-assessment or student evaluations. Akerlind (2005) concurs. When professors are focused on navigating heavy workloads, their aims deal more with efficiency than with becoming better teachers.

Since teaching is, in essence, the first and most critical stage of advising students, the degree to which intensification compromises a professor's teaching likewise compromises the relationships the professor has with his or her advisees. More than in the limited one-on-one advising a professor and advisee may have between or after coursework, the time a professor spends with his or her advisees within the university classroom provides the critical foundations that lead to professional growth. During classes a professor provides the ideological foundations of the field and establishes expectations for thinking, writing, engaging, and otherwise behaving as scholars in a scholarly community. In an intensified environment, professors do not fully utilize the time they have with their advisees to help them develop as scholars, and they do not model appropriate pedagogy for students to looking forward to teaching in the academy themselves.

Effects on Research and Scholarship

As noted by Apple (1986) and others, intensification leads to a disconnection between one's work and one's sense of purpose. Therefore, professors within an intensified academic environment are highly susceptible to losing a sense of their scholarly identities and may struggle to sustain a generative trajectory of research and scholarship (Ackerlind, 2005). This becomes professionally and pedagogically problematic regardless of the research status of the university given the reciprocal nature of teaching and scholarship, but it becomes particularly disastrous in settings where professors are working with doctoral students. Particularly given the previous description of doctoral granting, research intensive institutions where professors are expected to publish more without adequate support, intensification creates a circuitous problem. Professors chase quick and superficial publications to meet institutional requirements for their promotion and tenure, and they do so at the expense of genuine intellectual growth and meaningful contributions to their fields. Over time, chasing superficial publications begets further chasing of superficial publications because the professor has not established a coherent, meaningful, and potentially expansive scholarly identity. Without meaningful connections between the "work" of publishing and one's professional identity, the disconnection between purpose and work characteristic of an intensified organizational environment – particularly that of a prestige-seeking environment - becomes even more acute. Often in theses circumstances, professors stop writing once they reach a professional plateau (Ballet, Kelchtermans, & Loughran, 2006), and yet they continue to advise doctoral students for the remainder of their careers.

Professors who do not develop or otherwise disengage from a trajectory of research and scholarship may experience what Clance (1985) characterizes as the "imposter syndrome." According to Clance, faculty experiencing the imposter syndrome do not feel as capable or adequate as others. They may have self-doubt, lack of direction, feelings of helplessness, and strained relations with others, including their students (Brems, et al., 1994; Clance and O'Toole, 1988, Gottdiener, 1982; Topping and Kimmel, 1985). According to research, professors struggling with the imposter syndrome are ineffective instructors and mentors. They are more likely to confuse students, less likely to be open to questions, and too insecure to promote enthusiasm about a subject (Bardwick, 1986; Baldwin, 1990; Brems et al., 1994).

The imposter syndrome and its subsequent effects can have serious implications within a university classroom, but those effects are, at least to some degree, mitigated by the fact that a classroom has motivated and thoughtful students and common texts from which to explore ideas. In other words, students in a graduate class are likely to learn and grow even if their professor is incompetent. They will make comments to each other, challenge each other's thinking, and guide each other through the materials if necessary. While the experience will not be as educative as it may be with a highly skilled professor, there is, nevertheless, potential for growth based upon students' shared readings, interests, and goals.

The imposter syndrome has far more significant consequences within advising relationships. Once students complete their coursework and begin to engage in dissertation work, they are very much at the mercy of their advisors. While students have

hopefully achieved levels of intellectual independence about their topics and have developed the capacity to identify appropriate research regarding their topics, they must nevertheless please their advisors throughout the process of writing their dissertations. Professors experiencing the imposter syndrome may lack the background knowledge to provide appropriate guidance – particularly when a student's topic does not directly relate to his or her own research. This scenario is more likely to occur within intensified work environments of prestige-seeking universities where professors often have much larger advising loads of students who are more practitioner-based and therefore more interested in pursuing dissertation topics more closely related to their own work than that of their advisors.

Effects on Institutional Service

Further, if professors do not have time to think, they also do not have time to think about the policies, procedures, and general operations of their own institution. Like K-12 teachers, they are more inclined to accept directives from university administration without question. By staying busy with the busy work, professors cannot change the conditions that have created the busy work in the first place. Therefore, their intensification creates an organizational circuit of bad practices. This becomes even more likely when one considers research by Houston, Meyer, and Paewai (2006) that indicates that professors are less likely to apply what they know to their own circumstances. For example, professors of educational leadership are not likely to apply concepts from organizational theory to analyze their own university, college, or department to improve operations.

While much of the intensification K-12 teachers in the United States are experiencing is a result of the No Child Left Behind (NCLB) legislation and its ensuing requirements for documentation, assessment, etc., professors are hit from a number of sources both within their own institutions as well as from state certification boards, accreditation agencies, and external funding sources. For example, some programs are faced with program revisions based upon state certification changes. Other programs are faced with greater needs to document student performance and program evaluations for the sake of accreditation. In many instances, tenure-line faculty are being replaced with temporary and part-time clinical faculty (Anderson, 2002; Baldwin & Chronister, 2001; Conley, Lesley, and Zimbler, 2002; Ehrenberg, 2004; Ehrenberg & Zhang, 2004), and as a result faculty are increasing their advising and teaching loads and taking on greater and greater amounts of university service because many of those tasks are relegated to tenure-line faculty only. This dynamic becomes even more problematic in departments where there is a significant disparity between the number of tenured faculty and those seeking tenure because some committee work is relegated only to tenured faculty (e.g. tenure and promotion committees) and otherwise tenured professors often try to shield tenure-seeking professors from too much service. Further, and particularly in challenging economic times, a number of faculty are feeling a great deal of pressure to pursue grant funding to supplement their research, scholarship, and travel. Often these grants involve even more service to external agencies and school districts.

ORGANIZATIONAL STRUCTURES WITHIN UNIVERSITIES AND IMPLICATIONS FOR INTENSIFICATION

The intersection of intensification and seeking prestige found in many universities today is particularly problematic given the organizational structure of universities. For the most part, universities have been described as loosely coupled organizational silos (Davis and Bedrow, 2008; Moore & Sampson, 2008) with ambiguous purposes (Lutz and Lutz, 1988). The structure of universities – particularly university departments and programs – are coupled loosely according to limited core curricular requirements, technical procedures, some level of authority as manifested within university administration and accreditation agencies (Orton and Weick, 2000). Otherwise, their identities and operations are relatively autonomous. Thus, university programs are typically decentralized and operate according to their own policies and procedures as long as those policies and procedures are consistent with those of the larger university and accrediting agencies. Loose couplings offer some advantages within the university structure. They provide opportunities for localized adaptation and novel solutions. Further, if a particular program struggles or suffers some level of breakdown, it is not likely to affect others. However, these advantages can also be seen as disadvantages, particularly in light of the prestige-seeking status of an institution. Because programs are loosely coupled, one program's success and growth does not necessarily lead to success and growth in others. As Weick (1976) notes,

> If a local set of elements can adapt to local idiosyncrasies without involving the whole system, then this same loose coupling could also forestall the spread of advantageous mutations that exist somewhere in the system. While the system may contain novel solutions for new problems of adaptation, the very structure that allows these mutations to flourish may prevent their diffusion (p. 7).

Further, because programs are loosely coupled, if a university chose to eliminate one it would not necessarily affect the others. Therefore, if a university was seeking prestige by proving support and encouraging innovation in one program, it would, by virtue of the organizational structure, be able to do so at the expense of other programs.

The larger organizational structure of universities often makes professors more susceptible to intensification. In addition to operating in relatively independent academic silos, professors and their programs are subject to a central source of surveillance and power: the president and provost at the university level, the dean at the college level, and the department chair at the departmental level. In this manner, the organizational structure of the university resembles a panopticon (Foucault, 1975). The highest levels of administration for each unit of operation are the only ones who see the distribution of work in the university and allocate resources for that work.

The panoptic nature of the organization is most keenly felt at the departmental level because it is the department chair who has the greatest influence on the work and support of professors. More often than not, the department chair is the only one who "sees" the workload of each professor and the degree to which each professor

gets support for that work is often negotiated between the professor and the department chair without being made public among the others in the department. Further, the department chair is often the only one who evaluates the professors, and so no one else can judge the degree of equity regarding workload, support, and performance. When professors do not "see" the bigger picture within the department, then they are not necessarily able to judge the situation and attempt to improve conditions. Instead, they are more likely to fall into a culture of blame (Doring, 2002; Houston, Meyer, Paewai, 2006).

Faculty are, to some degree, subdued within this panoptic system by an over-exaggerated sense of academic freedom. The loose coupling of programs, the de jure faculty governance found at most institutions, and the limited formalization of procedures within the academy implies a greater degree of freedom than actually exists for many – particularly those in an intensified environment. In other words, one is free in the academy to the degree that he or she has the resources to be free. However, strained resources, increased teaching loads, and extensive advisee loads make the "freedom" more of an ideal image than a reality.

The limited formalization within universities is more often than not coercive – predicated upon surveillance tactics needed for the sake of accreditation. With this in mind, universities can be characterized as autocratic organizations with low degrees of coercive formalization as described by Adler and Borys' (1996) typology of organizations. According to Adler and Borys (1996) an organization is formalized to the degree that it operates under rules explicitly governing behavior with very prescribed roles and relationships among participants. Lutz and Lutz (1988) argued that there is not enough formalization within universities. Not only is there often ambiguity of purpose overall within the university, but there is also a great deal of ambiguity regarding the roles and responsibilities of professors. Where formalization does exist within the university, it is more coercive. The aspects of a professor's work that are dictated are typically done so for the sake of surveillance (thus reinforcing the panoptic nature of the organization) in order to document performance for various agencies. Regardless of any framework a college may produce for NCATE and others, most of the prescribed expectations of professors are not connected to any larger purpose. Therefore, the data collection processes become discrete, technical tasks to be endured and additional sources of intensification.

While some may tout the lack of formalization in university structures as a lack of bureaucracy and therefore inherently good, less formalization within intensified and prestige-seeking universities is actual very troubling – particularly in relation to advising between professors and advises. Professors need enabling structures and procedures in order to free themselves to work more effectively with their students. Otherwise, they become overwhelmed by the disconnected tasks required within their institutions and compromise their relationships as mentors and teachers. When professors find themselves with unmanageable workloads and large advising loads, then the ambiguity found within their autocratic programmatic silos provides enough flexibility for them to fail in multiple ways, and when their departments are structured panoptically, it provides opportunity for the powers above to blame them for those failures.

THE NATURE OF THE PROFESSORIATE AND IMPLICATIONS FOR INTENSIFICATION

In addition to the organizational structure of a university not providing support for the professor in the intensified and prestige-seeking university, the general nature of the professoriate and how it is perceived in terms of human resources within the organization makes advising even more challenging. Universities are not typically designed to support professors' academic growth and development (Akerlind, 2005). While a number of professional development centers emerged in universities in the 1970's, they have largely focused on the technical aspects of teaching such as instructional strategies and use of technology. Some universities have also offered professional development regarding grant writing, but again, this training has focused on the technical aspects of writing, not on the development of ideas or the relationship between the grant and one's research agenda (Foster & Roe, 1979; Thompson, Pearson, Akerlind, Hooper, and Mazur, 2001). Further, academic professional development is idiosyncratic and often tied to the professor's institutional circumstances. As such, universities lack an integrative framework within which they can address the variety of needs and opportunities. With little or no organizational space to consider academic growth, no formal institutional mechanisms to support it, and with the intensified university environment, many professors focus their professional goals on more efficient performance rather than academic growth. This organizational blind spot short-changes the professors, their students, and their respective academic fields and compromises their potential vitality.

According to Baldwin (1990), faculty vitality involves an instructor's capacity to challenge himself or herself as well as his or her students to strive for effectiveness in multiple ways. A vital professor has confidence and prowess to help students to develop in a positive yet rigorous manner. Further, a vital professor is enthusiastic, caring, and dedicated. As such, vitality is a critical element in the advising relationship and has positively influenced the degree to which students are able to complete their programs (Bardwick, 1986; Neumann, Finaly-Neumann, & Reichel, 1990). As Brems, Baldwin, Davis, and Namyniuk (1994) note, "instructors whose selves are well developed are vital and willing to be available for student contact, the two very features that have been identified as important to students' academic success" (p. 184). Their study noted that advisors exhibiting high levels of vitality were more likely to take on more advisees and were more successful with those advisees. However, faculty vitality is not innate. It requires professional support and development (Kohut, 1984).

Faculty vitality cannot be sustained in highly intensified environments where professors are overwhelmed with work that is disconnected from scholarly trajectories. When professors are burdened with heavy advising loads on top of heavy teaching and service – a scenario all to familiar in prestige seeking, research-intensive universities – their scholarship suffers as does their capacity to advise. When advisees are largely practitioners and want to pursue a wide range of research topics for their dissertations, then their advisors are highly susceptible to the "imposter syndrome" and they are forced to hold together their professional reputations in the process much like an individual drowning in debt tries to stay financially afloat.

The professors overwhelmed with work and struggling with feeling like imposters toward their advisees often suffer in isolation. Colleagues in the various loosely couple silos within their departments are typically unaware of their plight because the organizational structure prevents them from seeing beyond their own programs. The department chair sees the problem, but he or she may choose to ignore it knowing that the success or failure of one professor or one program, by virtue of loosely coupled silos, will have little to no effect on the others. Further, if the chair attends to the struggling professor or program, he or she may unwittingly admit to some level of responsibility for creating the conditions that led to the situation in the first place. Further, the dean will not necessarily reward the department chair if he or she supports the struggling professors because that support will not influence the college's desired rankings. Ultimately, the struggling professors and their advisees become the casualties hidden in the midst of superficial institutional celebrations of advancing in rankings on U.S. News and World Report.

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3. RE/THINKING RESEARCH TRAINING

Scientific Productivity as the Beginning of a Life Program

When we hear America, as Mexicans we think in American Continent, not just United States of America. Our reflection about doctoral programs therefore is based not in United States current and historical conditions surrounding this issue, but on Latin-American point of view that is extensive to Ibero-American countries. In this book the editors posit that the doctoral degree in America (United States of America) is either taking two paths: the idea of university research or the doctorate itself. This book, they have said, takes on the second idea.

Nevertheless in Mexico among other Latin-American countries both paths are useful even necessary. It seems to us that choosing the first path involves accepting doctorate conceptualized as an institutional goal, while the second one implicates the doctorate as an individual goal. Our proposal is to create a kind of bridge between both paths to integrate them as the core of the same goal. In this sense our point of view is that the key to have a successful doctoral program is to take it not only as a university research training program or only as doctorate it self, but a program for research teams consolidation.

So we do not see doctorate degree as an individual isolated goal or like an institutional collective goal. We propose it as an inter-individual teamwork goal, which is integrated by professors and students. The first ones aimed to the consolidation of university research, the second ones to consolidate doctorate itself. While as a team, they work for research as a lifestyle.

Historically the development of doctoral programs in the United States is pretty different to Europe. In the last century before the Second World War, the European doctorate model was established after college, while United States offered master degree between college and doctorate. After the Second World War, United States more than ever was aware of the relevance of research development for its nation. Thus university research becomes a priority and so United States adopted the European model. Actually, Europe, United States and Latin-American countries offered either two models.

Our proposal is that master programs must put together a group of students and professors sharing the same main interest and way of thinking. Then doctoral programs could be the way to give shape to a thinking school or theoretical framework in order to generate, transmit, transfer, apply and diffuse knowledge as a lifestyle. That is what we propose as a Life Research Program that lies in scientific activity and

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productivity in a collaborative way among students and professors for all their academic lives; working in the same or new research team and creating research networks.

For us, to foster the consolidation of a research team involves leaders training; leaders which will help to go deeply into the theoretical proposal that give foundation to every work of the research team which the doctor in training belongs to; or leaders that will conform and consolidate their own research team or research network. Any of these options focus on the main goal of increasing research activity and productivity benefiting each team member in an individual way and so improving research in an institutional even national level.

Thus, research team productivity is based on intellectual capital, guided by institutional, national and international standards, linking individual and the team interests. Hence through research we cannot just improve the sciences, as science model establish, but solve social problems without loosing individuality. The matter is inter-individual coordination, because for us, theoretical change in science field is not a social product, but an individual proposal that is shared and socialized.

Without being eclectic, the proposal we submit is based on the reflection of several works: The criteria of Organization of Ibero-American States for Education, Science and Culture (OEI for its acronym in Spanish: Organización de Estados Iberoamericanos); the Seventh Framework Program (FP7) by the Europe Union; the master's degree thesis by one of us (Rosas-Colin, 2008) focus in research training in Instituto Politécnico Nacional (IPN) and, our experience as members of a new research team in the IPN under the leadership of the other of us (Rodríguez-Salazar).

We are working together in the development of an epistemology of imagination, the theoretical proposal of the leader of the team (Rodríguez-Salazar, 2008; 2009; Rodríguez-Salazar, Hernández-Ulloa & Rosas-Colin, 2009). Our aim about epistemology of imagination is to establish this proposal as an epistemological, psychopedagogical school for scientific development, as well as a model for scientific and technological education.

CRITERIA FOR THE CREATION AND IMPROVEMENT OF DOCTORAL PROGRAMS ACCORDING TO THE ORGANIZATION OF IBERO-AMERICAN STATES FOR EDUCATION, SCIENCE AND CULTURE (OEI)

Some members of the Organization of Ibero-American States for Education, Science and Culture (OEI for its acronym in Spanish: Organización de Estados Iberoamericanos), have made a global analysis about the relationship between developmental conditions of university research and doctoral programs (Sebastian, 2003). This analysis makes possible to the OEI to establish the framework for a Strategy Program which has the objective to give an approach to understand and improve doctoral degree in Ibero-America region. The analysis involves data about the historical and current conditions in which research has been developed in this region. The results of the analysis highlights that research is restricted to the universities in Ibero-America. Doctoral programs constitute the principal start point for this activity and training process. Both research and research training play a vital role in our days for nation's development. This point of view is important because it shows the

current tendency in this field in our region. Likewise this view has been important to establish our own point of view about the issue as well as our alternative.

According to the OEI universities have assumed the function of contributing to social and economic development through research and research training since the end of 20th century. Therefore, OEI's educational policies have been ride by the assumption that fostering research in Post College makes possible to guarantee quality and pertinence in researcher's contributions for social well-being, as well as knowledge advance and diffusion in Ibero-America. For the OEI, doctoral programs is an indicator to measure the research potential of the countries (Sebastian, 2003). Furthermore, doctoral degree in conjunction with ranking research systems provides the number of researchers that a nation has, as well as their productivity level and the impact of their contributions. Under these criteria, the OEI has pointed out a big problem in Latin-America: the low percentage of professionals and academicians with doctor degree, and in the other hand, low productivity by Ibero-American doctors.

The increasing of number of doctors has been the OEI's priority, especially in Latin-American. While in Spain and Portugal have started to think about measures to increase productivity and its impact. For instance, in Spain the idea is emerging that the fostering of postdoctoral hosting is needed in order to increase scientific productivity. Nevertheless other voices claim for the improvement of doctoral programs to promote scientific productivity in the framework of Human Capital Theory (García-Romero, 1999). We are in agreement with the idea that the solution is not in postdoctoral hosting but in the appropriate design and implementation of doctoral programs. Our proposal is not based on Human Capital Theory, which belongs to the management field. We consider that it is better to lay the foundations of our proposal on an epistemological, psychological and pedagogical framework due to the nature of the problem. The framework of our proposal is derived from Jean Piaget Psychogenetic Theory and his Genetic Epistemology. Farther on we will take back this idea.

Given the increase of academicians with doctorate degree the priority of the OEI, it has analyzed specific indicators for the creation or improvement of doctoral programs. From among these indicators there is the *researcher's distribution according to the fields of study*. The OEI's analysis into this issue shows that the tendency of research training in Latin-American goes for Social Sciences, then for Basic Sciences and Math, Medical Sciences, Engineering and technology, Agrarian Sciences and finally Humanities (Sebastian, 2003). The OEI has not yet considered interdisciplinary doctoral programs. In this sense we think that it could be useful to point out and foster those sorts of programs, because from our experience in a Master interdisciplinary program (Methodology of Science), we are convinced that interdisciplinary work favors creativity and productivity.

Another relevant indicator for the creation or improvement of doctoral programs according to the OEI is the *gender aspect in the academic community*. In spite of female presence is increasing in Latin-American universities (as all over the world), talking about research activities and productivity women participation is not good enough to considered a reasonable equity in this issue. This problem is accentuated in specific fields of study, as Mathematics and Basic Sciences. In spite of the promotion

of gender policies in our country and in our institution to give privilege to academic proposals immerse in this issue, we think that beyond scholarships for women, there are no proposals related with doctoral programs and gender. It seems that it is necessary to do more research on gender and implications for the academy in context in order to establish better equity conditions.

The third basic indicator considered by the OEI as relevant for the design of doctoral programs is the *evidence of the generation of knowledge and its economic value*. Latin-American countries are not standing out from the rest of the countries in the matter of knowledge economy. In this sense the OEI posits that it is important to regulate basic, applied and technological research, as well as the link among academic and key sectors of the economy. Likewise gender policies are being promoted in our country and in our institution; there are general linkage policies in order to support this indicator.

Strongly related with this third indicator are the fourth and the fifth indicators, *doctoral programs productivity and financial support*. Even if productivity is pretty important for us, the OEI defined it through the number of graduates that a doctoral program produces, not for activities and products generated by their graduates (scientific productivity). Thus, we assert that this is a mistake because it supposes that the doctorate degree is an objective by itself that the objective seems to be to obtain a certificate. Far from it, the doctorate is a necessary medium for achieving a bigger objective, scientific productivity. We believe that the purpose of the doctorate is to prove that the graduate has become an active collaborative researcher that has a self-regulation of his scientific activities and productivity according to ranking research systems. Furthermore, a person with a doctorate must prove their contribution for the creation and/or transmission, transferring, application and diffusion of knowledge. Likewise, in order to have financial support a researcher most demonstrate a high level of research and academic activity and productivity, as well as proving an important national and international impact of his contributions. These requirements are impossible for an individual. That is why our account in this chapter is that the individual must help to create and consolidate research teams working together for a line of research as a Life Program. We think that according to the OEI, the principal indicator to be considered for the design of doctoral programs is the third one, the generation of knowledge, because it is the basic goal of this educational level; at least in our institution. According to its regulations doctoral programs have the objective to prepare the student and give to him a high quality academic training for the generation of original knowledge; through basic, applied and technological research for solving problems. Likewise doctoral students are trained for being educators in research and to give academic and management guide to research teams (Instituto Politécnico Nacional –IPN-, 2006, 8th article, p. 7).

So it is important to underline that just increasing professionals and academicians with doctoral degree there is no guarantee of the increasing of scientific and technological productivity and its national and international impact. Other measures are needed. Our proposal is an effort trying to give respond to this issue. Otherwise, financial issue most increases in our countries if we want to improve research impact at national and international level. We need sponsoring and external resources.

But they are only possible if researchers follow the standards imposed by the ranking systems. Although we cannot lose sight that those standards are constantly changing due to scientific community and its dynamic activity. It is always necessary periodical evaluation of the criteria established by the ranking systems in institutional, national and international terms in order to improve research polices.

In summary, according to the OEI, doctoral programs in Latin-America most promote high quality research which means: 1) to generate new knowledge and technologies; 2) to fit research according to scientific institutional, national and international polices to attend knowledge, social and productive demands; 3) the diffusion of research activities and their results; 4) to link research and postgraduate education; 5) to generate new postgraduate opportunities to enlarge and improve continual education for teachers and researchers; and 6) to promote collaboration among institutions, and key sectors of economy through the construction of national and international research networks.

The OEI sees doctoral programs as research training programs. Therefore, its proposal is the PIFI (the acronym in Spanish for Ibero-American Program of University Cooperation for Research Training). Commonly "university cooperation for research training is focus on the process to obtain a doctoral degree. It includes one of two modalities: research training in foreign institutions or research training in inter-universities cooperation programs" (Sebastian, 2003, p. 44). The PIFI of the OEI (PIFI-OEI) is based on the second modality that supposes that "[…] an optimal research training program is determined by the environment where it took place, not by the issue or field of study" (Sebastian, 2003, p. 33).

The OEI consider that a good environment brings conditions to make possible team work, access to materials and information, scientific debate, and an open culture for critics, collaboration and internationalization. Nevertheless the OEI does not make reference about the individual. We believe that doctoral programs involving research training in order to be really successful, they most put attention to the cognitive, affective, moral and social areas of individual development. In other words, contrary to the OEI statements, our thinking is that individual and inter-individual factor and not environmental factor (in physic and social terms) makes possible the optimal conditions to achieve a successful doctoral program.

In addition to this, we can say that the OEI offers an educational/institutional policy view. In our opinion there is a frequent mistake in the field of education: Almost every educational proposal could have either an educational policy framework or a theoretical framework. Likewise there are more proposals with an educational policy framework than with theoretical framework; a situation that underline a pedagogical lack. In this respect and in agreement with Callejo Pérez (2008):

> More than ever before, changes in education continuously come at us; not only from faculties of education, state and federal government, and other traditional players; but also from the growing sector of non and for profit educational companies. The result has been an oversimplification of the problems affecting learning; and thus an oversimplification of the training of teachers (p. 20).

In the same way, educational proposals with just theoretical framework are missing policy and management guideline necessary for the achievement of educational

goals in institutional terms. So, we think that there are necessary both educational policy framework and theoretical framework, as one of us has mention in another work. The framework must consider an epistemology view, which lays the base for the psychology theory that gives support to the pedagogical proposal (Rosas-Colin, 2008). Educational policies give guidelines and general recommendations for educational institutes to plane their actions and management taking care of institutional, national and international context. Therefore every educational proposal must have both foundations, and both foundations must keep congruence between them.

So we are not at all in agreement with the PIFI-OEI bases. We believe that doctoral programs involve research training, but as we have said not only with an institutional or educational policy point of view. As we have seen, university research cooperation implies principally this view. It seems that at individual level, cooperative university research only is taking care of doing easy student's transit in different doctoral programs among different institutions. But it does not put attention in the integral development of the person in long term.

Then, our proposal about university research cooperation is to establish an inter-individual goal laying a bridge between institutional and individual goals. In other words, to establish as a necessary condition for doing doctoral studies to conform or to belong to a research team in expansion or in consolidation. We are right now starting a deeply study about both educational policy framework and theoretical framework to understand the nature of research teams. From an educational policy view a research team is defined by Foreign Affairs and International Trade Canada (2009)[1] "as a group of at least three researchers with at least one having completed graduate studies (Ph.D. or equivalent)" (www.canadainternational.gc.ca/washington/studies-etudes/linkages-couplage.aspx?lang=eng).

According to this organization, a research team must be comprised of members from an academic institution. Each team shall be actively engaged and demonstrate experience in a research related to a specific subject and to show that their proposal's goal is to foster academic development, mobility and exchange of information. From another educational policy view, according to the Computing Research Center of the Instituto Politécnico Nacional –IPN-(2008, April 14) from Mexico, a research team is a group of at least two researchers with a common research subject that link their works and their student's works.

Officially there is not an institutional definition for research team in our educational institution (IPN). Instead, there is a policy about research networks: "A research network can be understood as a flexible collaboration form, not hierarchical, between several members, entities or institutions that work as a team for the achievement of a common research goal" (IPN, 2004a, p. 10). As we can see, for IPN is not a differentiation between research team and research networks, which is from our point of view a failure because a step is missing for defining academic goals and actions.

Therefore, we can say that research teams are inspired in the organizational proposal of teamwork. From a theoretical view, we can consider the more frequently definition of teamwork given in organizational field which is:

> The process of working collaboratively with a group of people in order to achieve a goal. Teamwork is often a crucial part of a business, as it is often

> necessary for colleagues to work well together, trying their best in any circumstance. Teamwork means that people will try to cooperate, using their individual skills and providing constructive feedback, despite any personal conflict between individuals (Business Dictionary, 2007–2009).

According to Cascio (1995), teamwork has become a common practice and an effective tool in organizations to produce high productive results, where work is highly interconnected between people and demands up to date information sharing. For that purpose, it is necessary to first build an effective team and second to motivate them in several ways to gain maximum output. In the other hand, it is argued than an effective team most has clear team goals and individual goals for each member that encourage the team as a whole and for each part. Team should also comprise of people with relevant skills according to the context of goals and it most exist mutual trust among team members to facilitate honest and collaborative organizational culture. All these process should be lead by an effective team leader who can motivate the team especially in difficult situations (Robbins & Coulter, 2002). The way to achieve a successful teamwork depends on the theoretical framework that supports the procedure. There are theoretical proposals that emphasize motivation (either as external or internal determinant) for teamwork achievements (Beardwell & Holden, 2001), while other ones lay their foundations on social psychology statements.

From social psychology view teamwork can be seen from theories about social group dynamics, specifically micro-groups dynamics (groups with 4 to 6 members). In general, social psychology views focus on the profile of the members of a group that makes possible some group dynamic. Sociology view instead, put attention on the group by itself. But all proposals about teamwork are developed in the context of human resource management. In this respect, even if a psychological approach is considered to study teamwork, for us it is needed more specific guideline to face the topic of skills of the members of the team, their motivation and mutual trust as well as the behavior of teamwork in an specific academic context. We think that research teams face a peculiar kind of work, different to organizational context; we focus upon research teams. Our account is that it is needed an epistemological, psychological and pedagogical view. Thus, our proposal is based on Jean Piaget theoretical proposal because it contemplates these three issues. So it is not necessary to go for another theory making possible to avoid an eclectic framework that most of the time causes confusion.

As we pointed above, we are interested in the relationship of both, institutional and individual goals for doctoral programs, as well as in the bridge that connect them, the team goals. Thus our view about socialization process is stated in psychogenetic theory by Jean Piaget. In Piaget's theory socialization is conceptualized as the adolescent arrival to the society world, not only as a cultural process in which society impose cultural roles to individuals. As we have said in other work (Rosas-Colin & Rodríguez-Salazar, 2008a) there are two wrong beliefs, at least, about *Psychogenetic Theory* by Jean Piaget. They are the neglected role of society in the cognitive development of child, and the neglected role of affectivity in this cognitive development.

In Piaget's proposal both, society and affectivity play an important role in the cognitive and moral process that underlay rational judgments and moral judgments

of the subject. Nevertheless, in Piaget's theory society is considered as a trigger, not as determinant factor like other authors in this field propose. So, cognition and affectivity are parallel process strongly interacting inside the subject and outside of him; where the subject interacts with other subjects. That is what Piaget calls inter-individual coordination. So the matter is an individual and an inter-individual co-ordination of the subject's cognition and affectivity. In other words, each subject has a very strong influence in the team throughout this coordination. We emphasize that in the framework of Piaget's proposal, affectivity not only means feelings or emotions, but interests and attitudes that reach to the inevitable attached to persons, things, activities and situations. Thus, the team does not determine the subject; nevertheless, research objectives responding to national and international guidelines determine team research objectives. Having or belonging to a consolidated team, the next step is to establish a relationship with other team research. That is to establish networks in the academic and the key sectors of economy.

Therefore, our account is that talking about team research in this framework involves talking about interest and attitude for national and international research objectives; as well as for ranking research systems and for research communities regulations that are related with the educational institution which research team belongs to. In other words, interest and attitude to the researchers as colleagues and for research activities and the products derived by them. So, doctoral programs must adjust to the individual and to the team cognitive and affectivity necessities to make possible the arrival, as individuals and as a team, to the researcher's world. Thus, for us, doctoral degrees are just a stage in the interminable scientific path. It is a formal medium for the generation of knowledge. Up to here we analyzed the OEI criteria. Now we present the European view about research training related with doctoral programs.

RESEARCH TRAINING IN THE CONTEXT OF THE SEVENTH FRAMEWORK PROGRAMME OF THE EUROPEAN UNION

The Seventh Framework Programme of the European Union, commonly called FP7, is the principal instrument for financial research support in Europe. Therefore, it is an international research policy framework. FP7 has two principal strategic objectives: 1) to reinforce the scientific and technological bases of the European industry and 2) to favor its international competitiveness through the promotion of research that could back the communitarian policies (European Commission, 2007). FP7 specifies areas and activities that the European Union is interested to financed.

The FP7 budget is about 50,000 million Euros. The budget of this program has been increasing year by year since its creation at the beginning of the millennium. That increase, according to the European Commission reflects research as a European priority. In other words, this program attends to the employment and competitively that Europe needs to conserve the leadership of world economy based on knowledge. FP7's budget is designated to co-financed research projects and technological development in the next way:

> […] the research projects are done by consortiums in which different communitarian and extra-communitarian countries participate; the scholarships given

> by FP7 demand researchers mobility between nations. It most be remembered that many research challenges involves so complexity that only they can be faced in a communitarian scale (European Commission, 2007, p. 6).

We consider that these policies are very important to re/think doctoral programs due to they establish useful guidelines for the definition of graduate profiles for an active and productive research career. Doctoral students must be guided to do research in the framework of this kind of international programs, that implies linkage, cooperation and internationalization policies as the OEI points too. The principal reason to consider this is specifically in Latin-American countries because we do not have diffusion of the requirements that researchers must keep in short, medium and large term to have a successful research career.

In our opinion, it is required academic formal, no formal and informal training mechanisms for the optimal implementation of these international standard aspects of research activity in addition to topics related with a specific field of study. For instance, those aspects related with research teams, research networks, research management as well as financing of research projects or programmes, intellectual property rights and other exploitation methods of research results, entrepreneurship, ethical aspects, communication and societal outreach as FP7 recommends.

In this sense collaborative research is an actual tendency that has been purposed by European Union as communitarian policies. According to FP7, collaborative research means the coordination of national and international communitarian research teams, the establishment of research networks and the increasing of researchers' mobility. European Commission can support consortiums, university research teams, associations, civil social organizations, enterprises, independent teams as well as experienced researchers and researchers in the initial stage of their career (Post College students). FP7 is open for any of this kind of participants of any country. For each mentioned option, there are detailed regulations that are necessary to know and understand to participate for sponsorship and scholarships.

European Commission (2007) has at disposal scholarship specific programs for doing research in collaboration with scientific European teams and other research teams over the world in the context of five main programs. Each program takes particular purposes and requirements. There are:

1) Cooperation Program fosters collaborative research through consortium trans-national projects between industry and academic institutions.

2) Ideas Program gives support for borderline knowledge research in every study field. This through independent research groups projects under the leadership of a researcher that has all the requirements that the European Research Council asks for.

3) People Program, which is the most important for us in this account, give support for researcher's mobility and professional promotion among European and no European researchers. Later on we will back in this program because it is important for our proposal of research career as a Life Program.

4) Capacities Program reinforces research potential necessary for Europe to become a prosperous economy based on knowledge. It brings support for research infrastructure and gives benefits for society according to the results of the projects.

5) Euratom Program focuses on fostering, supporting and diffusion of nuclear research. It gives lines of research and management advice inside and outside Europe. It highlights research training in this field.

For us, this great European proposal opens a big picture for research as a professional activity; a priority activity for a society based on knowledge. We say that designers of doctoral programs can get ideas through this proposal in order to have a better planning for research training. If we keep in mind the purposes and requirements established by European Commission, Latin-American researchers at the beginning of their careers (doctoral studies) and experienced researchers (researchers in professional work) can be able not just to participate in this kind of magnum projects, but to propose similar projects in America Continent, considering the particular context and special link among North America and Latin-American nations.

Right now to participate in FP7 or to create a similar project could seem for most of Latin-Americans researchers as a utopian goal. It is obvious that actually we do not have the academic conditions for this. But that is why we propose the idea of re/thinking doctoral programs to re/designed them having clear that what science and society needs is not doctor degrees as certificates but Research Life-long Programs. European Commission establishes the next guidelines for People Program in order to bring an adequate research training to make possible the main European project. Particularly we are going to refer to what they call Marie Curie Actions (CORDIS, 2007).

We believe that these guidelines would be useful for the improvement of doctoral programs. Marie Curie Actions started just as a scholarship program to foster mobility, meanwhile actually is a big program address to foster the development of research as a professional career. Marie Curie Actions is support by People Program. It has been successful because it gives answer to the European scientific community necessity of intellectual capital specialized in research. This means that Marie Curie Actions solves training, mobility and the professional researcher's trajectory development.

In a general way, the People Program, and in a particular way Marie Curie Actions, have their foundations in the idea that researchers in a big number and highly- qualify, are a sine qua non condition for science and technology development. Likewise, researchers are a very important factor to attract and to maintain inversions for research given by public and private organisations. So it is needed the development of the labor market for researchers. That means the conditions to improve mobility between disciplines, institutions, sectors and nations. It involves both the orientation of new vocations for research and the support for scientific careers since it beginnings.

People Program has at least four line actions: initial training, life-long training and career development, Industry academia and international dimension. We propose these actions as important to re/think doctoral programs because Europeans consider

research training as a lifestyle, from our proposal as a Life Research Program. In European Commission words (2007, web site) we specify each action:

Initial training: Aims to improve early-stage researcher's career prospects in both the public and private sectors, thereby making research careers more attractive to young people. This will be achieved through a trans-national networking mechanism, aimed at structuring the existing high-quality initial research training capacity […]. The action will be implemented by supporting competitively selected networks of organisations from different countries engaged in research training. […] Support will be provided for: 1) Recruitment of researchers (who are still within the first five years of their careers in research) for initial training. 2) Recruitment of Senior Visiting Scientists of outstanding stature in international training and collaborative research to strength transfer of knowledge. 3) Networking activities, organisation of workshops and conferences, involving the participants own research staff and external researchers.

Life-long training and career development: This activity will support experienced researchers in complementing or acquiring new skills and competencies or in enhancing inter/multidisciplinary and/or intersectoral mobility, in resuming a research career after a break and in (re)integrating into a longer term research position in Europe after a trans-national mobility experience. This activity is addressed to researchers in possession of a doctoral degree (independently of the time taken to acquire it) […]. The following actions are foreseen in particular: 1) Intra-European Fellowships for Career Development [financial support for advanced training and trans-national mobility for individual projects]. 2) European Reintegration Grants [opportunity for experienced researchers to capitalise on their mobility period]. 3) Co-funding of Regional, National and International Programmes [address to organisations that finance and manage fellowship programmes].

Industry Academia: This action seeks to open and foster dynamic pathways between public research organisations and private commercial enterprises, including traditional manufacturing industries, based on longer-term co-operation programmes with a high potential for increasing knowledge-sharing and mutual understanding of the different cultural settings and skill requirements of both sectors. Support is provided for the creation, development, reinforcement and execution of strategic partnerships based on a longer-term cooperation programme between the participants, aimed at knowledge sharing and inter-sector mobility based on targeted human resources interaction. Participants under this action are on the one hand, one or more universities/ research centres and on the other, one or more enterprises that propose a project based on a joint cooperation programme.

International dimension: To increase the quality of European research by attracting research talent from outside Europe and fostering mutually beneficial research collaboration with researchers from outside Europe. This activity is addressed to experienced researchers in possession of a doctoral degree independently of the time taken to acquire it) or have at least four years of full-time equivalent research experience.… actions are foreseen in particular: International Outgoing Fellowships for Career Development, International Incoming Fellowships, International Reintegration Grants and International Staff Exchange Scheme.

FP7 has contributed in making us think about:

1) The idea of proposing a recruitment of researchers system that implies to work into the creation of a specialized assessment program for training researchers. In our opinion we most propose pedagogical-psychometric instruments for a kind of researcher's diagnosis and treatment. To do this, we need a theoretical framework to establish profiles criteria about cognitive, affectivity, moral and social development. In this way, we can see recruitment researcher's process as a head hunting strategy and not a marketing campaign to encourage students to buy a service.
2) The need to evaluate researchers' program in order to support their careers under the view of equity of gender, age and socio-economic status.
3) How to promote the acquiring or improvement of cognitive and social skills in order to achieve the goals related with the generation, transmission, transferring, application and diffusion of research, as well as the creation of research teams, networking, research fellowships and associations, and so staff exchange processes.
4) To instruct researchers in topics about management and financing of research projects and/or programmes, exploitation methods of research results, entrepreneurship, ethical aspects, communication and societal outreach.
5) Even if FP7's research policies are pretty good, a theoretical framework is needed for the implementation of research training and collaboration.

From this reflection we have made a proposal for our institute; with the initial objective to improve its Researchers Training Program (PIFI-IPN)[2]. We underline that this one was the goal, but after the analysis of many proposals about research training from a national and international view, we made a comparative analysis that results into a classification of proposals. We establish two categories: Models (proposals with just theoretical framework) and Programs (proposals with just educational policies framework). As the main point of our analysis we take the conception of formal, no formal and informal education. PIFI-IPN is in Programs category and it is a no formal program (Rosas-Colin, 2008).

In that work we conclude that what IPN need is an Institutional Research Training Model, which must have both educational policies and theoretical framework; and both foundations must keep congruence between them. Laying this foundation we can link other institutional research programs that all ready exist or to create new ones, in order to propose a life-long training and career development into IPN. That is what we call a Life Research Program. In the next section we will go deeply into this work. Here we only want to underline that the results of the mentioned work shall be useful for re/thinking doctoral programs.

RE/THINKING DOCTORAL PROGRAMS IN IPN CONTEXT: RE/DESIGNING RESEARCH TRAINING

Our proposal is comprised of two initiatives. One aimed at the idea of doctoral degree not as a three year process, but a thirteen or fifteen research training process.

The second one based on our own experience as team members of a new research team seeking its consolidation. To expose our proposal first of all we will give some background of the current research situation in our institution. In Mexico, among the main Higher Education Public Institutions stands out the Instituto Politécnico Nacional (IPN). Like other Mexican institutions, the IPN have a program that encourages research joining his best students with the objective to train them in research activities working beside a researcher that directs a project. This program is called, as we have said PIFI-IPN. In spite of PIFI-IPN has been a good program for IPN to generate research, his principal objective: "early training researchers" seems that it is not working out. Only few students that belong to that program continue working in research activities as a profession or as a career.

The IPN expends time, money and too much effort in this program. In addition to this, the great goal that IPN is trying to reach is to generate more scientific and technological developments to help to the increase of competitively in our country. Without human factor this is merely impossible. Furthermore we think that without a life-long training and career development we cannot have results with an important national and international impact. According to these statements, we work our proposal as the thesis to obtain the master degree in science in Methodology of Science of one of the team (Rosas-Colin, 2008) under the supervision of Dr. Luis Mauricio Rodríguez-Salazar.

The thesis work is about a re/design proposal aimed to optimizing PIFI-IPN from a different research training conception (different of other similar programs). We propose PIFI-IPN as the beginning of a planned academic-research career in IPN. In this work we proposed that PIFI-IPN is address to adolescent's arrival to the researcher's adult's world as young adults immerse in research as a professional activity. Actually research training begins and finishes in doctoral level as a formal program; while our proposal is to begin research training in high school level and continued it through college, master and doctoral level. The idea is to link the formal program of each level to a no formal research training program that encourages young students to research as a professional career not research just as a subject. Thus, if research training begins in high school up to doctorate, that means thirteen or fifteen years of research training process.

This proposal is based on the changes that we begin to design in order to optimize the efficiency of the PIFI-IPN (Rosas-Colin, 2008). As we have said, PIFI-IPN is an early research training program in our institute. It has existed for twenty-five years. As we have said above, PIFI-IPN is a proposal categorized by us, according to our analysis, as a Program (proposal with just educational policies framework). And it is a no formal program. We take the idea of formal, no formal and informal programs from Jaume Trilla (1996; 1997), who establish the conceptualization of the educative universe as conformed by three sectors. For Trilla, formal education is the one that the school offers under a normative system that imposes specific training goals and it is oriented to give an official certificate of the education given by the institution with official recognition according to the level. The level is also established by the national educational system. Formal education is known too as schooling education.

No formal education refers to systemic educative actions but they do not necessarily take place in the school. No formal education is conformed by complementary resources and educational environments either outside the official curricula or the educational institutions. Frequently these proposals are optional for students, in other words, it is up to the student to take it or not. For instance, regularization programs, complementary curses or workshops that give training but the education received is not certificated or endorse by an institution. Finally, informal education according to Trilla (1996; 1997), is the one that every person received by his daily particularly environment. In other words, it is given by the people whose an individual coexists; for example the student's family, his friends and the media.

This conceptualization of education has been useful to try to understand the education in a better way. It has given a bigger picture and so new educational proposals have took place, especially to give alternative to adult literacy issue (Aoyagi, UNESCO, 2006). Our account is that this conceptualization of education can be very useful to theorized about research training. Until now, it seems that it has not been used in an explicit way to study research training proposals. In our work, the conceptualization of formal, no formal and informal proposals or modalities permitted to give order in pedagogical terms to the different proposals we found.

In short, talking about research training programs, formal modality includes, in one hand, specific curses about methodology of research during all educational levels; and in the other one, doctoral degree. No formal modality joins the students to a research project under the leadership of an active researcher. It is a kind of advisory system in which the student in a volunteer way or by invitation acceded. Finally, the informal modality tries to show the daily life of researchers beyond the classroom, which means how they work, how they relate with other researches and institutions, how they obtain sponsoring for their activity and productivity and how they diffuse their research (Rosas-Colin, 2008).

So, this analysis keeps to us to the concept of: research as a life program (Rosas-Colin, 2008). We think that a life research program is closely related with the concept of planned career. At the beginning, our idea of a planned academic-research career arises from the organizational theoretical view. In this respect, as all over the world, in Mexico the industrial community has specific training programs for the employed professional development: They planned the employ functions in order to give him the experience that other positions inside the company required. So, the employee is being trained for another future position in the company while he is working day by day. Another similar case but in other area is happening in our country. Recently, the Mexican government implemented a wide program for the professional development for the bureaucrats who are having good results.

When we take a look at the Mexican educational community, we can see that there are not similar programs as in industry or as in government that allows the design of a planned career in the academic and research world. The planned career programs as the concept of teamwork in organizational psychology studies based on a social psychology proposal: social identity. The basic principles that organizational psychology established the design of a planned career is that it imply a present and future relationship between the individual and the organization, where the goals are

determine by the organization, not by the individual. Planned career programs needs a description and a detail analysis of the functions of the different positions in the company that led to the determination of profiles.

Otherwise, social psychology says that the problem of social identity means that individual needs to belong to a group. A group that determines, in a certain way the individual attributes and interests. Social psychologists also say that the individual does not have the need to belong a group if he does not know anything about this group. And the person could pretend to stay in some group if they do not value that group. So it is necessary to know what a group does in order to value it and so the need of belonging arises in the individual.

We state that the problem of planned career from the organizational theoretical framework even the policy framework, is that Mexican companies or organizations do not have as their main goal the national development through the generation of knowledge as institutes does. Instead, they see for their own economic development. Our institute established as it mission:

> The Instituto Politécnico Nacional is a public institute, leader in Mexico in scientific and technological education; who is responsible for the generation, application, diffusion and transference of scientific and technological knowledge, created in order to contribute for the economic, social and political development of the nation. To reach this goal, its community trains professionals in an integral manner in three levels: High School, College and Post College. IPN makes research and makes extensive research results to the society with high quality, ethic, responsibility and social obligation (IPN, 2004b).

On the other hand, IPN establishes a particular mission for Post College. It states:

> The reason for Post College is to train scientist, technologist as individuals highly qualified with advanced, innovative and pertinent knowledge from a social obligation view, with the capacity of using that knowledge in an innovative manner for solving relevant problems of our nation. Post College in IPN must contribute to discourage inequity and to makes possible new knowledge fields. Training offered by IPN's Post College fosters highly ethic values, permits autonomous learning, knowledge transmission and multidisciplinary national and international team works (IPN, 2004c, p. 72).

Summing up, what we found through our research is that it is needed a unified proposal for designing research training which shall cover at least four aspects:

1) That any proposal about this issue must be developed from two frameworks with congruence between them: educational/institute policies framework, and theoretical framework. The first one gives the base to establish institutional goals, meanwhile the second one, as we have said in other work (Rosas-Colin & Rodríguez-Salazar, 2008b) define an epistemological-psychological-pedagogical posture that allows establishing individual learning goals.

2) That research training proposals must establish linking among the three research training modalities: formal, no formal and informal modalities.

3) To consider for research training four basic topics: methodology of research, methodology of science, vocational scientific orientation and training for training researchers.

4) This kind of training has to be focused both in the field of study and in the topics related with research as a professional career. Therefore the research training program must consider for its design to link the several educational levels with research as a professional career.

Thus, from this analysis we propose a redesign of the PIFI-IPN with implications for Post College programs, especially for doctoral programs.

RE/THINKING DOCTORATE RE/DESIGNING PIFI-IPN: SCIENTIFIC PRODUCTIVITY AS THE BEGINNING OF A RESEARCH LIFE PROGRAM

The PIFI-IPN arose in 1984 at the same time that National Researcher's System (SNI[3]); a system created in Mexico for the fostering and recognition of research training as well as the development of research professional career. We underline that the educational polices that we take care about for the re/design of PIFI-IPN in addition to institutional IPN philosophy, are national and international ranking research systems, especially SNI and FP7 because they establish important criteria for a life-long research training and career program. Besides we highlight that actually our proposal has the educational and research policies framework, while theoretical framework based on Jean Piaget proposal, as we have mentioned above, is on configuration.

So, in this section we show the educational and research policies statements that give foundation for re/thinking doctorate as a thirteen years program through re/ designing PIFI-IPN. This new PIFI-IPN's designed is a research training program where the student begins his no formal training as a research apprentice in high school level, research collaborator in college level, research assistant in master degree level and research pre-candidate ending doctoral degree (see table 1). Thus, the doctorate shall be, at the same time the end of the no formal research training in the framework of PIFI-IPN; the beginning and the end of formal research training and the beginning of research as a life program (informal training) in the framework of SNI. To encourage research as professional career SNI gives one of five possible distinctions: National Researcher Candidate, National Researcher (level I, level II or level III); and National Emeritus Researcher. The goals for Researcher Candidate and National Researcher level I can be achieved through individual productivity, while for National Researchers level II and III, as well as for Emeritus Researcher the established goals only can be achieved through research activity and scientific or technological productivity as a team.

Commonly, the main objective of institutes for Post Baccalaureates is the increasing of number of graduates that their doctoral programs produce. From among institutions with this objective is IPN-México. Likewise, the number of researchers with SNI distinction is an indicator of research potential of an institution. In IPN most of the researchers with SNI distinction are Researcher Candidate and National

Researcher level I. IPN is worried about how to increase its number of researchers with SNI advanced distinctions. So our proposal is that the main goal of doctoral programs in IPN must be to conform and to consolidate research teams in order to increase the number of researchers in the institute with SNI distinction of National Researcher level II and III, as well as Emeritus Researcher; the last distinction means an uninterrupted research career with at least fifteen years with level III distinction. If IPN could reach this objective, then the institute would achieve its mission.

Table 1. PIFI's-IPN new hierarchy

PIFI's new hierarchy	*Educational level (Mexico educational system)*	*General objective*
Research Apprentice	*From the beginning of high school to the first middle of college.*	*To promote the adolescent student arrival to the scientific productivity of researchers through training him in Bibliographic Methods.*
Research Collaborator	*From the second middle of college to the first half of master studies.*	*To approach to the young student to scientific productivity helping to do the products of research. He needs training in Methodology of Research.*
Research Assistant	*From the second half of master studies to the first part of doctoral studies.*	*To support the beginning of the career of the student as a researcher through scientific productivity as co-author. He needs training in Methodology of Science.*
Researcher pre-candidate	*From the second half of doctoral studies to the ending of them.*	*To promote the consolidation of the student as a researcher with self-regulation for doing research activities and productivity. He needs to be able to generate original projects/ programs, to train other new researchers and to conform and consolidate research groups and networks.*

Our proposal for early research training as a Life Program since high school to doctoral degree. Grey color represents the intensity and deep of the training of the student as a researcher.

Source: elaborated by the authors.

So, our PIFI-IPN re/design includes a hierarchy or levels of PIFI's students different of the actual one. We think our hierarchy proposal it is better for PIFI's design qualities that make it a no formal and informal program. But we do not reject the link

with formal programs. So, instead of PIFI students of high school level, college level and post college level (master and doctoral level) as it has been under the formal education criteria, we propose four PIFI profiles according to a no formal program: research apprentice, research collaborator, research assistant and researcher pre-candidate. Table 1 shows each of these profiles. We note that the last PIFI level is call pre-candidate because it suppose that concluding doctoral program, the graduate is able to ask at least for the first level SNI distinction: National Researcher Candidate. The objective of these initial outlining profiles is to specify the pedagogical goals reflected in scientific activity and productivity according to ranking research systems to makes high scientific productivity a lifestyle from initial training to a Life-long training.

Taking the re/designed PIFI-IPN, we can show now our idea of research training process linking formal, no formal and informal modalities for the arrival and permanence of the adolescent into the researcher's world. Figure 1 shows how we conceive this linking in order to establish a Life Research Program. We are far from implement this strategy, but we are working on it in our institute. Now what we need is to work on the theoretical framework. In this sense, as we have said above, we take Jean Piaget proposal. In short, what we want to developed is Life Research Program support by Piaget statements about experimental spirit (Piaget 1969/1983; 1975), scientific education versus science teaching (Piaget, 1974), orientation of scientific vocations (Piaget, 1974) and how to conform scientific squares as the teaching of a professional career (Piaget, 1969/1983).

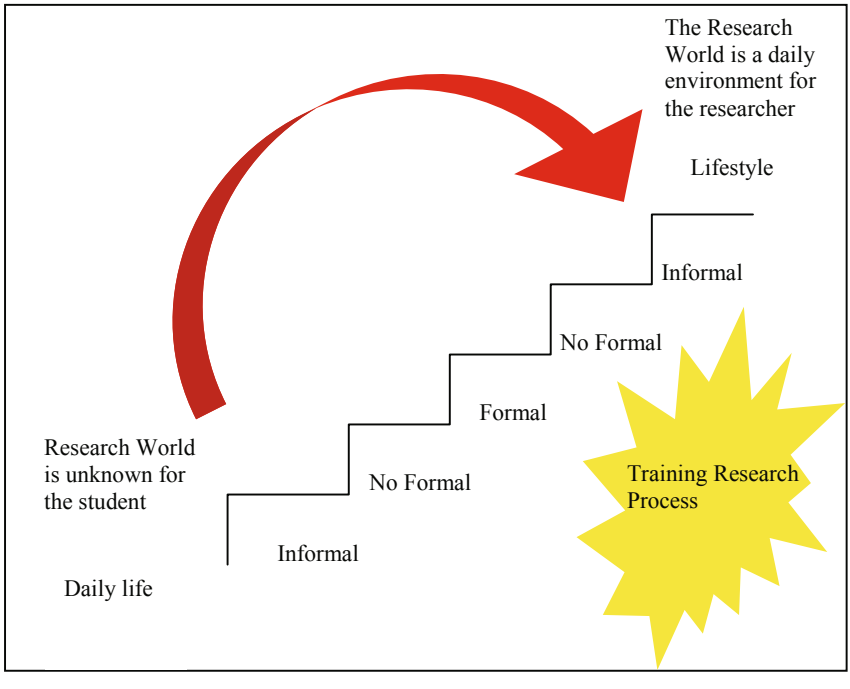

Figure 1. Pedagogical process for long-life research training and career development.

The second initiative of our proposal is based on our own experience as team members of a new research group seeking its consolidation. Our group was conformed in the context of the master program of Methodology of Science two years ago. In this Masters program, six individuals with different background converge in a special way. Just one of us, right now the leader of the group, has the research panorama as a professional career. Others have interest of research activity but only in an academic environment. The rest of the members of the team just have a general interest for knowledge. The Master in Science in Methodology of Science has given us the opportunity to redesign our individual future plan and to have a team plan.

The Methodology of Science Program is about the reflection and analysis of what scientists have done and actually does. In other words, it is about the study of philosophical, epistemological, historical, sociological, psychological and methodological bases of science. In a particular way the master program rides us to think about our profession and about our own chore. In this reflection we start to chat and those informal chats ride us to the formal foundation of our ideas about the epistemological, psychological and pedagogical bases for scientific development. This master program inspires us and rides us to the research career. Right now we are working in a research project titled, "Epistemological bases for science and technology teaching and research training." Our Institute supports it. In this project we are trying to develop a model for science and research learning in high school level using new technologies and with gender view from the bases of epistemology of imagination; the theoretical proposal of the leader of the team (Rodríguez-Salazar, 2008; 2009; Rodríguez-Salazar, Hernández-Ulloa & Rosas-Colin, 2009).

When the group started to formulate it, the theoretical framework was based on Jean Piaget's work, but now we are searching the best way to achieve our collaboration as a group to go into the development of the doctoral proposal of the leader of the group (Rodríguez-Salazar, 2008). We want to establish a thought school calls epistemology of imagination. This proposal is based on an enlarged experience notion derived of Jean Piaget Psychogenetic Theory and his Genetic Epistemology. In this proposal instruments have an epistemological meaning. It tries to give an explanation about how the subject can create possible material and digital realities as the pathway to science development.

In order to develop this idea we must work as a group; especially since just the group leader has a doctorate. Likewise, we need financial support. Thus, we need for all group members to receive a doctorate in order to increase our research activity and productivity through SNI distinction. In this context is that emerges the idea of the doctoral program as an instrument to achieve our team goals. The research project we are working in has duration of three years. This year is the last one. The results are suggesting us various research pathways. Right now we are focused in a particular way in mathematical education. Our proposal has epistemological, psychological and pedagogical aspects that we have to go deeply into. Therefore the idea to propose a doctoral program done at our particular side arises. We are looking for inter-institutional agreement in order to establish networking between

our research team in consolidation and a consolidated research team. The last one is working in the context of the Educational Mathematics department of CINVESTAV-IPN[4], Mexico. They collaborate with the doctoral program in mathematics education.

We think that our training background and the experience of the mathematicians consolidated research team is a great opportunity to link disciplines, programs and institutions. Otherwise, we want to establish relationship with other programs and other national and international institutions. The team goal is to configure, to confection and to materialize a new mathematical education model. Each member of the group is going to focus in an aspect of the main goal. Among various topics, we need to attend mathematical contents, teaching methods, assessment methods and psychological and pedagogical theories about mathematical reasoning. Likewise we consider necessary to work for respond to ranking research systems requirements as SNI, OEI and FP7 as we have mentioned in order to develop our Life Research Program.

We are designing the strategy to achieve our goal. We think this project is a possible reality that we can materialize defining and supporting the idea that a team goal is a convenient bridge between individual goals and institutional goals for the design of doctoral programs, as well as a good based for a Life Research Program with high-quality productivity.

NOTES

[1] Foreign Affairs and International Trade Canada (2009) promotes a North American Research Linkages Program, which "is designed to facilitate North American collaboration within the academic community. It aims to foster the development of permanent exchange networks by providing assistance to teams of researchers from Canada, the United States and Mexico in order to organize seminars, workshops, or other forms of research linkages" (www.canadainternational.gc.ca/washington/studies-etudes/linkages-couplage.aspx?lang=eng).

[2] For the acronym in Spanish of: Programa Institucional de Formación de Investigadores del Instituto Politécnico Nacional, México.

[3] For its acronym in Spanish: Sistema Nacional de Investigadores.

[4] The acronym in Spanish for Research Center and Advanced Studies of National Polytechnic Institute.

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SECTION II:
RETHINKING THE CONCEPT OF EVALUATION AND PROGRAMMATIC COHERENCE

MARTHA COMBS AND J. RANDALL KOETTING

4. FOUR PRIORITIES FOR DOCTORAL PROGRAMS IN SMALL COLLEGES/UNIVERSITIES

A Reflective Essay

In 2004 we joined the faculty of a small private Catholic college (now a university) with a proud history as an applied liberal arts institution that had received approval to offer a PhD in Educational Administration and Leadership. At that time, the college became one of the smallest institutions of higher education in the United States to engage in the advanced preparation of leaders. Over its seventy year history this small institution, supported by a congregation of Sisters committed to justice, compassion, and service, had generated a strong sense of loyalty among its students, faculty, staff, and community. The institution had its beginning in the preparation of teachers which historically had been, along with the preparation of nurses, the lifeblood of the institution. In the 1980s the institution expanded into graduate education with master's degrees in educational leadership and advanced preparation of teachers for work with at-risk students. This expansion contributed to keeping the institution both vibrant and fiscally sound.

Over the past several years there has been intense study of doctoral programs in a number of disciplines by the Carnegie Foundation. Shulman, Golde, Bueschel & Garabedian (2006) suggest that a central purpose of a doctoral program is the preparation of "future leaders who will creatively generate new knowledge, critically conserve valuable and useful ideas, and responsibly transform those understandings through writing, teaching, and application (p. 27). As an outgrowth of our experience at the institution described above, we explore several priorities related to planning and implementing a doctoral program that we believe small colleges/universities should consider. We focus on the importance of: 1) clarity of institutional purposes for engaging in doctoral education, 2) drawing upon literature in adult development in program planning, 3) developing a culture of scholarship, and 4) enculturating doctoral students into communities of scholarly inquiry and practice. As we explore these issues our concern is primarily on the preparation of educational leaders.

CLARITY OF INSTITUTIONAL PURPOSE

In our experience, clarity of institutional purpose is a critical first step for planning a doctoral program. According to the Carnegie Initiative on the Doctorate (Golde & Walker, 2006), a central purpose for doctoral programs is to provide a rich culture

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that prepares future leaders to be stewards of their discipline or profession. Shulman et al. (2006) describe the use of the term "stewards" as

> intending to convey a role that includes, but also transcends, accomplishments and skills. A steward is entrusted with the care of the discipline, and thinks about the discipline's continuing health and how to preserve the best of the past for those who will follow. Stewards direct a critical eye toward the future. They must consider how to prepare and initiate the next generations of leaders. We believe that these ideas are particularly compatible with education's long-standing commitment to social justice, equity, and professional responsibility (p. 27).

To serve as stewards of the profession, educational leaders must serve not only as models of leadership, but also must have expertise in policy formation and implementation, deep knowledge of pedagogy and curricular issues, expertise in fostering collaboration and teamwork, and a sophisticated understanding of data collection and analysis (Grogan, Donaldson, & Simmons, 2007, p. 2)

The small institution with which we have experience has always prided itself on serving the needs of the region. The results of a needs assessment revealed the desire of many school-level administrators in the region for a terminal degree that included certification as a district administrator. In addition to other potential students, a large number of alumni who had earned a master's degree and initial certification as a principal or program director were interested in pursuing the next level of leadership preparation. They wanted the experience of a PhD to have the same personalized qualities as their master's experience.

While the institution has an excellent reputation among private institutions in the state, institutional leaders felt that approval to offer a PhD would further elevate its stature among state institutions. It would have the distinction of being one of the smallest institutions in the state and nation to offer a PhD. Institutional leaders saw this as an opportunity to impact not only the region, but also the state through the preparation of high-quality school district administrators. This program would place the small institution in the same league as several large, prestigious state institutions that also prepared superintendents to serve the needs of the state.

The potential of the PhD program was also viewed as a new source of revenue. In addition to attracting new students, it was thought that the doctoral program would also attract alumni of the master's program in educational leadership for advanced study. Pointing to the needs assessment as evidence, institutional leaders developed a proposed budget to demonstrate the new revenue that could be available to the institution.

For success in doctoral education, institutional purposes need to become the shared vision of the faculty, since it will be the faculty who actually implement the program. To prepare the next generation of stewards, current faculty must have not only deep knowledge of their particular expertise but also broad understanding of the foundations of education in order to consider the possibilities of the future. Callejo (2008) affirms this concept when he suggests that faculty need to be multi-dimensional practitioners who "look back toward our history and focus on the

present to make decisions that impact students' lives everyday, and forward to the future with a vision that helps us anticipate future problems" (p. 74). P-12 educational leaders, in particular, must have this broad view to solve the challenging problems they currently face.

Faculty in small institutions, who have never worked in a doctoral program, may have only their own doctoral experiences to draw upon. As students of education, faculty who are about to embark on a new PhD program, should be involved in the study of what other institutions and groups, such as the Carnegie Initiative on the Doctorate, are learning about the purposes and possibilities of doctoral education. Without involvement in study that expands understanding of the possibilities for doctoral education in the current economic climate, faculty may be quite limited in their ability to contribute to program visioning and development. Working in master's programs may not be the training ground to prepare faculty to understand the level of support needed by doctoral candidates and the demands of the district-level roles for which they are preparing.

Leaders who guide the visioning and development of doctoral programs in small institutions must have a clear understanding of the institutional cultures in which they work. They must use that knowledge to put in place organizational structures that engage the desire of individual faculty to expand their personal understanding of the challenges of doctoral education, as well as the importance of achieving a shared programmatic vision. Doctoral programs developed without clear purposes become little more than a collection of courses rather than a transformative curriculum that prepares educational leaders. Statistics such as the achievement gap illustrated by results of the National Assessment of Educational Progress (NAEP) and high school dropout rates affirm the critical need for leaders who can recognize and solve educational problems in the United States. These problems demand a broad perspective in foundations of education and an understanding of the complexity, politics, and economics of schooling in society.

ADULT DEVELOPMENT AND PROGRAM PLANNING

As institutional leaders and the faculty engage in planning a doctoral program, it is important to focus on knowledge of adult development and the potential impact of advanced graduate study on students' cognitive, social, emotional, and ethical development. In a review of research on the impact of doctoral education on adult development, Stevens-Long and Barner (2006) assert the significant potential for doctoral programs to foster "perspective transformation, causing students to challenge the assumptions that constrain the ways they perceive, understand, and feel about the world. These cognitive changes are intertwined with evidence of profound personal change, including increased patience, empathy, and self-confidence" (p. 471). As faculty plan a curriculum of experiences that have the potential to transform doctoral students, it is important they keep in mind that "the nature, timing, and processes of development will vary according to the experiences and opportunities of individuals and the circumstances in their lives" (Tennant & Pogson, 1995, p. 197).

In the planning process, it is important for faculty who will work with doctoral students to understand the ways that adults become more self-directed as learners and ultimately responsible for their own continued learning. This requires a curriculum "emphasizing the ability to tolerate contradiction and ambiguity and make effective use of these as a basis for thought" (Stevens-Long & Barner, 2006, p. 456). The curriculum should provide multiple opportunities for doctoral students to engage in solving ill-structured problems in innovative ways. This provides an understanding that problems are often complex and unstructured and that solutions are guided by the way that problems are formulated (Arlin, 1990), and promote development of critical inquiry and reflective judgment (Kitchener & King, 1991, 1994). As Grogan, Donaldson, & Simmons, 2007) suggest, this involves "aligning reflection to theory, forming critical inquiries about policy and practice, and taking informed action" (p. 2). Stevens-Long and Barner suggest, "We might well expect this capacity to accompany the intellectual stretching, cognitive development, perspective transformation, and greater fluidity in the sense of self" (p. 471).

Program planning should also include experiences that will provide for continued emotional development. Tennant and Pogson (1995) state that

> The interpretation of experience is social and political, as well as a psychological exercise. The self as a fixed, stable, and harmonious entity is replaced by the notion of self-construction as an ongoing process. The self, in effect, stands in a dialectical relationship to experience, both forming and being formed by the experience it encounters (p. 169).

Stevens-Long and Barner (2006) argue that the transformation of the self "means seeing one's perspective (whether intellectual, social, or personal) as just one of a universe of possibilities based in differing assumptions about reality and tending, as Dewey put it, toward differing conclusions" (p. 459). Changes in the way people define the self and the ways they understand the construction of knowledge are often accompanied by intense self-doubt and anxiety. Opportunities to explore these feelings and to support self-discovery should become a regular feature of both master's and doctoral education if we hope to encourage a growth in maturity and wisdom perspectives of both the students and faculty.

Planning doctoral programs for educational leaders should also include attention to the breadth of diversity in the larger social context and the impact of that context on learners and learning. Stevens-Long and Barner (2006) suggest that study of diversity and inclusiveness can "encourage people to explore cultural bias and hegemonic assumptions that constrain their own thinking and the development of their field of study" (p. 471). Learning is a result of our biographical, historical, and cultural experiences and how we have made meaning of those experiences. Transformation, or growth, becomes possible when one becomes "critically aware of one's own tacit assumptions and expectations and those of others and assessing their relevance for making an interpretation" (Mezirow, 1991, p. 4). Thus the curriculum requires a pedagogy that promotes diversity of perspectives, moving the learner outside their comfort zone, and challenging taken-for-granted or simplistic explanations of practice. This type of study is a pre-requisite for becoming a vibrant member of a scholarly community.

DEVELOPING A CULTURE OF SCHOLARSHIP

Smaller institutions typically emphasize high quality teaching as the most important criteria for tenure and promotion. While scholarship is expected, the nature of scholarship must take on a broader definition. It is through high quality teaching that faculty at smaller institutions demonstrate their membership in a scholarly community. Moving into doctoral study, however, requires that faculty broaden their spheres of scholarly influence beyond the classroom. Boyer (1990) provides a foundation for broadening understandings of practice to the theoretical complexities of doctoral study. In our experience, and as Boyer suggests, "the work of the scholar also means stepping back from one's investigation, looking for connections, building bridges between theory and practice, and communicating one's knowledge effectively to students" (p. 16). Boyer describes scholarship as having four separate, but overlapping, functions: discovery, integration, application, and teaching.

Boyer (1990) suggests that the scholarship of discovery leads to original research that "contributes to the intellectual climate of a college or university" (p. 17). This form of scholarship is what is most often described as an expectation for faculty who hold a PhD, especially for faculty at research institutions. To maintain a discipline, generating new knowledge and understandings is absolutely vital. For faculty at small institutions, who typically have higher teaching loads each semester, the time that must be devoted to scholarship to discover new knowledge is quite challenging.

For Boyer (1990), the scholarship of integration involves "serious, disciplined work that seeks to interpret, draw together, and bring new insight to bear on original research" (p. 19). He suggests "Those engaged in integration ask, 'What do the findings mean? Is it possible to interpret what's been discovered in ways that provide a larger, more comprehensive understanding?" (p. 19). At a small liberal arts institution, interdisciplinary work is the foundation of undergraduate studies. At the graduate level, faculty attempt to draw on that foundation to achieve better understandings of the complex problems and issues that face education. These problems are interdisciplinary in nature, drawing on philosophy, sociology, anthropology, psychology, etc. to understand the challenges that P-12 school districts are examining in order to understand issues such as the achievement gap among students.

The scholarship of application, according to Boyer (1990), focuses on applying knowledge to consequential problems. In this process "new intellectual understandings can arise out of the very act of application….theory and practice vitally interact, and one renews the other" (p. 23). In small institutions, exploration of the application of understandings developed through discovery of new knowledge is very appropriate for faculty with a history of focusing on teaching and preparing educational leaders for P-12 schools.

Finally, Boyer (1990) identifies the scholarship of teaching, which "means not only transmitting knowledge, but transforming and extending it as well" (p. 24). Small institutions with a proud history in the liberal arts take pride in their scholarship of teaching. He suggests this type of environment is a "supportive climate for scholarship of integration, intellectual exchange that fosters interdisciplinary studies, creative general education courses, and capstone seminars" (p. 59). This environment makes connections across disciplines, situates ideas in a larger context, and illuminates

data in a revealing way (p. 18). This is an example of how graduate education ties into the mission of the institution and provides a seamless progression from undergraduate to graduate study.

The development of master's and doctoral programs pushes a liberal arts college toward the role of a comprehensive university where, as Boyer (1990) suggests, the institution should carve out its own distinctive mission. As it does, scholarship of the application of knowledge, as well as the development of new knowledge, are valued and relate learning to real life. This includes the identification of consequential problems in education that could serve as the focal points as candidates move through their program of study.

In our experience, as small institutions embark on the development and delivery of doctoral programs, the nature of faculty scholarship can impact the ways in which faculty think about program development, course content, and the organization of learning experiences. Faculty, who have engaged deeply in scholarship of teaching and immersed themselves in their own scholarly agendas, have intimate understanding of ways that knowledge can be transformed and extended through learning. This is critical for faculty who will engage new doctoral candidates in learning and enculturate them into a communities of inquiry and practice.

COMMUNITIES OF SCHOLARLY INQUIRY AND PRACTICE

If doctoral students are to become stewards of the profession as described by Shulman et al. (2006), they must become full members of a scholarly community. Membership in a scholarly community also suggests membership in a community of practice which is inseparable from the contexts and activities of the community itself (Brown, Collins, & Duguid, 1989; Heibert, Gallimore, & Stigler, 2002; Lave & Wenger, 1991). This is what is meant by the theory-practice dialectic. A scholarly community has tools associated with the cultural activities of the community and the use of those tools is influenced by the ways members of the community see and act within their world. Membership in a scholarly community requires the active use of tools that build an increasingly rich understanding of the world in which the tools are used and of the tools themselves. Stewards of a profession are fully immersed in a community of scholars and a community of practice, and, as such, maintain the continuing health of the discipline and preserve the best of the past for those who will follow (Shulman et al., 2006).

Many doctoral students are part-time students which may provide limited opportunity for socialization into communities of scholarly inquiry and practice (Shulman et al., 2006). At the same time, doctoral students are deeply immersed in P-12 school communities on a daily basis which have their own cultural norms and tools. We have learned that being well-versed in a P-12 culture does not (necessarily) prepare new doctoral candidates for the rigors of doctoral study. The culture developed during master's study must be extended and deepened in order to develop a more critical stance toward the importance of inquiry for recognizing the complexities of educational problems and issues. Thus the need for careful planning of doctoral programs as identified in a previous section, rooted in the theory/practice dialectic.

For doctoral students to become fully immersed in scholarly communities of inquiry they must have opportunities to participate in new situations, negotiations, and activities with members of the community of scholars (faculty) and observe how those members recast their knowledge in new and more densely textured forms. It is important for faculty to guide doctoral students to discover or invent new knowledge within the scholarly community in response to something they are trying to understand at its more complex level. In these cases, there are no existing models. Members of the community, faculty and students, learn by trial and error. They may face failures, make mistakes, but that is accepted as part of the learning process. They focus on the processes of learning, and not merely on the outcomes. Thus the processes become possible opportunities for creating new knowledge and understandings.

Small institutions take great pride in providing personalized learning experiences for students, which include small class sizes and extensive contact with faculty. Doctoral students in these environments begin as observers on the periphery of a new type of scholarly community. As masters' students they felt very included in the professional community, with its emphasis on practical application of course content to everyday experiences of P-12 educators. They find, however, the experiences they bring as successful master's students are underdeveloped and often inadequate in exploring the depth and breadth needed for becoming members of the community of scholars. They are challenged to find adequate time for study of new language and ideas they confront in their studies. The critical stance and questioning in which they engage as doctoral students is not encouraged, and often not appreciated, in their P-12 communities. In these circumstances, faculty must focus on developing their own knowledge and skills for mentoring this process of enculturation for these new doctoral students.

CONCLUDING COMMENTS

In this chapter we identified what we believe are four priorities for institutional leaders and faculty at small colleges/universities that desire to move into doctoral education. We recognize these priorities are not exhaustive but we believe they are crucial for examining doctoral education in its broadest context.

Clarity of Institutional Purposes for Engaging in Doctoral Education

Regardless of size, making the decision to undertake doctoral study moves an institution into the complexities of being a comprehensive university. The institution needs to re-envision itself. Institutional motivation to move into doctoral study should not be about elevating the status of the institution. It should not be about generating new streams of revenue. But it does have everything to do with achieving a shared vision of the seriousness of preparing strong educational leaders who will be the stewards of the profession for the 21st century. If those in leadership positions and faculty do not have experiences to draw upon in working in doctoral education, immersing themselves in the literature and study of what it means to be a doctoral

granting institution has to be the first step this requires intense study in focus groups and perhaps a reorganization of the very structure of the unit itself. Faculty who participate in the program must be grounded in the theory/practice/research of the discipline and understand doctoral education in both theoretical and practical contexts. It is not about teaching a course, it is being a full participant in the programmatic experience.

The Need to Draw Upon Adult Development in Program Planning

If doctoral study is to be more than a collection of courses to be completed or a degree to be earned, the study of adult development should be an integral part of the knowledge upon which faculty draw to design learning experiences that have the possibility to be transformative. All educational experiences should be transformative, but this is particularly important at the doctoral level. By transformative we mean experiences that develop a level of critical awareness of one's assumptions and interpretations about the world. Transformation provides the basis for action and the constant calling into question of the nature of our work. These types of learning experiences involve problem posing which suggests engagement with the theoretical, "leading to intellectual stretching, cognitive development, perspective formation, and greater fluidity in the sense of self" (Stevens-Long & Barner, 2006, p. 471). It is the field of adult development that offers faculty direction and support as they develop doctoral programs.

Developing a Culture of Scholarship

When a small liberal arts institution moves into doctoral education, the very nature of the institution will change. Faculty, who have focused primarily on teaching and service, will be called upon to find a new balance between teaching, scholarship, and service. It will be imperative that institutional leaders and faculty carefully examine how scholarship is defined, resources that are available to support scholarship, scholarship expectations for tenure and promotion, how graduate faculty status is determined, the balance between teaching loads and scholarship expectations, etc. In light of the renewed interest and discussions of the PhD and the EdD degrees, we suggest a re-reading of Boyer's (1990) arguments for a broader view of scholarship (as we discussed in a previous section) in light of studies such as the Carnegie Initiative on the Doctorate (CID) and the Carnegie Project on the Education Doctorate (CPED). Boyer's recommendations have much to say on behalf of a strong liberal arts education and how it broadens what a comprehensive university should be about: interdisciplinary studies, varied research methodologies, developing strong pedagogies within disciplines, and the practice of the discipline itself.

Communities of Scholarly Inquiry and Practice

While all of the priorities discussed thus far are important, we believe the development of a community of scholarly inquiry and practice to be at the heart of a vibrant

doctoral program, both for faculty and for students. The faculty, as current stewards of the profession, in order to bring doctoral students into communities of scholarly inquiry and practice, need a sense of community of scholarship amongst themselves before they can pass it on to others. It is worth returning to the description and use of the term steward presented earlier in this chapter, as

> intending to convey a role that includes, but also transcends, accomplishments and skills. A steward is entrusted with the care of the discipline, and thinks about the discipline's continuing health and how to preserve the best of the past for those who will follow. Stewards direct a critical eye toward the future. They must consider how to prepare and initiate the next generations of leaders. We believe that these ideas are particularly compatible with education's long-standing commitment to social justice, equity, and professional responsibility (Shulman et al., 2007, p. 27).

For doctoral students it is a continual reminder that their course of study is more than a series of courses, but is an orientation toward a new way of life.

Our perspectives on doctoral education are influenced by our own doctoral work at large research institutions and our enculturation into communities of scholarly inquiry and practice at institutions at which we have been professors. We believe we were transformed by those early experiences as we learned what it could mean to be a member of a community of scholars and develop scholarly habits of mind. We continue to be transformed as we engage with doctoral students.

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M.O. THIRUNARAYANAN

5. CONSOLIDATING DOCTORAL DEGREES

It Makes Sense

INTRODUCTION

The United States has been a leader in offering research-based doctoral degrees for many years. According to data from Falkenheim and Fiegener (2008), 48,079 doctoral degrees were awarded by institutions of higher education in the United States in 2007. Every year, students from all over the world enter the United States to pursue doctoral degrees in universities across the country. The fact that it takes students an average of 7.5 years (Hoffer and Welch, 2006) to graduate from the time they register in doctoral programs does not seem to be a major deterrent in pursuing such degrees.

REASONS FOR PURSUING DOCTORAL DEGREES

According to Crago (2003), "Many students are in graduate school for the love of learning and discovery" (p. 2). Graduate school offers many students the opportunity to interact with knowledgeable professors who are passionate about ideas and intelligent students who wish to make their mark in their chosen fields. In addition, graduate school also offers students the rare commodity of time that they can use primarily to develop and sharpen their own ideas. For some the graduate school experience results in making a lasting contribution in a chosen discipline or combination of disciplines.

Other motivations to pursue graduate education include "cultural motivation and family traditions" (Crago 2003, p. 22). As an example, my grandfather was a professor of botany and pursued research even after he retired from his job. I am not sure if this directly influenced my decision to teach in a university, but even when I was in high school, I knew that I wanted to teach in a university – at that time however, I did not know what I will be teaching, but I definitely knew that I will be teaching in a university someday.

A third motivation for entering a doctoral program is "… because their chosen careers depend on the possession of a graduate degree" (Crago 2003, p. 2). In my own case, I did not even consider stopping my education after a master's degree because I knew that a doctoral degree was essential qualification for teaching in a university.

OTHER ADVANTAGES OF PURSUING DOCTORAL DEGREES

A person who holds a doctoral degree is less likely to be unemployed that others who have not earned such a degree. According to a report published by the National

D.M.C. Pérez et al., (eds.), Higher Education and Human Capital: Re/thinking the Doctorate in America, 65–73.

Science Foundation, the unemployment rate for all doctoral degree holders in the year 2006 was 1.6% (Kannankutty 2008), compared to the overall U.S. labor force unemployment rate of 4.7% during the same year. Doctoral degrees do help people get employment and also remain employed.

Those who earn doctoral degrees also earn more money throughout the span of their careers, which typically lasts about thirty years. According to Bergman (2005):

> New information from the U.S. Census Bureau reinforces the value of a college education: workers 18 and over with a bachelor's degree earn an average of $51,206 a year, while those with a high school diploma earn $27,915. Workers with an advanced degree make an average of $74,602, and those without a high school diploma average $18,734 (http://www.census.gov/newsroom/releases/archives/education/cb05-38.html).

According to Day and Newburger (2002) "… each successively higher education level is associated with an increase in earnings" (p. 2). Based on the above information, the advantages of earning advanced graduate degrees, including doctoral degrees are rather obvious. However, there are some issues associated with the proliferation of doctoral degrees that are being awarded in this country.

PROLIFERATION OF DOCTORAL DEGREES

Doctoral degrees have begun to proliferate at a fast rate. No, I am not talking about the number of doctoral degrees that are being awarded to people, including some who do not deserve such degrees. I am talking about the growth in the number of types of doctoral degrees that are currently being offered in various academic disciplines in universities across this country. When someone said that he or she holds a doctorate, most people probably used to think that the person has earned a Ph.D. degree. Instead of offering a single research-based doctoral degree, nowadays universities offer several doctoral degrees. According to information published by the U.S. Network for Education Information (February 2008), the following degrees are considered by the national Science Foundation as being equivalent to a research-based Ph.D. degree (See Table 1 below).

Table 1. U.S. network for education information (February 2008)

Doctor of Arts (D.A.)
Doctor of Business Administration (D.B.A.)
Doctor of Church Music (D.C.M.)
Doctor of Canon Law (J.C.D./D.C.L.)
Doctor of Design (D.Des.)
Doctor of Education (Ed.D.)
Doctor of Engineering (D.Eng./D.E.Sc./D.E.S.)

Table 1. (Continued)

Doctor of Fine Arts (D.F.A.)
Doctor of Hebrew Letters (D.H.L.)
Doctor of Industrial Technology (D.I.T.)
Doctor of Juridical Science (J.S.D./S.J.D.)
Doctor of Music (D.M.)
Doctor of Musical/Music Arts (D.M.A.)
Doctor of Music Education (D.M.E.)
Doctor of Modern Languages (D.M.L.)
Doctor of Nursing Science (D.N.Sc.)
Doctor of Philosophy (Ph.D.)
Doctor of Public Administration (D.P.A.)
Doctor of Physical Education (D.P.E.)
Doctor of Public Health (D.P.H.)
Doctor of Sacred Theology (S.T.D.)
Doctor of Science (D.Sc./Sc.D.)
Doctor of Social Work (D.S.W.)
Doctor of Theology (Th.D.)

Not all Doctoral Degrees Recipients Continue to Pursue Research

It is true that research-based doctoral degrees prepare students for careers in research. However, research is not the only career path that many professional choose to pursue. I fact, according to a prominent author, "More than half the Ph.D.s in science are stillborn, dropping out of original research after at most one or two publications" (Wilson 1998, p. 56).

Many professional who reach the highest levels of their careers probably never continue to conduct original research or publish peer-reviewed papers. History has revealed to us numerous great teachers, leaders, managers, philanthropists, and those who serve society, but who have never conducted scholarly research and probably will never do so in their lifetimes. It is my contention that these people also need to be given an opportunity to earn the highest degrees offered by academe.

NATURE IS INTERDISCIPLINARY

Nature does not divide itself into physics, chemistry, mathematics, biology zoology, and other disciplines. For example, an animal is a biological entity, made of numerous chemicals which react to produce other chemicals, consist of structures that engineers

can study and re-create using other materials, and is subject to the laws of physics. We humans divided nature into diverse disciplines several centuries ago, perhaps in an effort to make it easier for us to comprehend different aspects of the natural world. The ever-present human need for territoriality could have also played a role in the act of dividing various disciplines into separate entities. The more specialized or divided the disciplines, the easier it is to claim that small piece of turf as one's own area of specialization. The more such areas of specialization, the more people can be kingpins of their disciplinary domains. However, nature continues to remain as interdisciplinary as it has been for billions of years.

Many of the future discoveries and advances in various fields of science, medicine, and engineering are more than likely to result from research that cuts across neatly organized disciplinary domains. By continuing to train students in disciplinary research and offering doctoral degrees that are disciplinary in nature, society faces the risk of delaying crucial discoveries and inventions that have the potential to improve the quality of our lives. A Ph.D. degree is more likely to be respected as an interdisciplinary doctoral degree rather than, say Ed.D., or Psy.D., degrees whose labels clearly betray disciplinary preferences.

UNIVERSITIES WILL FIND IT EASIER TO BRAND AND MARKET FEWER DEGREES

Whether or not a majority of academics favor such a trend, universities are beginning to act more and more like businesses. Presidents claim that institutions of higher learning should become more customer-oriented. This implies that universities should treat students as their customers and society as a whole as the source of future customers. This kind of corporate thinking on the part of universities necessitates that universities follow other tactics that successful corporations employ, including creation of "brand awareness" for their products. Corporations know well that the fewer the products that it produces and/or markets, the better the brand recognition it can establish and promote among its past, present and future pool of customers.

Many large universities in this country currently use the nicknames of their sports teams to brand themselves. Most college-going youth in this country can identify the name of a university given the nickname of their football or basketball teams. While sports teams that bring much needed revenues are here to stay, universities can and should also promote brand recognition for the academic degrees that they offer, especially the doctoral degrees. Such academic brand recognition is easier to promote if the university offers a fewer number of differentiated doctoral degrees.

THE ACCREDITATION PROCESS WILL BECOME LESS DAUNTING

As universities grow and start offering too many degrees, the process of retaining accreditation becomes a formidable process. The agency that accredits the entire university has a set of standards that the university must meet. The Department of Education in the state in which a university is located usually has other standards for universities and its degree programs to meet. Professional associations and organizations too have a say in standards that degree programs must meet. It is

obvious that the more degrees that a university offers, the more difficult it will become for it to satisfy and meet the requirements of various accrediting bodies.

CONSUMERS WILL BE BETTER ABLE TO DIFFERENTIATE BETWEEN DOCTORAL DEGREES

It is true that people in the United States and perhaps other developed countries live in societies where they have numerous choices and pseudo-choices. The availability of a few choices is good since it makes people feel as though they are in charge of their lives, but the availability of too many choices only makes it quite confusing and perhaps even overwhelms the average consumer. The same is true of doctoral degrees offered by universities. Instead of offering a multitude of research-based doctoral degrees, universities would do well to offer a few doctoral degrees that are for varied accomplishments, including research.

A PROPOSAL FOR CONSOLIDATING DOCTORAL DEGREES

Offer a Ph.D. degree with variations along domains of expertise and also based on the nature of accomplishments in leadership, management, philanthropy, practice, service, and teaching. The traditional research-based doctoral degrees should be awarded to those who wish to pursue tenure-track and tenured careers in academia. The diploma will have the following information: the name of the degree followed by the functional area in which the candidate has accomplished at a sufficiently high level to warrant the earning of such a degree, and the disciplinary domain of study in which the degree is awarded. The examples that follow are related to education and a few other selected content areas, but any and all other disciplines and inter-disciplinary fields of study can also easily offer similar degrees.

Ph.D. (Leadership – Discipline)

A diploma for a degree in education for leadership will state: Ph.D. (Leadership – Education). Each disciplinary or interdisciplinary domain has to determine what constitutes leadership worthy of being awarded a doctoral degree. Students aspiring to earn such degrees should be offered appropriate coursework in theories of leader-ship and follower-ship, characteristics and styles of leadership and biographies of great leaders and their accomplishments. After completing such coursework, they could be required to write one or more scholarly, peer-reviewed papers and/or make a sufficient number of scholarly presentations at professional conferences based on their knowledge of leadership theories and on their own experiences as leaders. Recognition by peers and followers could also be one of the several criteria used for awarding such degrees.

Ph.D. (Management – Discipline)

There are many people out there who routinely manage people, resources, and projects in corporations, schools and school districts, departments of education in states and in

entire countries, other governmental agencies, towns, cities, and even different segments of whole countries. Those who excel in managing systems such as transportation systems, healthcare systems, social service systems, energy systems, and other systems could be potential candidates for this doctoral degree. Their contributions and expertise too could be honored with doctoral degrees PhD (Management – Psychology.). A mix of coursework, scholarly publications and presentations, and peer recognition could be the criteria used to award such degrees.

Ph.D. (Philanthropy – Discipline)

Universities often award honorary doctoral degrees to past and potential donors. If donation of large sums of money were the sole criteria for receiving degrees, it can be argued that philanthropists buy their doctoral degrees. Here is an option give those people who make philanthropy a way of life to earn a Ph.D. (Philanthropy – Business). Let them enroll in a sequence of courses that teach them what philanthropy is all about, from ancient times to the present, and speculate on the nature of philanthropy in the future. Let them write about their views of philanthropy and give talks at professional gatherings. What are some of the reasons why they decided to give money to others? Was it for selfish or selfless reasons? How much tax benefits did they receive as a result of their charitable behavior? Could they afford the money that they gave away? Did they have so much money that the donations that they made did not make any dent on their fortunes? How many lives did they impact because of their giving? These could be some of the criteria other than publishing papers and making scholarly presentations that are used to determine if someone is worthy of being awarded a Ph.D. (Philanthropy – Business) degree.

Ph.D. (Practice – Discipline)

The Ph.D. degree in educational practice Ph.D. (Practice – Education) should be awarded to those who have demonstrated expertise in teaching, inspiring, and mentoring students. Students could take courses related to theories of learning, motivating students to learn, various methods of teaching, etc. The awarding of doctoral degrees could be based on a candidate's true mastery of teaching, which could be demonstrated in different ways, including scholarly publications, lectures, and testimonials from former and current students and colleagues.

Ph.D. (Research – Discipline)

The research-based doctoral degree in any discipline will perhaps be the most difficult degree to earn. A Ph.D. for research in any discipline should follow the highest standards and should be awarded only to those who make original and significant contributions to the knowledgebase in disciplinary or interdisciplinary contexts. This degree should also be the one that prepares students to pursue full time, tenure track positions in universities and other institutions of higher learning. It is this degree that prepares students for a life-long career in research and advancing the frontiers

of knowledge. In addition to the completion of coursework, the completion of a full-fledged dissertation of high quality will probably continue to be the major requirement for earning this degree. The diploma for the research-based doctoral degree in Chemistry will state: Ph.D. (Research – Chemistry)

Ph.D. (Service – Discipline)

Many people serve their communities in various ways. Some volunteer their time, expertise, contacts and other resources to serve less privileged members of their communities. Those who serve at the highest levels deserve to earn the Ph.D. (Service – Economics) degrees. Similar to those who earn other non-research based doctoral degrees, the candidates for the service doctorate, should also be expected to complete appropriate coursework that teaches them the various ways in which others who precede them in time have served their countries. They also should be expected to publish scholarly papers and make scholarly presentations. The unbiased and preferably anonymous recommendations of their peers and those who have been the beneficiaries of their service should be taken into consideration before they are awarded the service doctorates.

Ph.D. (Teaching – Discipline)

People who are recognized as the best teachers in elementary, middle, and high schools as well as other levels of education such as community colleges and universities could be ideal candidates to pursue such a degree. Coursework for such candidates could be comprised of research related to teaching and learning, and also based on the works of teachers who are acknowledged to be expert teachers by their peers and students. To earn such a degree, students should be expected to master the pertinent literature on teaching and advance the same in significant ways. They could also be required to present at professional conferences or publish their thoughts in appropriate journals before they are granted their degrees. A diploma of a doctoral degree awarded in this area in the discipline of Physics would be labeled Ph.D. (Teaching – Physics).

Ph.D. (Honorary – Discipline)

Honorary degrees have been granted to people who have made outstanding contributions to society or a particular discipline and may also already hold doctoral degrees from another university. Sometimes these degrees have been awarded to those who have made outstanding contributions to society but have not and do not have the time or the inclination to enroll in graduate degree programs. Oftentimes these degrees are also awarded for political purposes. One thing common in all instances is that those who are granted this degree do not to enroll in degree programs, and do not complete prescribed coursework. Universities will continue to grant such degrees for politically and financially motivated reasons. These degrees could be labeled Ph.D. (Honorary – Discipline).

CONCLUSION

As more professional in various fields reach the top tiers of their professions, they start seeking doctoral reasons for various reasons. Adding the initials of a doctoral degree at the end of one's name perhaps makes others think highly of the person holding such a degree and their expertise in the field. The person with the doctorate will also be regarded as being well qualified to hold positions of authority at the upper levels of the hierarchy, thus providing them with opportunities for moving up the ranks in their chosen fields and professions.

All the newly proposed doctorates except the research doctorate can perhaps be completed in about three years. The research doctorate will take much longer to earn. Students who wish to pursue a tenure-track career in academe will most probably have to complete a research doctoral degree.

What kind or kinds of doctoral degrees should different disciplines or combinations of disciplines offer? That is up to each discipline to decide. Some disciplines may choose to offer only research doctorates. Others may decide to offer a larger variety of doctorates, depending on the needs of their disciplines. In the future, institutions of higher education may also identify other functional areas that are considered worthy for the awarding of doctoral degrees. Performance is one such functional area that is an obvious candidate for the awarding of doctoral degrees.

Some attempt has been made in this paper to identify the criteria for awarding doctoral degrees based on accomplishments in functional areas. However, the actual criteria for awarding such doctoral degrees will have to be determined by faculty and administrators in institutions of higher education that choose to offer such degrees. Future recipients of such degrees should also have a voice in determining the criteria for earning such degrees. Institutions of higher education will also have to collectively negotiate such criteria with agencies and corporations that hire recipients of these degrees, and also with other private and public institutions, such as professional associations, state departments of education, professional and regional accreditation agencies that have a stake and a say in the awarding of doctoral degrees.

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SEBASTÍAN R. DÍAZ

6. KNOWLEDGE MANAGEMENT AS AN APPROACH TO EVALUATION OF ADVANCED GRADUATE PROGRAMS

I first learned of www.facebook.com from a close friend who works as Dean of Students at a regional university. At his home one evening, Chris sat me down at his computer and showed me students' Facebook sites, some tastefully created, some bordering on soft pornography. Several aspects of this new phenomenon intrigued me. First, I was amazed by the ease with which this new medium allowed students to create a sophisticated web presence. Second, I remember feeling inappropriately voyeuristic about the ease with which I could view details of others' lives. Third, I remember being amazed at the high percentage of students at Chris' institution actively participating in *Facebook*.

I was told that Facebook, originally designed for college students, required that subscribers have a valid e-mail address ending in the letters ".edu." Naturally, faculty members and administrators with these types of e-mail addresses began to utilize Facebook as well, some to pry on students, others to interact openly with students on this medium. What started as a social networking website for college students ultimately became a ubiquitous phenomenon that I imagine the original designer, an undergraduate at Harvard, had never anticipated. Recent news headlines focus on how, despite earlier higher estimates, Facebook.com is now valued at only 10 billion dollars.

With initial hesitation, I subscribed to Facebook a few months later. I was asked to provide basic, relatively nonintrusive demographic information, and was given the opportunity to specify the extent to which my personal information was divulged to others on the Internet. By simply providing my name, my e-mail address, and specifying the years in which I graduated from my alma maters, I received in return a tremendous wealth of data. I was immediately reconnected with a couple of friends from college and high school with whom I had lost contact. Given that Facebook provided identities of my fellow alumni's friends, my connections with lost friends and acquaintances snowballed. In a matter of minutes, the Facebook website provided me 100 times more information (i.e., knowledge) than all alumni organizations from high school, college, and graduate school had been able to provide me over the past 20+ years. Yet we should not be too surprised by this recent phenomenon. Long before *Facebook*, *Twitter*, and *MySpace*, Peter Drucker predicted that since information knew no national boundaries, it would form transnational communities of people who, maybe without ever seeing each other in the flesh, would be in communion because they would be in communication (1989, p. 258).

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This chapter explores how Knowledge Management systems can be used to help design, implement, and evaluate curriculum for advanced graduate education. Facebook serves as a good example for understanding Knowledge Management (KM) systems. As Facebook continues to gain popularity, it provides those of us in academia, in particular those involved in advanced graduate education, a model that highlights the benefits of implementing Knowledge Management systems. While many advantages of KM implementation are discussed, this chapter also discusses the challenges created by KM systems.

KNOWLEDGE MANAGEMENT OVERVIEW

One of an organization's most critical competencies is to create conditions that both generate new knowledge and help it to be freely shared (Wheatley 2006, p. 110). Knowledge Management (KM) is the leveraging of collective wisdom to increase responsiveness and innovation (Frappaolo 2006, p. 8). It is the deliberate and systematic coordination of an organization's people, technology, processes, and organizational structure in order to add value through reuse and innovation (Dalkir 2005, p. 3). KM is a term at times used synonymously with Intellectual Capital or Data-Driven Decision Making. However, it is a much broader construct. KM involves a variety of activities, such as 1) generating new knowledge; 2) acquiring valuable knowledge from outside sources; 3) using this knowledge in decision-making; 4) embedding knowledge in processes, products, and/or services; 5) coding information into documents, databases and software; 6) facilitating knowledge growth; 7) transferring knowledge to other parts of the organization, and; 8) measuring the value of knowledge assets and/or the impact of KM (Gupta, Sharma, & Hsu 2004, p. 3).

Disparate perspectives of Knowledge do exist, however. Jakubik (2007, p. 11) compares and contrast four approaches to Knowledge in the literature that mirror diverse perspectives found among KM investigators. The epistemological perspective views knowledge as a scientific construct, whereas the community perspective views it as a social construct. The ontological views how the reality of knowledge is constructed, while the commodity view examines knowledge as an asset. These disparate views highlight opportunities for diverse perspectives for research on and application of Knowledge Management within the academy. Social scientists can adopt the social construct perspective, while econometricians can adopt the commodity view. Drucker, by contrast, identifies three major types of knowledge: 1) continuing improvement of process, product, service; 2) continuous exploitation of existing knowledge to develop new and different products, processes, and services, and; 3) genuine innovation (1993, p. 185).

An alternative and simpler way to define Knowledge Management is to compare and contrast how my university and college alumni contact information was created and disseminated in the past versus how it is done now using Facebook. When I graduated from college, I was contacted by a publishing house every five years to be given the opportunity to purchase for about $80 a printed book that contained the names and addresses of all my fellow alumni. These books, obviously, have become obsolete in light of *Facebook* and other social networking sites.

The first feature that distinguishes the conventional alumni directory from Facebook is that whereas the printed directory contained static information updated every few years, Facebook is updated continuously and dynamically. A second distinguishing feature is that whereas the conventional directory cost approximately $80, the cost of *Facebook* involves a portion of what one pays for access to the Internet. Whereas the conventional directory was text based, *Facebook* is multimedia-based, allowing the user to post information in narrative, picture, and video formats. The conventional directory's information was generated, albeit thoughtfully, by the publishing house. By contrast, information in *Facebook* is generated by its users. Finally, and most importantly, whereas the conventional alumni directory produces no new information beyond what is printed in the book, *Facebook* generates new knowledge continuously as more data is added to the system by its users.

These contrasts and comparisons illustrate how KM borrows from various trends in business and academia. *Facebook's* ability to update continuously its online information is an example of the Just-In-Time approach utilized throughout the for-profit sector. Facebook's relatively low cost as compared to conventional alumni directories illustrates the decrease in cost over time of technological innovations. Facebook's ability to employ multimedia exemplifies the new media literacy quickly becoming a necessity for workers in the Knowledge Society. Since information on Facebook is generated primarily by its users, the site reflects the trend toward user-generated systems and student-centered learning. Most importantly, since Facebook generates new information in return for the information provided by the user, it illustrates the feature that distinguishes KM systems from conventional data and information systems, namely that new information and knowledge is generated by KM.

As an everyday consumer, you might be currently using sophisticated KM systems without realizing it. My *Netflix* account utilizes a KM system to bill services, provide online streaming of movies, and process my requests for DVDs to be delivered to my home. What fascinates me most about my *Netflix* account, however, is the evaluation process inherent in their KM system. *Netflix* occasionally surveys me about how quickly I received DVDs in the mail (a single item asks me to click the day I received it). *Netflix* also surveys me in a variety of ways about how much I like a particular movie. The more I complete these evaluations, the more that *Netflix* warehouses data on my likes/dislikes. Netflix then takes that information and suggests for me movies that I might enjoy. I do not know whether they use a sophisticated cluster analysis or some other statistical means, but I am impressed by (and also find it eerie) how accurate their predictions are regarding which movies I like.

Doctoral, graduate, undergraduate and other programs are experiencing a host of challenges created primarily, and quite simply, from the inevitability of change. One change in particular presents advanced graduate education programs with both overwhelming challenges and exciting opportunities. That change is the arrival of the Knowledge Society, which can potentially change advanced graduate education as much as the ways in which we now connect with college alumni or rent movies.

Peter Drucker referred to the Knowledge Society as post-capitalist since knowledge has become the resource rather than a resource, thus fundamentally changing the structure of society (1993, p. 45). Clark Kerr warned similarly that knowledge has never in history been so central to the conduct of an entire society, and the university, he reminded us, is at the center of the knowledge process (2001, p. 66). As the 1990s progressed, it became clear that intangible, intellectual capital assets were more important than originally thought, and in fact, were driving a stealth-like sea change in the U.S. economy that was not immediately perceptible (Moore & Craig, 2008, p. 9). One manifestation of that sea change is the increased transparency created by technology, and its implications for how advanced graduate education will be evaluated in the future.

KNOWLEDGE MANAGEMENT FOR ADVANCED GRADUATE EDUCATION

Knowledge Management is certainly not a panacea for the quality improvement challenges faced by advanced graduate programs in the academy. And as Thomas Stewart, a major figure in the Intellectual Capital movement reminds us, Knowledge management isn't the first step toward running a successful business in the knowledge economy, it's the last (2001, p. 53). KM can, however, provide us a better arsenal of tools with which to adapt to the changing context of advanced graduate education in the United States. If done effectively, KM can lead to better decision-making capabilities, reduced "product" development cycle time (for example, curriculum development and research), improved academic and administrative services, and reduced costs (Kidwell, Vander Linde, & Johnson, 2000, p. 31). Postsecondary institutions are obvious sites to explore the implementation of KM principles within the public sector especially since the primary business of academia has long been producing knowledge (Metcalfe, 2006, p. 3). Borrowing from an evaluation perspective, KM's benefits for advanced graduate education are examined here as they relate to respective programs, their faculty, and their students.

Throughout this chapter, the term advanced graduate education is used in place of doctoral education since it better reflects the trends emerging in post-undergraduate education. Much as popular media states with respect to aging, "40 is the new 30," postdoctoral education is the new doctorate. As the new Knowledge Society further emerges, true lifelong learning will motivate individuals to seek extensive formal education both prior to and beyond the doctorate. A physician who has earned the M.D. degree may choose to subsequently pursue a Master's degree in either education or informatics to better prepare her for an academic position. An attorney specializing in intellectual property law may choose after completing the J.D. degree to pursue a Master's degree in intellectual property. An engineer wishing to update his skills in a new nanotechnology may pursue a formalized non-degree program. Throughout much of the basic sciences, former expectations for earning the doctorate as a minimal requirement for academia have been replaced by expectations to have completed postgraduate studies. Inevitably, knowledge workers will be expected to continue their education, formally or informally, throughout the life of their career. Although the concepts examined in this chapter certainly apply to doctoral education, Knowledge

Management practices are germane to all aspects of education that may occur beyond undergraduate training.

KM's Utility for Advanced Graduate Programs

KM is nothing new to the admissions process for advanced graduate education programs around the country, at least not for its applicants. Regardless of whether an institution is employing KM to guide its admission process, be assured that some, if not most of these applicants are already utilizing KM systems to better inform their preparation of application materials. For example, applicants may utilize social networking sites to explore more responsibly and in-depth the nature of advanced graduate studies and the respective faculty at a particular institution. In a similar fashion, institutions can utilize KM to explore more responsibly and in-depth the nature of applicants to advanced graduate programs.

On a less intrusive level, however, institutions fail to simply take advantage of the wealth of data they already collect on a particular applicant, especially when that applicant goes on to be a advanced graduate student, and eventually an alumnus. Note that KM systems do not necessarily require that new data be collected. Instead, KM systems redefine how existing data is structured and analyzed. By taking data from separate metaphorical silos and unifying them in a single KM system, advanced graduate programs could better analyze the trends that emerge from the data when viewing a student longitudinally from admission through to post-graduation. Such a single-silo KM system could utilize predictive modeling to identify when students may be at higher risk for academic failure, thus prompting an appropriate intervention. Such a system could also be used to help students network with colleagues within and outside their institution (and academia) who share similar research interests. And for our colleagues in Development offices who have to worry about the banality of raising money for the university, these same predictive models can help improve the amount of money eventually obtained from alumni.

This single-silo scenario highlights a major challenge to the implementation of KM systems within academia. Effective KM systems ultimately require that closely guarded fiefdoms of data repositories be merged. For this reason, many higher education institutions have experienced difficulties in implementing comprehensive, university-wide KM systems. Regardless of this challenge, advanced graduate programs should first strive to create unified KM systems focused on their own programs. Although it is highly unlikely at a larger public university that offices of Admissions, Student Records, and Alumni Affairs will relinquish data (i.e., power) to one another, it is feasible for a single department or college to request admissions, academic achievement, and alumni data from these departments, and subsequently merge that data into a smaller KM system. Research into knowledge economies stresses the self-reinforcing advantages of having knowledge producers, suppliers and support services concentrated in a certain geographic area as knowledge can be shared, integrated and transferred through relationships of proximity (Sharma, Ng, Dharmawirya, & Lee 2008, p. 156). For this reason, universities and/or their individual colleges and departments are poised to fare well in the Knowledge Society.

KM's Utility for Advanced Graduate Education Faculty Members

KM is already impacting the way faculty in advanced graduate education programs teach, conduct research, and provide service to their profession(s). At a very simplistic, even symbolic level, when a faculty member uses a computer to store documents and other files used in teaching, she is in effect utilizing a Knowledge Management system. Before the advent of computers, I was not a particularly organized person at work. I never gained the knack for storing paper files and folders and titling them in a way that they could easily be retrieved at a later time (and I never had the status to have a secretary assigned to do this for me). However, once computers became ubiquitous tools in the workplace, I suddenly became very organized, given that the computer system allows me to easily store and retrieve files.

Many faculty members already utilize Knowledge Management systems when teaching their courses. Learning management systems (LMS) such as Blackboard or Ecampus catalog not only the course materials, but in some cases, in particular classes involving online learning, the very interactions that take place between students and the instructor. These learning management systems have profound implications for the teaching role. On one hand, these systems are slowly converting tacit information that was once the sole property of the instructor to explicit information stored permanently on the University's computer system. It is conceivable that if an instructor were to utilize fully all of the features in a given learning management system, he would eventually work himself out of a job. All of the faculty member's lectures (including both PowerPoint slides and an audiovisual recording of the lecture), written comments, feedback, and assignments would be explicitly recorded on the University system. For this reason, the use of KM systems has profound implications for changing faculty roles. It is possible however for faculty members to utilize KM systems to improve advanced graduate level teaching while taking sensible precautions to safeguard their own intellectual property and job security.

Teaching

Teaching and learning in online environments necessitates the use of inherent KM systems. Over time therefore, we will see a wealth of evaluative data being generated for online learning courses. Many of the doctoral students with whom I work, especially those focused on technology, obsess in their dissertation work about comparing the efficacy of online and respective face-to-face courses. I believe these types of research questions miss the mark. Rather than arguing whether online teaching is better than conventional face-to-face teaching, or vice versa, we need to recognize how online learning is impacting conventional courses more fundamentally.

There exists the danger that over time, online learning will be perceived as being more credible than conventional face-to-face courses. I recognize this sounds counterintuitive. However, most of us who work in advanced graduate education, much of which is conducted conventionally face-to-face, fail to capture any data that measures outcomes. By contrast, our colleagues in the online world who are fighting hard to dispel perceptions of fly-by-night diploma mills are often doing an impressive job of collecting, analyzing, and utilizing data and knowledge that informs

their practices. If we fail to establish, via a rigorous examination of assessment and outcomes data, the efficacy of conventional face-to-face instruction, we may find that online and other markets will encroach upon ours, and that over time, those of us teaching more conventionally will be the ones battling negative perceptions. Regardless of whether your institution offers advanced graduate education in face-to-face, online, or blended environments, KM systems need to be adopted to help inform the efficacy of instruction.

Research

Knowledge Management systems will impact our research role primarily in two ways, First, KM systems are calling to question the adequacy of our existing methods for disseminating research. Second, KM systems can significantly improve the way that we conduct research as part of social networks and/or communities of practice, in particular with respect to the efficacy of advanced graduate level education. Each of these impacts needs to be considered carefully for the future academicians we are preparing in our advanced graduate programs.

The ease with which individuals can now establish online research networks will eventually call into question the utility of our existing organizational structures for academic departments. I seriously doubt that academic departments will cease to exist. However emerging KM systems will continue to redefine the particular social networks utilized by scholars to collaborate with one another. As one example, my colleagues and I recently published a piece related to the Community of Inquiry (CoI) survey instrument we developed together (Arbaugh, et al., 2008). Although my co-authors and I have been working for almost 2 years on this particular strand of research, I have yet to meet in person 2 of these individuals.

If we expand this possibility to our advanced graduate education students, we may find in the future that they will not be limited to working with scholars in their own particular department, college, or university. Instead, students may be encouraged to seek out worldwide those particular scholars with whom their research interests are most parallel. As we prepare advanced graduate education students to become future academicians, we bear some responsibility towards preparing them for the particular nature of work in the Knowledge Society that may be quite different from what has existed over the past 50 years. If we want our students to be prepared to work effectively in a wired world, we should modify our advanced graduate education programs to encourage these practices, not only for the sake of preparing our advanced graduate education students for the future, but also to help us as teachers catch up with emerging practices.

Knowledge Management systems continue calling to question the lunacy of our conventional practices for disseminating research. Being careful not to throw out the baby with the bathwater, our conventional practice of disseminating research in paper journals has been obsolete for quite some time now. Although some academics will question the rigor of online academic journals, the cynic in me believes that the true issue is the changing economics of the publishing world. In fact, the challenges faced by academic publishing are quite similar to the challenges faced by the popular

music industry, in which end-users of the information are pushing for more convenient access to that information.

One particular College of Medicine's library with whom I worked recently utilizes what I have found to be the most exciting and progressive Knowledge Management systems. When the college was formed almost 10 years ago, they chose to invest heavily in online access to literature. The ease of access to library information by students, faculty members, and clinical preceptors is profound in and of itself. Furthermore, this electronic access allows the KM system to monitor and analyze how frequently and in which particular manner electronic sources are being utilized. Faculty development specialists are thus able to compare and contrast trends in library use by role, geographic region, or time period.

Let us be honest with ourselves. How many of us conduct research in which the respective reviews of literature are heavily influenced by their ease of access? That is, how many of us are actually taking the time to walk to the university library to read paper copies of journals? We all do it somewhat grudgingly on occasion, especially when we need a particular citation that is pivotal to our literature review. However, most often we rely heavily on those journal articles that are easily accessible as PDF documents on the web. In the future, advanced graduate education programs need to embrace this change by advocating for policy that invests heavily in the online access to published research. We may find in the future that a significant portion of the University library's square footage will be devoted to other uses as KM systems allow publishers to charge for access to electronic journals based on usage.

Outcomes Measurement in Advanced Graduate Education

Much as has happened to its sibling professions (Law, Medicine, and Clergy), academia is quickly being demystified. Peter Drucker himself sounded a warning over 15 years ago that has come to haunt the academy:

> Indeed, no other institution faces challenges as radical as those that will transform the school. The greatest change, and the one we are least prepared for, is that the school will have to commit itself to results. The school will finally become accountable (1993, p. 209).

When President George W. Bush's administration commissioned a study examining science and technology education in the USA titled, *Rising Above the Gathering Storm,* the report's authors reminded us that our K12 and postsecondary educational systems are inexorably linked to our capitalist engine. The report stated that inadequacies of our system of research and education pose a greater threat to U.S. national security over the next quarter century than any potential conventional war that we might imagine (2007, p. 25). That was a remarkable statement when you consider it was made in the midst of ongoing US wars in both Iraq and Afghanistan.

Advanced graduate education is certainly not immune to the increasing external scrutiny that will continue to be placed on the academy. We should for the sake of self-preservation resist the temptation to bemoan the mysterious, mystical aspects

of advanced graduate education that are impossible to measure as an argument against measuring outcomes. It is true there are aspects of education that are very difficult to measure, and as Professor Einstein once reminded us, not everything that counts is counted, and not everything that is counted counts. Although KM has value for institutions of higher education, we should not simply re-appropriate KM as it has been popularized in the business sector (Petrides & Nguyen 2006, p. 22). Regardless, there are many outcomes related to advanced graduate education that we should be measuring. KM systems can help us to measure those outcomes and to ask some tough questions about the efficacy of our programs.

KM systems can also help us to better compare and contrast academic programs throughout the country. Emerging technology makes it relatively easy for institutions to merge data and allow the comparisons to bear out. Rather than allowing fear to guide our approaches to evaluation, we should embrace such efforts with a deep conviction that the purpose of evaluating programs is not to label them with simplistic good/bad dichotomies, but instead to highlight their unique strengths so that students can find a good fit with the institution. In short, it is always a better practice to beat your critics to the punch by engaging in rigorous self-evaluation as opposed to waiting for a vindictive scrutiny to rain down upon you from outside the academy. If we fail as educators in advanced graduate education programs to evaluate our own efficacy in a candid and rigorous fashion, we will ultimately regret not taking such initiative, much as many K12 educators have regretted after experiencing the mandates of the No Child Left Behind (NCLB) legislation.

OPPORTUNITIES/CHALLENGES RESULTING FROM KM

Knowledge management systems will provide advanced graduate education programs three distinct advantages: 1) transparency; 2) connectedness, and; 3) speed. KM systems however, present three particularly difficult challenges to advanced graduate education programs: 1) transparency; 2) connectedness, and; 3) speed.

Transparency

Transparency is a popular topic right now in the fields of management and leadership. And it is a phenomenon that provides distinct advantages as well as serious challenges to advanced graduate education programs. KM systems are closely related to the transparency movement in that when implementing a KM system effectively, transparency is inevitable. No effective KM system can exist without increasing significantly the transparency of the organization. There are no exceptions to this rule.

Although a difficult topic to ignore given the recent book co-published by Warren Bennis (2008), actual implementation of transparency initiatives are a difficult process, as they threaten existing power structures more so than any other factor. In general, we should expect any significant change within the academy to be, at best, difficult. Integrating a KM initiative within an organization and within the daily activities of its staff will require a change in the way that they work (Bishop, Bouchlaghem, Glass, & Matsumoto 2008, p. 19). I remember a particularly challenging curriculum

revision at a medical school in which I worked. Our move to Problem Based Learning, I believe, was being rejected more so for how it would modify faculty members' workweek hours than for any pedagogical-philosophical reason. At the time, this reality was something whispered in secret among colleagues, and thus never discussed openly in public forums. Imagine a more transparent organization where such realities are made apparent through the use of KM systems, in and of themselves public forums for evaluative information.

Consider the transparency that was created by the www.RateMyProfessor.com website, magnify it multiple times, and you begin to get a sense of the transparency that will be part of our daily life as academicians. The same voyeuristic unease I felt when my friend Chris first showed me Facebook.com will be felt by members of the academy who are not used to this type of intrusive data collection. This is a particularly difficult challenge for academicians given that many of us came to this profession to enjoy academic freedom.

Connectedness

Knowledge Management systems allow all advanced graduate education students and their faculty to easily connect with research partners throughout the world. The adage, It's not what you know but who you know does have merit, and as educators of advanced graduate education students we should consider more thoughtfully how we can help students develop their own social capital. Education may play a central role in the creation of social capital (Halpern, 2005, p. 163). As educators, we must be mindful of our role in creating KM structures that help our students and future academicians build and enhance social capital and the respective networks in which such capital resides.

When conducting my own dissertation research, my faculty asked that I try to contact Dr. John Tukey, the famed statistician upon whose work my computer-simulation was based. I was quite surprised (horrified actually) when after finding a phone number for his home, I called and Dr. Tukey answered the phone after the second ring. In the future, KM systems might initiate communications more frequently in the opposite direction, from experienced scholar to doctoral student, as we are expected to assess the progeny of our scholarship. The legal profession places a heavier burden on its academicians to keep track of how their work is utilized by others. Citation analysis isn't as de rigueur in the social sciences as it is in law, yet soon it will be common practice in all disciplines and professions. The ease with which KM systems will allow us to analyze citation trends will shift the quantity/quality balance of publications towards the latter side of the seesaw. Furthermore, visual and graphical representations of citation trends will allow us to analyze which academic institutions are following up on our research, and where the ethereal institutional hubs exist for certain research topics.

For KM practitioners, it is important to note that as higher education is becoming more tied to global markets, the value of knowledge assets will be increasingly determined on a global stage (Metcalfe, 2006, p. 13). One area of development that highlights the advantages of our connectedness is the notion of the commons in

knowledge surrounding free computer code. Knowledge is nonrivalrous in that your knowing something doesn't lessen the amount I can know (Lessig, 2001, p. 57). Connectedness thus ups the ante on global competition. As Friedman warned in The World is Flat, if you an American, you better be good at the touchy-feely service stuff, because anything that can be digitized can be outsourced to either the smartest or the cheapest producer, or both (2007, p. 15). A similar warning is offered by Daniel Pink, author of A Whole New Mind: We must perform work that overseas knowledge workers can't do cheaper, that computers can't do faster, and that satisfies the aesthetic, emotional, and spiritual demands of a prosperous time (2006, p. 61).

Increased connectedness threatens advanced graduate education on a more immediate level. First, the increased ease with which students may now use Knowledge Management systems to find relevant citations may result in over-citation. We may come to the point where advanced graduate education students, feeling the pressure to substantiate their claims, fail to produce any new insights as they devote the majority of their efforts to citing any phrase that sounds like an original thought. More importantly, however, increased connectedness with the world comes at the price of less time spent in soulful reflection. This reflective practice continues to distinguish academia from other professions, and constitutes a major advantage that we offer our society and communities: thoughtful practice.

Speed (Just in Time)

Speed is both a blessing and a curse. The speed with which we can collect, analyze, and disseminate evaluative data using KM systems makes it easier to improve the quality of our academic programs. In particular, the increased ease and speed with which we can now warehouse and analyze qualitative narrative data presents exciting opportunities. Software developments in both voice recognition and narrative analysis are growing geometrically. For example, whereas organizational culture in the past was assessed through surveys, focus groups, and interviews, future assessments will be automated through KM systems. If you want to gauge the true culture of an organization, why not conduct a narrative analysis of every document, email message, and other electronic artifact that ever originated from there? Although this may sound like Big Brother, it has already arrived. Advanced software systems will allow institutions to compare and contrast in a single day the organizational culture for the past two presidents, deans, etc. by comparing the tone of all electronic artifacts produced during their respective tenures.

The speed with which we can collect, analyze, and disseminate evaluative data using KM systems also increases demands on quality, quantity, and response times. At the most basic level, consider electronic mail. Although email itself is not always used as a KM system, it highlights how an emerging technology can change expectations. Many of my colleagues and I are expected to respond to emails within a day or two. Yet we are all too aware that a day spent thoroughly reading and responding to emails is not necessarily a day spent adding value to our work. In the same way, automated KM systems may overwhelm us with information that we will not take the time to ever review thoughtfully, or more importantly upon which we'll act.

One of the basic tenets of Program Evaluation is that if you are not going to utilize a particular set of data, you should not collect it in the first place. Here is one of the potential pitfalls for the Knowledge Management movement. As we collect and warehouse data that will never be used, we reinforce in our stakeholders negative feelings and attitudes towards KM.

In some ways, the academy has long been the exemplar of Knowledge Management. Our research efforts seek to create, catalogue, and distribute new knowledge. Should we blindly, therefore, jump on this bandwagon? The answer is no, and yes. I liken our challenge in the academy to that of other innovators who, although they came up with the original idea, eventually lost market share as the competition got fiercer. Henry Ford came up with the original idea for the mass production of automobiles, yet the company he founded is losing viability. America Online was one of the first online service providers that reached mass markets, yet their market share is decreasing ever so rapidly. Although we in the academy may have been the original Knowledge Management experts, we now stand to potentially lose our own market share as the institution that produces new knowledge. It may well be that the needs of today's knowledge worker cannot be adequately addressed by the university as we know it today and that new institutions will emerge to fill the widening vacuum developing between traditional higher education and the demands of today's knowledge-intensive workplace (LaRue, 2002, p. 280).

In advanced graduate education, we are helping produce both our future advocates and future critics. Some graduates will pursue academic faculty lines, while others will assume administrative positions designed to scrutinize our efficacy (remember Drucker's warning about accountability of the school). Regardless, both of these groups will have been raised in the Knowledge Society, and so our antiquated approaches to change will seem to them as outdated as a rotary dial on a landline telephone. Much as we pursue our academic work thoughtfully, we should also reflect on the inevitable changes that will transform the tenure-track faculty life. And rather than trying to play catch-up with the Facebook generation (Facebook.com will itself inevitably be outperformed by another young upstart), we should instead prepare for the long haul, and teach accordingly our future academicians.

At the beginning of this chapter, I identified three aspects of Facebook that intrigued me. These three aspects may help us look into our own future as advanced graduate education programs adjust to the changes in our Knowledge Society. The ease with which students create sophisticated pages on Facebook reminds us that many aspects of our own work as academicians will continue to be trivialized by technologies. This is a wonderful opportunity for us to reflect thoughtfully on those aspects of our work that truly add value to the institution (and those that do not). The voyeuristic unease I felt when glancing at students' websites reminds us that as our electronic commons proliferates, many intimate aspects of our professional lives will become more transparent, not only to our colleagues and students, but also to the members of our democracies that ultimately fund our paychecks. And much as I was amazed at the number of students at Chris' institution participating in Facebook, I believe we in the academy will be amazed by the frequency and depth with which our students utilize technologies that contribute to Knowledge Management efforts.

Given the potential plethora of knowledge available both inside and outside the organization, any business strategy today that ignores the tenets of Knowledge Management is a formula for certain failure (Frappaolo, 2006, p. 5). In fact, the main aim of earning a doctorate gets at the very core of Knowledge Management: An individual who has earned the doctorate must evidence that s/he has created new knowledge. It behooves us to better prepare for the changes Knowledge Management brings to our academic institutions and respective advanced graduate education programs.

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SECTION III:
BEYOND PRACTICE: THE DOCTORAL DEGREE BEYOND THE DISCIPLINE, SUBJECT, AND FIELD

WILLIAM L. WHITE AND JASON GRINNELL

7. THE EDD V2.0

Imagining a New Doctorate in Education

Let there be no mistake. With almost 200 programs churning out more than 7,000 educational doctorates per year, the field of education is awash in a tsunami of mediocrity that cripples the discipline. Debate of the relative merits of Ph.D.s and Ed.D.s masks the true nature of the problem – the prevalence of doctoral programs that lack the rigor, will, and resources to create intellectual leaders and to ensure honest and well-articulated debate over the future of educational theory and practice. This chapter examines the practical consequences of the increased number of Ed.D.s and Ph.D.s in education and suggests that fundamental changes in graduate education studies are needed if the quality of advanced degrees in education is to be improved. We understand that the changes presented in this chapter not only challenge entrenched and ossified conceptualizations of terminal degrees in education, but that they also would require tremendous courage to implement. Even when faced with these obstacles, we fully believe that a thorough examination of the educational doctorate, within socio-political (Bourdieu 1990) and professional community (Fairclough 1995) parameters, will provide an appropriate context for revisions that not only promise but also deliver quality programs and graduates.

Currently, a fundamental tension lies at the heart of the doctorate in education. Proponents defend it as both a scholarly research degree, akin to the highest level terminal degrees in other fields, and a practice-oriented program of studies intended to train future generations of administrators and instructional leaders. The tension between purposes is exacerbated by a number of other worrisome issues, including a massive expansion in the number of doctorates awarded, the time it takes typical doctoral candidates in education to complete their degrees, and the lack of a clear mission inherent in multi-purpose, omnibus degree programs. Each of these elements weakens the doctorate of education and lowers the prestige of the degree. Responding to the very real challenges that lie ahead means creating smaller doctoral cohorts that undertake graduate studies with the purpose of engaging in theoretical and philosophical aspects of educational studies rather than practice-based involvement. Likewise, graduate-level education programs must work toward creating full-time programs that help develop communities of scholars who engage in learning through dialogical processes and close association with other intellectuals. Finally, we must create a clear distinction between practical and theoretical programs in recognition that the sort of intellectual talents and habits cultivated by a research degree are not those required by either teacher trainers or those administrative personnel in the political business of public education.

D.M.C. Pérez et al., (eds.), Higher Education and Human Capital: Re/thinking the Doctorate in America, 91–102.

Critiques and proposals for change should not, however, emanate from an ahistorical vantage point. The key to understanding the current state of all doctorates, but specifically the doctorate in education, lies in the history of the U. S. doctorate and its rapid expansion. Indeed, from the origins of the American doctorate in 1861, the number of doctorates granted in the United States has grown dramatically. From the granting of the first American doctorate by Yale in 1861 to the culminating doctoral onslaught brought on by the Soviet launch of Sputnik and other late 20th century national security issues, real or imagined, the American doctorate started slowly but soon took on a life of its own (Prewitt 2006; National Science Foundation 2006; Thelin 2004). Indeed, from the approximately 3,500 doctorates awarded prior to the beginning of the 20th century, another 100,000 were added by 1960. In the last 40 years of the millennium, however, the growth in doctoral programs and doctoral degrees accelerated at a pace unlike any seen in the past. During these years, an additional 1.2 million new doctorates, or about 89% of all American doctorates awarded, were granted in fields ranging from Atmospheric Dynamics to Zoology (National Science Foundation, 2006).

Fundamental to understanding this historical growth, the current state of American education, and the path that has brought us to this critical period is the impact of political and social issues on policy and public thought. To be sure, American education and political policy have always been capable of responding to challenges with remarkable rapidity. In the aftermath of World War II, fear of economic blight and dissatisfaction among returning veterans who had seen, tasted, and smelled the world outside their small farming communities led the American government to enact the Servicemen's Readjustment Act of 1944, better known as the "GI Bill." Less than 15 years later, another mid-20th century political and identity crisis, the Soviet Union's launch of the Sputnik satellite, constituted the foundations on which the National Defense Education Act (NDEA) of 1958 was quickly built. Finally, global challenges to America's economic, political, cultural, and educational hegemony, outlined in the National Commission on Excellence in Education's A Nation at Risk, provided the impetus for sweeping changes that eventually led to the enactment of legislation related to the "No Child Left Behind" movement. Although these national initiatives were enacted at different times in the history of American education, they share the common denominator of attempting to improve society and personal lives via increased access to an improved educational system. Each of these legislative actions also opened the doors of higher education to thousands, if not millions, of students who had long been deprived of access to higher level education and who clamored for opportunities to improve their economic situations. And lastly, each of these pieces of legislation attempted to impact society in ways that would benefit the military-industrial-government triad (White 2008).

Increased capacity and interest in education served as the catalyst to swell the numbers of doctoral students and doctoral recipients in the late 20th century. From 1999 onward, more than 40,000 doctorates have been awarded each year, with approximately 60% granted in science and engineering fields. When disaggregated by individual disciplines, however, the terminal degree in education, a non-science and engineering field, is the most commonly awarded doctorate (see Table 2 for list of

the most commonly awarded doctorates by field) and accounts for approximately 16% of the total doctorates conveyed each year. Certainly, the legislation associated with the Nation at Risk report and that with the No Child Left Behind initiative, especially as it relates to notions of high-quality teachers, have acted in concert to increase the number of educators pushed to work toward a terminal degree in the field. However, professional advancement and increased salary scales have also played a significant role in the rising number of these degrees (Shulman et al. 2006; Golde & Dore 2001). All in all, however, the push to the education doctorate is guided by instrumental rather than intrinsic motivation, creating questions that must be answered if the education doctorate is to escape the quagmire of negative perceptions and mediocre results in which it is currently engulfed.

Table 1. U. S. doctorates awarded, 1920–1999

Area of study	*Number of doctorates awarded*
All fields	1,354,873
Science & Engineering (S&E)	835,221
Biological sciences	167,179
Physical sciences	152,857
Engineering	146,876
Social sciences	136,698
Non-science and Engineering	519,652
Education	256,014
Humanities	171,870
Professional fields/other	63,670

Adapted from U. S. doctorates in the 20th century (NSF, 2006, p. 12)

Table 2. U. S. doctorates by total and select field of study, 1999

Area of study	*Number of doctorates awarded*
All fields	41,140
Education	6,557
Engineering	5,337
Biological sciences	5,600
Psychology	3,667
Mathematics and Computer Sci.	1,935
Agricultural sciences	965

Adapted from U. S. doctorates in the 20th century (NSF, 2006, p. 13)

In addition to changes in the purpose of the doctorate, trends in the amount of time taken to earn the doctorate have also changed over time. The National Science Foundation report, U.S. Doctorates in the 20th Century (National Science Foundation, 2006), notes that over the course of the 20th century, there was a gradual, but perceptible increase in the time it took candidates to complete all degree requirements. This trend is evident in all three measures of degree completion time: Total Time to Doctorate (TTD), the total calendar time between receipt of the baccalaureate

and the doctoral degrees; Registered Time to Doctorate (RTD), the time in attendance in post-baccalaureate programs prior to receipt of the doctoral degree; and Post-baccalaureate Time to Doctorate (PTD), total calendar time from the first enrollment in graduate programs and the receipt of the doctoral degree. Overall, the TTD for doctoral students, between 1995 and 1999, rose to its highest level, 11 years, in history. Although most non-science and engineering programs generally require more time to complete than science and engineering doctorates, the field of education, at 20 years TTD, surpasses all other disciplines by a minimum of 5 years and is double the overall TTD average (see Table 3 for additional information on specific fields). The significant elapsed time from the end of baccalaureate programs to completion of the doctorate contributes to the field of education's position as the field with the oldest average age (43), by almost 11 years, of all doctoral programs (Shulman et al. 2006).

Although there are some easily identifiable reasons for this "age gap" in education, including professional experience requirements for entry into education doctoral programs, it nonetheless appears likely that obligations to family and work erode the ability of doctoral students in education to fully engage doctoral studies. The question of student status is equally important in relation to the question of age. Many candidates for the doctorate in education work toward their degrees as part-time students and therefore take considerably more time than students in other areas. It is important to note that the age of doctoral candidates is not the central question. Rather, the reasons behind belated entry into doctoral studies and more importantly, the effects that part-time studies have on doctoral programs must be examined critically. It appears likely that understandable concerns with family obligations and commitments to career prohibit doctoral students in education from fully engaging the intellectual nature of doctoral studies and leads to a lack of socialization with intellectually committed peers that undermines the dialogical nature of learning in a community of scholars that perceive and act upon the need to approach learning as a collaborative effort (Shulman et al. 2006; Golde and Dore 2001).

Table 3. Time to doctorate

Area of study	*TTD*	*RTD*	*PTD*
All fields	10.6	7.3	6.0
Science and Engineering, all	9.0	7.0	6.0
Social sciences	11.0	8.0	6.0
Computer sciences	10.0	7.4	6.0
Agricultural sciences	11.1	6.8	5.0
Engineering	9.0	8.0	6.0
Non-science and Engineering	15.1	8.3	6.0
Education	20.0	8.3	6.0
Health sciences	14.2	7.8	6.0
Professional fields/other	13.6	7.8	6.0
Humanities	11.8	8.6	7.0

Adapted from U. S. doctorates in the 20th century (NSF, 2006, p. 37)

The descriptive statistics shown below suggest significant differences between those students who pursue the doctorate in education and their counterparts in other fields. Statistics demonstrate that students in educational doctoral programs take more time to complete the degree, as evidenced by the 20 year average TTD, and suggest that they are older, and more likely to return to their previous positions, if indeed they ever left them. Educational doctoral students "have often worked as teachers before pursuing the doctorate" and consequently are in the middle stages of their careers rather than at the beginning (Golde and Walker 2006 p. 246). Moreover, education doctoral students (1) self-finance their degrees, (2) often attend school part-time, and (3) typically possess an undergraduate degree outside education (Golde and Walker 2006; Shulman et al. 2006). Portraits of doctoral recipients, while important in understanding the educational doctorate, provide only a surface-level understanding of the educational doctorate and the issues and challenges that it faces. When considered closely, these statistics suggest strong undercurrents that swirl and push the educational doctorate hither and fro in a schizophrenic search for meaning and place on the doctoral seascape. On the one hand, doctoral candidates in educational fields seek the terminal degree in the field to satisfy state and federal mandates for high quality teachers and certified administrative personnel, for permanent certification, or for increased financial remuneration (Levine 2005; Levine and Dean 2007). These practical and financial rationales may be in tension with another set of interests – the search for insight into the philosophical, social, cultural, and political influences that guide educational practice and curriculum development – that guide what appears to be a minority of educational doctorate students.

A solution to the problems identified above requires recognition of tensions between the practical and philosophical foci for the education doctorate. They undermine the very core of the doctoral degree in education and render it ineffectual in producing either competent administrators or practicing intellectuals. Concerns over quality lead, ultimately, to questions of purpose, validity, and viability of the advanced degree in education. When measured by the litmus test of school-based change and performance improvement, the doctorate in education has failed to achieve measureable results (Miklos 1992; McCarthy 1999; Shakeshaft 1999). In addition, the lack of a clear intellectual focus calls into question education's claim to a status as a true, separate discipline (Richardson 2006).

Perhaps the failure to assist schools in improving their practices, performance, and student learning outcomes is not entirely the fault of the doctorate as such, lying instead in the current conceptualization of the Ed.D. If, indeed, the Ed.D. is intended to provide training in effective and efficient administrative practices and the Ph.D. in education are conceptualized as the academic and scholarly research degree track, there should be a significant difference in the requirements for the respective degrees. Surface differences evaporate in face of reality. Distinctions between the programs – including course requirements, field experiences, dissertation topics, and graduation criteria – are minimal and lead to a questioning of the field's purpose (Anderson 1983; Dill and Morrison 1985; Murphy and Vriesenga 2005). We might well ask, then, "What is a doctorate?" We believe that a doctorate is recognition that the educational limits of formal coursework in a field of study have been reached.

The possessor of a doctorate has the recognized ability to join the community of those who produce and discover, rather than those who are tasked with consuming and applying knowledge. The dissertation, as an original contribution to the discipline, is a demonstration of that ability. Once the established scholars charged with reviewing the dissertation have accepted it, the author is considered to have proven her ability. She is then expected to pursue further research and expand the horizons of the discipline. This is a fundamentally different set of expectations than that placed on recipients of undergraduate or even other types of graduate degrees, and it cannot be realized, much less demonstrated, by any accumulation of coursework or examinations, nor by dissertations that rely on formulaic rigor to describe best practices rather than explore previously uncharted conceptualizations of education.

The sort of intellectual scholarship that lies at the conceptual core of the doctorate can and must be distinguished from other sorts of art and science. The skill sets vital to teaching, administration, management, experimental design, data collection and analysis, and financial planning are all valuable, challenging, and worthy of our respect. The same must be said for the type of wisdom and insight disseminated by the published narratives of talented teachers and administrators.

The original research involved in true scholarship, however, is of a qualitatively different kind. It breaks new ground, asks new questions, and pushes the theoretical boundaries of what is known. Even if it should turn out that no one in recorded history has ever multiplied the number 364 by 476, for example; to be the first to calculate the product as 173,264 would not constitute scholarship. The pursuit of the product of these numbers is simply an application of insights into mathematical calculations that others have uncovered. While we honor and believe that the application of theory to practice has vital real-world purposes, we also believe that the result of successful application of theory to practice does not demonstrate that the calculator is a mathematician. If our professional goals call for such calculations, however, we should be grateful to have someone close at hand able to quickly and accurately make them. If that is what the situation demands, to insist the calculator have a doctorate does no one any good. Much of terrain currently occupied by the doctorate in education fits this model.

It is our contention that a great deal of harm stems from confusion over the nature, value, and role of the doctorate. The sort of scholarship that has traditionally served as the core of the doctorate across all disciplines is distinct from the practical concerns and interests of the professional seeking to improve her career skills. This is, of course, not to praise or belittle either. An engineer's focus on applications and problem solving may lead to more efficient bridge designs and innumerable other benefits, but it is a different object of study than the physicist's investigation of the nature of the fundamental forces that hold the bridge together. To pretend otherwise or to replace either professional with the other is to invite disaster. Likewise, this metaphor can be expanded to the field of education. The practicing secondary administrator or instructional leader requires a different set of skills than a doctor of education. One needs to discover, within the confines of theories, best practices. The other needs to discover theory within practice. The tensions between the practical goals and values of students, the more abstract and theoretical goals of idealized education doctoral

programs that value intellectual curiosity and theoretical knowledge, and the reality that neither is being accomplished renders the doctorate of education weak on a myriad of levels. First, of course, is the inability to articulate clear goals or to accomplish the murky objectives assigned to the degrees.

A lack of true purpose and the resulting lack of academic status, then, create challenges to the doctorate of education that might be insurmountable. These challenges, of course, have not gone unnoticed and have given rise to calls from such distinguished authors as Arthur Levine (2005) for the complete elimination of education doctorates in favor of terminal masters degrees in professional education. Others (Shulman et al. 2006) propose retaining the doctorate in a significantly altered state, hoping that decreased enrollments will enhance the quality, purpose, and results of doctoral studies in education. Missing in this "either/or" approach to addressing the inconsistencies inherent in the doctorate of education is the need for those practical administrative, classroom, and research skills required to improve the practice of education; as well as a theory-oriented education path that leads, as in doctoral studies in other fields, to new knowledge. We believe that the schizophrenia inherent in the current degree need not be a rationale for scrapping educational doctorates or the neglect of the needs of practicing educational professionals. Both would follow from a shift to an academic doctorate as the only advanced degree in education. Rather, we believe that the duality, or indeed multiplicity of needs for the education community, administrative expertise and academic advances, provide powerful incentives for differentiated programs of study. Each of these advanced degree tracks, whether a masters of professional education or a doctorate of education, would be unique, needed, and intended for two distinct groups. The first, a terminal masters, is primarily a combination of public administrative practices tailored to the particularities of contemporary schooling. The second program, a doctorate in the field, combines a variety of humanities-based programs in search of new knowledge and new means of imagining the educational act. These programs intersect at the creation of new education practitioners who require both the practical skills of daily engagement with students and the understanding of theory, history, and culture that underpin school curricula and practices.

Differentiation of this sort would alleviate all three of the fundamental problems we have identified. It would check the proliferation of doctoral programs and doctoral recipients. It would provide an alternative, shorter, path to professional advancement for those without the desire, time, or need for an academic doctorate. More importantly, it would allow each type of degree to focus on those issues, competencies, and practices crucial for its intended audience.

Modeled after Levine's (2005) professional master's degree, the intended audience for the terminal master's in education research or practice would be school personnel who desire additional learning for either teaching or professional advancement. This degree, with an administrative or teaching track, would prepare teachers for the rigors of school-based research or for mentoring roles for new, inexperienced educators. The need for programs of this type comes not only from the requirement to differentiate the masters from the omnibus doctorate in education but also from the realization that the current education doctorate is not meeting its stated aim to improve

school-based practices in teaching or administration (Miklos 1992; McCarthy 1999; Shakeshaft 1999). Although Shulman and his colleagues (Shulman et al. 2006) believe that re-imagining the masters as a public administration or professional teaching degree would be difficult, we believe that courageous education schools can make a commitment to changing the face of schooling and can create meaningful experiences that provide a basis for improved secondary education. It must be noted, however, that schools of education and higher education, in general, must guard against the American tendency toward certification creep – the omnipresent pressure to require additional degrees, diplomas, and certifications.

In the model we propose, the doctorate of education, whether titled "Ed.D." or "Ph.D.", becomes a true doctorate in which new knowledge is forged in an intimate relationship with practice and theory. As with doctorates in other fields, the doctorate in education would limit entering cohorts and maintain rigorous admission, attendance, and completion requirements. More specifically, doctoral programs in education would require a full-time commitment from students who intend to enter the professoriate upon completion. Full-time study and a commitment to providing the resources needed for graduate fellowships, teaching assistantships, or research positions would obligate colleges of education to locate and pursue grant opportunities. Although the establishment of these positions would no doubt bring hardship to some programs, it would also foster a community of inquiry within the program and its host department and lead to discovery, a sense of shared purpose, and meaningful learning experiences. Indeed, one of the greatest current challenges to the doctorate of education is the lack of community within these programs. The significant number of part-time students and older adult learners, as evidenced by the Total Time to Doctorate statistics (see Table 1.3), who are employed full-time in secondary or elementary schools limits their active participation in the academic and intellectual life of their departments and programs. We believe that those students who are not dedicated to either intellectualizing the field or the single-minded pursuit of the education doctorate, are not able to form the communities of inquiry upon which debate, dialog, and diverse metaphors for education can be formed.

With these concepts guiding our conceptualization of the re-imagined doctorate of education, we offer suggestions, simple in nature but perhaps difficult in their realization. These recommendations, divided into three broad stances – cognitive, social, and public – mirror the Community of Inquiry model (Garrison, Anderson, and Archer, 2000) and represent the means to render the doctorate in education meaningful for recipients of the degree, institutions of higher education, and the public (Arbaugh, Cleveland-Innes, Diaz, Garrison, Ice, Richardson, & Swan 2008).

Of course, the component of this model (see Table 4 for a complete list of model components) that appears to be most basic to a successful transformation of the educational doctorate is the cognitive stance. Here, we take this term, again in reference to the Community of Inquiry model, as the "extent to which the participants in any particular configuration of community are able to construct meaning through sustained communication" (Garrison et al, 2000, 89). However, we expand the notion to include a broader range of discourse, including scholarship, differentiation between the purposes of the professional masters in education and the doctoral degree,

Table 4. Community stances for doctorate of education programs

Stance	*Indicator*
Cognitive Stance	Information exchange
	Involved faculty
	Scholarship as the focus
	Differentiation between masters and doctorate
	Dissertation re-alignment
Social Stance	Full-time study
	Community-oriented
	Decreased enrollments
Public Stance	Sharing research
	Review of doctoral programs
	Increased funding for research positions

increased involvement of faculty in the intellectual and scholarly lives of candidates, and a re-alignment of the dissertation away from the adherence to formulaic rigidity that all too often replaces the posing of those deep questions important to education. Research questions that primarily relate to best administrative or instructional practices and which use reliable quantitative or qualitative methods of inquiry on narrow questions and applications should be the basis for study within the professional masters programs. This would leave doctoral candidates the intellectual space to delve into the social, political, or cultural aspects of education, or to investigate and explore hidden elements of curriculum that shape and transform the field of education. Each of these tasks, it must be noted, is equally and vitally important. However, the differentiation between the type of research and coursework required to complete both cannot be conflated into a single, omnibus doctorate of education. In short, the cognitive stance and its related indicators are vital in the development of critical thinking skills and the framing of research questions that will produce new knowledge and raise the quality of research completed in doctorate of education programs.

The second part of the model, the social stance, is defined, within the Community of Inquiry model, as "the ability of participants to project their personal characteristics into the community" (Garrison et al, 2000, 89). Again, working from the core elements of the model, we suggest significant changes in the social practices that characterize doctoral programs in education. First and foremost, we recommend that all programs move toward requiring full-time attendance in doctoral programs. Although this is likely to lead to decreased enrollment (In our view a necessary change in the social stance of doctoral programs in education), it would create a community of scholars that engages in dialogical processes as members progress toward awareness of roles, relationships, and commitment to education. As has been noted (Shulman et al, 2006), the lack of communities of inquiry and opportunities for discourse among and between faculty, candidates, and ideas deprives the educational doctorate of the potential for intellectual growth and renders the degree a mere shadow of what it might become. Indeed, as Garrison and his colleagues (Garrison et al, 2000) noted,

"the primary importance of this element is its function as a support for cognitive presence, indirectly facilitating the process of critical thinking" (p. 89).

The final element of the model, the Public Stance, differs from the Community of Inquiry model's Teaching Presence, primarily a managerial role for classroom management and instructional techniques. We intend the Public Stance in our model to include the crucial capacity to share research, the need to establish standards within doctoral programs in education, and the requirement for colleges and schools of education to provide additional grant, fellowship, or graduate assistantships to candidates. The Public Stance allows doctoral candidates in education to demonstrate their commitment to the field and the original research that emanates from these programs by sharing the results of research at conferences or through journal publications. We believe that by exhibiting a commitment to public engagement and meaningful research, candidates and their mentors will help improve the prestige of the doctorate of education and create a means to recover participation and influence within national curricular and educational debates (White 2008). Without the ability to sustain oneself financially, graduate students will seek employment outside the confines of the education departments, thereby precluding the creation of communities of inquiry that foster the development of ideas within safe harbors. Finally, we believe that an educational analogue to the early 20th century Flexner Report on the status of medical education in the United States and Canada should be researched and produced to ferret out diploma mills and other programs that are producing doctors of education who lack the knowledge, dispositions, and capacities to become contributing members of the professoriate. The problems with the doctorate in education, highlighted within this chapter, are severe and chronic and therefore must be dealt with by an outside entity unrelated to institutions of higher education. A Flexner Report on the Educational Doctorate would work from the lessons learned from the Carnegie Initiative on the Doctorate and would take advantage of the lessons from the handful of education programs that have engaged in serious and systematic reflection of their practices (Shulman et al. 2006). Although the potential closing of some doctoral programs in education might appear harsh on the surface, the decline in doctoral enrollments in favor of the professional masters would necessitate downsizing doctoral programs with a compensating expansion of programs in the professional masters tracks.

The framework for improving the doctorate of education allows us to imagine an Ed.D. v. 2.0 and offers solutions to the chronic and severe problems that have plagued the doctorate for decades. In focusing on cognitive, social, and public stances that lead the doctorate from its current Ph.D.-lite status into the forefront of scholarly and intellectual pursuit, these revisions allow us to imagine a degree that is respected and whose recipients provide leadership at the local, regional, and national levels.

Reading Foucault's *The Order of Things* (1973), we realize the importance of placing objects of reflection into spaces that allow for objective consideration. For those who are actively engaged in the field of education and more specifically the duties of doctoral program administration, it is difficult to rise to the challenge of critically evaluating the Ed.D. and acknowledging the inherent challenges in the degree. There is no doubt, however, that the doctorate of education is a troubled

degree, weakened by the schizophrenia inherent in its attempts to accomplish disparate goals and the reality that it fails to deliver on its promises. We realize, in short, that education has struggled to articulate a compelling argument, beyond financial, for students to engage in doctoral studies and that long ago, the doctorate of education entered a stage of unsustainable growth that has slowly, but surely eroded respect for the degree and the quality of programs that offer either the Ed.D. or the Ph.D. in Education. We believe, unlike Arthur Levine (2005), that the educational doctorate has the potential to recreate itself and to enter a new stage in which the degree is meaningful and respected. Working within the framework provided within this chapter, we believe that education specialists can engage in discourse over meaning, purpose, and differentiation in educational programs that is needed and that through frank and open conversations new life can be breathed into the doctorate of education as degree paths and programmatic goals are differentiated between practical educational considerations and the onus on doctoral programs to produce new knowledge that inspires others to reconsider the potential inherent in curriculum studies.

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8. THE NEW "PROPOSED" DOCTORAL DEGREE IN EDUCATIONAL LEADERSHIP (ED. D.) AT A COMPREHENSIVE UNIVERSITY IN SOUTHERN CALIFORNIA

The Doctor of Education (Ed.D.) degree - a major vehicle for developing school leaders - recently reached a crossroads. Some think the Ed.D. should concentrate more on the work of practitioner leaders in education (Golde & Walker 2006; Murphy 2006); others think it should be discontinued altogether (Deering 1998; Levine 2005). Educators struggle with the wide-spread perception that education doctorates lack rigor and substance. Unlike other fields education uses doctorates to prepare both scholars and the highest level of leading practitioners (McClintock 2005) - often doing neither very well (Murphy and Vriesenga 2004, 2005; Schulman, Golde, Conklin-Bueschel, and Garabedian 2006). Although there is strong evidence that many doctoral recipients trained in the United States are excellent researchers and scholars whose subsequent work contributes significantly to the advancement of educational study and practice (Walker, Golde, Jones, Conklin-Bueschel, and Hutchings 2008) it is critical to continue developing doctoral education programs for the next generation of disciplinary leaders. These future leaders will creatively generate new knowledge, critically conserve valuable and useful ideas, and responsibly transform those understandings through writing, teaching, and application (McCarthy, Kuh, Newell and Iacona 1988; Riehl, Larson, Short, and Reitzug 2000; Schulman 2004; Golde 2006).

Current research claims that changing conditions may mean that current doctoral program designs no longer effectively meet their purposes, as some practices are rendered obsolete (Davis 2007; Golde 2006). In response, Carnegie's Initiative (See Golde and Walker 2006; Schulman et al. 2006) asks that schools of education foster thoughtful deliberations aimed at achieving an adequate and comprehensive account of the doctoral program's intellectual and performative qualities. It created four rubrics to measure all doctorates of purpose (the direction and understanding of a program's expected outcome), assessment (the strategies for determining how well a program does in achieving its expectations), reflection (a program's on-going habits of reflection about its aims and strategies), and transparency (the extent to which the relationship between purpose, assessment, and reflection in a doctoral program are readily discernable to all elements of the program). Clearly universities need to rethink doctoral programs and create programs that strengthen and assess student learning for academic excellence and social responsibility - that universities need to create world-class centers for socially responsible intellectual and

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academic pursuits. In rethinking the doctoral program, universities and schools of education must focus on ways to best facilitate learning communities that promote the intellectual achievement and successful practice of faculty and doctoral students.

The general purpose of this chapter is to present the development process for the newly proposed Ed.D. program at California State University, Domingez Hills (CSUDH), one of 23 campuses within the California State University system (CSU). Subject to approval by the CSU Chancellor's Office and the Western Association of Schools and Colleges (WASC), the anticipated implementation of the proposed program is scheduled for January 2010. We situate the doctoral program development within the context of recent research done by the Carnegie Initiative and a needs assessment of the southern region of Los Angeles County. Highlighted are key components of the proposed program including program rationale, targeted student population, collaborative efforts of key players, program design, curricular areas of focus, as well as a brief overview of the program assessment plan. We conclude the chapter with final reflections.

CONTOURS OF DOCTORAL EDUCATION IN CALIFORNIA

Since its adoption in 1960, California's Master Plan for Higher Education has served the state exceedingly well, allowing California to create the largest and most distinguished higher education system in the nation. A key component of the Master Plan is the differentiation of mission and function, whereby doctoral and identified professional programs are limited to the University of California, with the provision that the California State University can provide doctoral education in joint doctoral degree programs with the University of California and independent California colleges and universities. This differentiation of function has allowed California to provide universal access to postsecondary education while preserving quality (California State University, Office of the Chancellor, Chapter 2 of Part 40 of the EDUCATION CODE, SECTION 66040–66040.7, 2007).

Because of the urgent need for school leaders to effect reform in school and community colleges, California made an exception to the differentiation of function in graduate education that assigns sole authority among the California public higher education segments to the University of California for awarding doctoral degrees independently. This exception to the Master Plan for Higher Education recognized the urgency of meeting critical public school and community college leadership needs and the distinctive strengths and respective missions of the California State University (CSU) and the University of California (UC). Consequently, the CSU was authorized to offer the Doctor of Education degree (Ed.D.) as a result of Senate Bill 724 (Executive Order No. 991, CSU, Chancellor's Office, 2006). This authorization was legislated and became law in 2005. The legislation intended to pair doctoral preparation of California's educational leaders with strategies leading to advances for PreK-12 schools and community colleges and the students they serve. It laid a foundation for a cutting-edge approach to doctoral preparation in the nation - in which future leaders study and contribute to significant reforms that can result in measurable improvements in student achievement (California State University, Office of the Chancellor's

Office Directives and Templates 2007). The CSU Educational Leadership Doctorate represents an innovative professional doctorate in education that explicitly aims to achieve high levels of quality and relevance. (Senate Bill 724, Chapter 269, Statutes of 2005).

BRIEF REVIEW OF LITERATURE

The Association of American Colleges and Universities defines the Ed. D. as a terminal degree generally presented as an opportunity to prepare for academic, administrative or specialized positions in education, favorably placing the graduates for promotion and leadership responsibilities, or high-level professional positions in a range of locations in the broad Education industry (Addams, 2009). In the United States, the Ed. D. is a terminal academic degree generally granted by schools or colleges of education in universities. At most academic institutions where doctorates in education are offered, the college or university chooses to offer an Ed.D. (Doctor of Education), a Ph.D. (Doctor of Philosophy) in Education, or both (Osguthorpe and Wong 1993). The Ed.D. and Ph.D. are both recognized as appropriate preparation for academic positions in higher education. It is often also recognized as training for administrative positions in education, such as superintendent of schools, human resource director, or principal (Murphy and Vrienga 2005; Schulman et al. 2006).

Several of the more distinguished schools of education in the United States offer the Ed.D. (e.g., Teachers College/Columbia University), others offer Ph.D.s (e.g., Stanford University) and yet others choose to offer both with degrees in applied research and theoretical research (e.g., UC Berkeley, University of Pennsylvania). Still, others may offer both degrees with an Ed.D. being project-based and a Ph.D. being research-based (e.g., University of Southern California, St. Louis University). Scholars argue that in theory, the two degrees are expected to have completely different foci, with one often designed for working educators hoping to climb the administrative chain and master the skill sets (including data analysis skills) needed for effective educational leadership, while the other, more research-oriented degree is meant to fit the traditional social science Ph.D. model (Anderson 1983; Deering 1998; Dill & Morrison 1985; Levine 2005). The field of education in a long struggle to strike a balance between the practice of education and research in education, is seen clearly in various designs of doctoral programs attempting to meet the needs of a diverse student population (Schulman et al. 2006, p. 26). More important than the public relations problem, however, is the real risk that schools of education are becoming increasingly impotent in carrying out their primary missions to prepare highly informed practitioners and scholars of leadership (Dill and Morrison 1985; Golde and Walker 2006). Scholars indicate it is time to construct a vibrant doctoral degree designed for professional education practitioners as the target audience (Jean-Marie, Normore, and Brooks 2009; Schulman et al. 2006; Murphy and Vrienga 2005; Murphy and Zirkel 2007).

In short, expectations are escalating, and doctoral programs today face fundamental questions of purpose, vision, and quality. There appears to be no unified vision underpinning many of the experiences students are expected to complete. Researchers have

documented inconsistent and unclear expectations, uneven student access to important opportunities, poor communication between members of the program, and a general inattention to patterns of student progress and outcomes are themes that run rampant throughout the current literature (e.g. Carnegie Foundation for the Advancement of Teaching 2007; Evans 2007; Normore 2004; Schulman et al. 2006; Walker et al. 2008). As Walker and colleagues (2008) indicate "Serious thinking about what works in doctoral education, and what no longer works, is an urgent matter" (p. 5). He further asserts that what is distinctly absent from most doctoral programs, "are processes, tools, and occasions through which both faculty and graduate students can apply their habits and skills as scholars - their commitment to hard questions and robust evidence - to their purposes and practices as educators and learners" (p. 6).

Researchers (e.g., Kehrhahn, Sheckley, and Travers 2000; Richardson 2006; Golde et al. 2006; Walker et al. 2008) indicate that there is a marked need for scholarly formation that will shape the vision of doctoral education. Included in this formation is a need for deeper forms of scholarly integration, a culture of intellectual community ultimately focused on learning, and a renewed emphasis on stewardship whereby purpose, commitments, and roles are clarified; where conditions are created that encourage intellectual risk-taking, creativity, and entrepreneurship (Walker et al. 2008, pp. 10–11). Schulman (2005) adds that new doctoral programs further need to identify and adopt "signature pedagogies" when developing new Ed.D. programs. These are characteristic forms of teaching and learning that organize ways to prepare future practitioners for their professional work. A signature pedagogy has a deep structure, "… a set of assumptions about how best to impart a certain body of knowledge and know-how. And it has an implicit structure, a moral dimension, that comprises a set of beliefs about professional attitudes, values, and dispositions" (Schulman 2005, p. 55). In order for signature pedagogy to be effective, Shulman further explains, it must be distinctive in the profession, pervasive within the curriculum, and found across institutions of education (Schulman 2007, p. 27).

CALIFORNIA STATE UNIVERSITY, DOMINGUEZ HILLS

Established in 1960, CSUDH is an urban, comprehensive public university with a strong focus on forging community partnerships. It serves a culturally rich, diverse student body of nearly 9000 students at the undergraduate and graduate levels including 2,000 students enrolled in its distance learning programs (Institutional Research, Assessment and Planning 2009). Located on a 346-acre site in the southern region of Los Angeles County, CSUDH is a multi-cultural, multi-ethnic teaching and learning community dedicated to excellence and committed to educating an exceptionally diverse student population for leadership roles in the global community of the 21st Century. A federally designated Title III and Hispanic Serving Institution CSUDH has been recognized by US News and World Report to be among the most ethnically-diverse universities in the United States. Its student population is 39.7% Hispanic; 31.1% African American, 18.2% White, 10.6% Asian, and 0.4% American Indian. Immigrant and visa students on campus represent 93 countries. The university pursues productive relationships with educational, public sector, and business

communities, by developing programs that address contemporary social concerns while fulfilling the University's commitment to teaching and learning, research, scholarship, creative activity and service.

The mission, core values, philosophy and the strategic directions of CSUDH provide the foundation of seven goals that define the proposed doctoral program in educational leadership. The program architecture, course design and pedagogical methods emphasize a balanced distribution of scholarship, theory, and research. Applied practice of high quality is achieved through intentionality and systematically applying theory to professional practice.

Rationale for the New Ed.D.

The need for visionary educational leaders for California schools has never been greater, particularly so in California where growing gaps are seen in academic achievement. These gaps are evidenced in low rates of high school graduation, transfer from community colleges, college attendance and baccalaureate attainment as well as awards of graduate and professional degrees. These issues are especially acute in CSU Dominguez Hills' geographic region of southern Los Angeles County. The region is rich in diversity, characterized by its large population of immigrants, second language learners many of whom experience overall low performance in Pre K-12 student achievement, college readiness, and college attendance rates.

As the University celebrated its 48th anniversary, it is poised for achieving the next level of academic distinction and for continuing to demonstrate its commitment to high quality, accessible, and affordable education. The California State University has historically taken as one of its primary missions the preparation of teachers and other educational professionals at the initial and advanced levels. It is a natural extension of this mission for CSUDH to offer the Ed.D. in Educational Leadership. This is particularly germane for CSUDH given the challenges and opportunities in our region. As it has grown in student population and matured in its academic program offerings and campus facilities, CSUDH has maintained a firm focus on its central mission as a learning-centered university in service to the communities of the region. Historically and currently, CSUDH has demonstrated its commitment—and success—in educating a diverse, often first-generation, student body. This commitment to academic distinction, coupled with building regional partnerships, is fully aligned with the newly designed doctoral program.

Because of the applied nature of professional programs, it is often the case in professional preparation of educators that the university-based professional development and achievement has a positive impact on the learning and achievement of the Pre K-12 students. This is a distinguished feature of the Ed.D. program and can be seen in the following four goals:

Goal one: Strengthen and assess student learning for academic excellence and social responsibility. The proposed doctoral program will nurture learning communities that promote the intellectual achievement and successful practice of faculty and doctoral students. The Ed.D. program will take pride in the improved learning of

Pre K-12 students that result from and are documented through program laboratory experiences.

Goal two: Construct and implement a sound process of planned enrollment. Providing high quality academic programs for a diverse student body is central to the future development of CSU Dominguez Hills. The new doctoral program will support this strategic goal of sustained, planned enrollment through its laboratory experiences in selected local Pre K-12 schools to improve student achievement, college readiness, and college enrollment.

Goal three: Build upon and take full advantage of our unique cultural and demographic diversity. The CSUDH community clearly embraces diversity in every possible dimension: racial, cultural, ethnic, linguistic, gender, sexual orientation, religious, economic, political, and intellectual. We recognize the rapidly increasing culturally and linguistically diverse population in the University's service area remains disproportionately underrepresented in higher education, especially at the doctoral level. In this context we recognize and accept our moral imperative (Fullan, 2003) to continue to educate and graduate diverse students who make substantial contributions to the welfare of the region's schools, economy, and industry. This context creates unique opportunities and responsibilities for us to prepare educators who reflect the diversity of the region in which they will serve as educators for the highest levels of sustainable leadership (Fullan, 2004).

Goal four: Engage in interactive partnerships that promote educational, economic, and social development of the communities we serve. CSUDH recognizes the centrality of community partnerships for developing academic programs that affect the future of Southern California and beyond. This goal is addressed by one of the most strategic features of the proposed doctoral program: School and Community Laboratories. Through significant collaboration with school and community organizations over the last year, we have developed several collaborative relationships with sites that will serve as the initial laboratories for the carefully designed progression of research and policy experiences in the doctoral program. Through these laboratory experiences, schools and organizations will play key roles in helping doctoral students and faculty to identify critical research and policy questions for intervention and/or investigation. In turn, faculty and doctoral students will conduct pilot studies, research, and policy analyses to address the needs identified by the school.

The need for effective and powerful leaders in the school districts served by CSUDH is profound. The target doctoral student population will be educators who practice in the urban and neighboring suburban school districts in South region of Los Angeles County. The 25 surrounding districts from which most of the potential students will come enroll approximately 980,000 racially, culturally, linguistically and economically diverse students - many who perform below proficiency levels on state-wide testing. We will select for admission educators who work with this diverse Pre K-12 student population. Candidates selected for the Ed.D. program will not only be aware of the achievement gaps that exist among different subgroups of students but will be committed to providing leadership that reduce inequities. The inequity

issues confronting these districts are many and cannot be corrected without honoring the integrity of historical and political dynamics of race, class, culture, language, gender and disability. Historically, student characteristics of race, ethnicity, language, socio-economic status, and gender have been predictors of educational success. The Ed.D. will prepare education leaders for urban schools through rigorous innovative curriculum. The program uniqueness however stems from its focus on enhancing the community and providing programs to meet the needs of the service region. This doctoral program promises to prepare educational leaders capable of and committed to reforming schools, raising the quality of education and educational opportunity for Pre K-12 students especially in the mandated state and federal academic growth targets for English, literacy, and special needs learners. The study of research-based practices, program interventions, and the critical professional development of teachers and other educators will occur with the preparation of dynamic, action-oriented, reform-minded educational leaders.

Student Demand

As part of the planning for the doctorate in educational leadership, in January, 2008, CSUDH conducted a regional needs assessment to measure the need for and interest in an Ed.D. program. Multiple data sources were used to assess interest including focus groups and a widely disseminated survey. Several focus groups were held with graduate students, professional leaders from school districts, Los Angeles County Office of Education, and educationally-oriented/non-profit agencies. The results of the focus groups indicated high demand for a regional program of high quality designed to accommodate the needs of full-time working professionals. Employers indicated a high demand for doctoral training of interdisciplinary educational leaders who will promote quality instruction and pedagogical practices that reform schools in order to raise student achievement levels. In February 2008 an electronically disseminated survey was used to assess demand for the independent Ed.D. and it confirmed these findings. Among the 314 Pre K-12 educators responding to the 2008 demand survey, 94% expressed interest in pursuing a doctorate at CSUDH. Respondents reflected a broad range of years of service in the field of education and held a variety of positions. Prospective students indicated a great interest for an interdisciplinary doctoral program in educational leadership. Among these respondents 71% were female and 29% male. The two dominant age groups were 26–35 years of age (45%) and 36–50 years of age (36%). The three most dominant ethnic groups among respondents were White (34%), African American (29%), and Hispanic (25%). With the exception of questions about demographics, respondents were not limited in the number of choices they could elect for each question. When asked to indicate the specialization areas of greatest interest, the respondents rated the top five areas for primary concentration as: 55% school/district administration, 45% urban schooling, diversity and social justice, 43% curriculum and instruction (pedagogy), 40% special education, and 40% teacher education and development.

Focus groups (Pre K-12). Four focus groups of eight participants each were conducted at CSUDH in January-March 2008. These provided further insights about

prospective demand in the southern region of Los Angeles County. Participant comments underscored their great interest in developing knowledge and skills needed to provide leadership that would lead to improved achievement among the diverse groups of PreK-12 students in the region. In addition to emphasizing the need for a program that combines leadership, resource management and pedagogy, the participants identified the importance of fieldwork/problem-based learning and course content that advances self-awareness; and understanding of diversity, culture, English language learning, and special needs learners; community assets, and poverty. They emphasized the benefit of gaining experience in the school and community environment by applying theory to practice through research projects, policy analyses and development and/or product development. The general consensus of the participants was a preference for a program that provides an equal distribution of blended research, theory, and practice.

Focus groups (employers). Two focus groups were held with six to eight high ranking administrators and school board members who already possess terminal degrees. Participants indicated that schools require leaders who can address successfully unique local needs through effective implementation of educational reform that promotes high expectations for achievement especially among culturally and linguistically diverse students and those with special needs. They stressed the need for knowledge of education reform and change, better informed application of data-driven decision-making, improved instruction, social development, inter-agency collaboration, and creation of interdisciplinary leaders who routinely design and execute advanced and applied research studies of educational practice. These needs are incorporated into the goals of the doctoral program.

Focus group (non-profit leaders). Seven individuals from community based organizations (e.g., a community counseling center, United Way, After School All-Stars, workforce initiative group) underscored the need for inter-organizational understanding and leaders who can communicate and collaborate across disciplinary and organizational boundaries. They indicated their own professional development needs and their wish for the Ed.D. program to produce leaders who will drive instructional improvement and promote collaboration and effective linkages with external resources, communities and families. Both employers and non-profit participants expressed their willingness to serve as partners in the Ed.D. development and implementation phases, indicating they would serve on program development, admissions, program coordination, and advisory committees; assist with student recruitment activities; and provide mentoring to program candidates. Many have continued to provide input and are now poised to serve as members of the Community Advisory Board, essential committees and as mentors.

Ed.D. Development: Internal and External Partners

An internal writing committee was organized. This committee led by a group facilitator participated in the planning, development and writing processes. Many groups and individuals provided information, materials, critiques, and guidance to

these processes. The resulting proposal was reviewed, given feedback and approved by all relevant campus governance bodies and key individuals.

The Community Advisory Board, a distinguished off-campus group of Pre K-12 colleagues was constituted and provided significant guidance throughout the development of the program. At least one educator from each district, county office of education, and community college in the CSUDH service region was invited to attend the Community Advisory Board meetings. The Community Advisory Board discussions influenced many decisions including: raising the expected cohort size from 20 to 25 because of the anticipated high demand, using a rubric-based scoring process for admissions decisions, ensuring that successful education leaders will serve as mentors, asking supervisors and others to submit a standardized letter of recommendation form rather than an open-ended letter, developing a mechanism for student advising that will help to keep admitted students on track to complete the program, ensuring the infusion of communication and public relations skills in multiple courses and ensuring that adequate emphasis on special education and English Learners emerges within the curriculum.

INTERDISCIPLINARY, COLLABORATION AND LEARNING

The Ed.D. is distinctive in that it is designed to be interdisciplinary in nature in order to meet the needs for leaders who understand and apply the many disciplines relevant to ensuring the achievement of highly diverse learners in southern California's urban settings. CSUDH has distinctive potential for highly productive interdisciplinary education and research. The curriculum is designed with cross-cutting education, social and measurement issues that students will understand more deeply when presented with interdisciplinary perspectives. Many faculty members participate in interdisciplinary research and training programs. The faculty has been highly successful in garnering support for multi-investigator and multi-and interdisciplinary research and training programs, e.g., from NSF and U.S. Department of Education, that promote interdisciplinary research and collaboration.

Excellence in teaching is the paramount criterion for success as a faculty member at CSUDH. The faculty in the School of Education are among the most talented instructors and professional developers in the field of education (Cook, 2008). The expectation for excellence in teaching and scholarship is part of the campus' commitment to collaboration and it is fueled by the passion that holds the great majority of the faculty in this community and in its schools.

PreK-12 Collaboration as "Signature Pedagogy"

The Carnegie Project on the Education Doctorate (CPED) considers the identification of "signature pedagogies" as a central component in cultivating the knowledge and skills of an expert professional. Schulman (2005) has said that signature pedagogies reflect "what counts as knowledge in the field and how things become known." It is necessary to consider a wide variety of pedagogies found in instructional, research and field environments in order to identify signature pedagogies. The Ed.D. curriculum

was designed to include a rich array of pedagogical approaches, both traditional and alternative, that contribute to preparing educational leaders for the complexities of today's schools. Examples of its intentionally diverse pedagogies include: case studies of educational institutions; collaborative problem-solving; laboratory projects using extant statistical/research data; ethnographic and participatory research studies; book reviews; job shadowing; on-line course sessions and threaded discussions accompanying student assignments. Candidates will prepare reflective essays and practice cases; policy analyses and studies; research and literature reviews; individual and group research projects; simulations involving role playing; and structured interview protocols. They will participate in the preparation of scholarly articles for publication and the development of grant proposals.

A full range of pedagogies is planned for use by our faculty to promote engagement, learning, and development of professional leadership. The broad scope of pedagogical approaches is designed to develop critical knowledge, skills, and equip graduates to promote student success in the most challenged urban schools. Developing collaboration skills and developing other critical skills through collaboration is a prominent feature of the program because professionals typically need to work with colleagues to solve real-life problems. Collaboration is a critical skill in all areas of life, but most certainly in education. Creating a collaborative culture will require developing specific communication skills, establishing trust and a common language among students, faculty and school partners (Friend and Cook 2007). It has been recommended that interdisciplinary groups "cultivate a culture of collaboration among scholars and practitioners [as a means to] promote reflective practice" (Perry and Imig 2008). That is precisely what this Ed.D. program will do: create a collaborative culture and ethic among students, faculty, mentors, and partners. The program will have a cohort structure, small pro-seminar and research seminar groups, applied laboratories, professional mentoring, and thematic dissertations–all contributing to the development of individual and collaborative leadership that are central to the program.

Pro-seminars. Groups of 4–5 students, formed based on their curricular areas of emphasis, will meet with a single instructor for the first two semesters, providing a stable advisor relationship with the students in the group. They will explore potential research projects related to their areas of curricular emphasis while also learning the purpose of, and becoming a professional community. Further they will model the behaviors and demonstrating resilience of professional learning communities. Their discussions will link research to problems of practice; connect research to scholarship in the discipline; and support effective participation in a doctoral education program. Through small group interaction students will develop skills for successful peer and professional mentoring groups.

Research Support Seminars are designed to ensure the development of a dissertation research proposal through two consecutive courses in the second year. The inclusion of pro-seminars and research support provides on-going direction and support of the students' research efforts. They allow students to identify and involve research advisors as early as possible in the degree program. The research support seminar leaders will meet with the same group of 4–5 students for three semesters,

providing a stable advising relationship with the students in the group. The seminar leader will be a likely candidate to be the chair for proposal defense and dissertation committees of these students. Students will be assigned to groups based on their early research plans but may be reassigned after the first research seminar based on the evolving nature of student plans and needs.

Applied Laboratories. The program meets the intent of the legislation and is aligned with the CSUDH and School of education mission. This is accomplished through deliberate attention to diverse, signature pedagogies designed to engage urban educational leaders in highly relevant, reform-focused study and practice. Collaboration among students; students and faculty; and students, faculty and practicing educational leaders is a hallmark of the program design. The Ed.D. students and doctoral faculty will conduct research, conduct policy analyses, and implement small or large scale interventions in a small group of schools, known as the Wilmington/Carson collaborative. Their work in these sites will make contributions to practice and help advance the field of urban educational leadership. The systematic inquiry and practices they will undertake are expected to impact schools, educational support services, and educational policy. Central issues to be examined include not only the study of leadership and change but also instructional leadership, the improvement of educational curriculum and content, leadership for special education and counseling services, assessment and evaluation, parent and community engagement in education all in the service of improved outcomes for students.

Mentoring. Mentoring is a central support in the program. Having a professional mentor who has already completed a doctoral program and who is from their professional environment will be a strong support for the doctoral students. *Professional mentors* will complement the support students receive from faculty advisement and the Research Support Seminar groups. Mentoring is recognized as a key component, and it is the responsibility of both the faculty advisor and the candidate's mentor to assist the candidate in the analysis and identification of professional growth needs. The primary responsibility for identifying a mentor rests with the student, but the decision will be the result of a collaborative effort between the student, the employer, and the program leaders of the Ed.D. It is strongly suggested that the mentor has earned a doctoral degree. This experience provides them with important insights that they can share with the candidate.

Thematic dissertation groups will offer an individual and collaborative emphasis in which students work collaboratively with faculty and practitioners from the field to study a contemporary problem in educational leadership. Bringing together a strong combination of experiences and perspectives (often interdisciplinary) to understanding the problem, the group's work culminates in a set of unique, complementary dissertations around thematically similar topics. Pilot-tested by University of Southern California Rossier School of Education faculty for nearly ten years, thematic dissertations have been found to enable Ed.D. students to explore important questions and conduct research collaboratively as administrators do in everyday settings. Thematic dissertations are similar to work done at the University of Michigan since 1964 in a collaborative project called, "The Detroit Area Study" (DAS). In one way

this design is more aligned with the DAS because the problems for studies are to be identified jointly with the practitioners. That is, the studies will focus on real problems the four laboratory schools and their communities identify along with the Ed.D. faculty and students.

This design has clear benefits for students as a result of the collaboration and active participation of the faculty advisors and school practitioners. It serves two other important purposes: First, it is fully consistent with our philosophy and the strategic directions we set in collaboration with the community in January 2008. That direction is to focus our community based work on a small number of low performing schools where we can collaborate in identifying and overcoming the barriers that perpetuate the achievement gap. After three months of study we have selected and begun collaboration with an elementary, middle and high school in the Wilmington area near the campus. The fourth site is a new charter high school we helped to design and in which we hope to develop a model program. All four schools have low API scores and are in program improvement or barely moved out of that status in spring, 2008.

The second purpose of the collaborative, thematic dissertation model is to ensure prudent use of our resources, especially as we begin the program. In this model senior researchers and junior faculty with similar interests can together lead dissertation groups and can also collaborate and advance their research and publication records while providing focus, consistent guidance and supervision of dissertation research.

Curricular areas of focus. Ed.D. students will gain knowledge and understanding of effective research-based teaching, learning, and assessment practices in Pre K-12 education. Equally important, they will learn skills for leading teaching, learning and assessment practices within the three curricular areas of emphasis of the program: (1) urban school leadership, teaching and learning for diverse learners (e.g., culturally and linguistically diverse, English Learners and economically disadvantaged), (2) organizational and systemic reform, and (3) educational and related services and supports for special needs learners. Students will specialize in one of these curricular areas for their research and practice.

Clusters of students. Small professional learning communities will be created from the onset. First, within the pro-seminars required in the first three semesters and then within the research classes during the second year. The majority of course assignments will focus on specific curricular areas that students choose to emphasize. Their interest areas will be further explored initially in the small group pro-seminars and designs for studies in these areas will be developed and conducted. The small cluster groups also integrate culturally relevant pedagogy with instructional leadership, which underscores the intent of the legislation that authorized CSU doctorates: the improvement of teaching and student achievement. The concept of educational leadership underlying the program draws from areas beyond the schoolhouse walls including community based organizing, wrap-around services, and economic development. The educational leader need not be an activist in any of these areas but will need to understand them and be able to mobilize their resources. The concept of instructional leadership draws from several disciplines in education including administration, more pedagogy-oriented subject matter disciplines, educational technology,

English-language development, and multilingual education. As a result, the interdisciplinary nature of a program such as this is needed to prepare educational leaders who have both leadership skills and pedagogical expertise to serve as effective change agents for improving instruction, learning, and school success.

The CSUDH Ed.D. model is based on the professional practice doctorate, reflecting in part the work of the Carnegie Foundation and its President, Lee S. Shulman. In this work, Shulman (2006) has indicated the importance of schools of education carrying out their primary missions to prepare leading practitioners as well as leading scholars. "We must move forward on two fronts: rethinking and reclaiming the research doctorate (the Ph.D.) and developing a distinct professional practice doctorate (the P.P.D.), whether we continue to call it an Ed.D. or decide to give it another name."(p. 29). Shulman, et al, call for a retooling of the Ed.D. degree that would provide "extremely demanding, rigorous, respectable, high-level academic experience that prepares students for service as leading practitioners in the field of education, whether as educational leaders—principals, superintendents, policy coordinators, curriculum coordinators, and so forth—or as educators of teachers and other school personnel…We need a degree that is positively and intentionally designed to serve the needs of professional practice—as the Ed.D. was originally intended to do, but no longer does." (2006, p. 29).

Given that we are embarking on our first doctoral program at CSUDH, we are designing afresh a program that does just what the calls for reform suggest—it develops scholar-practitioners who are highly skilled and committed change agents. The Ed.D. program at CSUDH will be an intellectually rigorous, application-oriented program, built around the craft knowledge and the research base on teaching, learning, and leading. It has a clear mission and focus and is built around common goals. It recognizes the changing knowledge base, the need for high standards and expectations; and the importance of professional ethics and dispositions. It is designed to prepare scholar-practitioner change agents who will impact student learning and help to close the achievement gap at Pre K-12 schools. It will advance knowledge of and capacity for effective leadership practice in important ways—for both faculty and students.

Rigorous Expectations for Students

Doctoral students will be recruited whose interests and experience fit with the goals of the program and potential for advanced level leadership roles as change agents. They will also be screened for strong conceptual, analytical, and writing skills to ensure their readiness to take on the challenges of the program. Our marketing and outreach efforts will stress that students will be expected to perform at a more advanced level than would be typical at the master's degree level in preparation for advanced leadership positions as scholar-practitioners. For example, they will critique and synthesize relevant research for a comprehensive literature review and analyze original data in light of findings from that review. Students will be expected to put in significant time outside of class reading and writing in preparation for class meetings and examinations, undertaking independent field research projects, preparing

professional presentations, as well as completing all the steps in the dissertation process.

In keeping with our mission of creating a network of scholar-practitioners, the *doctoral* curriculum has been developed (and approved by the relevant university curriculum committees) to emphasize strong connections between research and practice in a balanced manner. The 12 units of dissertation seminars build on four semesters of quantitative, qualitative, and evaluation methods in the research core for all students. This strong scholarly foundation is complemented by field-based inquiry assignments in two of the courses during year I, as well as smaller field assignments in many courses. We have deliberately designed field-based courses to apply concepts and skills from both traditional research and leadership core courses, such as Leadership Models and Organizational Theory, and Program Evaluation and Accountability. Likewise, students will be expected to read and apply empirical research to their work in more practitioner-based courses, from Research Colloquium in Learning and Social Development to Learning in a Diverse Society.

As the course outlines and syllabi were developed, faculty were careful to ensure that the doctoral level courses built upon and extended the basic concepts included in the state standards for the administration credential or in their master's program in Educational Administration. Rather than the site-level leadership goals and operations typically stressed in master's programs, the doctoral program will have a systems-level orientation to leading Pre K-12 change at higher levels, including organizational theory and policy development/implementation. Topics that may have been introduced at the master's level will now include a stronger theoretical underpinning with more complex texts and in-depth discussions and assignments. Each course will include a blend of theory, empirical studies, and practice, with special emphasis on how theory and research can inform decision making and practice. Data-based decision making will be emphasized throughout the program. Course texts have been selected to reflect these emphases and to avoid duplication of texts used in the master's program.

Students will be expected to do a significant amount of reading, consult library and other resources beyond the required readings, and engage in original data collection and problem-based applied research in selected school sites. Students will learn to read, understand, critique, and apply original quantitative, qualitative, and mixed methods research. Primary sources will be examined as students conduct the review of research. Students will actively engage in discussions, make presentations, and share their thinking and work with one another in classes, online discussions, week-end seminars, and specially arranged student colloquia. There will be major writing assignments in each course in preparation for writing the dissertation. Students will be encouraged to write papers with colleagues or faculty that may be published in peer-reviewed journals or presented at regional or national conferences. All student work will be written in APA style in preparation for their dissertation work.

The Dissertation

The dissertation is often, but does not need to be, a stumbling block that impedes degree completion for doctoral students, whether in Ph.D. or Ed.D. programs. To avoid

this pitfall, students will be carefully mentored in producing a problem-centered dissertation that is relevant to their own work and professional lives. The main channel for dissertation support apart from meetings with the dissertation advisor will be the weekend seminars, when students can focus more intensively on the steps in the dissertation process as well as share research strategies and chapter drafts for peer review.

Faculty will guide students in developing meaningful research questions, conducting a comprehensive literature review, and planning as well as completing original research – collecting, analyzing, and interpreting either quantitative or qualitative data, or both. The dissertation will be grounded in theory and conceptual frameworks related to practice, which will be revisited as part of their analysis. In keeping with our scholar-practitioner orientation and focus on applied research, as well as recent trends in the field of action research (Herr & Anderson, 2006), dissertations will also describe and analyze student-led cycles of inquiry, action plans, and continuous improvement processes at their institutions. This will mean more elaborated recommendations for practice and future research than are common in the Conclusion of traditional dissertations. We believe the combination of mentoring support and the problem-centered, applied approach will make for greater student engagement in the dissertation process and for final products that make highly relevant contributions to both the field and students' professional growth.

CSUDH doctoral students will be expected to meet conventional standards for doctoral-level research, writing and analysis. Unless there is a compelling reason to do otherwise, the dissertation will follow the typical 5-chapter format. Rubrics have been developed to provide the student guidance in completion of the qualifying exam and the dissertation. The rubric will be introduced at the initial Summer Retreat for new students and reinforced at weekend seminars throughout the program. A hallmark of our doctoral culture will be the value of ongoing revision and helping students learn to accept and respond to collegial criticism to improve their work. Students will have access to advice and support not only from their dissertation committee, professors, and mentors but also from research and writing assistants on the program staff.

Creating a Doctoral Culture among Faculty

The College of Education has traditionally been a place marked by extensive collaboration. Faculty in the Educational Administration program consistently work together to develop common expectations across course sections and to ensure program quality and consistency. Faculty have collaborated on grant-writing, articles and presentations. They have worked together to develop and offer an innovative on-line/hybrid preliminary credential and master's degree program in Educational Administration. This spirit of collaboration has extended to the planning of the doctoral program and has resulted in the program proposed here. However, in this case, the collaboration extended beyond the program to faculty in other programs and colleges, as well as our Pre K-12 educational partners in the field. The success of the doctoral program will require continued close working relationships among all of the partners, sharing of responsibilities, and commitment to excellence. It is this mix of participants

that will form the nucleus of a network of educational leaders prepared to effect profound change in teaching and learning that leads to improved student achievement, as stated in the program mission.

Faculty will work with school partners to prepare the context for the doctoral program laboratory in three schools. These are schools that want assistance with data based decision-making and are happy to provide their data and policy contexts for mini studies for the Ed.D. students and their faculty advisors. Educational Administration program has recently received a $6.5 million grant to provide support to educational administration students and to arrange for speakers who can present innovative and cutting edge information about new developments in educational leadership. We also recognize that in order to teach doctoral students at the level of expectation we have for our program, faculty themselves need to continue to be productive scholars. CSUDH has clear expectations for faculty research and scholarship that are central to faculty promotion and tenure.

Federal grants received by faculty in the Ed.D. program will provide numerous events and opportunities for faculty to share their research and learn from visiting scholars or external consultants, such as EL experts Russell Gerston and Alba Ortiz. Many faculty who will serve as core doctoral faculty have already demonstrated a strong publication record and have consistently presented their work at state and national professional meetings. The university is eager to continue to support and develop faculty research agendas to an even fuller extent through the establishment of research centers, the funding of staff research assistants, and the seeking of additional support for research as in a University-wide Research Fellows Program.

Creating a Doctoral Culture among Students

Equally important and related to the culture developed among doctoral faculty will be the development of a doctoral culture among students. This is particularly challenging when students are working full time, as will be the case for the majority of our students. The cohort structure will assist in the development of a common set of commitments and expectations to learning at this advanced level and to the doctoral culture expected of our students. Educational Administration faculty are highly skilled at working with cohorts in the master's program and encouraging cohorts' best qualities of mutual support and team building, while discouraging tendencies toward cliques or group think. Initial expectations for students will already be established through a highly selective admissions process, which is designed to evaluate not only academic competence and leadership qualities, but also key dispositions, like collaboration and commitment to the change agent role.

Students admitted to the program will participate in a two-day retreat before classes begin to welcome them into the broader community of scholar-practitioners in educational leadership. They will be given a reading list to prepare themselves for this retreat as well as for the first few weeks of classes. During the retreat, they will be introduced to the norms and expectations of the program, to program faculty and their specific areas of expertise, and to the steps in the dissertation process. They will be given tips for success in the program and begin to formulate research interests.

Weekend seminars throughout the three-year program will be structured to provide students with more extensive information and guidance that will support them in their doctoral work. For example, sessions already planned include: academic writing; APA style; conducting an effective literature search; use of SPSS; preparing for the qualifying exam; preparing the dissertation proposal; the Human Subjects Institutional Review Board application; and preparing for the dissertation defense.

Students will have access to program staff for individual technical assistance with academic writing and data analysis. A website for doctoral students will be maintained in order to provide background information, post announcements and items of interest, and offer an opportunity for students and faculty to have another vehicle to share information with one another. The website will include a student handbook and all forms needed for the program, as well as links that connect students to the community of scholar-practitioners that they are joining.

As part of reinforcing their membership in this broader community, students will be encouraged to attend and present at professional meetings individually or collaboratively with one another or with faculty. Building on past collaborative arrangements, we will also take part in regional doctoral seminars and other events sponsored by the CSUs in the LA Basin.

The CSUDH Ed.D. program is designed to allow for completion of all requirements within three calendar years. This time period allows for completion of all coursework, the qualifying examination, advancement to candidacy, and dissertation work. It is recognized that it may require students' additional time to complete all requirements at the level of quality expected, and an additional one or in some cases up to two years of study may be needed. Time to degree completion may under normal circumstances be extended not to exceed five calendar years.

Cohort model. The faculty selected an annual cohort model for program design and delivery. The cohort model has been used successfully in several of our master's programs. Academic advantages include the following: (a) building a learning community that establish professional relationships for professional support and growth – both during and after the program; (b) fostering and monitoring doctoral students' progress thereby increasing persistence and completion rates; (c) providing a forum in which doctoral students with different areas of emphasis form partnerships for increasing student success from preschool through college entrance. In addition, the cohort model allows for more predictable planning for fiscal revenues and allocations, course scheduling, and faculty deployment (see Donaldson & Petersen, 2007).

Targeted student population and qualifications required for program. The type of students targeted for the program are working professionals with the potential for educational leadership in various disciplines; successful experience in Pre K-12 and/or other educational settings; problem-solving ability; strong oral and written communication skills; and an interest in assessing critically and leading educational reform within current educational environments. Doctoral faculty qualifications have been established system-wide for the Ed.D. program. In keeping with CSU guidelines, there

will be three levels of participating faculty in the CSU Dominguez Hills Ed.D. program: 1) core doctoral faculty; 2) affiliated doctoral faculty; and 3) additional doctoral faculty as needed.

Core doctoral faculty. These will normally be full-time tenured or tenure-track CSUDH faculty members who hold doctoral degrees, teach at the graduate level, and have disciplinary expertise, and a strong scholarly record relevant to Pre K-12 leadership and study of the field. They will be eligible to serve in all primary roles in the Ed.D. program, including teaching, advising, dissertation supervision, and governance. They are the primary faculty eligible to serve as chairs of dissertation committees. Core doctoral shall include individuals from a number of relevant academic units on the campus.

Affiliated Faculty for P-12 Leadership Specialization. Faculty with disciplinary expertise or significant experience related to the Ed.D. leadership experience in the education of Pre K-12 students may be appointed as affiliated doctoral faculty. These may be faculty from the School of Education who are not central to the area of study, do not meet all of the qualifications for Core Faculty status, or do not have interest in assuming the responsibilities of the Core Faculty. The category also includes faculty from related disciplines with expertise and interest in Pre K-12 education who have been and will continue to be actively involved in the program development. Many will serve as affiliated faculty, co-teach selected seminars, serve on dissertation committees, and contribute in other ways to the academic rigor of the doctoral program as well as the campus wide nurturing of a doctoral culture. Current faculty from various divisions in the School of Education and sociology, psychology, ethnic studies, English, anthropology, peace and negotiation studies, and child development qualify as affiliated doctoral faculty. In the first two years we intend to recruit others. Faculty from business and finance have participated in some planning but are not able to become actively involved until their new programs earn accreditation. Each potential affiliated faculty member has an impressive record of active projects with Pre K-12 schools, joining their elementary and secondary school colleagues in improving pre-collegiate learning and preparing students for higher education.

Affiliated doctoral faculty. This third group is comprised of individuals who are experienced practitioners in Pre K-12 education. They will typically be appointed as lecturers and would have to be designated as affiliated faculty through established personnel procedures. Affiliated doctoral faculty may teach or co-teach program courses. Service of practitioner/lecturers as members of Ed.D. examination or dissertation committees shall require special approval as specified in the program bylaws.

Assessment and Evaluation

CSUDH recognizes the complexity of assessment and the importance of designing measures that are multidimensional, meaningful, manageable, and oriented toward program improvement and enhanced student learning. Consequently, four interrelated components of quality indicators guide the evaluation of educational effectiveness including: program goals, student learning outcomes, quality faculty, and accreditation.

Program Goals and Student Learning Outcomes for the doctoral program were developed in concert with educators in PreK-12 schools. During the planning meetings, these partners described the specific qualities and skills most essential for future educational leaders. As a result, Program Goals and Student Learning Outcomes are linked explicitly to the essential characteristics identified by the external partners. The program's design and delivery, admission standards, course content, and pedagogical methods are inextricably linked to achieving these outcomes. Faculty quality is evidenced primarily by successful PreK-12 educational preparation and experience; teaching/pedagogical effectiveness; rigor of research, scholarship, and creative activities; and strength of service contributions to PreK-12 schools. As the assessment plan is a living document the Program Director in conjunction with core doctoral faculty will:

Evaluate and adjust as appropriate formative and summative methods for assessing Program Goals, Student Learning Outcomes, and faculty quality.

Identify the level of student attainment expected for each learning outcome;

Employ both direct and indirect methods for examination of students' level of attainment;

Interpret assessment results ensuring actions are taken and documented for program improvement;

Identify the timetable for review of assessment reports by the Doctoral Executive Council, and Community Advisory Group; and

Determine methods for communicating to students, the campus, and the external community the ways in which the assessment results were used for program improvement.

Formative and Summative Assessment

For each learning objective, faculty will identify courses that introduce, reinforce, and address at an advanced level from both the core and specialization courses, in order to embed performance-based prompts in course assignments. Faculty will then develop rubrics for these embedded assignments that provide scoring criteria specific to the assessment of the appropriate Student Learning Outcome. The criteria will draw upon emerging research and practices of professional/disciplinary organizations as related to student learning. The reliability and validity of the rubrics will occur through pilot testing, inter-rater reliability methods, calibration over program cohorts, and faculty professional judgment (Bloom 2001; Boote and Beile 2005; Bresciani 2006; Davis and Krajcik 2005; Lovitts 2005; Walvoord 2004). Embedded assignments will be varied with the following characteristics: (1) multiple types of student work such as research papers, essay examinations, poster presentations, grant applications, articles for publication, seminar presentations, and oral defenses (videotapes); (2) individual and collaborative learning assignments; (3) electronic and print formats; (4) integrated and interdisciplinary application of learning; and (5) self-reflection essays about applying student learning to educational reform in PreK-12 education.

Other forms of formative assessments will include: Graduate Record Examination, student focus groups, and student course evaluations.

Because graduate writing proficiency at the doctoral level requires advanced critical thought, the summative assessment of student writing proficiency will include the following: dissertation proposal and oral defense, dissertation research, oral defense of dissertation graduate school exit survey, alumni survey, and employer evaluations. Each of these summative assessments will be assessed with the help of rubrics that determine: originality in conceptualizing and formulating the premise/ thesis of the written communication; evidentiary and analytical basis for assertions; interdisciplinary perspectives toward topic; sophisticated analysis of the prior scholarship related to the research and explication of the connections to the current project; and the scholarly integration of theory, research, and practice as applicable to the topic. Special attention will be given to cross-cultural communication and appropriateness for internal/external audiences. In addition, students will be judged on their demonstration of writing style characterized by clarity of expression, grammatical correctness, coherence, rhetorical sophistication, and analytical and creative expression.

External Review

An external team of reviewers will rate types of writing and strength of writing on the continuum from program initiation to completion based on a rubric of criteria to be developed by the faculty. The external review team will be comprised of professors from doctoral-granting universities and with expertise in rhetoric and the assessment of writing commensurate with doctoral education. To ensure standards of quality within a context external to the University, an external review will be conducted in year four at the completion of the first cohort. A team of three external top scholars in assessment and doctoral education will be invited to evaluate both the quality of the assessment plan/processes and the quality of student learning.

External reviewers' qualifications normally include the following or their equivalency: The highest degree in a relevant discipline, preferably Ph.D. or Ed.D in education; Rank of professor; Distinguished record in related teaching and research and scholarly activity; Notable background in the effective employment of program-level student learning assessment methods; No conflict of interest; Ability to complete the review and report within the prescribed timeline.

In selecting members of the external review team, in addition to the above requirements, one of the members will be an expert in program-level assessment. Another member will come from one of the universities involved in the Carnegie Initiative on Educational Doctorates.

Responsibilities of External Reviewers

The external reviewers' primary responsibility is to provide an honest, unbiased professional judgment when assessing student work. The external reviewers perform the following responsibilities over a two-day on-site campus visit:

Review the self-study document

Conduct interviews and conduct an exit meeting with the following individuals/ groups: Program faculty, Program Director, current students, alumni, Doctoral Executive

Committee, Community Advisory Board, Dean, Vice Provost, and Provost

Submit a written summary of findings within three weeks of the campus visit.

Elements for review by the external reviewers will include the assessment plan/ processes of the respective assessment roles of faculty, administration, students, and external community; assessment of Program Goals and Student Learning Outcomes, especially direct assessment methods/measures; and effective use of assessment data for program improvement. Assessment of student learning will include a meta-review of dissertation research, oral defense, and embedded assessment artifacts. Each provides a direct measure of the quality of student work, and a rubric for each of these meta-reviews will be developed and guide the assessment.

To prepare for the external review, the Program Director will form a college Academic Program Review Committee comprised of two core and one affiliated faculty, one community member, and an alumnus. This Committee will prepare a self-study report that contains assessment data, focuses on an examination of strengths, identifies areas for improvement, and recommends changes. As a result of the external reviewers' report and the self study document, the Dean of the College of Professional Studies, the Director of the School of Education, and the Program Director will develop an implementation plan that will include the actions for change, timeline, key person responsible for leading the actions, and fiscal costs.

Information resulting from the external evaluation will be provided to students as well so they may provide additional information that will assist in program enhancement and so they may view external assessment as a model for their assessment of student learning in PreK-12 education.

FINAL REFLECTIONS

Currently, faculty and administration at CSUDH are seeking approval for a Doctor of Education in Educational Leadership (Ed.D.) degree. The purpose of the Ed.D. is to provide school leaders with the interdisciplinary leadership skills necessary to tangibly address the rapidly changing educational landscape and distinctive characteristics of PreK-12 public education in the southern region of Los Angeles County. Using an interdisciplinary focus, the program is designed to prepare full-time working urban professionals for evolving levels of school leadership. In the development of this campus-wide doctoral program, the School of Education collaborated with local school districts and other schools on the campus: College of Human and Behavioral Sciences, College of Arts and Humanities, and School of Health and Haman Services. To meet the distinctive challenges that school leaders currently face in the complex school environment of our region, a different set of skills is needed beyond those found in traditional doctoral programs.

Several features make this educational leadership doctorate unique. The first is its defining purpose, which is to effect significant improvement in the academic

performance of the children in the region's school systems while simultaneously reducing the inequity gap. Second, the program provides opportunities to engage in interactive partnerships that promote educational, economic, and social development of the communities we serve to make CSUDH an indispensable resource. Third, since the program is intended to enhance the abilities of experienced urban educators those admitted to the program will have already proven themselves in a leadership role within a school district. Finally, the urban nature of our service region and its changing demographic patterns has dramatically increased the need for knowledge of and access to sophisticated educational leadership skill sets. Recognizing this, the program utilizes a fully integrated instructional model relying upon a cohort structure, evening classes, weekend and summer academies, and online exchange. The cohort structure will involve intensive fieldwork and applied research in carefully selected low-performing schools. The goal is to develop school system leaders who can build learning communities characterized by high student achievement and ongoing professional development, regardless of the schools' social and economic features.

Graduates will leave the program with a robust knowledge base about how best to use applied research to meet the evolving needs of schools not only in our region but for all schools of the 21st century. The literature asserts that leadership is crucial to improving classroom instruction and student learning as is reflected in the Association for Effectives Schools' (2004) Correlates of Effective Schools. Urban instructional leaders need a preparation program that transforms them into "learning leaders" (DuFour 2002), capable of leading communities and committed to improving academic achievement. Tied to this emphasis is the need for a more coherent and defensible role for interdisciplinarity, collaboration and leadership for learning.

In addition to becoming "learning leaders" who can effectively communicate the role of educational technology, well-prepared school leaders in many regions must also understand the distinctive impact of increasing poverty and significant demographic change. Urban communities are facing serious and unique challenges to their well-being owing to new barriers to economic viability and human development. Further, Banks and McGee (2004) have projected that "white" students will constitute approximately 50% of the student population of the nation's schools by 2020 and that this demographic shift will occur at the same time that the teaching force becomes even more homogenous. Regardless of where students live, they will need to understand and work with people whose backgrounds are different from their own (Marx 2002).

Given that educational leadership preparation programs, and Ed.D. programs in particular, are under attack, we feel that this is an opportune time to create a new program that focuses on developing leaders skills in dealing with the myriad problems facing urban schools. As states look for ways to improve leadership preparation, this model may serve as a focal point for discussion and program improvement. To reiterate an earlier point, our Ed.D. students will gain knowledge and understanding of effective research-based teaching, learning, and assessment practices in Pre K-12 education. Equally important, they will learn skills for leading effective instruction, learning and assessment practices within the following three curricular areas of emphasis of the program: (1) Urban school leadership, teaching and learning for diverse learners

(e.g., culturally and linguistically diverse, English Learners and economically disadvantaged), (2) organization and systemic reform, and (3) specialized education services and supports for special needs learners. As the new doctoral program undergoes implementation, the governance structures and review teams will continuously monitor and assess its progress and modify as appropriate to incorporate changes that will strengthen the program and enhance its capacity.

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9. COMPLEXITY AND UNCERTAINTY AS DRIVERS FOR A PH.D. IN MATHEMATICS EDUCATION AND SCIENCE EDUCATION

I want to acknowledge the input of Dr. Harold Bergman, Director of the Ruckelshaus Institute of Environment and Natural Resources, Dr. Andrew Hansen, who upon the development of this chapter was associated with the School of Energy Resources.

INTRODUCTION

The Science and Mathematics Teaching Center (SMTC) at the University of Wyoming has been collaborating with the College of Education on revising the Ph.D. program for Mathematics Education and the Ph.D. program for Science Education. Currently the only option for graduate students is to pursue a college wide Ph.D. program in Education which requires a significant number of generalized education graduate courses (16–18 hours), advanced research methodology courses (12 hours), and the conventional independent research dissertation hours (16 hours). Upon closer inspection, such a large generalized core of courses leaves far too little room for innovative cognate sequences in mathematics or science content, focused mathematics and science education research, or apprenticeship experiences (we define a cognate to be a connected set of two to four courses with a common interrelated theme, for example cognition courses in mathematics and science education). In response, we are striving to create a novel Ph.D. program that integrates concepts of complexity and uncertainty in mathematics and science, integrated science and mathematics cognates, and apprenticeship experiences in content and mathematics and science education.

Complexity science, computational science, and cognitive science, provide new paradigms for the study of mathematics and science education. First, complexity science can serve as a driver for both content and education. Two of the most pressing and complex problems of our time, energy resources and environmental issues, require citizens that can bring an integrated mathematics and science perspective to bear on the problems, as well social, political, and economic lenses. These issues will provide the context for the study of complexity and uncertainty in our program. Complexity theories can also be applied to the science of learning systems, accounting for the interactions of multiple agents, as opposed to the study of individual

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components of a system (Davis & Simmt 2003). To continue to be relevant, mathematics and science education must move beyond efforts to bridge individual learning and social learning, to trying to understand the emergent classroom community and the cognitive changes of individuals within it. Second, cognitive science provides theoretical underpinnings for the teaching and learning of mathematics to guide investigations of learning. Findings in this field are having a major influence on how the teaching and learning of mathematics and science are viewed. Third, computational science with its focus on modeling scientific phenomena, large data base analysis, and computational efficiency is driving efforts at integrating science and mathematics. When coupled with open access to data provided through Internet portals, learners have unlimited potential to design and pursue their own investigations. The integration of science with mathematics through modeling should impact K-12 schools in significant ways, making this an important potential driver to which Ph.D. programs must respond.

It is our position that Ph.D. programs need to develop future leaders with expertise in issues of complexity, uncertainty in modeling, and in integrated approaches to science and mathematics. At the University of Wyoming we are revising our Ph.D. program to include:

Cognates in key areas:

Mathematics and Science Education Cognate course sequences with an emphasis on complexity, uncertainty, and rural education

Mathematics and Science Cognate course sequences with an emphasis on mathematical modeling, simulation, applied algebra, and Earth's energy resources

Cognitive Science Cognate specializing in the underlying literature and research methodology of mathematics and science cognition, learning theory, and assessment

Immersion in authentic mathematics and science education and teacher education experiences, including:

Mentored teaching apprenticeships in both undergraduate content and education

Structured internships providing professional development through the Science and Mathematics Teaching Center (SMTC)

Mathematics and science education research experiences in the study of teaching and learning complexity and uncertainty and rural education

Collaborative research experiences in modeling and computational sciences, potentially in conjunction with the NCAR Super Computing facility coming to Wyoming

In this chapter we will discuss the components of such a program and why they are important.

NATIONAL TRENDS

Reys, Teuscher, Nevels, and Glasgow (2007) systematically described current doctoral programs in mathematics education. They found that over half of the institutions in the United States require a student pursuing a secondary emphasis in mathematics education have a BS/BA in Mathematics or Mathematics Education and over half strongly encouraged applicants to have a master's degree in one of these areas. The institutions in the study reported that the strongest areas of emphasis in mathematics education doctoral programs are Research in Mathematics Education (98%), Research Methods (97%), Mathematics Content (90%), Learning Theories (83%), Teaching/ Professional Development (83%), and Mathematics Curriculum (80%). The Association of Mathematics Teacher Educators (AMTE) and the National Council of Teachers of Mathematics (NCTM) established Principles to Guide Doctoral Programs in Mathematics Education (AMTE and NCTM 2002) in which they supported the areas of emphasis identified above. They emphasized the need for the mathematics content to broaden and deepen the mathematical knowledge around the big ideas in the pre-K-14 mathematics curriculum and to examine how those ideas develop throughout the curriculum. They recommended the inclusion of seminars, clinical experiences, internships, assistantships, and independent study to support coursework.

Although there is no similar comprehensive viewpoint on graduate studies published in the literature of science education, we believe that the perspective should be similar. In response, the revised Ph.D. program at the University of Wyoming will incorporate these recognized components and recommended approaches with the goal of making our graduates competitive on the national level. In an effort to make our program attractive to potential graduate students at the top tier, we will build on the unique strengths and reputation of the University of Wyoming in the areas of energy and environment. The nexus between energy and environment is complex and uncertain, lending itself to study through computational science and mathematical modeling. Our goal is to integrate cognates between a Ph.D. in Science Education and a Ph.D. in Mathematics Education, using energy and environment issues as the context.

ENERGY AND ENVIRONMENT NEXUS DRIVER

By the year 2050 the ever increasing demands for natural resources, energy, and water will require the resources of two equivalent planet Earths to satisfy. Worldwide issues of natural resource depletion, energy consumption, CO2 emissions, climate change, and water shortages will be the pressing scientific problems of the next generation. A driving force in global research and development will be the resolution of the natural resources, energy, and environment crisis quickly confronting our world. Effective research and development, both industrial and academic, addressing this issue will be interdisciplinary, require the collection and analysis of large amounts of interrelated data using technology, and engage scientists and politicians in complex problems with both scientific and social consequences.

In parallel, the real-world energy-environment nexus should be a driving force in science and mathematics education across the K-16 continuum. Such an emphasis will result in an engaged and educated democratic citizenry that can make informed decisions and has opportunities in science and mathematics related careers. To support such a future, we want to create innovative and responsive Ph.D. programs in science education and mathematics education with an emphasis in energy and environmental education which:

> develops teacher educators who are leaders in integrating the concepts of complexity and uncertainty in relevant contexts in mathematics and science into the K-12 classroom;
>
> develops top-tier researchers who are engaged in addressing the significant research question: What is the cognitive capacity of K-12 students to develop a flexible conceptual understanding of issues of complexity and uncertainty in mathematics and science?

To accomplish this we will create an energy-environment cognate course sequence consisting of a collection of courses where mathematics education and science education graduate students apprentice with mathematicians and scientists to develop expertise in energy and environmental sciences.

The graduate students in this cognate will develop expertise in cutting-edge science addressing the energy-environmental nexus so they can study its integration into the classroom at the K-12 levels. Problems in this area require an integrated science and mathematics approach supporting expertise in the collection and analysis of large data sets, modeling of those data sets to make predictions, and integrating resources from science and politics to determine policy decisions. The Haub School of Environment and Natural Resources (HENR – policy issues in environment), the School of Energy Resources (SER – research on energy issues and alternative energy resources), and the Program in Ecology (PiE - expertise on diverse ecological aspects of energy development) at the University of Wyoming will partner to provide mentoring and collaborative research opportunities in the interplay of energy and environment. Special seminars will bring together graduate students with faculty in education and the sciences to explore issues of how energy and environment research should and can impact K-12 classrooms. Funding from the above entities will be sought to assist in supporting graduate students who bridge science/mathematics content and science/mathematics education.

Permeating the science, technology, engineering, and mathematics (STEM) classrooms from kindergarten through undergraduate levels with the energy-environment nexus will require substantial change in the educational system. This change must include the creation of curricula appropriate for different grade levels, authentic assessment tasks that measure students' conceptual understanding, content-based professional development that enables teachers to enact the curricula in meaningful ways, and research into the cognitive development of children with respect to issues of complexity and uncertainty. The Ph.D. programs will develop future mathematics educators and science educators that are prepared academically and experientially to address these future needs.

COMPLEXITY AND UNCERTAINTY AS DRIVING THEMES

The Energy and Environment Driver provides a context for the principal themes driving the Ph.D. program: complexity and uncertainty. Energy and environmental research represent two unique strengths across the faculty at the University of Wyoming, so they are a natural choice as a context for our programs. While the context may differ somewhat depending on a university's strengths, the themes of complexity and uncertainty can be universal drivers for Ph.D. programs in mathematics education and science education. These themes lead naturally to a focus on computational science issues such as large database analysis and modeling, as well as technology's impact in the area of data collection, visualization, and data analysis. The graduate students will research the developmental aspects of students exploring complexity, uncertainty, modeling and scale in mathematics and science. What are the developmental aspects of gathering information, representing and modeling that information, analysis using technological tools, and decision making when there is a level of uncertainty? What are the appropriate developmental levels and learning trajectory for complexity and uncertainty across K-16 grade levels?

COMPLEXITY: Why complexity as a driver? The energy-environment nexus is a non-linear complex adaptive system with a number of diverse and independent agents, including scientific, social, and political, that are constantly changing and interacting with each other. Environmental challenges such as climate change and the loss of biodiversity display non-linear response, long range correlation, and disequilibrium through significant fluctuations leading to extreme events (Canziani 1999; Hallam and Funasaki 1999; Hull and Falcucci 1999; Jorgensen 1999; Giampietro, Mayumi, and Pastore 1999, Svirezhev 1999). Complexity science provides a theoretical framework for studying such complex adaptive systems (Kelly 1994; Waldrop 1992; 1996; Wheatley 1999). Complex systems are non-linear, meaning that a small perturbation may cause a large effect (butterfly effect), a proportional effect, or no effect at all. Complex systems are open in that they are far from equilibrium, but they change over time in ways that can influence future states and therefore may produce emergent phenomena. The Ph.D. program will endeavor to have students shift from viewing the natural world through a machine-like reductionist perspective where a complex system is understood by taking it apart and examining the components, to a complexity science view where there are a number of diverse and independent components constantly changing and interacting with each other. Studying only the components of energy and environment in isolation produces an incomplete understanding of the whole. Complexity science suggests that the natural tendency in problem solving of breaking down the problem into parts and solving a simpler problem is not sufficient for complex problems. A better approach to solving complex problems is to implement multiple approaches and then gradually shift time and attention towards those things that seem to be working best.

Davis and Simmt (2003) of the University of Alberta have turned the lens of complexity onto learning in mathematics. This provides a dualistic use of the complexity science perspective; not only are mathematics and science driven by issues of complexity, so is the teaching and learning of science and mathematics. They are

researching the application of principles of complexity to the teaching of mathematics. Complex systems are adaptive and emergent. They define how a complex system adapts in a Darwinian evolution manner, changing its own structure; and how it is emergent in that it is composed of and arises in the co-implicated activities of individual agents. The central thesis of their work is that mathematics classrooms are complex systems in and of themselves, systems which are adaptive and self-organizing. The contrast between current theories of knowing, such as constructivism, with complexity theories of knowing is striking. The constructivist epistemologies are focused on particular phenomena, such as an individual's or group's construction of knowledge. But complexity science is concerned with a range of nested learning systems which includes the co-implicated processes of individual sense-making and collective knowledge-generation. We might say that complexity science is more a meta-discourse, useful for reading across theories that are concerned with different levels or aspects of complex nested learning systems (Davis and Simmt 2003).

This view implies that we must move beyond efforts to bridge the phenomena of individual and social learning; from constructivism to trying to understand the emergent classroom community. It is our goal to take a complexity science view of the learning and teaching of mathematics and science in our programs.

UNCERTAINITY: Why uncertainty as a driver? The energy-environment nexus, as in many other areas of mathematics and science, requires that decisions be made with an acceptable level of uncertainty. The theoretical framework of *uncertainty analysis* is relevant to the Ph.D. programs' desired outcome of students working with uncertainty in mathematics and science. Uncertainty analysis aims to quantify the overall uncertainty associated with the response as a result of uncertainties in the model (Sayers, Gouldby, Simm, Meadowcroft and Hall 2002). Uncertainty is divided into natural (aleatory) variability which refers to the randomness observed in nature and knowledge (epistemic) uncertainty which refers to the state of knowledge of a physical system and the ability to measure and model it. In science knowledge is often captured through an imperfect model or theory, causing the boundary between natural and knowledge uncertainties to blur and change over time. Analysis of knowledge uncertainty has three key components: define what is uncertain in the modeling process (sources of uncertainty), define how to quantify output uncertainty consequent on the sources of uncertainty, and define how to condition the uncertainty estimate as data on model-predicted variables become available. Students studying the energy-environment nexus will examine large data sets, create a conceptual model and represent it quantitatively with a graph or equation, and finally implement a procedural model that will provide quantitative predictions (Abbot 2002; Beven 2001). The model may not be an accurate mathematical description of the physical processes, so it is subject to three different forms of knowledge uncertainty: process model uncertainty (all models are an abstraction of realty and so have inherent error), statistical inference uncertainty (error in estimating the population from a sample), and statistical model uncertainty (multiple models may fit the data equally well over the sample, so which is best for extrapolations/interpolations). Mathematical and statistical quantitative aspects of managing and modeling large data sets will be an enduring understanding that is highly valued as a student outcome in the Ph.D. programs.

Analyzing complex problems in the energy-environment nexus requires modeling large sets of data. There are a number of large, natural sciences data bases available for students to analyze such as: World Data Center System: NOAA's National Geophysical Data Center, Boulder, CO; Water Events Worldwide: United Nations Educational Scientific and Cultural Organization; Global Change Master Directory: Goddard Space Flight Center; and Global Resource Information Database: United Nations Environment Program – Sioux Falls, SD. The analysis of the data will require both quantitative and qualitative methods, including developing mathematical models to use for studying trends and making predictions.

INTEGRATED SCIENCE – COMPUTATIONAL SCIENCE DRIVER

The types of complex environmental, energy development and related issues facing society today simply cannot be addressed by any one traditional discipline or approach, and they cannot be resolved by basic or applied science alone. In response to this and related problems identified by the National Science Board (NSB, 2000), the National Science Foundation (NSF) convened the NSF Advisory Committee for Environmental Research and Education. This committee's report entitled "Complex Environmental Systems: Synthesis for Earth, Life, and Society in the 21st Century" (Pfirman and the AC-ERE 2003) presents a challenge "…to develop environmental synthesis to frame integrated interdisciplinary research questions and activities and to merge data, approaches, and ideas across spatial, temporal, and societal scales. An essential part of this process is the effective communication of scientific information, models, and conclusions to and among researchers, educators, students, resource and industrial managers, policy makers and the public."

These recent NSF reports directly relate to the real-world complexities and uncertainties associated with analysis and management of any energy-environment project or policy, which can be among the most complex and difficult issues facing society today. As such, these kinds of projects and policies demand an interdisciplinary approach, encompassing the traditional disciplines of the physical, natural and social sciences; mathematics and statistics; law and politics (and more). This Ph.D. program will integrate graduate students into a rich, interdisciplinary mix already in existence at the University of Wyoming to conduct cooperative course delivery and research in the Haub School of Environment and Natural Resources, the new School of Energy Resources and the Program in Ecology.

The Haub School of Environment and Natural Resources (ENR) strives to prepare students to address societal complexity and uncertainty associated with estimating environmental responses to energy development scenarios, ENR coursework and research strategies use a "problem-based learning" approach, wherein student teams, guided by faculty mentors, attack a highly complex and seemingly intractable real-world project or policy problem and complete a major integrated assessment of the project or policy consequences. A graduate capstone experience and research opportunities will bring students and faculty from disparate disciplines together, serving as culminating experience for students in their preparation as practitioners and educators.

Several of the modern integrating approaches to deal with the complexities and uncertainties of major energy-environment projects and policies that are used in these courses and research projects include the following: conceptual modeling of complex science and management options for understanding the key drivers of environmental responses to energy development alternatives (Henderson and O'Neil, 2004); risk analysis models for estimating rate functions within action-response networks in energy-environment systems provided by the U.S. Environmental Protection Agency in 1998; adaptive management strategies for handling major uncertainties inherent in energy-environment project tradeoffs, including staged development (e.g., partial oil field development), monitoring of environmental and economic responses, and altered next-stage development strategies; and collaborative education and involvement strategies for engaging decision-makers, stakeholders and the public in project and policy related decision making from the Council on Environmental Quality in 2006.

COGNITION DRIVER

The research program for the Ph.D. will focus on cognitive science related to the learning and teaching of complexity and uncertainty in STEM disciplines. Cognitive science is the interdisciplinary study of mind and intelligence, embracing philosophy, psychology, artificial intelligence, neuroscience, linguistics, and anthropology. A theoretical framework for cognitive science includes:

computational models analogous to mental operations complementing psychological experiments on deductive reasoning, concept formation, mental imagery, and analogical problem solving

linguistic approaches to identify grammatical principles that provide the basic structure of human language

neuroscience focus on the nature of the brain and what regions are involved in mental imagery and word interpretation

cognitive anthropology applying ethnographic methods to explore culture influences in cognition

expert-novice cognitive research

We want to develop graduate students with the capacity to be experts in cognitive science in the area of specific STEM disciplines. The purposeful program of study on complexity and uncertainty will incorporate cognitive and affective analysis of how students develop such reasoning across STEM disciplines and across the divide of high school and college. A focus on how student cognitive misconceptions of complexity and uncertainty develop and methods of addressing those issues will be studied. Current cognitive science theoretical approaches about how the mind works will be incorporated into the study, including mental representations interpreted as

formal logic, rule-based systems, concept schema and scripts, analogies in problem solving, and visual and spatial imagery.

Graduate students will engage in research on children's cognitive development in the area of complexity and uncertainty in science and mathematics across the Kindergarten, elementary, middle school, high school and college continuum. A critical component of a field internship will be the engagement of a cohort of research scholars in a common research agenda focused on children's cognitive development in this area. This development will encompass students' ability to model complex problems, critical thinking, reasoning, communication, and problem solving processes. Cognitive science research will be brought to bear on what energy and environment topics are appropriate on varying grade levels and on the learning trajectory for computational science and mathematical reasoning that support this science. A number of questions related to the complexity and uncertainty concepts will be of interest. What impact will integrating issues of complexity and uncertainty into the science and mathematics classroom have upon student's ability to critically reason about and solve complex problems? What is the level of cognitive processing that can be elicited across the K-12 and undergraduate science and mathematics curriculum by engaging students in large database research and technology-based data gathering? How do we promote conceptual understanding of science and mathematics through the study of complexity and uncertainty? What is the affective impact of engaging students in the real-world problems of complexity and uncertainty? What is the impact on student achievement gaps in science and mathematics for underserved populations in an integrated science and mathematics approach addressing complexity and uncertainty?

The focus on complexity and uncertainty in mathematics and science education carries with it questions of developmental and conceptual ability of students across the K-16 continuum. Graduate students will need to be versed in cognitive science in order to study this question. Efforts by psychologists to understand the acquisition of scientific knowledge and knowledge about scientific method, though reflecting variety in theoretical orientation, have illuminated important factors in the development of scientific understanding. One such factor is the role of prior knowledge of the domain which has been shown to figure importantly in the formulation of questions and hypotheses (Klahr, Fay and Dunbar 1993; Penner and Klahr 1996; Schauble 1990; 1996). Another is the ability to distinguish between, and to coordinate, theory and evidence (e.g., Klahr and Dunbar 1988; Kuhn, Amsel and O'Loughlin 1988). Carey and Smith (1993) have noted that many students do not recognize that science is fundamentally a theory-building endeavor. Another factor that may influence the development of scientific reasoning is awareness of one's own thinking; recent studies in children's "theory of mind" have suggested important developmental changes that may bear on this element (e.g., Chandler, Hallett and Sokol 2002). Several lines of research have converged on the characterization of children as moving from a view assuming straightforward, sensory-based knowledge in which truth is an easily obtained objective to a view in which science is admitted to involve active interpretations of deliberately staged experiments, mental manipulations, and theories (i.e., frameworks for knowledge that may yet contain uncertainty) (Carey and

Smith 1993; Grosslight, Unger, Jay and Smith 1991). Thus, children's understanding of models as a scientific tool undergoes significant change. These known factors in the development of scientific thinking will be taken into account (maybe even treated as aspects of manipulations and/or measured outcomes) in activities fostered by the proposed program.

APPRENTICESHIP DRIVERS

The graduate students will develop personal and professional skills by engaging in a professional apprenticeship model. They will work as a community of scholars on issues of complexity and uncertainty in mathematics and science education. As members of the community they will participate in a cutting edge seminar series focusing on STEM research and education issues featuring speakers from within and beyond the University of Wyoming. They will complete research projects, first under highly structured mentoring, and later as individual, and present results at regional and national meetings. They will submit a state and national grant supporting the dissemination of their research and broadening its impact. The grants will provide for continued research on complexity and uncertainty in K-12 and undergraduate classrooms, as well as the development of contemporary curricula. The cohort will collaboratively publish papers in STEM education in collaboration with faculty in science and education.

STEM RESEARCH PROJECTS (at pre-dissertation stage): The doctoral cohort will engage in integrated mathematics and science research internships with University of Wyoming mathematicians and scientists in the areas of energy, environment, and computational science at the pre-dissertation stage. They will participate in the numerous seminars offered through HENR, PiE, and SER, which invite national and international speakers to the University of Wyoming. In collaboration with HENR and SER, the graduate students will participate in a research and policy project on energy and environment. They will have the opportunity to interact with the internationally renowned board of advisors for the HENR. They will also have opportunities to collaborate with mathematicians and scientists working on modeling projects with the National Center for Atmospheric Research (NCAR), including use of the new super computer to be built in Wyoming.

STEM EDUCATION – Preservice Teacher Apprenticeship: Graduate students will partner with College of Education and College of Arts and Sciences faculty to integrate complexity and uncertainty in mathematics and science into the professional development of K-12 pre-service teachers. With recent education reforms focused on a socially-relevant science curriculum and incorporation of exciting discoveries and applications, the role of scientists in teacher professional development has become paramount (Drayton and Falk 2006). In pre-service science teacher development programs it is believed that integrating scientific experiences benefit the field "by exposing them [students] to the leading-edge techniques/technologies" (Bloch 1990, p. 841).

Most programs involving mathematicians or scientists and teachers working in collaboration are limited to sporadic experiences for both groups, with management and control mostly executed by the invited higher education faculty member. There have been different ways in which scientists have been involved in science teacher education programs. For instance, a scientist and science teacher team teach a lesson (Anderson 1993; Wier 1991), or participate in summer internships that include meetings during the following year. This proposal is oriented towards establishing a new model in mathematician-scientist-science teacher collaboration. In our program, both pre-service and in-service teachers are engaged in addressing issues related to energy and environment. Experts in the field and researchers (i.e., graduate students, scientists) assist pre-service teachers during their junior and senior years. This is a crucial stage in the mathematics and science teaching certification program because it is when pre-service teachers incorporate their content knowledge into the planning, implementation and assessment of teaching and learning before their residency semesters and full-time careers. This partnership effort is also significant because mathematics and science educators, as recommended by the National Research Council's standards, are to seek connections with other groups of practitioners within the local, national and international community. Therefore, there is evidence that highlights (1) the merit of this collaboration, especially from the standpoint of the value of pre-service teachers' involvement in research experiences, and (2) mathematics and science teachers gain great understanding of the scientific enterprise and its features (i.e., uncertainty) in connection to science teaching (Cunningham and Helms 1998; Helmer 1997).

The scientist (graduate student)-pre-service science teacher collaborative work in this proposal is focused on features such as uncertainty and complexity of the scientific knowledge as central characteristics of the scientific practice. This is a valid framework that researchers (Bowen 2004; Roth 1995; Varelas, House, and Wenzel 2005) have used to understand and associate the practice of science in educational settings. The finished science products, as reported in science textbooks, are not the only pictures we want our pre-service science teachers to portray and show in their classrooms. They need to tell their student not only 'where we are now (knowledge of science) but also how we get there (knowledge about science)" (Wandersee 1992, p. 428). Science is a human endeavor and builds a type of knowledge that is durable but tentative. These are features that translate into attitudes educators observe in their classrooms; human curiosity oftentimes has resulted in scientific breakthroughs as scientists wonder about reality or practice their problem-solving skills to tackle phenomena in nature. This approach to scientist-science teacher connection highlights the goal of our STEM teacher education by "helping science teachers challenge and refine their ideas about teaching and learning science and learn how to learn from experience" (Bryan & Abell 1999 p. 137).

STEM EDUCATION – Outreach Teacher Apprenticeship: The graduate students will also work with teams of K-12 teachers, scientists and mathematicians, and science and mathematics educators in outreach internships lead by the Science and Mathematics Teaching Center (SMTC) at UW. With mentoring support, the internships will place them in a leadership role in providing professional development for

teachers in the field. The professional development theme will be complexity and uncertainty issues in energy, environment, and computational science. Partner K-12 schools in Wyoming that are teaching environmental and energy issues in the classroom (Journey School, Jackson; Star Lane Academy, Casper) will serve as partners in research on student development of understanding complexity and uncertainty in science and mathematics.

RECRUITING, RETENTION, AND DIVERSITY

If the graduate students are to become leaders in mathematics and science education around the country, it is important that they be broadly representative of diverse ethnic, racial, and cultural backgrounds, gender, non-traditional students and international students. A comprehensive recruitment plan is needed with special emphasis on locating prospective students from underrepresented groups. We will incorporate a team of University of Wyoming faculty who are Hispanic, Native American and African American to take a lead role in recruiting and mentoring underrepresented graduate students for the program. A broad base of students will be recruited from within the University of Wyoming and from other universities, as well as potential students who are working in professions. Recruitment will start at UW within science-related departments and the College of Education to identify potential candidates among their students completing bachelors and masters degrees. In addition, presentations will be made to the McNair Scholars on campus (a graduate school preparation program at UW for low income and first generation college students) as well as students who have participated in the federally-funded TRiO Math Science Initiative at UW, the Summer Research Apprentice Program (SRAP) and the Minority Engineering Program.

We will collaborate with the Graduate School and a variety of UW academic departments and programs in their outreach efforts including the Minority Student Recruitment program. Recruitment from other universities will focus on Minority-Serving Institutions (Historically Black Colleges and Universities, Tribal Colleges, and Hispanic-Serving Institutions); large public universities with good minority recruitment programs, such as UCLA, the University of Michigan, and the University of Texas at Austin; private colleges and universities that do an excellent job of enrolling a diverse student body, such as Harvard, Stanford, Wesleyan, and Yale Universities; majority institutions with large minority enrollments, such as Arizona State University; and intervention programs with good track records, such as the Meyerhoff Program at the University of Maryland (a program that focuses on highly able African-American students who aspire to become leading research scientists and engineers – some may be interested in a career in teaching in higher education). Faculty and staff will also contact science and education departments at universities that do not offer PhD programs in their specific areas and ask them to recommend good candidates.

Specific strategies for identifying and attracting members of underrepresented groups who are working in various science-, education-, environment- and energy-related professions include recruiting at various conferences, advertising in their

publications and websites, and sending direct mail. Organizations will include the Society for the Advancement of Chicanos and Native Americans in Science, the American Indian Science and Engineering Society and its college chapter at UW, the Society of Hispanic Professional Engineers, the National Association for Multicultural Education, and the National Science Teachers Association and its affiliate Association for Multicultural Science Education. The graduate program opportunity will also be advertised to teachers currently teaching in the sciences in Wyoming and the region.

A Summer Research Institute for Graduate Students will be held with the express goal of recruiting underrepresented students for the doctoral program. The institute will introduce prospective students to STEM and STEM education faculty, allowing them to explore common research interests and examine labs. The prospective students will also meet with faculty to discuss issues of support and mentoring at the University of Wyoming. The University has strong student support groups and student services. The graduate students will have mentors and advisors who will have been provided with special training. A special emphasis will be placed on involving the graduate students in research, professional societies and the intellectual life of the university.

The University of Wyoming will provide a rich experience for students from diverse backgrounds. The graduate students will work with highly diverse urban public schools in Denver as well as rural tribal schools in Wyoming as part of their program. UW has well-established relationships with schools in both areas that have been a part of the education program for all teacher-education candidates for many years. Diversity is supported and encouraged through the UW President's Advisory Council, the Ethnic Studies Program, Martin Luther King Days of Dialogue, the Women's Study Program, and the nationally renowned Shepard Symposium on Social Justice. In addition, the University of Wyoming has a new initiative, the Social Justice Research Center, which will provide graduate students additional mentoring and research support.

SUMMARY

The proposed Ph.D. in Mathematics Education and Science Education incorporates cognates and apprenticeships that will engage the students as practitioners embedded in the larger community of STEM scientists, mathematicians, and educators. The primary drivers of complexity and uncertainty motivate an integrated science approach based in modeling real-world phenomena using mathematics and technology. Graduates of such a program are uniquely poised to address pressing needs in K-12 and undergraduate STEM education. There is a pressing need to move curricula from the current silo approach to teaching mathematics and science as a collection of isolated facts, to an integrated approach that coalesces STEM disciplines around real-world problems. There is a pressing need to provide preserve and inservice teachers with professional development that prepares them to teach mathematics and science through a problem/project based pedagogy that engages and motivates

students by demonstrating the utility of science. There is a pressing need to develop teacher educators that are enculturated into the STEM communities way of knowing (what does it mean to DO science or mathematics) and reflect the central concepts of scientific inquiry and mathematical problem solving/proof in their practice. Overall, our program is a purposeful response to a pressing need to bring educational research in the area of cognition to the classroom in a way that positively impacts teacher's practice and student learning.

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SECTION IV:
THE IMPLICATIONS OF INDIVIDUAL IDENTITY WITHIN THE DOCTORATE: INDIVIDUAL PERSPECTIVES ON NEGOTIATING THE DOCTORAL EXPERIENCE

DIANE RODRIGUEZ AND KENNETH LUTERBACH

10. DOCTORAL PROGRAMS IN SPECIAL EDUCATION

What Can We Do to Recruit Culturally and Linguistically Diverse Students?

> Today we begin in earnest the work of making sure that the world we leave our children is just a little bit better than the one we inhabit today. President Barack Obama

Individuals involved in the education of children with special needs are concerned about the shortage of personnel in higher education in the field of exceptionality. This has been true for the past quarter century. In the early 1990s, researchers had noted that for over a decade, authorities in the field of special education have been shouting out loud about the shortage of, and need for, personnel in special education (Sindelar, Buck, Carpenter, and Wantanabe 1993; Smith and Pierce 1995). Calls for attention to this issue continue today. Wasburn-Moses (2008) stated: "despite the growing demand for professionals with doctoral degrees in special education, doctoral programs are not producing enough graduates to fulfill this need" (p. 259). Additionally, educators are equally concerned about the quality and design of doctoral special education programs across the United States. As the number of children with special needs continues to increase, school districts must respond to the needs of teaching and preparing these young individuals for society. In response to the needs of school district personnel, institutions of higher education must ensure that high quality programs are available to attract prospective educators and to prepare them well to teach in special education. In order to create and maintain high quality special education programs, institutions of higher education must recruit and retain faculty specializing in the field of special education and/or exceptionalities. Further, given today's demographics, institutions of higher learning need to treat culture and language as vitally important issues rather than as political issues. One key indicator of how effectively a college or university is responding to changing demographics is the number of culturally and linguistically diverse faculty recruited and retained. Another effectiveness indicator for institutions of higher education with Schools or Colleges of Education is the extent to which teacher preparation programs consider instruction for culturally and linguistically diverse students with and without disabilities. According to Tyler, Lopez-Reyna and Flippin, (2002) there is a shortage of culturally and linguistically diverse teachers in the "special education teaching field and the percentage of teachers do not reflect the demographics of the student population" (p. 7). They further agree with researchers who, based on previous studies, have

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concluded that there is a "significant effect of the race or ethnicity of students whom teachers determine are difficult to teach or who require additional support, with students from diverse backgrounds" (p. 14). Given the current demographics in U.S. society, the sooner the curricular offerings will prepare teachers for the grade school students they will encounter, the better off children and youth will be academically, cognitively, affectively, and socially.

Some administrators and faculty members in higher education realize that the shortage of special education personnel is critical (Wasburn-Moses 2008; White 2004), but this message must be reiterated in order to alert more stakeholders to this problem. In addition to increasing awareness of this issue, it is helpful to offer solutions that may eliminate or at least alleviate the problem. In order to offer recommendations intended to increase the number of students entering special education and to offer recommendations concerning the development of appropriate and high quality programs in this field, we consider multiple issues in this chapter. As alluded to earlier, one consideration pertains to the curricula of doctoral programs. Should the curriculum include components of in-depth analysis and studies related to culturally and linguistically diverse students in special education programs across the country or is this only a superficial aspect of multiculturalism in special education? Other considerations are captured in the following questions. Are doctoral candidates prepared for research in multiple areas of special education? How can we attract and retain more culturally and linguistically diverse doctoral students? Do institutions of higher education have the financial resources necessary to produce sufficient numbers of graduates of Ph.D. and Ed.D. programs in special education? As educators, do we consciously reflect on the needs and demands established by our school districts? How can we start promoting effective and quality models of teacher preparation in special education? In this chapter we consider those issues in an attempt to address the recruitment and retention of faculty from diverse backgrounds into special education. We also consider the use of technology as a tool for searching for doctoral programs in special education. In this regard we discuss four searching methods, one of which is being developed uniquely for the task of finding current information about doctoral programs in special education.

RECRUITMENT OF FACULTY FROM DIVERSE BACKGROUNDS INTO SPECIAL EDUCATION

To succeed in the recruitment and retention of diverse faculty in the field of special education it is helpful to understand why there exists such a shortage of teachers and faculty. We will consider that shortage, and how to address it, from multiple perspectives, including mentoring, curriculum resources, financial incentives, funding opportunities, scholarships, stipends, and multifaceted systems of retention. We first consider those issues in light of a particular recruitment framework. In particular, Tyler, Yzquirdo, Lopez-Reyna, and Saunders (2004) established three justifications for recruitment of diverse faculty and teachers in the field of special education. Those justifications include: (a) equity and social justice; (b) over representation of culturally and linguistically diverse students in special education; and (c) impact on

student learning. As a diverse society, if educators want to address diversity issues, teachers and faculty should reflect the current demographics our nation is facing today. Smith, Tyler, Pion, Sindelar, and Rosenberg (2001) have called the shortage of faculty the first layer in chain that affects special education students in the third layer. The shortage of quality special education faculty in the first layer results in less than optimal training for teachers (second layer) and this in turn negatively affects the education of children with disabilities (third layer). By increasing the number of educators who are from a culturally and linguistically diverse background, there will be greater parity with the current demographics. In addition, more culturally and linguistically diverse professors would serve as liaisons from institutions of higher education to school districts, to communities, and directly to culturally and linguistically diverse families. As liaisons, culturally and linguistically diverse professors would convey to children from minority backgrounds that they have access to quality education. Messages to culturally and linguistically diverse youth about equal access to educational opportunities are consistent with social justice.

For decades, special education programs have been facing overrepresentation of children from culturally and linguistically diverse backgrounds. To address the significant problem of this overrepresentation, educators need to continually question whether children from culturally and linguistically diverse backgrounds are appropriately assessed and identified. Educators should also question the suitability of the curriculum. Does the curriculum prepare students in teacher education programs to understand the cultural and linguistic learning styles of diverse ethnic groups? Although many educators have demonstrated an interest in teaching this particular population and to ensuring that instructional materials for them are appropriate, there are still many unconscious or conscious stereotypes embedded in educational materials. Quality education begins with teacher preparation programs that promote diversity and multicultural issues in an equitable manner to better educate all children, including culturally and linguistically diverse students with and without disabilities. A greater number of culturally and linguistically diverse faculty could have a positive impact on student learning through their teaching and indirectly by refining the curriculum in a manner consistent with social justice.

While the Tyler et al. (2004) framework provides one particular lens through which to consider recruitment and retention of culturally and linguistically diverse faculty, consideration of additional perspectives adds to the conversation. As noted by Smith et al., institutions of higher education may employ various strategies to recruit faculty. Those institutions could start by reducing the cost of doctoral programs, and by providing higher salaries, loan forgiveness, and faculty mentoring before and beginning of the career. Yung and Rousseau (2000) discussed other possibilities for encouraging culturally and linguistically diverse individuals to pursue profession careers in special education. They discuss family responsibilities; intellectual challenges; and lack of self-confidence, which impedes culturally and linguistically diverse individuals from pursuing a doctoral degree in special education.

The quality of doctoral programs in special education and the suitability of those programs to culturally and linguistically diverse people affect recruitments rates. To help ensure that culturally and linguistically diverse students are satisfied with

their doctoral programs, professors and administrators of those programs do well to continually reflect on efforts to provide high quality programs. Pertinent questions in this regard include: Are we truly preparing doctoral candidates for future faculty positions? Are all special education faculty really ready to guide doctoral students in such an endeavor? Do all doctoral students in our special education program need to publish an article in a refereed journal in order to graduate? Are the graduates of our doctoral program ready to pursue a research agenda? How many doctoral candidates get the opportunity to teach college courses? Regarding doctoral students who will be pursuing work in clinical settings or schools, do they know what professional services they must provide; are they prepared to lead innovative programs in their schools? Many universities provide a rich research environment for doctoral students while some doctoral programs struggle to do so. Care must be taken when selecting a doctoral program. One consideration when selecting a doctoral program is the extent to which university programs collaborate or partner with practitioners.

The collaboration among institutions of higher education and school districts is imperative. For example, Transition to Teaching grants from the United States Department of Education require collaboration between the Colleges or Schools of Education and local school districts in order to refine efforts related to recruiting, hiring, and retaining school teachers in low socioeconomic regions. When such collaborations are established, all parties have a stake in the achievement of objectives and the commitment of the parties reflects this. Indeed, collaborations like this help address the many challenges faced by special educators, including class size, work overloads, and stressful work environments. After completing a doctoral program, hopefully one that has offered opportunities for research and practical experience through partnerships with practitioners, attention turns to job seeking.

Institutions of higher education have expressed intentions to diversify the faculty in special education, but the critical shortage of well trained personnel in the field makes this quite challenging. Once institutions of higher education hire individuals from diverse backgrounds to serve as faculty members, the institutions should seek to enhance retention by offering: (a) satisfying salaries; (b) mentorship; (c) guidelines for publications; (d) teaching loads commensurate with success; (e) research support; and (f) clear criteria for attaining tenure and promotion. Improving even just the last one of those factors, by making tenure and promotion criteria explicit and clear, would assist in the recruitment and retention of individuals from diverse backgrounds.

In summary, institutions of higher education need to increase the recruitment of culturally and linguistically diverse faculty into their doctoral programs for multiple reasons. First, as stated by Billinsley and McLesky (2004), “the shortage of fully certified special education teachers, which has been described as severe, chronic, and pervasive, threatens the quality of educational services that students with disabilities receive. Second, Davis and Garcia (2002) found that culturally and linguistically diverse students with disabilities who are receiving special education services are not making adequate progress because the “instructions they receive do not adequately address their sociocultural and linguistic characteristics” (p. 609). Third, even after 40 years of attention (Dunn 1968) a lack of understanding about sociocultural and linguistic characteristics is still causing overrepresentation of minority

children in special education. Fourth, universities with doctoral programs in special education must take action because the supply of personnel from extant programs provides little hope of improvement (White 2004). Finally, institutions of higher education need to increase the recruitment of culturally and linguistically diverse faculty into their doctoral programs in order to remedy the disparity in equity of educational opportunity. Educators have known for many years that culturally and linguistically diverse students with disabilities have difficulty succeeding in school and have recommended that those students receive necessary and adequate individualized educational plans for academic success. More culturally and linguistically diverse special educators would help alleviate this disparity.

USING INFORMATION AND COMMUNICATION TECHNOLOGY TO IDENTIFY DOCTORAL PROGRAMS IN SPECIAL EDUCATION

Searching for information about academic programs of study may still be done using paper publications, but electronic searching is most helpful for obtaining accurate and current information. Electronic searches are conducted using Information and Communication Technology (ICT), which for our purposes here is a computer connected to the Internet and capable of retrieving information from the World Wide Web. To find information about doctoral programs in special education, prospective students (and their mentors) may pursue one of four options.

One option is to open a web browser in order to check Peterson's list (http://colleges.petersons.com/bymajor.asp?mn=Education&cipcode=13). After accessing that page, simply click any of the special education links. Unfortunately, the hyperlinks in Peterson's list actually lead to the home pages of colleges and universities, rather than directly to information about the special education programs.

Another web browsing option involves conducting a search of the Personnel Preparation Programs database, which is maintained by the National Association of State Directors of Special Education. To search that database, one can go to http://www.personnelcenter.org/get.cfm; then click the checkboxes beside information of interest to you (e.g., a particular U.S. state, or all of them; doctoral programs, particularly Ed.D/Ph.D.; and Office of Special Education Programs, OSEP, funding); then click the search button at the bottom of the page. Database searches present contact information and hyperlinks to schools of education, special education departments. Although some hyperlinks are broken or out of date, searching this database may lead to the information you seek.

The remainder of this section contrasts two methods for electronic searching of doctoral programs in special education. First, we consider the use of search engines on the World Wide Web (particularly Google and Yahoo). Second, we discuss a web crawler which was designed to identify doctoral programs in special education offered by universities and colleges in the United States. In addition, the web crawler seeks to determine whether various programs offer students financial assistance.

One approach to gaining information on the World Wide Web is to conduct a keyword search. Entering "doctoral programs in special education" (quotation marks included) into the Google search engine (http://www.google.com) on January 12, 2009

yielded approximately 2100 hits whereas the search in Yahoo (http://www.yahoo.com) produced about 500 hits. Without the quotation marks around the keywords, doctoral programs in special education, Google generated 413,000 hits whereas the results for Yahoo ballooned to 16,200,000. Perhaps for obvious reasons, the latter results were not considered, but a sampling of the first round of results revealed that keyword searching in typical search engines may not prove worthwhile. While the links generated by the search engines led to the doctoral programs in special education at various colleges and universities, some of the other links lead to scholarly articles concerning doctoral programs in the field of special education. While the links to those articles were of some value to these authors, the links would be of little help to someone seeking information about extant doctoral programs in special education. Further, none of the links sampled led directly to information about whether the doctoral programs offered students any financial assistance. Since funding opportunities are highly beneficial to culturally and linguistically diverse students, as well as other students, hyperlinks leading directly to web pages with that information would benefit recruiting efforts. Today, however, search engines on the World Wide Web are not capable of producing such refined results. However, special purpose software can improve upon those results.

Search engines on the World Wide Web rely on software called web crawlers (which may also be called spiders, web crawling robots, web bots, or just bots) that visit or "crawl" through web pages in an automated fashion, without human involvement. By extracting some keywords from the web pages visited, web crawling programs create an index that associates key words with particular web pages. This does aid searching, in general, but as our searching scenario for doctoral programs in special education reveals, general purpose searching may not be adequate.

To help meet more specialized needs, a web crawler was developed to access (or crawl) the web pages of colleges and universities in the United States in search of doctoral programs in special education and whether those programs provide any financial assistance. Figure 1 presents a non-technical overview of the method implemented in the web crawler, which seeks to find doctoral programs in special education and any financial assistance available to students.

To find a list of hyperlinks to university home pages, the web crawler accessed the web page at www.utexas.edu/world/univ/state, which presents approximately 1900 hyperlinks to the home pages of U.S. colleges and universities. The web crawler attempted to access each of those hyperlinks and, when feasible, executed the method described in Figure 1. In order to gain insights into the functioning of the web crawler, consider the web crawler's visit to Vanderbilt University.

Just as a human being would go to http://www.vanderbilt.edu in order to view the home page of Vanderbilt University, the web crawler also uses that Uniform Resource Locator (URL). However, after retrieving the content of a web page, the web crawler does not render the content in a visual form. That is what web browsers do to enable human beings to perceive web content. Instead, the web crawler parses the words of hyperlinks (which many technologists call anchor tags), web page titles, and meta tag descriptors in attempts to determine the content of a web page and to determine which page to visit next. Human visitors to Vanderbilt University's

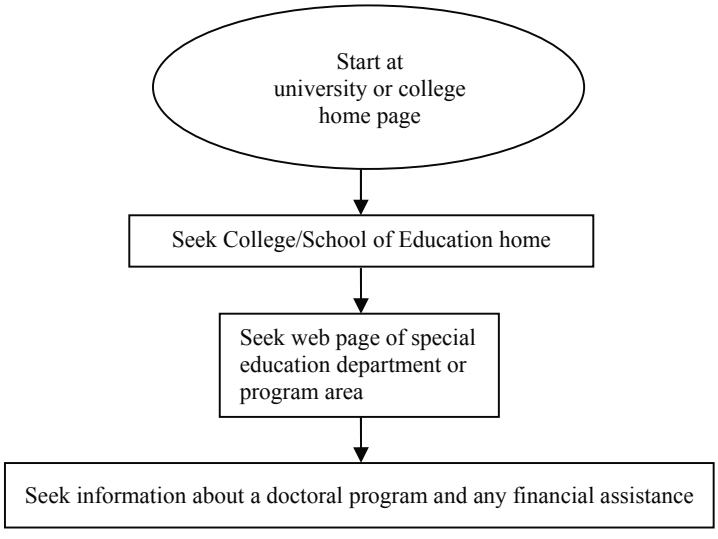

Figure 1. Web crawling method.

home page will find a side bar of hyperlinks, one of which is labeled "Colleges and Schools." While searching through the anchor tags at Vanderbilt University's home page, the web crawler also discovers the Colleges and Schools link. The web crawler is programmed to follow a link with such a label (or a similar one). At the Colleges and Schools page (www.vanderbilt.edu/colleges.html), both a human being and the web crawler readily find the link to the Peabody College of Education and Human Development. By continually extracting key words in hyperlinks and accessing web pages that may lead to or provide the information sought, the web crawler continued through the Peabody College of Education and Human Development web pages to the Department of Special Education and then to information about doctoral programs and financial assistance. That may seem simple enough, but multiple complications do arise when crawling through web sites and they are important to note in order to convey the limitations of this and other web crawlers.

In its current state, the web crawler does not really engage in anything that would be regarded as natural language processing. Whereas human beings read the content of web pages in order to obtain information, many web crawlers focus strictly on keywords in hyperlinks. In the case of this web crawler, if there were no hyperlinks to information about doctoral programs in special education and to information about financial assistance, the web crawler had no potential to discover such information. Further, sometimes no words are associated with hyperlinks. In some hyperlinks, images appear in place of words. For human viewers of pages, the images may very well display a word or words, but images cannot be parsed like text. Fortunately, references to images in web pages often include a brief textual description of the image. Also, in the case of this particular web crawling application, there is no shortage of text-based hyperlinks to information about academic programs in the web pages published by colleges and universities.

Another limitation to information encountered by web crawlers includes sites that disallow or do not desire access by web crawlers. This limitation reduced access by less than 1% of the total pool of institutions. Lastly, on the non-technical side, the key words of interest in this application (e.g., colleges, schools, faculties, departments, divisions, units, areas, academics, programs, and education) often lead to hundreds of web pages at any one institution. Given so much information, searching algorithms require refinement or fine tuning in order to retrieve desired information in a precise manner. Parenthetically, insights into the technical details and challenges concerning the development of web crawlers can be gleaned from multiple web sites, papers and books (e.g., see www.mingo.info-science.uiowa.edu/padmini/Papers/crawlingFinal.pdf) for a technical article titled, Crawling the Web, by Pant, Srinivasan, and Menczer). In all this light, how did the web crawler perform on its first run and what remains to be refined?

Although the web crawler remains in a developmental stage, on January 14, 2009 it did access 1916 university/college home pages and found the home pages of 383 colleges/schools of education. The web crawler identified 15 doctoral programs in special education and, by mistake, four doctoral programs in Educational Leadership. The web crawler identified 17 web pages that contain information about financial assistance; four of those pages are errors because the information on the page pertains to funding for people other than special education students. The web crawler did output a file containing hyperlinks to the colleges/schools of education it identified; as well as hyperlinks to doctoral programs in special education and hyperlinks to web pages concerning financial assistance (www.personal.ecu.edu/luterbachk/InitialResults.html).

To enhance the utility of the web crawler, two key goals will be pursued immediately. First, the web crawler's criteria for identifying special education programs will be adjusted in order to identify more Colleges and Schools of Education and, in particular, more doctoral programs in special education, with and without financial aid for students. Second, rather than a single web page of hyperlinks to all data detected by the web crawler, a searchable interface to the web crawler's results will be developed.

Longer term goals include improvements to the speed of the crawler. Although the speed of the crawler does not affect those searching the results, a faster crawl would enable more frequent crawls for the latest data. This is certainly not a priority because the crawler could be run on a daily basis as is. Another long term goal is for the crawler to search for information about other academic programs offered by colleges and universities. This actually raises an important issue regarding the searching method or algorithm.

As depicted in Figure 1, the web crawler first seeks a College or School of Education home page, before finding the Special Education Department or Program Area, and then the actual information sought about degree programs. An alternative approach is available. Some universities have a web page that lists degrees offered by academic units. Some institutions use two web pages for that purpose, one for undergraduate degrees and one for graduate degrees. Experience gained while developing the web crawler has led the authors to hypothesize that the most accurate information about degree programs is acquired through the web pages of academic departments

or program areas. The authors noticed that the listings of degree programs created by institutional offices of graduate studies were not as complete as departmental representations. In some cases, institutional offices of graduate studies advise prospective students to go to the web sites of the actual academic departments offering the degree programs in order to obtain more detailed information. Given this realization, the developers decided to go straight to the most likely source of accurate information. There are trade-offs, though, because each approach has some advantages and some disadvantages. It is certainly conceivable to write a web crawler that pursues both options and then checks for consistency. This option is more viable for web crawlers that extract information from the content of web pages rather than only from hyperlinks.

Returning to the two immediate goals, the developers believe that both of them can be achieved within two or three months (perhaps about the time this book is available). Tuning the web crawler's searching capability will enable it to find more doctoral programs in special education and more information about financial assistance. Progress toward that goal will be made on a daily basis. Achieving the goal of making the web crawler's results searchable will be achieved in two steps. First, the web crawler will output results by inserting records into a relational database. Second, the developers will create an interface that enables retrieval of the data in accordance with the user's wishes. See http://personal.ecu.edu/luterbachk/WebCrawlerInfo.html for information about the latest developments.

The development of the user interface will be guided by user centered design principles. In other words, the interface will be refined repeatedly based on feedback from users. After selecting the data they wish to view, users will press a submit button, which will result in the generation of a database query. The design of the database for this system is depicted in the entity relationship diagram in Figure 2.

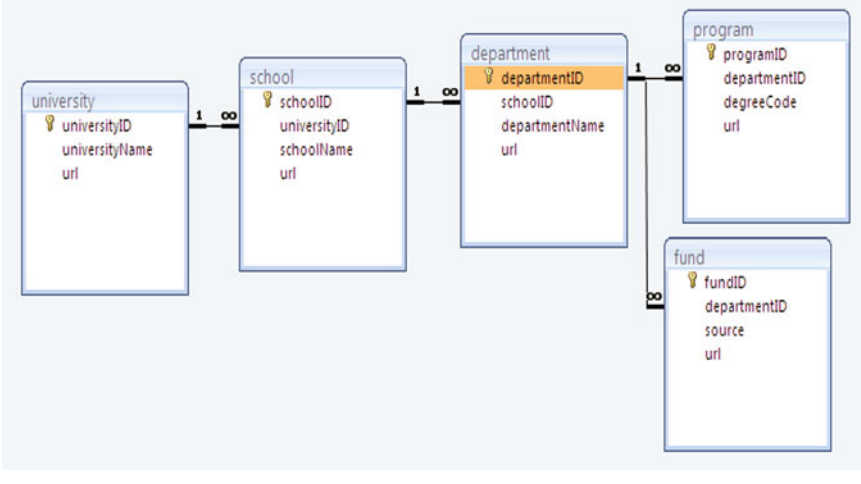

Figure 2. Entity-relationship diagram for the web crawler.

The development of the underlying relational database will be rapid because the field names; the data types for each field; the tables; and the relationships between the tables are all known. With respect to table relationships, the ER diagram depicts four one-to-many (which appear as 1—∞) relationships. In the case of the university and school tables, the one-to-many relationship means that any one university can have many (i.e., more than one) schools (e.g, School of Education, School of Business, School of Arts and Sciences). Although the table name is school, any university may refer to its academic units as colleges or schools (or even in rare cases, faculties). The name field in the school table will store the actual name of the school, college, or faculty. While we are interested only in Schools, Colleges, or Faculties of Education in this work, the design of the database permits expansion to other academic units.

The database programming will utilize the Standard Query Language (SQL), which permits the development and maintenance of relational databases with four commands, namely insert, delete, update, and select. Using those four commands a database application can insert, delete, update (i.e., modify the values in records), and retrieve records. The web crawler software will control the insertion, deletion, and modification of records in the university, school, department, program and fund tables. In contrast, based on user preferences, the user interface software will create a database query, which will retrieve records from the database.

CONCLUSION

This chapter considered the importance of increasing the number of culturally and linguistically diverse students in doctoral programs in special education and increasing the number of those graduates in the field, both as professors in higher education and as practitioners. As discussed, the recruitment and retention of diverse students and faculty in special education is important for multiple reasons. First, efforts to increase the number of diverse students and faculty in special education would address the shortage of special education researchers and practitioners in the United States. As Smith et al. stated: "The faculty shortage has a direct impact on the education of children with disabilities. When fewer doctoral students accept faculty positions, fewer special education teachers can be prepared. When fewer special education teachers are prepared, children with disabilities are either not served or receive instruction from unqualified teachers." (p. 11). Greater numbers of diverse practitioners would directly benefit students with disabilities in school districts. Indeed, children from culturally and linguistically diverse backgrounds would benefit academically, socially, and emotionally. As Darling-Hammond (2003) stated: "Keeping good teachers should be one of the most important agenda items for any school leader" (p. 6). Unless the numbers of diverse practitioners in schools is increased, one ought to ask: What are the chances that culturally and linguistically diverse students with disabilities will have equal access to a quality education?

A greater number of ethnically diverse faculty members in special education would help to reduce the plague of overrepresentation of children from culturally and linguistically background in special education. Culturally and linguistically diverse faculty could teach their students how to correctly diagnosis exceptionalities. Further,

more ethnically and linguistically diverse faculty would increase the number of role models, which would attract more individuals from diverse backgrounds to the field of exceptionality. To increase access to doctoral programs for culturally and linguistically diverse individuals, institutions of higher education may reduce the cost of doctoral programs; guide prospective students through the many admission requirements; offer financial assistance; and improve the quality of their programs by making them more appropriate for culturally and linguistically diverse students. To increase the number of special education faculty, institutions of higher education may offer satisfying salaries; mentoring; opportunities for joint research and publication; and clear criteria for attaining tenure and promotion.

Whether interested in enrolling in a doctoral program of study in special education or helping one find information about those programs, this chapter presented four options. Accessing information through the hyperlinks available at Peterson's index may be helpful. Additionally, the contact information and hyperlinks generated by searching a database of personnel preparation programs, which is maintained by the National Association of State Directors of Special Education, may be beneficial. Third, seeking information through general purpose search engines may lead to the identification of hyperlinks to pertinent web pages. Fourth, the first run of a web crawler has identified web pages of particular doctoral programs in special education. The web crawler also identified web pages describing any financial assistance available to students. The results of the web crawler, which contain hyperlinks to the pertinent information, are currently available on the web.

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MEADOW GRAHAM, SARAH SELMER
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11. INDIVIDUAL DOCTORAL EDUCATION EXPERIENCES AND ACADEMIC STEWARDSHIP

INTRODUCTION

What are the visions, core values and purposes of educational doctoral programs? Guided by the words of the Council of Graduate Schools, consider whether educational doctorate programs "prepare a student for a lifetime of intellectual inquiry that manifests itself in creative scholarship and research" (Bargar and Duncan 1982, p. 12). Within this piece, the exploration of doctoral programs focuses on the individual students' experiences. Ultimately, the development of an academic identity is a process students themselves must shape and direct (Walker 2008).

The shaping and guiding of experiences can be influenced by programs and participating faculty, however, the evaluation of these experiences are rooted in the individual experiences of the participants. Turning to the literature, demographic studies of doctorate education explore broad characteristics of education schools including offered programs, faculty credentials, degrees awarded, student dissertations and various other programmatic attributes (Levine, 2007, p. 8). There are also specific university case studies exploring programs based on purpose, curricular choices, specific faculty composition, admission criteria, graduation and degree standards, research focus, finances, and assessments (Levine, 2007, p. 7). Yet, the case study fails to truly explore the experiences of the students within program. The purposes are explained and considered, but what are the realities of the experiences for the participants? The critical nature of these individuals' experiences is based on the incredible diversity found in higher education. The presence of diversity makes it difficult to really assess and discuss doctorate programs based solely on demographic and case studies, which are not focused on the individual.

Institutional Diversity

Consider the diversity found within and between institutions and the individuals pursuing educational doctorates and one finds the depth and breadth extraordinary (Levine 2007, p. 7). There are free-standing institutions and subunits within larger colleges and universities. There are for profit and not-for-profit, public and private, sectarian and non-sectarian. There are large and there are small institutions; undergraduate programs, graduate programs and combinations of both. There are colleges of education with scores of programs in a variety of subject areas, covering education

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in the broadest sense of the term—in and out of the classroom and across the lifespan. They differ in their emphases on teaching and research. Some model themselves after professional schools; others favor the graduate school of arts and sciences model; and most try to blend both. Now take it a step further and turn your attention to the individuals within these diverse institutions pursuing educational doctorates.

Individual Diversity

As you read these words, some 228 schools and departments of education are located in doctorate granting universities. Education was the top doctoral field of Ph.D.s in 1960–64 and remained the top field in 1995–99, accounting for about 16 percent of doctorates in both periods (Thurgood, Golladay, and Hill 2007). Students come from a range of professional backgrounds—teachers, principals, and administrators from public and private elementary, middle, and high schools, and others from the nonprofit sector. They come with unique academic interests and perspectives on an assortment of content areas, teaching populations, and policy views. The students can range in age from teachers in their mid-20s with the requisite 3 years of successful teaching under their belts to career educators with decades of experience in the field and the world. Many students are parents and prioritize their family lives far ahead of the requirements of the degree. Others have left countries thousands of miles away to earn degrees to take back to South Korea, Turkey, China, and India (Thurgood et al. 2007). Some students rush to class after grueling days in schools and at full-time jobs, only to face a 2-hour commute home at the end of class. Some are in their first semester of work; others have been toiling for twenty years. Others manage a full-time course load with their social life centered on campus while holding jobs designed to support their graduate study (Teachers College Record August 2008, p. 1546). The broad demographic landscape of educational doctorate students represents a tip of the iceberg in considering the variance between individual experiences within doctoral programs. When one delves further in the individualized nature of educational experiences the conversation becomes multilayered, integrated, and complex. In order to simplify the complexity of understanding and analyzing experiences of doctorate students the lenses of program performances and personal journeys are utilized throughout this chapter.

THEORETICAL FRAMEWORK

Conceptualize the evaluation of doctoral program through the two, intertwining perspectives of a program performance or personal journey of doctoral students. The discussed framework was expanded from notions related to the general art of teaching from the writings of Elliot Eisner in his work: The Educational Imagination. The expansion of the framework from teaching to doctorate experiences then allowed the narrowing of the conversation to the experiences of students within doctoral programs. On the one hand, a doctoral program is a variety of performances or acts executed by individual students with the intention of promoting learning (Eisner 1994, p. 158). Throughout a doctorate program, students listen to lectures, participate in discussions, write, demonstrate, explain, lead conversations, research, teach, etc.

Individual performances can be assessed by the copious notes taken during the lecture, the brilliance of a written piece, the vividness of the examples provided, the depth of a discussion and the innovation found in conducted research.

However what do these performances mean in terms of authentic learning? Just because a doctorate student creates a brilliantly written piece based on an exceptional lecture does not give us a clear understanding of the experience for the student. The evaluation of these experiences needs to move beyond the analysis of learning based on "acts performed by individuals" (Eisner 1994, p. 158) and turn to conversations focused on personal growth or journeys, the second part of the conceptualization. Personal journeys are comprised of defining moments and experiences in an individual's life. These resonating moments are unique to each person in range, depth, understanding, and action. Uniqueness of experience makes the discussion and sharing with others allegories, an allusion to something, wrought with metaphors that only mean something specific to the person telling the story (Eisner 1994). In other words, when a person experiences a journey, one that changes who and what they are, it cannot be fully understood by anyone but that person. Yet, it is important that we share our experiences and interpret and understand others experiences as researchers trying to understand the intricacies of doctoral programs. The shaping of doctoral programs evolves from uniting our identities and building bridges allowing for commonalities in interpretations and understandings among groups of people working in doctoral education (Barone 2001; Latta 2001; Palmer 1983). This type of evaluation requires that we shift our focus to the broad impacts of personal experiences. For those of us who believe in the value of ethnographic study, we do so not in spite of but because of its central paradox, that it is "a process by which each of us confronts our respective inability to comprehend the experience of others even as we recognize the absolute necessity of continuing to do so" (Behar 2003, p. 271). Within the importance of these shared experiences lies the framework for exploring program performances or journeys through educational doctoral work.

PROGRAM PERFORMANCE OR JOURNEY

Program Performance

When a performer engages a performance, weeks of preparation come to fruition as they seek to flawlessly execute a routine. Likewise, program performances are something a student does after significant preparation executing their task. Performance, though, does not necessarily bring any personal growth or entail identity work. Performance is simply an execution of what the performer has trained for. Thus, in the context of doctorate programs, performance entails jumping through necessary hoops to reach a goal, whether it is successful completion of a test or paper, earning an adequate grade, or completing a doctoral degree. For example, a case study focused on the prestigious Vanderbilt educational doctorate program states:

> The heart of the program is the apprenticeship. For a student to be admitted, a faculty member must agree to work with her, and that work begins as soon as the student arrives. The goal is for the student to join the professor's research

> team, work closely with the professor as a mentor, assume a growing role in the professor's research throughout her residency, write and present at conferences and produce a dissertation, often an extension of the mentor's work (Levine 2007, p. 9).

Thus, program performances surface within the doctorate experience through many carefully constructed program components including classroom experiences, relationships with professors and peers and professional experiences in research and teaching.

Classroom Experiences. Many doctorate classroom experiences primarily fall into the category of a performance. Students and teachers go to the assigned room at the appropriate time and complete the necessary courses based on a constructed program structure. Education doctoral programs typically require a large number of course credits (upwards of 60 credit hours) comprised of research methodology courses, theory courses and courses in the area of the degree (i.e., Curriculum & Instruction, Literacy, Mathematics Education, Educational Leadership, etc.). Course assignments fit into the performance model, as students perform for an audience of one (the professor) as they complete course requirements, whether reading, writing or presenting work. Experiences are signified through the students' desire for the teacher to recognize their potential or intelligence, reverence for the teacher's knowledge, and the assignment of a high grade. In turn, "The teachers desire their students' attention, diligence, even admiration" (Jones 1996, p. 1) This begins the establishment of relationships with professors and peers.

Relationships with Professors and Peers. The relationships established with professors and peers affect a doctoral student's experience throughout their program. In fact, these relationships are considered essential factors that contribute favorably to doctoral students' research interests, productivity, and their experience in the process of conducting research (Hollingsworth and Fassinger 2002). Thus, these elements are regarded as performances by previous research; programs simply put these relationships into place with a series of structures designed to facilitate their development, yet the relationships essentially remain an item to be checked off the list of items to be completed throughout the program, without consideration of their overall effect or larger meaning.

Between students and professors, the ideal consists of developing a mentor and apprenticeship model with a professor. Ideally, professor-student relationships develop naturally through interactions within coursework and lead to a more formal advisor relationship. Frequently, though advisors are assigned, either with student/professor research interests in mind or simply by assigning students to professors with openings in their schedules. Among peers, relationships develop through common experiences, which may naturally occur during coursework. Frequently, programs incorporate research seminars as a venue for students to network by sharing their research informally with one another. Additionally, cohort models abound, where students work their way through a program as a group, which ideally becomes a support network for their shared experiences. Students almost always find several colleagues to whom they gravitate and then begin to support each other. This could entail class group work, writing together, and acting as a peer reviewer for each other's research.

Professional Experiences in Research and Teaching. The process of completing a doctoral degree program involves a significant number of performance hurdles to be achieved by the student. Most programs entail hurdles such as coursework completion, comprehensive exams, dissertation proposal defense, dissertation research and finally, the dissertation defense. Ideally, doctoral students' research design and implementation should have an "emphasis on creative research and scholarships and the production of a dissertation that makes an original and significant contribution to knowledge" (Lovitts 2008, p. 297). Yet within programs, frequently one can notice the development of doctoral students whom produce distinguished research and scholarship, while others do not. The discrepancy in research outcomes highlights the fact that specific coursework and program mandates do not necessarily lead to original and significant research contributions. In fact, due to the human element inherent in a doctoral program, it is often possible to indentify distinctly different levels of academic achievement, as modifications are made to accommodate the needs of students or the advisors.

In order to support students in these required performances, many programs put structures into place to mentor students as they develop the skills needed to succeed not only as doctoral students, but as they become academics. Co-teaching with a professor provides students with the opportunity to learn to teach at the college and graduate level without being solely responsible for the classroom. Research internships further develop mentoring relationships, as faculty members allow students to experience the research process alongside them, both researching and then writing and presenting the work. These mentorships are meant to ease the transition into independence, which is needed for the dissertation process and future employment. Graduate assistantships additionally support this process, as students engage in research and teaching experiences, with varying levels of independence. Student availability for these mentored opportunities can add to the different levels of academic achievement, as those with the flexibility to engage in these opportunities find themselves better prepared for their dissertation and academic life. For some students, the transition to independence is particularly difficult, in that it is a markedly different experience from their prior education, possibly because of the experiences they have had time and space for. Additionally, the transition from, for example, being consumers of knowledge, such as they have experienced within the classroom, to creators of knowledge through their original research (Lovitts 2008, p. 328) can add difficulty for many students.

Adding to the complexity of the performance is that each of these hurdles does not depend on the student alone but can be significantly affected by the involved faculty members. Thus the quality of the relationship between the student and their advisor and committee members is important. If the relationship is based on convenience over a purposeful fit, or the research question is focused more on the advisor than the student, the performance can be a strained experience. Examination of the experiences of all of the participating performers lays the foundation for discussing the intertwining notion of personal journeys. Experiences that are defining moments within a performance become a part of the individuals own personal journey. It is important to realize performances can become a profound defining moment for one participant and remain inconsequential for another.

Journey: Soul Searching, Relationships, and Stewards of the Profession

Personal journeys by students within doctoral programs are difficult to quantify and frame with theories of learning. In fact, consider the lack of references here to books on education theory, there is also not an attempt to set experiences against the background of doctoral program components as it is described through program performances. Rather, the broader work of individuals explaining and exploring human experiences related to learning provides tools of inquiry. Evaluations of doctoral programs should consider the following question: has a doctoral student turned inward to better understand themselves, connected and evolved these understandings through relationships with others, and ultimately contemplated their place and ensuing impact on the world? In To Know as We are Known, Parker Palmer (1983) explores the spiritual role of someone involved in education. Considerations based on community and truth, humanity and commonalities, the individual and their place in the world allow for a better understanding of personal journeys. Paulo Freire's work extends these spaces to focus on the relationships with others required for authentic learning. He speaks of the need to develop mutual relationships based on respect stating: "Liberating education consists in acts of cognition, not transferrals of information. It is a learning situation in which the recognizable object intermediates the cognitive actors. Teacher on the one hand and students on the other" (Freire 1971, p. 79). Finally, the work of Maria Montessori speaks to the grander, larger focus of educational journeys with the impact of those journeys on the world. She states: "Those things which occupy us in the field of education are the interests of humanity at large, and of civilization, and before such great forces we can recognize only one country—the entire world" (Montessori 1912, p. 5).

Connections, commonalities, and understandings related to the importance of personal growth within doctorate programs should move beyond the demographics of programs, the standards, objectives, program goals, and other often inaccurate methods of giving a voice to the real diversity, influence and depth of the human experience. Conversations about life, mortality and our place within it as academics in our chosen fields should be "more generous, more complex, and more closely aligned with life" (Eisner 1994, p. 203). More important than book knowledge, the passing of an exam, and the learning of facts is the idea of transformative experiences for doctorate students. Larger, grander questions surface beyond our daily participation in learning activities and the awarding of a degree towards notions of the growth of whole human beings, in harmony with the planet and one another. Returning to the question of has a doctoral student turned inward to better understand themselves, connected and evolved these understandings through relationships with others, and ultimately contemplated their place and ensuing impact on the world (Montessori 1912, p. 5)? We intend to convey a sense of purpose for doctoral education that is larger than the individual and implies action, such as movements towards an increased notion of a scholar as a steward of the discipline, or the larger field, not simply the manager of her own career and life. A fully formed scholar should be capable of generating and critically evaluating new knowledge; of conserving the most important ideas and findings that are a legacy of past and current work; and of understanding

how knowledge is transforming the world in which we live, and engaging in the transformational work of communicating their knowledge responsibly to others (Walker 2008).

Where do opportunities for journey's surface within doctorate programs? Ideally, the doctorate experience involves defining moments within and amongst others, a learning experience that is something more than a series of encounters with knowledge; learning entails…the messier and less predictable process of becoming implicated in knowledge (Teachers College Record 2008, p. 1548). Yet, an individual can take a test, participate in a class discussion, and lead a lecture, but what does that really mean in terms of learning? How has their doctoral experience affected who and what they are as individuals? The complexity of the answer is stated through the simplicity of regarding individual journeys. Who is that person, at that moment, with that group, within that experience, and what are the effects on the individuals' journey? Is it a moment of amazement, connectivity, growth, and understanding? Is it a harmonious journey of the teacher and student in sync with the world? Or is it just a moment passing, adding to others, in the ever evolving human experience? Paulo Freire (1971) states in *Pedagogy of the Oppressed* that "men and women begin to single out elements from their background awareness and to reflect upon them" (p. 68). In this type of education,

> people develop their power to perceive critically the way they exist in the world with which and in which they find themselves; they come to see the world not as a static reality, but as a reality in process, in transformation. This type of education take the peoples historicity as their starting point and affirms men and women as being in the process of becoming—as unfinished, uncompleted beings in and with a likewise unfinished reality. They are aware of their incompletion. In this incompletion and this awareness lie the very roots of education as an exclusively human manifestation (Freire 1971, p. 68).

Similarly, Palmer states: "I reach for relationship, allow myself to feel the tugging of mutuality and accountability and take my place in community by knowing the transcendent center that connects it all" (Palmer 1983, p. 78). This is a way of thinking about doctoral programs that is not just task-oriented but always looking over its shoulder at everything that is going on around.

One cannot simply say all doctorate students will experience a journey element to their program after they finish their coursework, or when they start their research, or by graduation. For clarity of point, consider the typical education doctorate program performance of taking a qualitative methods course. Consider each student in the course is having a different experience. For one student, the course is something they do in combination with four other classes and a fulltime job. They are not conducting research and do not feel the personal connection between the course content and their present state as an academic. The second student is beginning to work on their dissertation, struggling with personal notions of research and understandings based on their present realities. Somewhere in the middle is the student simply going through the dissertation motions to finish their degree. How does the environment, teacher, class discussions, and timing correspond with the experiences and journeys of

each student? Perhaps the instructor is experiencing a professional soul searching journey, a student can be in the midst of a personal journey and perhaps the two meet in a particular classroom setting. Again, the focus returns to the individual in the process, are they performing or on a journey—or do the two intertwine? It is these individual experiences, intuition, and understanding in the world of research driving discovery related to the doctorate in America (Alvesson and Skoldberg 2000). Within the academic realm of doctorate programs, as individuals are liberated from structures that have hindered our education in the past, a new direction for educational research, knowledge, and practice could emerge. These liberated structures provide more space for conversations about individuals and their impact on the world.

Specifically within a doctorate program setting, professors (and doctoral students) must be able to let go of being the authority of knowledge and find some common learning ground. Palmer states, "Teachers must find….the combination of how to allow students the space to explore and understand the boundaries to narrow and connect with others and the hospitality to have their voices heard" (Palmer 1983, p. 71). In turn, students must have the motivation, confidence, respect, and understandings to set the stage for reciprocal journeys. It is through this joining of journeys based on relationships that individuals begin to better understand their place in the academic world through an enhanced consciousness of who we are as students and individuals within the larger context of the world.

CONCLUSION: IDENTITY DEVELOPMENT IN THE DOCTORAL PROGRAM

Thus the story of the journey and performance together add up to the overall hermeneutical development of the individual, and this development is, in fact, a story of their identity explained through narrative. No one can mandate what each doctoral student learns or does not learn at each performance point, nor can the defining moments of their journey be predetermined, rather it is an organic process that changes for each person as they experience their program of study. Nevertheless, the end result is a changed identity, which now incorporates new and broader elements that have been delineated by their experience of defining moments, changing relationships and stewardship actions. A worthwhile doctoral program is not one that the student simply jumps through hoops to complete a checklist program but one where the student leaves with a changed and developed personal identity. While doctoral programs can hope that this happens in their programs, structures cannot ensure this process, only the students can embark on this process of self-discovery and identity development.

Identity development is ultimately a personal process. We reinvent ourselves each time we retell our stories and, in fact, the telling of stories opens space for identity development to occur, as narrative changes signify hermeneutical development (Bruner 1991). Narratives are "constructions, in talk, of sequence or consequence" (Taylor 2006, p. 95), they are inherently important to the individual; otherwise they would not mention them. Furthermore, the individual must integrate repetitive narratives. Thus, identity development is constantly in flux, identity development "implies the continual rearranging and reframing of one's selves, testing and negotiating

their interconnection" (Kraus 2006, p. 104). Butler's theory of performativity (1993) explains that when individuals engage in performances (such as those described earlier in the chapter) they are acting out of personal history, which they believe to be their personal identity. As these performances are repeated "every repetition requires an interval between the acts, as it were, in which risk and excess threaten to disrupt the identity being constituted" (Butler 1998, p. 729). Therefore, the journey occurs when doctoral students engage in their performances and experience a disruption in their typical patterns, making space to alter and reconstitute personal identity.

Acting upon the students' constructions of identity are the social and figured worlds they are a part of, represented by their relationships and stewardship actions. Social worlds are the life spaces in which identity is constructed (Holland, Lachicotte, Skinner, and Cain 1998). Identity is "storied and inscribed by narratives of gender, science, race, education and so on" (Kemp 2001, p. 347). Figured worlds not only represent the worlds that individuals find themselves in but also the worlds they want to be a part of, therefore, the students not only reflect the reality that they live in but also the one they desire (Holland et al. 1998). Therefore, individuals not only enact their identity through narrative, but actively compose it, using narrative to position themselves as the people they desire to be (Dawson 1994). For doctoral students this means that performances offer opportunities for larger identity development when the student uses those performances as space to compose their own personal narratives within their social and figured worlds.

Social worlds act upon individuals' identities as they interact via discourse. Bakhtin (1981) described dialogic interaction as the narratives constructed by multiple individuals, together through discourse, within a specific social world or context. Divorced from any of the players or the context, the dialogic interaction would have no meaning or significance. During these interactions, the interactions with and narratives of others affect the identity of each individual. This shapes the figured worlds of the students, as they individually and through interactions with others experience performances and journeys within their doctoral programs. Thus, they not only personally compose and dream the figured worlds they want to be a part of, but also those figured worlds are shaped by what those around them give them space to enact and hope for.

It is therefore of upmost importance that the human element be the largest consideration when examining doctoral programs. While no program can dictate identity development, encouragement and space for narrative reflection and identity work is essential to the development of doctoral students. We need to look closely at the stories of the participants in order to develop a true understanding of the larger worth and meaning of a doctoral experience. Statistics and a checklist of requirements cannot tell us how the students' identities have been affected and shaped through their experiences within a program. Furthermore, the social worlds that doctoral students are prepared for and allowed to consider is greatly influenced by the performances demanded by their doctoral program, as those performances give them experience with and apprenticeship into possible figured worlds they may want to join, once finished with their doctoral work.

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ANDREW T. KEMP, JOSEPH FLYNN
AND SAMARA MADRID

12. NEGOTIATING THE TENURE-TRACK JOURNEY

The Competing and Contesting Discourse Associated with Becoming an Academic

INTRODUCTION AND FRAMEWORK

According to the Survey of Earned Doctorates (Welch 2008), there were 6,429 doctoral degrees in the field of education granted in 2007. In the spring of 2007, three of these graduates accepted faculty positions at Northern Illinois University. We three found ourselves drawn to faculty life. On separate occasions we expressed excitement about finally getting the job we always wanted, the job of a lifetime so to speak. What else did we have in common? We all came from research-intensive universities. That was it. Two of us were Ph.D. graduates, one an Ed.D. Two came from nationally renowned programs, one from an up and coming program. We came from different fields, different life experiences, different belief systems, and different worlds. Yet, in an instant we were all faced with transforming our doctoral experiences into faculty life. While in many, and perhaps most ways, we were different, there was an essence that was the same. As new faculty members we bonded; maybe not immediately, but over time. In late 2007, toward the end of our first semester, an opportunity arose. That opportunity was to write a column for the *Chronicle of Higher Education* sharing our experiences as new faculty members on the tenure track.

This essay is a compilation of our *Chronicle of Higher Education* articles. Our work is an autobiographical inquiry that used life notes to document the ways that three new assistant professors, from various social and cultural backgrounds, navigated the terrain of academic life on the tenure track. Autobiographic inquiry and the use of "life notes" as a methodological tool has been used by feminist scholars to uncover how people learn "to do" academe and how it's related to the construction of our social identities, not only as academics, but also as human beings (Bell-Scott 1994; Dillard 2006; Neumann and Peterson 1997). Our work in grounded in Dillard's endarkend feminist epistemological framework (2006), which acknowledges that reality, as it is known, exists at the intersections of our lives and overlaps with the cultural constructions and socializations of race, gender, and other identities.

The basic epistemological assumption we carried into this work is that our professional lives could not be separated from our personal lives, as all aspects of our identities are bound tightly to past, present, and future histories. Given this, we used life notes (personal narratives chronicling our thoughts, feeling, and beliefs)

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as a method to construct, unravel, and rebuild our understandings of academic life (Bell-Scott 1994).

The texts presented come from short narratives that described our thoughts and emotions as we took ourselves into the various arenas of the university, reflecting back as well as forward on the very ideas and beliefs that shaped our identities as recent graduates who were now tenure track-faculty. We address a number of issues that are both common and uncommon to transitioning into the professoriate: weary excitement, understanding the role, dealing with a school shooting, negotiating the personal life and the professional life, understanding ego, and reflecting on the past while looking forward. What did we learn? We learned that our experiences are entirely shared and entirely unique.

ON-THE-JOB TRAINING

January 29, 2008

Andrew Kemp, Ed.D.

> The sun was shining clearly through the tall windows of the conference room when my dissertation chair called me back in at 11:47 a.m., on March 27, 2007, and said, "Congratulations, Dr. Kemp."

Four years of classes, research, data analysis, statistics, sleep deprivation, library stacks, copies, reading, writing, and paper after paper after paper were over. Those years – which I had also filled with a full-time job as a high-school teacher and with two daughters and a supportive wife – were suddenly and abruptly finished. What was I to do with myself?

Now, here I sit, 1,292 miles to the northwest, an assistant professor of education in my first tenure-track job. I am in a small, windowless office with my computer and my books. The overhead fluorescent lights are off, and my three antique lamps light the room with 75 watts of "natural light." This is my place.

I look over at the disk housing my dissertation, which is desperately calling for my attention, pleading to be turned into articles. I review my notes, again, to prepare to teach my next class. I grade the newest set of essays from a group of highly motivated graduate students. And there goes my dissertation, calling out to me once again.

Where did all of my time go?

I remember when I accepted the job, my friends, colleagues, and family all joked about the cushy life I was going to have. How many classes do you teach? What are your office hours? So you get to sit around and think about things you are interested in and write about them?

I teach two classes. They take up as much time as all of the classes I taught in a semester as a high-school teacher, combined. Office hours? I'm here every minute I am not at home, or in a meeting, or sitting on a committee, or visiting a school.

When I sit here, sometimes I think that I am an assistant professor in title alone. Is it possible to be filled with confidence and fear at the same time? I have no idea

where the fear comes from. Perhaps it is because I am learning to become a professor, and all that it entails, and it entails more than I imagined. I am learning to be a researcher, a teacher, a mentor, an adviser, a member of the academic community, all the while being a husband, a father, and a friend.

In this column, my colleagues and I will share our experiences as first-time faculty members in the department of teaching and learning at Northern Illinois University's College of Education. We spent years preparing for an academic life, only to find that there is so much for which we are unprepared.

We are discovering through our conversations that our experiences are the same, and yet quite different. We are excited and nervous; we are confident and scared. Each day we wake up and realize that we know more than we thought; we also know a lot less. We are finally in the profession of our dreams, and it turns out that being a professor is a challenge, a thrill, a chore, a revelation, and one heck of a lot of work.

Samara Madrid, Ph.D. Down the hall from my new office is the dance department. Every Tuesday, on my way back from teaching my undergraduate class, I stop and watch the beginning ballet class. It's set in a typical dance classroom with hard floors, barres, and mirrors. Young women and a few young men of every shape and size in their pale tights and black leotards stand in line doing pliés as the dance teacher critiques their performance in a loud, authoritative voice.

It takes me back to my first year of junior high school, when I was enrolled in a performing-arts program for dance. We took two hours of dance every morning. My dance teacher said I looked in the mirror too much, wore too much makeup, and talked too much when I should have been listening to her.

Why am I writing about dance class in a column about being a new assistant professor in early childhood education?

Because each time I walk past that dance class I am overcome with feelings that connect who I once was with who I am today. At 13 years old, I was a scared, young girl alone in a new school wondering if I was going to fit in. Was I good enough to be in a performing-arts school? Would the other girls like me? Did my dance teacher see that sometimes I missed a step? Did she notice my big thighs?

Twenty-something years later, with a doctorate in hand from a Big Ten university, I find myself with the same sort of insecurities. Will I be successful in academe? Do my colleagues like me? Do I still talk too much when I should be listening? Will I make the final cut? And what about those big thighs?

What I am learning, however, is that the process of becoming a member of a junior-high dance program – while different in its particulars from the process of becoming a new assistant professor – is not all that different in its general requirements. It takes daily practice, discipline, sweat, tears, and, most of all, a deep commitment to the profession.

So I smile and keep my back straight even when I am exhausted from teaching. I attempt to ask questions in meetings even when I have no idea what anyone is talking about, or even what the acronym for the committee stands for. (And why so many meetings anyway?)

When I miss a step, I jump back in line with the rest of the dancers and try to learn from my mistake. Even when I doubt my abilities, I continue to show up for practice and give the best I've got for the day.

Joseph Flynn, Ph.D. This all came so fast. After years of graduate school, the amount of time between realizing that my dissertation could be defended and starting a professorship was like approaching a black hole. Time and space distorted, and my past as a student sped away while a new identity unavoidably and rapidly pulled me into an uncertain center. Suddenly, just like that, I became a professor. But what does that mean?

In teaching my first graduate-level class, I had my students watch an episode of HBO's The Wire to discuss community and institutions. Everyone said everything I was going to say. Usually I would be happy about a good discussion, but at the time it made me question myself, "So what the hell am I here for?" Gena, my wife, told me, "Baby, at this level you're a facilitator, not just the expert."

A fact about me: I am a black man whose research is on multiculturalism, whiteness, and film. After I was hired, I was told that that unique matrix of experience was a significant reason why I got the job. But do I really want to be "that guy"? The black guy who works on race?

Having wanted to be a professor most of my life, I always thought that becoming one would be the end product. But within minutes of attending my first faculty-wide meeting, I realized that something much bigger was happening. As I strolled in to the large ballroom, listening to Miles Davis on my iPod, I looked around and understood a fact that many new black faculty members come to realize: There really aren't that many of us.

I was vibing with a senior faculty member and with Drew Kemp when I noticed a woman kept coming around to photograph the three of us from different angles. "You know why, don't you?" the senior professor asked. "Because the more pictures of you, the more diverse we look."

I looked around again and took in the fact that being a black professor is a much greater issue than just comfort in my own skin; I am also a symbol. Here was my first lesson in how the sausage is made at a university, and I felt that being a black professor was just as much about what I hope to be as what others think I am. Suddenly the reality of politics, place, and identity crashed into me. "Am I ready for this", I wondered once more.

Regardless, it's still a pretty cool gig.

All three of us. So here we sit – halfway through our first year as professors – struggling to understand who we are, who we want to be, and just how much control we have in making it happen.

We find that we are less concerned (for the moment) with the mechanics of earning tenure and more concerned with finding our ground. If we can succeed at the latter, will that make it easier to achieve the former? Are we making too much of all this? Or are those fears and worries just part of becoming a professor?

WHEN THE SHOOTING STARTED

February 25, 2008

Joseph Flynn. On February 14, a young man walked onto the campus of Northern Illinois University and opened fire inside a lecture hall. He killed five students and wounded more than 20. At the end of the onslaught, he took his own life, a grisly, common tale: Virginia Tech, Jonesboro, and Columbine, to name a few. The term "school shooting" has become a sorrowful addition to the American lexicon, a vestige of the dark and ugly underbelly of popular culture and humanity.

I was in my office in Northern Illinois's department of teaching and learning when the shooting started. The gravity of the situation did not hit me until later, when I picked up my boy from preschool and showed my wife where the shooting was in relation to my office – literally around the corner. The full extent of it did not dawn on me until the next morning, when all of the news outlets were still talking about it. Then I looked at myself in the mirror and realized: Students were shot and killed at my university.

As a newcomer to NIU, in my first year of my first tenure-track job, I found myself wondering: How am I supposed to deal with this? Much like a death in the family, this is a moment nobody in the profession can really prepare you for.

The campus shut down, and so did I. I spent the following day in two places: a movie theater and my bed. I lost myself in a double feature of Michael Clayton and No Country for Old Men. I slept. I wept. I talked to no one – not even my wife and son, much to their consternation and concern. Aside from popcorn and Gummy Bears, I didn't eat. For 24 hours I wrapped myself in a cocoon, wondering, "Why in the hell did somebody come onto my campus and start shooting?"

I teach future teachers in the university's College of Education. On February 12, I was teaching an undergraduate class, and we were discussing what the students felt they needed for success in a classroom. Inevitably the conversation turned to safety. We discussed how the term "safety" was complicated – physical, mental, spiritual safety – and elusive.

I challenged the students that day: We often talk about safety in education as though it were the necessary condition for learning, in spite of the fact that around the world, and within our own country, children learn, succeed, and thrive under some of the most unsafe circumstances. Moreover, safety is always under attack and subverted in unexpected ways. Safety, for many, unknowingly serves as a code word for control. Do we stress safety as a way of maximizing control in a context that is naturally unpredictable?

Two days later, the safety issue hit home. In retrospect, I feel terrible about having challenged the safety issue so immediately and intensely in the classroom. The irony does not escape me. But, at the same time, I know it was important to engage my students on the issue. How do we resolve those contradictions? In the end, like my mom says, "We all must shake the dirt from our sandals and journey on."

I'm not sure how to help my students (or myself) make sense of what happened on our campus. This is some serious on-the-job training. I suppose that is why

today I wrote my portion of this essay and also submitted a conference proposal. Get back to it, you know? For my family, my friends, my students, my colleagues, my campus, and myself, I will find a way to shake the dirt off my sandals and journey on. It's just gonna be hard for a while.

Andrew Kemp. On Friday, February 15, I sat down with my 8-year-old daughter to explain why someone had shot students at my university. I didn't have an answer. I wanted to give her one, to tell her something that would make sense, but all I could say was, "I don't know." I felt helpless. I could tell she felt scared and confused.

A few weeks ago, a teacher at the school where my wife used to work was stabbed in the face, neck, chest, and back. The teacher ended up losing her eye. Now, in the wake of the shootings at my university, my daughter seemed to be asking, "Are we safe?"

I am new to the university this year, but I have already given my heart and soul to the place. Most days I wear something with the NIU logo, be it a jacket, hat, shirt, sweater, or scarf. I go to campus sporting events. Sometimes I wander the campus, in and out of buildings, just to know where things are. I believe that we, in this profession, in any profession, have to be a part of the place. By being a part of the place, the world has relevance.

So while I didn't know any of the victims, even though one of them was a student in my department, and I don't know their families, I am nonetheless hurt. My place has been hurt. My people have been hurt. My world has been hurt. And, in a deep way, I hurt.

Today the lamps in my office at work are turned off; my computer screen is black. The campus is deserted. I am home. I am home with my family and an outpouring of care and concern from the world. In the past 24 hours I have heard from former high-school students, administrators, friends, colleagues, and family from near and far.

And what am I doing right now? I am thinking about my daughter and wondering what I am going to say. I am wondering how I am going to answer her questions. My answer is still, "I don't know." But I know she wants to talk about it. I want to talk about it. I think it is time that we all talk about it. I think being a professor is about being a part of the dialogue.

Looking back, the situation at Virginia Tech was a tragedy. But it was a tragedy that happened there. As callous and simplistic as it might sound, that was how I perceived it. Now the same reality has hit Northern Illinois University. In my small world, I am ready to talk about it. Maybe we all are.

Samara Madrid. "Love is spoken here." Those are the words that I now have displayed in my office. I feel profoundly changed by our campus tragedy. Since that day, I have been discussing with family, friends, and colleagues what it all means.

I was not on the campus when the shootings happened. I had been in my office during the morning. I had a phone conference scheduled for 3 p.m. that was cancelled, so I left my office around 2 p.m. and went to the bank in a town about 30 miles away. As I was withdrawing cash, my colleague called on my cell phone and asked, "Are you locked in your office?"

Locked in my office? "No, I am at the bank," I responded. That was how I learned that a shooter was on our campus, and that my colleague was locked in her office with three of her students.

I quickly found a nearby restaurant and asked the waiters to put on the news. We watched the horrific experience live, as it unfolded. As soon as the campus was secured, I returned to my home, which is about a mile from the university. What the media did not capture on television that day was the sorrow, fear, pain, and sadness that hovered, like a gray fog, over our small town. There was not one person, one faculty member, or one student who was not deeply disturbed by this event. It does not matter if we knew one of the victims personally, or even if we were on the campus that day: We all are grieving.

As a new assistant professor, I never expected to witness such an event. NIU is my new home, and this campus is my new family. The tragedy has uncovered the love that resides within me for my students. It is a love that recognizes the fragility of life.

My primary concern now is my students' well-being. What will I say? How do we begin to heal? How do I help them feel safe? How can I use the love of my profession to help us move forward as a community? My answer is grounded in the quote above: "Love is spoken here." Love is what will heal us. Love is what is needed to move past the fear and grim reality of that day, to the light of who we will become in the weeks and months to come.

The Rev. Jesse Jackson spoke at the campus vigil on Friday night, after the shootings. He asked us to embrace one another, to reach out to those next to us. I stood in the back, with my colleague, good friend, and fellow assistant professor Kim Zebehazy, and with tears in our eyes, we honored those lost as we hugged and embraced those who are still here with us.

All three of us. Our prayers and condolences go out to our campus, to the families of the lost and wounded, and the family of the young man who touched off these events. Finally, we want to thank the first responders, the university administration, and our colleagues for the amazing strength and support they have provided during this tragedy. There are no words to convey our gratitude and pride in their professionalism.

WHEN THE PERSONAL INTRUDES ON THE PROFESSIONAL

April 2, 2008

Samara Madrid. I look once more at my eHarmony account and realize that no one has responded to my "start communication" requests. Could it be the Ph.D.? Maybe it's my disclosure that all of my reading is related to academe? Or perhaps it's because I listed my "interests" as work, food, and sleep?

How does a 38-year-old single heterosexual female assistant professor find the time and courage to develop a healthy and meaningful romantic relationship while trying to write grants, attend meetings, publish articles, and get decent teaching evaluations?

As of now, I have communicated with two men on eHarmony, both of whom seem to be impressed that I have a doctorate. One likes to refer to me as Dr. Madrid in most e-mail messages, and the other asked me to send an abstract from my latest article. How romantic.

But there have been no innuendos, flirtations, or sweet nothings. No, they want to know how academic life is treating me. I tell them that I am online looking for dates, not collegiality, which pretty much sums up my social life in my first year at a new university: nonexistent.

DeKalb, Illinois, is a wonderful town, surrounded by cornfields and located about 60 miles west of Chicago. In the winter it's a very snowy and cold small town. It takes me a minute to drive through the heart of town. Literally. I timed it today. Needless to say, the excitement and "heat" in my social life comes from my excursions with another new faculty member to Wendy's for a Spicy Chicken Sandwich.

I had some spice in my life prior to becoming an assistant professor. In fact, I had a boyfriend up until a few weeks ago. The problem was that he lived six hours away. When I became an assistant professor and moved to Illinois, I also left behind meaningful personal and professional relationships that I developed while getting my Ph.D. in Ohio. As much as I would have liked to sustain those relationships, it's not so easy when you put two states, the high cost of gas, and a demanding schedule between yourself and those you've left behind.

A friend jokingly mentioned that women have to be nuns to get tenure. Is that true? Will I be left navigating, by myself, the landscape of a new town, profession, and social identity for the next five years? Do I need to take a vow of celibacy to make it in academe? And most important, is it all worth it?

I think so. Despite the lack of a social life, I find myself thanking the universe and the university for bringing me to this campus, for no other reason but this one: A few months ago, driving above the required speed limit, listening to Natalie Merchant, looking at the Chicago city skyline, I was overcome with a sense that I was exactly where I was supposed to be. Being here, alone, and doing this felt just right. No rationalizations, reasons, or explanations.

I will try to remember that epiphany the next time I pull up my eHarmony account and find that my new love "match" lives 120 miles away, has been married three times, and lists the word "fishing" in every description about his life. But hey, I do like sushi.

Joseph Flynn. Race dominates my life. Partly because I am a black man and confronting race is often status quo. But I also choose to investigate race, specifically whiteness. Our society cannot fully address racism until we have a clearer understanding of the role that whiteness takes in shaping institutions and social relations. My personal beliefs are joined with my professional agenda. But that highway of the personal and the professional takes unexpected turns.

A few years ago, I was teaching a course that focused on structural inequity. We were discussing white privilege, and the students were contemplative and engaged. Then a white student sitting in the middle of the class interjected, "All this race stuff wouldn't be a problem if it wasn't for people like you and the NAACP." Wow.

I did not respond to the assertion for I was not sure what would come out of my mouth; I let the students respond. I was happy that the comment was met with criticism that pointed back to the course materials. I was also happy that a student with a challenging opinion felt "safe" enough in my class to voice it. My professional side was vindicated. But my personal side? The sting lingered; it was not merely an admonishment of high-minded ideas. It was about me. "People like you," the student had said. At that moment the demarcation of identity no longer mattered. The professional was the personal.

But let's look at that intersection another way because I am not always the innocent victim of those opposed to my ideas.

Around Christmastime, I was out shopping for a printer at one of those chain photography stores. When I walked in, I found a great deal, a $100 rebate, and went to ask about it. When I got to the counter, I pulled out my earbuds and a young brotha, about 30 years old, greeted me. I told him what I wanted and he told me that I had to buy a camera to get the rebate.

I protested, "It doesn't say that in the ad!"

He went to check and came back with, "Sorry but you gotta buy a camera."

I flipped. "Well I want to speak to the manager!"

"I am the manager," he pleasantly replied.

I asked with surprise, "You're the manager?!" Right after I said it, I realized what I had done. I always tell teachers in training, "Don't prejudge your students," but on this day I was guilty of that myself.

What made it worse was that I had assumed the manager would be white. I could say it was the stress of the holidays, but it wasn't. The fact of the matter is, I am flawed. Despite what I profess and study, I struggle as well. But I did that to another brotha and I know exactly how he may have felt, being slighted and questioned about his status and knowledge because of his race. I am sure that someday, in the classroom, I will recount that story to help students see that addressing race is a life-long process.

I later returned to the store and apologized to him. It's funny. I know all these theories that help explain so much of our social world, but at the end of the day, I am still learning how to be a person and a professional.

Andrew Kemp. Finding a position on the tenure track was stressful: the preparation, the interviews, and the completion of my dissertation, the waiting, the negotiating, the acceptance, and now the job. Those sources of stress have been replaced with new ones: publication, committee work, new preps, politics, teaching, advising, doctoral committees, and the like. But in truth, my job stress pales in comparison to the stress of life, in particular, the stress of picking up and moving our family across the country.

When I accepted this position, I was just finishing my dissertation at the University of Central Florida. When we moved here, we bought a beautiful house, wildly above

our expectations. Our daughters were at a new school that was walking distance from the house. My wife found a teaching job at a local high school. We were living a dream.

However, my wife's job was not all what it had seemed to be. She hated the working conditions. She hated the drive. She hated the job. Slowly, her indignation toward the place turned into anxiety. After a few months, she quit. Soon, she found herself sleeping a lot, lacking energy, and just feeling bad. She didn't seem like herself anymore.

Soon I found myself taking on most of the responsibilities of the household. I was making most of the meals, getting the girls ready for school and then for bed. I was doing most of laundry, most of the cleaning, and most of the day-to-day parenting that my young children needed.

I found it harder and harder to sleep. Every noise made me jolt awake. My wife's condition made her dizzy and unbalanced. I worried that if she got up in the night, and she often did, she would fall down the stairs. Just before Christmas, after a call to 911, we ended up in the emergency room. She had passed out and started throwing up blood. What was happening to her? To me? To us?

Here I was, professionally, having the job of a lifetime, and here she was having trouble having a life. How had our dreams, our new life, our new house, our new adventure, turned into pain, anxiety, depression, blood, and the emergency room? I called my faculty mentor to explain my situation. Her only advice: family first. The job would still be there.

Things are slowly improving, though we still have some bad days. We found out that much of the anxiety that my wife was feeling, was well, anxiety. Leaving her job had helped. But part of her problem was gallstones. Her doctor found that she had hundreds of them, and said she had probably been having gallstone attacks in the middle of the night that were waking her up and throwing off her sleep patterns. That, combined with the stress of the move, took a toll on her body and mind. Over the winter break, she had surgery. Since then, she has gotten a little better. So have we.

All three of us. Being a new professor is a time-consuming, stressful, rewarding, and exhilarating space to live in. We have found that the professional is the personal, and vice versa. Getting an assistant professorship is a dream come true, but it still has the same problems and pitfalls of any other job. We have to learn to balance and embrace our social identities in both spheres and not let one dominate the other. We are colleagues, teachers, and researchers. We are friends, lovers, and parents. Most of all we are human, both personally and professionally.

BATTERED ACADEMIC EGOS

May 14, 2008

Andrew Kemp. The day I started 10th grade, back in 1984, I remember feeling on top of the world. I had just finished three years of junior high, I was past puberty (well, most of it); finally, I was a high-school student. And then ...

Everyone knew more than I did. Everyone had relationships. The boys were men, the girls were women, the teachers were old. Within a day, I went from the top of the world to the bottom of the heap. Here I had thought I was growing up, but suddenly I felt like a child again, insignificant and insecure. My ego was stomped.

Fast forward to August 16, 2007, my first day as an assistant professor at Northern Illinois University. Everyone knew more than I did. The faculty and staff members had relationships. The office was filled with intelligent, accomplished, and experienced men and women (I won't say they seemed old). I thought I was grown up, but again, I felt like a child. Here I was, just having finished the pinnacle of academic achievement, and I felt insignificant and insecure, again. Damn.

Life is cyclical like that. At every level of your education and career, you start at the bottom of the pile and work your way up. When I earned my doctorate, I thought I had reached the very top. But I was just at the bottom of the next level.

Walking around the halls, leaving the safety of my lamp lit office, I see all of these active, vibrant minds, the accomplished teachers and scholars, the colleagues that seem to have it all together, working and producing. Where do I fit in? Where does this proverbial 10th grader who still listens to punk rock, alternative music, and Pink Floyd way too loud, who secretly enjoys video games and watching Rock of Love fit into an intellectual society?

I am hoping that confidence grows the longer you are in the job. The more accolades you get, the more publications you produce, the more dissertation committees you serve on, the more you are eventually convinced that you are good at what you do.

I am still amazed when people come to me for advice. But the fact is, I have been able to answer their questions on everything from the subjects I teach, to professional development, to career advice, to research, to philosophy. Maybe I do know what I am doing. Maybe I am ready to graduate again. Except the next stage doesn't come for another few years when I go up for tenure. Tenure. Here we go again.

Samara Madrid. Over the past few years, I have meditated on a beach in Hawaii, on the top of a mountain in New Zealand, in an ashram in India, and in a Buddhist temple in Japan. All of those journeys have been focused on uncovering my spiritual and "true self," while dissolving my ego and "false self." Ego, however, is like a shadow. It can be seen only when you are standing at the right angle and in the right lighting. And just when you think you have it under control, it appears beside you, bigger and denser than before.

When we decided to write about ego, I spent several hours sitting at the computer. Nothing came. What was the problem? Talking about my ego, in this column, with my real name and professional affiliation, places me in a vulnerable position. Few academics truly want to discuss the embarrassing details of their egos in a national forum.

Do I actually have to tell others how perplexed I feel when I hear criticism from my students, colleagues, and friends? How could anything be wrong with my teaching? How could my paper need revisions? How could I use an attitude adjustment? Yes, it's a daily struggle to admit to myself and others that I am not perfect and need to get a handle on that damn ego of mine.

A former professor once suggested that you need a big ego to make it in academe. Being invisible and selfless is the last thing you should strive for as a young aspiring assistant professor. The bigger the ego, the more grants you get, right?

But that notion collides directly with my own spiritual quest, and I am struggling to build a connection between the two. For example, in my teaching I have moved away from the traditional lecture and sought to create a classroom atmosphere based on dialogue, critical thinking, collaboration, and care. Yesterday, I asked my undergraduate students to anonymously tell me how the class was going. I had the same set of students last semester for another course, in which I earned very good ratings from in-class evaluations and an in-class assessment by a senior colleague.

Here's how one student responded: "I think last semester we took advantage of you, and this semester you flipped out and are wound way too tight." Huh? Took advantage? Wound way too tight? That could be interpreted as: Last semester we walked all over you, and for no logical reason you've decided not to let us do it anymore!

The collision of my ego, spiritual beliefs, and academic values are made visible through that comment. Was I too interested in being accepted by my students last semester to notice they were taking advantage of me? Did my liberal spiritual beliefs turn me into that "flaky" professor whom everyone can walk over? Have I been so wrapped up in starting a new research project, getting an article out, writing a book prospectus, and presenting at conferences that I now appear wound up? Have I let my academic self-centeredness and competitiveness take over?

What happened to the serenity I found on that beach in Hawaii and in the ashram in India? How do I keep that selflessness and peacefulness when I am in a space where people may take advantage of me, where I may take advantage of others, and where it's hard to see when it's happening?

Perhaps I need to stop seeking the answer to those questions in far-off places, and begin to seek them in the academic life I have chosen.

Joseph Flynn. Welcome to the big leagues, kid. When you spend a significant portion of your life pursuing a goal, you risk that what you will find upon achieving it will fall short of your expectations. Everyone wants a .350 batting average. And as my man Jay-Z says, everyone wants to be able to dust off their shoulders. Those of us in academe are no exception.

Ego can be the fuel you need to say something unpopular or wholly original. In some cases, ego alone can get you through. But, sometimes ego can be your undoing. It is a crazy Cirque du Soleil act; you lean too hard one way and you break; you lean too far the other way and you fall into shame. Learning how to negotiate those contortions is the trick. And trust me, in academe, there are a million and one opportunities to fail.

I can't speak for others, but when I finished my dissertation and set foot on the campus of Northern Illinois University, although I was a bundle of nerves, I was filled to the brim with ego. I had been told I had good ideas. I had just written what amounted to a book. I had respect from my mentors, new colleagues, family, and friends. I was finally making a decent salary. My stuff was set!

But then real challenges emerged. After the "honeymoon," you begin to realize, like any player in the big leagues, that you must produce. It is no longer enough to talk about how you can knock a grand slam in the bottom of the ninth; now you are expected to do it – regularly. And then, you are handed your first defeat, or more appropriately your first series of defeats.

Earlier this academic year I was handed the first of two defeats. I was not approved for research grants from my college and from my university. Colleagues said my proposals were good and the projects interesting, but the powers that be felt otherwise. After I got the news, during my state of blue funk, a few senior faculty mentors counseled me, confessing that they, too, had lost out on numerous grant proposals and that applying for a grant is always a crapshoot.

> That helped only a little, but then my ego said, "Get up dogg and dust your shoulders off."

At the beginning of this semester I submitted my first article for publication. I had a few colleagues run through it who seemed impressed. My ego was satisfied. I sent it to a top-tier journal and figured that if the editors did not take it, they would at least be able to tell me how to fix it.

Four months later, I got that "thin envelope," and we all know that is never good news. My article didn't even make it past the first round of review, and got no feedback. I asked myself, "Man, they didn't even think it was good enough to tell me what was wrong with it?" My ego was shattered.

The reality is, even if you have a .350 batting average, it still means you missed two-thirds of the time. So I am still here, revising my article and reconsidering where to send it. And of course, dusting my shoulders off.

All three of us. Ego can be a splendid thing. The very ego that has been seriously wounded for each of us over the past year is the same ego that motivates us to get back to work, challenges us to keep reading new ideas, and encourages us to create our own.

As academics we have found that we must accept the losses, which can come in droves, with the successes. And every day we must acknowledge the ego and keep it in check if we are going to succeed and be happy.

REFLECTIONS ON THE FIRST YEAR

July 17, 2008

Samara Madrid. Recently I attended a colleague's graduation. Four women with Ph.D.'s sat at a table drinking wine and celebrating our friend's success. Our conversation turned to the sacrifices that women make in academe and the losses that come with our career choices.

At the close of my first year on the tenure track at Northern Illinois University, I think the most important lesson I learned had to do with transforming the sacrifices and losses into love and gratitude.

I could, at this point, offer simple tips about how to avoid the pitfalls of daily academic life. But most of us know how to write a paper, teach a class, and collaborate with a colleague. What we may not know is how to deal with the emotional fallout.

Most women I speak with about the process of earning a Ph.D. and getting tenure use words like "loss," "broken down," "sacrifice," and "barely getting by." It reminds me of speaking with soldiers who have just returned from war. They show you their battle wounds, talk about why they went to war in the first place, and ponder if the war was worth the cost.

Women in academe have battle scars, too. I have met some female academics who have transformed their wounds into a reverence for life, while others have let their wounds fester into bitterness.

I experienced my own losses this year, personally and professionally. When I completed my Ph.D., and began my journey on the tenure track, I had this romantic notion that winning the battle would turn me into the perfect academic woman. I would lose 40 pounds, publish four articles in the first six months, find my soul mate, get a big research grant, run a marathon, and receive the highest teaching evaluations.

Perhaps the biggest loss I experienced this year was the loss of a dream that turned out to be wholly unrealistic. It was the loss of an image about what it might mean to be a Successful Female Academic. Does that woman even exist? And who created her image, anyway?

From what I've seen, a true academic warrior does not buy into that unrealistic image. She courageously and purposefully follows her own path. She takes risks, speaks her truth, and allows emotions such as love — yes, I said love — to guide her teaching, research, and service. She is complex, rich, deep, and soulful.

In my yearly performance review last month, I asked the department chair what I needed to do to get tenure. He said, "Just be you, Samara."

That was the best piece of advice I received all year.

Joseph Flynn. If the theme of this month's installment is "What did we learn the first year?" then I learned some big lessons.

First and foremost, your relationship with your students is paramount. After the February 14 shootings here — when a young man walked onto the campus and opened fire inside a lecture hall, killing five students and wounding others — my semester fell apart. I could not get myself focused on my teaching and thought this year marked my poorest showing ever in the classroom.

To my surprise, my students really enjoyed my classes in spite of all the hiccups and missteps. They offered useful critiques of my teaching and their comments actually gave me much to consider as I move forward. It's like they called in my pardon just as I was beginning to feel like the proverbial dead man walking.

Second, recognize your successes. I was able to deliver two really good conference presentations. I contributed to a recurring column for a pretty good publication (wink, wink). I grew closer to developing a clear research agenda. I formed strong relationships with my colleagues and met new ones at other institutions. I began

to serve on university committees. I understood more about the process of getting published.

And, well, to be honest, I had a great time as a first-year professor. During my final evaluation, my department chair assuaged my fear and loathing about my teaching in the spring and let me know that I was on a good trajectory. I was humbled.

Third, we often think of academic work as a job done in isolation. We think saying that about ourselves makes us sound like mavericks. But in my experience, success in academe is really about teamwork and communication. Simply put, I do not think I could have made it through this semester had it not been for the support of my departmental colleagues.

Building strong relationships in your department is key as you move toward tenure. Ask for help. Be open to criticism. And let your conscience guide you.

Finally, this job can become all-consuming all too easily. On too many evenings, I have found myself totally distracted from my family. You must take time for your family, your friends, and yourself.

For those of you who are just finishing a dissertation and going straight into a teaching gig, do whatever you have to do to get away from the work for a while and decompress before your job begins. Because when it does, you will have plenty of time to learn how to be a professor.

Andrew Kemp. The first year is finished. I am tired. I have used more words this semester in writing, teaching, and committee work than I thought I had in me. Therefore, I am going to dispense with eloquence, organization, and paragraphs. Here is my list of what I learned this year, in no particular order:

More isn't necessarily better — when it comes to assignments, that is. I used to teach high school. Coming out of that background into higher education, I applied the K-12 model of assignments: Give 'em lots of them. I have learned that, with graduate students that approach makes for a veritable grading nightmare. A few good, thought-provoking assignments work well.

You can't get tenure your first year. Don't try to finish everything.

Appreciate silence.

While it seems like a good idea to get involved in lots of campus committees, don't (if you can help it). Getting involved is great for building relationships, but getting too involved takes a lot of time and energy with little reward.

I don't like being called a newbie.

Refocus on the dissertation as a means of getting a few articles out. That might seem obvious, but it took me a while to get back into the diss. I had worked on it for so long finishing my degree, I found that revisiting it gave me a migraine.

Write with your colleagues. Share ideas with them.

Exercise. It gives you energy. It also keeps off the weight. I didn't exercise enough. Now I have to diet.

> Keep your office door open. Some of the best conversations I have had have been on a whim. In fact, I have two papers in progress because someone walked in and we started talking.
>
> Don't be afraid to contact anyone, Part 1: One of my specialties is place-based education. In my first month on the job, I contacted most of the big names in the field via e-mail message, introduced myself, and asked if they had any interest in collaboration. Every one of them responded within two days.
>
> Talk to senior professors. They know the drill. They've done it. They know procedures, rules, and policies. They also give great advice.
>
> Wander aimlessly on the campus. Go in and out of buildings. Meet people. Drive through the town. The university is your place. Get to know it.
>
> Don't be afraid to contact anyone, Part 2: This column came about because I suggested the idea and called. Now here we are on the fifth instalment.
>
> Don't try to write too many papers at once. Higher education is great for stimulating the mind. I talk to people and inevitably an idea for a paper springs up. Now I am up to eight. How many have I finished? Zero.

I thought this first year would be stimulating, challenging, frustrating, and exciting, and it has been. It's also been a lot tougher that I ever thought it would be.

Most important, be flexible. I think a part of everyone wants to be perceived as tough: Here are the rules, these are the due dates, it's now or never. But life happens and it happens for everyone. Getting to this point required a lifetime of work; this is the reward. So appreciate it. I am an assistant professor at a university. How cool is that?

All three of us. We are three different people, with different lives, responsibilities, and goals, but we all share this aspect of our lives: We know that we are learning, we are growing, and we are accepting the responsibilities associated with being an academic. If we could offer one lesson we have all learned from this trying first year, it's that relationships are important — relationships with students, colleagues, family, and friends.

Being a new professor can be lonely. Don't let it be.

BEGINNING YEAR 2 ON THE TENURE TRACK

November 19, 2009

Joseph Flynn. Even though being an assistant professor is a cool gig, at the end of the day it's only a gig. You file a W-2 just like everybody else.

In my second year on the tenure track, I am finding that I am less and less excited about it all. Why? Simply put, I have so many items on my agenda — and the fear of failure that comes along with them — that it's not easy to just sit back and bask in the glow of being a professor anymore. The honeymoon is over.

The problem is not that this is my second year, it's that I am one year closer to tenure review, and my time for acclimation has been exhausted.

In year two, you are no longer a rookie. You are expected to get better student and faculty evaluations for your teaching, to serve on more committees, to do community outreach, to get IRB approval, and, the killer, to get your research published. You are expected to be more understanding of the institution and its politics. You are expected to be more understanding of your role. You are expected to be ... more.

I love my job, but every morning as I roll over, the list of things I need to get done today, and in the coming days, washes over my mind like a North Shore wave on Lake Michigan. This needs to get done. That needs to get done. I have how many meetings today? When can I write? I thought this was going to be done a week ago? That proposal is due Friday?

What I once fondly viewed as a beautiful lifestyle and culture has become a long list of tasks, failures, and accomplishments.

Maybe it's not that the glow is gone. Perhaps I am just a little jaded right now. I remember telling people in the final months of writing my dissertation that I could see the light at the end of the tunnel, a common cliché. But now I am in a new tunnel, too far in to see the light behind me and nowhere near close enough to the end to see the glow of tenure.

A colleague just handed in his tenure portfolio (note to self: keep track of what you are doing, because that is one intense document), and we all could see the feeling of peace and tranquillity that radiated through his face as he declared, "This is it!" Right on. More power to him. Hopefully I can use his light for a little while, until I rediscover my own.

Samara Madrid. It's Friday evening, and I am at home alone looking at my "to do" list. There is the usual ache in my stomach as I realize that the list will not get much shorter even if I spend the entire weekend in my office. Sadly, nothing on the list has anything to do with my research agenda.

I visited the library a few weeks ago. The smell and sight of those books revived my senses and enthusiasm for academe. The purpose of my visit was to get a reference for my current research project. Instead of getting one book in a five-minute visit, I left with two bags full. Both bags are still sitting untouched in my office, and little has been done on my research project.

My visit to the library helped me to remember why I chose to become an academic. It was the creation of knowledge and the process of discovery that I enjoyed most — those moments when I was challenged by new evidence that made me see the world in a different light. I became an academic because I thought it would give me the space to uncover the unknown. To ask questions.

Instead, in my second year here, I spend my time sitting in committee meetings, grading endless papers, and navigating the political and social terrain of the university. Is the glow gone? I don't know, but I do know my time for research is gone. The notion of discovering the unknown has been replaced with multiple discussions about topics that never seem to get resolved.

As I sat in the middle of the library, basking in the light of unread knowledge, I reflected on my lack of time to conduct meaningful and engaging research. I decided

that I must reclaim a space to ask questions and do research if I am going to reignite my passion for academe. If I don't feel passionate about what I am doing, the struggle of the process can become suffocating rather than freeing. And I am all about free choice.

My choice this weekend is to recapture the excitement I lost along the way. The weekend "to do" list will have to wait as I open the books sitting in my office and revisit partially analyzed data. I took this job to do research, to write, and to share knowledge with my students. The glow is not gone. It just has been dimmed by all the other activities that take up so much of my time, my enthusiasm, and my light.

Andrew Kemp. Through the chaos of learning a new job, moving across the country, and finding a new home, I realize now, I lost part of my self, the part of me that loves education.

Throughout my life, I have made a slow progression from lazy high-school student to average undergraduate to anal-retentive master's student to willing and eager doctoral student. Along the way I taught English-language courses in the Marshall Islands, spent time as a high-school teacher, developed an international program and other projects as a program coordinator, and finally won this position as an assistant professor. It has been a long, consistent, almost predictable march to the front of the line. Now that I am here, in my second year, I'm wondering, where is here?

I have developed a terrible habit of starting lots of projects and struggling to find time to finish them — something my professors warned me against. I've read columns on these pages in which academics write about feeling like a sham, and sometimes, lately, I feel that way, too. I have earned national leadership positions. I am sitting on dissertation committees, I am working on a series of papers related to my research agenda. I am collaborating with colleagues on interesting topics. But I am doing many of those things because I have to, not because I want to. Somehow this culminating experience in education, the professoriate, has become just another part of my 35 consecutive years in education, as either student or a teacher (minus one year when I worked for my father). How do I feel about it? I know there is something here that I love; I just need to get reacquainted with it. Life has become complicated in ways that I hadn't imagined but I am starting to find my way again.

I don't mean to sound like I don't appreciate what I have. Northern Illinois is a great place. I have ample support from my colleagues and the administration. I have been given the freedom to follow my interests. Maybe it's that with everything that has happened this past year with my family's health, the shootings on the campus, the floods, the blizzards, the ice storms, and some strained finances, I am looking at the world differently. My priorities are no longer eager and naïve.

Perhaps that is what I know. Faculty life is deeply personal. It is a combination of academic freedom and the awful existential freedom of having to be. Yet, in the end, there is still a glimmer of excitement. I still have conversations with colleagues that make my head swirl. And just the other day, I finally figured out how to create something publishable out of my dissertation. So perhaps it isn't all gloom and doom.

All of us. As we move through our second year, we are finding that the rigors of the professoriate are beginning to weigh heavily. The first year is a grace period of sorts, a series of exhibition games meant to ease you into this strange new world. The life and work of the mind is a noble and honored profession, of which we all feel blessed to be a part. But we are also beginning to see the degree of perseverance that is required to sustain us in a world that is, at times, anxiety ridden, sometimes elating, and always challenging.

CONCLUSION

We three wrote six essays over the first full year of being professors and as a part of the process realized that we all were concerned about the same issues in general but also expressed our own unique perspectives and priorities. Drew expressed the real concern over the amount of time this career can take and the toll it can take on family. It can be overwhelming. It is not just the time it takes to prepare classes and write articles. It is what is not talked about: time spent in committee meetings; times spent commuting to satellite campuses; time spent considering the next steps. As a professor you quickly realize that it is wholly necessary to create time and space for yourself and your family if you want to remain intact.

Samara pointed out the idea that being a new professor is also about projecting a positive image, for you and for the creation of new relationships. There is awkwardness when transitioning from graduate student to professor that can be rife with self-doubt and dissonance. But Samara's ideas show that what is key is to consistently embrace one's self-awareness, the doubt and loathing as much as the brilliance and excitement. As a part of the process, one in transition should be willing to take risks while always valuing the multiple iterations of the self as a thinker, teacher, colleague, friend, and individual. Ultimately Samara helps us to remember the importance of tending to one's spirituality and understanding that although we are professors we are always so much more.

Joseph's essays reflect the struggle to appreciate the larger social and cultural implications of being a professor while embracing the personal satisfaction of being a professor. As he states, "It's a cool gig," and he attempts to strike a balance between being a title and being a person. Joseph (and Samara) point out how race and gender do have significant impact on an experience and the implications of giving voice to those identities are crucial in developing a positive self and professional identity.

What is most relevant about this collection of essays is that each of us felt that at the end of the day one must be patient, collaborative, and reflective. As a new professor you must be open to getting your fair share of hard-knocks, but that is in fact no different than the induction into any profession. Therefore, the two most important things one can do as a new professor is run from isolation by building relationships with new colleagues and falling back on relationships with family and friends. Also, give yourself a break. Seek out colleagues for support and vigorous conversation. Collaborate on a research team or partner with another colleague interested in similar issues. Keep your office door open and regularly go to lunch with other faculty members. Attend college and university-wide luncheons and mixers.

Reach out to faculty in other departments. Reach out to your faculty mentors. It is through the building of these relationships and connections you get valuable advice about surviving the politics of your institution.

Most importantly always remember that you are more than your profession. Any individual is a matrix of identities and experiences. Although this career path can be very demanding, remembering that this is only one aspect of the self makes it much less crucial to be perfect and perhaps can allow you to remember who you are as you make your way through the tenure process.

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PABLO TORAL

13. RETHINKING THE DOCTORATE FROM A LIBERAL ARTS COLLEGE

The authors in this volume evaluate whether universities have chosen to increase the value of a doctorate as a source of intellectual capital or whether they are wedded to the degree as a certification and dollar producing endeavor. This chapter reflects on the doctorate as a source of intellectual capital, but not solely as a mere instrument to help the doctoral candidates develop the skills to conduct research in a particular field of inquiry so that they can advance the frontiers of knowledge. It focuses on the need to embed this approach in a broader process that will allow the candidates to develop additional advisory and pedagogical skills so that they can be well equipped to teach college students how to become life-long learners and researchers themselves.

Five percent of American undergraduates attend liberal arts institutions. These colleges hire doctoral candidates to fulfil mandates whose focus is not exclusively on the production of knowledge. The mission of my own institution serves as an example. "Beloit College engages the intelligence, imagination, and curiosity of its students, empowering them to lead fulfilling lives marked by high achievement, personal responsibility, and public contribution in a diverse society. Our emphasis on international and interdisciplinary perspectives, the integration of knowledge with experience, and close collaboration among peers, professors, and staff equips our students to approach the complex problems of the world ethically and thoughtfully[1]." Are doctoral institutions giving their graduates the skills to help Beloit College fulfil its mission?

My own graduate institution, Florida International University, allowed me to teach courses when I advanced to candidacy. Before teaching, the university required doctoral candidates to attend a semester-long seminar on teaching pedagogy. The candidates came to this seminar without a clear idea of what the intended goals of the seminar were, but most of us were happy to leave our comprehensive examinations behind and looked forward to the next step. Intimidated by the prospects of walking into a classroom full of students who were not much younger than ourselves, we welcomed this seminar as an opportunity to learn some basic teaching skills. Over the course of the seminar we learned a bit about each other's disciplines and worked in groups to develop syllabi, assignments, class discussions, grading rubrics, etc. The diversity of the disciplinary backgrounds of the doctoral candidates was a valuable resource, because we reviewed each others' syllabi and assignments to make sure they were as clear as possible.

D.M.C. Pérez et al., (eds.), Higher Education and Human Capital: Re/thinking the Doctorate in America, 189–203.

I soon realized that the seminar had been successful when I began teaching my first course. At first I felt a bit intimidated. My syllabus was simple but clear, so the students did not ask many questions. The assignments made sense to me and the students did not complain about the grades I gave them, so I concluded that I had learned to be a good teacher. Great seminar!, I thought Over the course of the following two years I taught International Political Economy almost every semester and by the end of my second year the department allowed me to develop a couple of new courses, International Relations of Latin America and Theories of International Relations. My professors thought that as I was about to start looking for an academic job, my chances would be better if I had a proven record of teaching experience and a list of courses I could teach.

Their strategy was probably correct, because I had several interviews and took a job at Beloit College. However, the world of the liberal arts soon made me feel underprepared and insecure again. How did my courses relate to the mission statement of the college? Were the syllabi that I developed for a large state school appropriate for a small liberal arts college? Did the assignments make sense? And, ultimately, was I going to be able to earn tenure? It was clear to me that my doctorate had given me strong research skills, a broad knowledge of the field of international relations and a strong commitment to a life of scholarship. However, it was not so clear whether it had taught me how to empower my students to "lead fulfilling lives marked by high achievement, personal responsibility, and public contribution in a diverse society" so that they could "approach the complex problems of the world ethically and thoughtfully". I was not even sure how I could stretch my compartmentalized and highly theoretical knowledge of international relations, firmly grounded in the field of political science, to meet the college's "emphasis on interdisciplinary perspectives, the integration of knowledge with experience, and close collaboration among peers, professors, and staff."

Liberal arts institutions know that doctoral programs do not equip their graduates with all the skills they need to serve the mission of the liberal arts and they have programs and incentives to help their newly hired faculty develop those skills. The departments, different programs on campus and academic deans work with faculty members to help them understand the expectations of the college. There are different seminars on pedagogy that provide a useful venue for new faculty to meet more experienced faculty and share assignments, teaching practices, etc. Mentor-mentee relationships facilitate these exchanges as well and help new faculty identify role models on which they can mold their own professional career.

In the following sections I address three important aspects of the liberal arts that successful educators should master, but doctoral programs do not prepare their candidates to fulfill. The first one is good teaching and advising skills. Some doctoral programs do not help the students gain teaching experience, putting them at a disadvantage when they apply for jobs at liberal arts institutions. Many of the top research institutions believe that the reputation of their school is enough to help their graduates land a job in higher education. With the growing emphasis on assessment in education, even the top research schools are under pressure to increase the quality of their teaching and look for evidence as one of the criteria to hire.

The second aspect addressed below is curricular development. At small institutions, faculty are forced to cover vast tracts of knowledge in their disciplines and across disciplines. In addition, development of new pedagogies, breakdown of disciplinary divisions, changes in the economy and labor market, and evolution of priorities within the college itself require faculty to revisit the curriculum periodically to adjust to these demands. Faculty need to be able to come up with creative ways of getting the most out of the resources of their institution, so that they can develop new courses, programs, majors or minors.

Finally, the separation of institutions of higher education in two groups, those focused on research and those on teaching, has been rendered obsolete, in part by the fact that many doctoral graduates have found jobs at institutions that traditionally focused on teaching and have now changed tenure expectations. They struggle with the need to keep an active research agenda while meeting the expectation of teaching excellence. This tension is best addressed by integrating research into teaching. In the last section of this chapter I will discuss how my interaction with the students and my participation in different programs at Beloit College helped me develop a new research agenda that brings together my research with my teaching.

TEACHING AND ADVISING

In keeping with my college's mandate to empower the students to lead fulfilling lives marked by high achievement, personal responsibility, and public contribution in a diverse society, I have developed a teaching philosophy that seeks to teach the students how to learn, so that they can become life-long learners. Since learning will continue after they leave the college, I seek to help them develop reading, writing, research and critical thinking skills. While some factual knowledge is necessary, teaching facts is not my focus. My main goal is to help them become active learners, so that they know where to find the information they need and how to process it. I use the classroom to discuss the writing style used by political scientists, and teach them how to read and write political science texts. My assignments help me see that the students read and understand the material well and that they develop their research skills.

Using the "backward method", I looked in the mission of the college for my learning goals and developed different types of assignments to help the students get there. Since the college wants our students to become responsible citizens, one of the main goals is to help the students develop critical thinking skills. One of the strategies I use to achieve this is to help them make sense of current events. I help the students understand theories and force them to apply them by making connections among seemingly unconnected news stories. We look for the underlying rationale that is not evident in the news. They question the source and the actors in the stories. They go to other texts to contrast the information and they develop their own analysis. I explain how theory is developed and applied in international relations and how it can help us make sense of the complexity of real life situations. While these are useful skills for all of the students, regardless of their major, I also emphasize some basic skills that are specific the discipline of political science, such as the writing

style that is used in journals in the field, tips on how to read academic texts in political science, the kinds of questions we ask, the way we conduct research, where we find the answers, appropriate sources, basic factual knowledge, etc.

In addition to critical thinking skills, life-long learners need to develop research skills. I ask the students to write research papers based on a case study to illustrate one of the theoretical debates or one of the main themes in the discipline. We discuss how to structure a paper, how to develop a clear research question and a thesis and how to break down the paper into sections to support the thesis. To help them build information literacy skills, we also discuss how to find resources. I spend time explaining where they can find appropriate academic books and articles for their international relations papers in a library. I also share with them online resources, such as JStor and other academic, professional and independent sources that can be used in their papers.

To help them develop good writing skills, I have developed different assignments that require different writing styles. For instance, the students learn to write a research paper, a book review, a policy paper, a report for a consultancy, and a grant proposal. We discuss writing tips, citation styles, referencing, literature reviews, etc. These types of writing assignments can prove very useful on the job, volunteering for a nonprofit, or in real-life situations.

To prepare the students to make a "public contribution" in a "diverse society" I also teach them public speaking skills. I use position papers and debates to push them to develop persuasive arguments. Their peers and I make recommendations on the content and style of the presentation. We discuss body language, time management, use of evidence in verbal communication, visual aids such as PowerPoint slides and how to engage and refute the views of others. Although some students are afraid of speaking in class, this exercise normally proves to be a good ice-breaking strategy to facilitate the integration of the shy students into our class debates, because they gain self-confidence.

Teaching "close collaboration to approach the complex problems of the world ethically and thoughtfully" comes through assignments that require work in groups. These assignments are normally based on a practical exercise, such as an analysis of a role play conducted in class, or policy advice for a nonprofit, a government, a grassroots organization, a nongovernmental organization or a firm. The students have to put together a document to an imaginary client. I play the role of their client as they negotiate with me the terms of their contract. I teach them how to listen to their clients to understand exactly what they need, how to write the document and how to present it, both orally and in physical form. They learn that the final group project is more than the addition of the parts and show them how to work together to structure the report and to integrate the parts into the whole. Their report has to have clear goals, as well as a clear discussion of the policy choices (strategies) to reach these goals, including potential future scenarios. The exercise is complex enough so that a single person cannot do most of the work, and yet it has a clear focus to facilitate a division of labor and the integration of the parts into the whole.

Class discussion can also foster teamwork and respect when they force the students to discuss the material they read and when they integrate it into their arguments.

If there are disagreements in class, I push them to engage in a constructive discussion by relating their views to the material we learn in the course, by considering the perspective of the other and if necessary by defending the views of others. Students learn how people construct their arguments and they become more respectful of each other's views. When I am writing an article, I share drafts with them and ask them to critique my arguments. The students develop an understanding of what it is to write an original paper, the use of a review of the literature, how to relate field work to the theoretical debates of the field, and the importance of peer reviews.

"Integration of knowledge with experience" comes through in-class simulations. I provide examples from three of my courses, European Union, Global Political Ecology and Peace and Security Studies. In my course on the European Union I developed a "Model EU" exercise in which the students have to organize a summit of the European Council. A group represents the European Commission and coordinates the summit and the other groups represent different countries of the EU. Through the semester they conduct research on the main issues that the EU is addressing at the time, as well as on the official position of their country, and they circulate position papers. In the end of the semester we celebrate a summit in which the countries need to reach consensus. By the end of the course, I encourage a group of students to join the Model EU Club on campus, so that they can be part of the delegation that we send to the Midwest Model EU conference every spring.

In Global Political Ecology I include an activism project. I tell the students that their goal is to make the college a bit more sustainable by the end of the semester. My goal is to help them understand politics at work. Some of the student projects addressed food waste on campus, paper waste, energy consumption, etc. The students set very ambitious goals and try to get the administration of the college to embrace their recommendations. As the semester goes along they adjust as some parts of their project become impossible to implement and they change their goals or their strategy. This exercise takes the college as a laboratory, and allows the students to see the difficulty of being an environmental activist in society. One of the sections of this course addresses specific environmental challenges, such as climate change. We also have a simulation of the United Nations Framework Convention on Climate Change. This project is similar to the Model EU exercise. A group of students represents the United Nations and the rest represent the government of some countries. Some students represent actors in civil society, such as environmental nongovernmental organizations and energy firms. For a couple of weeks the students conduct research to learn about the official position of the actor that they represent and one evening we hold a summit to try to agree on a treaty to address the problem of climate change. Students learn how to find primary sources, they combine scientific, economic and political arguments, they learn how different actors interact and they find themselves using diplomacy, compromise, coalition building techniques, etc.

Students in Peace and Security Studies need to get out of the college bubble and learn how the local community is dealing with a specific conflict. They choose the conflict themselves and they talk to the people involved. The goal is to learn what is going on, the position taken by the parts involved, and they make recommendations

to solve the problem. In the end, we present their research at a public venue downtown. Some of the topics they have researched include homelessness, the curriculum of the local school system, juvenile violence, drug abuse, race relations, and immigration. This exercise helps build bridges with the local community and allows the students to work with and learn from community leaders who pursue "lives marked by high achievement, personal responsibility, and public contribution in a diverse society."

I help further the college's mission to facilitate interdisciplinary learning by building some courses or sections of courses around issues or problems that the students have to address by combining tools developed in different disciplines. An example of an interdisciplinary course is International Political Economy. The students learn some economics to understand how structural economic forces work and how they constrain the actions of social and political actors. We borrow from political science to study how different actors participate in politics and how they use their power in the economic arena to alter the distribution of resources. In Global Political Ecology a good understanding of economics is also important to see how the logic of the market leads people to engage in economic activities that impact the environment. We also study politics to learn how political actors can exercise agency over the distribution of natural resources. Geography also provides useful tools to learn how the space is modified by the interplay of economic and political forces over the environment. In my course on Peace and Security Studies we use methods from social psychology to analyze the reasons why people engage in violent behavior, and we use political science and anthropology, among other areas, to explore strategies developed by different societies to solve conflict peacefully.

Advising is also a vital part of the college learning experience. The flexibility afforded by our curriculum gives the students a lot of freedom to build their majors, so working in close consultation with them is important to make sure they have a clear rationale in the selection of courses. It is also very important to encourage the students to involve themselves in campus life to experience public service and activism. Helping them find internships, summer jobs, suggesting conference where they can present their papers and student journals to publish their research, off-campus study and graduate programs are also critical aspects.

CURRICULAR DEVELOPMENT

A small institution offers ample opportunities for faculty to influence the curriculum. Since coming to the college I have been involved in an ongoing process of curricular review that should lead to a major overhaul of our curriculum. While I have been active in these discussions, I will focus in this section on the role that I played in the development of a minor in peace and justice studies. Most doctoral graduates are firmly trained in a single discipline, making it hard for them to find connections across disciplines. However, interdisciplinary programs help students in the liberal arts tackle real-life problems by integrating the skills developed in different disciplines. Asking the disciplinarily trained doctoral graduate to put together or simply to participate in an interdisciplinary program is quite a challenge because the graduate has

not developed interdisciplinary skills in graduate school in the first place. However, it is very hard to a successful educator in the liberal arts without the ability to teach the students interdisciplinary learning.

When I arrived at Beloit College in 2003, there was a lot of interest among the student body in a peace studies program. "A college that sends so many of its graduates to the Peace Corps and AmeriCorps or to careers in the field of human rights cannot afford not to have these programs" was common parlance at the time. I worked with a group of faculty, staff and students from the college to build support for this new program on campus. One of the members of the Department of Education created a course called "Civil Rights in Uncivil Societies" and I created a new course called "Peace Studies" in 2004. Both courses served as an introduction to the field of peace studies, security and conflict resolution and helped bring together students with an interest in the program. The student Peace Club opened their Peace House to those interested in this program and in the course of two years we discussed the rationale behind the new program. Was there enough student interest on campus? Did we have enough courses offer a strong major or minor? Could we create new courses to serve the program? These meetings (two or three per semester) served to create a critical mass of supporters among the students (mainly those in the Peace Club), some members of the faculty and some members of the staff, especially in the Office of International Education, where they suggested potential study-abroad opportunities in the field.

We conducted some research to find out where other colleges and universities were and got some ideas to structure our program and to produce a proposal that we could submit to the Committee of Interdisciplinary Studies (the committee that reviews interdisciplinary programs) and eventually to the college's academic senate. Our rationale was the following. Peace and justice studies (P&JS) is an inter-disciplinary field of study that has boomed in colleges and universities around the world since the Second World War. Today, more than 160 higher learning institutions in the United States and more than 500 around the world offer peace and justice studies programs. Peace studies received a major boost in the United States in 1970 when a group of researchers and educators organized the Consortium on Peace Research, Education and Development (COPRED). The U.S. Institute of Peace, created by the US government in 1984, has become a key publisher of textbooks and scholarly material. The Peace Studies Association (PSA) emerged in 1987 as a research-focused alternative to COPRED. The terrorist attacks of September 11, 2001 galvanized the efforts of researchers and educators to promote a better understanding of the reasons for conflict and conflict resolution mechanisms. Academic interest in "justice studies" has followed in tandem from work in universities and communities on anti-racism, growing economic inequality, environmental concerns, critical legal studies and other associated ventures. As a result, PSA and COPRED merged to create the Peace and Justice Studies Association (PJSA) in 2001. At least six scholarly journals are devoted to peace and justice studies.

Peace and justice studies also appear under other labels such as "peace and conflict studies", "peace and justice studies", and "conflict analysis and resolution." The field explores the causes and nature of human conflict from the interpersonal

to the global level. Historically, peace studies programs concentrated on "negative peace" or absence of war. Today, more attention is devoted to the concept of "positive peace" promoting social, political, and economic justice. A partial list of topics under peace studies includes violence, war, ethnic conflict, conflict management, conflict resolution, negotiation, peace making, peace building, peace keeping, law, human rights, values, justice, environment, racism, sexism, and nonviolence. Because violence often occurs as a result of conflicts related to economic and social inequalities, issues of justice are also considered a key component of the peace studies field.

Normatively, the goal of peace studies is to promote a just and peaceful world. Those more closely aligned with the many varieties of justice studies tend to see some kind of peace, or the elimination of violence, as the goal of their endeavors. Beloit College's P&JS program is built on the values and beliefs stipulated by the PJSA: active nonviolence as a positive force for social change, critical analysis of institutions and social structures, societal transformation toward justice, equitable sharing of world resources, life-long education (community-based and service learning), innovative and effective pedagogy, liberatory use of technology and media research in support of community needs, and effective networks and alliances.

We brought the proposal in response to sustained student interest in peace and justice studies. In fact, a peace and justice house was located on campus and an active peace and justice club organized periodic activities and talks on campus. At several meetings organized by the peace and justice club, students and faculty discussed the possibility of creating a major and/or a minor. It was clear from these conversations that very few students would major in P&JS. However, several said that they would like to complement their major with a minor in P&JS. Creation of the minor would relieve students of the responsibility of proposing self-designed minors in this well-recognized area of interdisciplinary study and the IDST Committee of overseeing these self-designed minors.

At the time it is difficult to predict how many students would elect the new minor. Eight of twelve students attending a meeting held in Fall 2004 at the peace and justice house and nine students in IDST 268 Peace Studies in Fall 2006 affirmed that they would minor in P&JS if they had the chance. It was difficult to explain why these students did not design their own minor in P&JS. It could be argued that there is no tradition among the students of designing minors in this area. However, we expected that students who had an interest in P&JS but had thus far not designed their minor would declare the P&JS minor when approved. When we were putting together the proposal for the minor, students who studied off-campus were seeking opportunities to study peace and justice both elsewhere in the U.S. and abroad. We argued that a P&JS minor would also help recruit new students to Beloit College because in the years before we put together the proposal, several faculty members had been asked by prospective students about our P&JS program.

In 2007 we proposed a P&JS minor that allowed the students to develop the skills to build a world based on these values and beliefs (the proposal was approved by the academic senate). Its interdisciplinary focus helps the student bring together courses from a variety of departments including chemistry, economics, education and youth

studies, environmental studies, history, international relations, philosophy, political science, religious studies, sociology, theater, and women's and gender studies. We argued that a P&JS concentration would enrich students' understanding of their respective majors and prove useful to careers or graduate studies in a variety of fields, including journalism, education, media, politics, public policy, law, business, domestic and international organizations, and international relations. A number of off-campus programs, both in the U.S. and abroad, offer programs and courses related to the minor, and courses could potentially satisfy the course requirements for the minor.

The minor allows students to group a number of courses to advance their interest in justice, conflict, violence, justice, and peace. In keeping with the aim of flexibility, the student's program in P&JS is developed by the student with the aid and direction of an advisor from the P&JS program, who will also evaluate progress toward the degree, and supervise the internship and the final portfolio. After declaring a P&JS minor, the students may count past courses, but in their portfolio they need to justify how they contribute to the minor.

Students may choose courses that are not included in these columns in consultation with advisor.

Peace and Justice Studies Minor (6 credits. Each course is worth one credit)

1. IDST 234 (Civil Rights in Uncivil Societies) and IDST 268 (Peace Studies)

2. Three of thirteen designated courses in several fields such as economics, education and youth studies, environmental studies, chemistry, history, interdisciplinary studies, philosophy, political science, religious studies, sociology and women's and gender studies. Other courses may be substituted, as determined by the needs of the student and approved by the advisor. New PJST-designated courses will be announced when approved in registration booklets.

3. Completion of an internship with field experience that carries at least half a unit of credit. The internship is arranged in consultation with the minor advisor. The student should present a paper based on the internship to a broad audience. The internship needs to be consistent with the student's Venture Plan. Examples of internships are those conducted through many of our off-campus programs, Chicago's urban studies program and the Duffy internship program.

4. IDST 350 (Advanced Seminar in Interdisciplinary Studies) – ½ credit. The students earn this half credit by putting together their portfolio, which includes [a] samples of work (artifacts) focusing on peace and/or justice issues from previous courses and field experience/internship, [b] memoranda explicitly linking their samples with the goals of understanding issues of peace and justice that reflect the interdisciplinary nature of the minor, and [c] a synthesis, in essay form, that addresses their entire learning experience in Peace and Justice Studies, drawing on personal experience

and writings about peace and justice. This final portfolio project is undertaken with the student's program advisor who will have been involved in crafting the student's program and who is thereby in a position to engage in dialogue with the student about what was gained through participation in the minor.

The purpose of the capstone portfolio project is to synthesize, evaluate and document the diverse experiences and learning of individual students related to peace and justice. As the minor is minimally prescriptive with respect to content, encouraging a high degree of initiative in choosing how to approach the study of peace and justice, outcomes will be quite varied. The portfolio framework offers students a means to collect and synthesize these diverse experiences in a common format, and to do this in a supervised, goal-directed fashion. This also provides an opportunity for assessment of the total student program, and of the program in a more general way. The portfolio is structured as a collection of annotated artifacts of academic and experiential work in peace and justice studies, with a summative synthesis in which individual student goals and outcomes are documented. Each artifact – one drawn from each of the five required courses, and one from the required experiential component – will be presented with an explanation of its peace and justice dimension, and its relationship with programmatic and individual student goals. These memoranda will also be a record of a process. In those cases where classes may have been taken prior to declaration of the minor, the portfolio offers the opportunity for retrospective re-examination of previous work in light of peace and justice goals that may have been articulated only after completing the class. The final synthesis might take a number of forms – but is conceived normatively as 7–10 page essay – depending on student experience and inclination. What is vital is that the final essay demonstrates the learning and insight gained through the program, and that it point to future directions of action or thought.

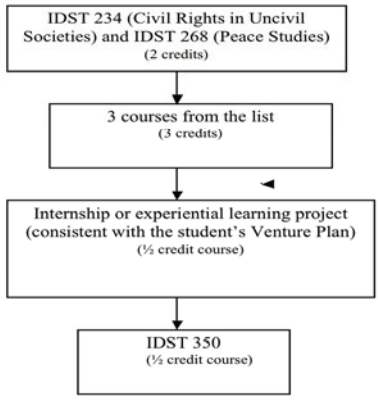

Figure 1. Structure of the peace and justice studies minor: (IDST is the course title for interdisciplinary studies courses).

The goal for each PJST student is the construction of a portfolio that:

1. demonstrates understanding of fundamental concepts and issues related to peace and justice,
2. fosters appreciation of the interdisciplinary nature of these concepts and issues,
3. consolidates the development of knowledge and perspective from the introductory course through the experiential component of the minor,
4. coordinates in a meaningful way the academic, experiential and co-curricular components of the minor,
5. provides opportunity for authentic student self-assessment of learning, and faculty assessment of student learning.

The design of the minor was closely linked to the mission statement of the college. It prepares the students for lives marked by personal responsibility and public contribution in a diverse society. The course selection pushes the students to expose themselves to several disciplines in the natural sciences, the social sciences and the humanities. The portfolio provides the opportunity for reflection upon these different fields of study and integration of the types of knowledge, skills and competencies they developed in each discipline. The integration of knowledge with experience is realized through the internship.

INTEGRATION OF RESEARCH AND TEACHING

The difficult task of keeping an active research agenda while excelling in the classroom as a teacher puts a lot of pressure on the recent doctoral graduate. When I arrived on campus my research focused on Spanish multinational enterprises in Latin America. The rationale behind my research was the following. Many of the state-owned firms that were privatized in Latin America in the 1990s were taken over by Spanish firms, triggering a wave of investments by Spanish firms that made Spain the second largest source of foreign direct investment (FDI) for Latin America, behind the United States. These investments since the 1990s responded to a strategy by seven Spanish firms in four industries (banking, oil, public utilities and telecommunications) to gain access to new markets and to become world leaders in their industries. Their managers decided to invest in Latin America because they believed that the firms had advantages that would allow them to do well. The main goal of my research was to explain the reasons behind this momentous rise in Spanish FDI in Latin America by proposing a new model to explain how multinational enterprises (MNEs) make investment decisions.

My research contributes to the literature on theories of MNEs by developing a model based on rule-oriented social theory to explain the growth and behavior of multinational firms. The focus is on how MNEs develop advantages in the home

market that they can later apply in the host markets. Rule-oriented social theory focuses on the interactions between actors and institutions, in this case the firm and the other actors in their home market (including government, regulators, consumers and competing firms). These interactions result in a process of learning by the firms' employees, through which they adopt sets of best practices that constitute the firm's advantages. These advantages are embodied in norms and patterns of behavior, which the firms take to the host markets when they make investments abroad. My research also contributes to the analysis of state-business relations. Many of the advantages developed by the Spanish firms would have been impossible had the government not played a prominent role facilitating their growth in Spain and ulterior expansion abroad. Finally, it contributes to the analysis of the reforms introduced in Latin America after the adoption of the "Washington consensus" by looking at the role of the multinational enterprises that took over the largest number of the formerly state-owned firms that were privatized. When I began conducting research on this topic there was no book that provided an analysis of the role of Spanish firms in Latin America based on a social constructivist model.

Many of my colleagues teach courses that are closely related to their topics of research. However, with the need to teach basic courses in Latin American politics, political economy and environmental studies, I could not develop a course that would allow me to teach in my area of research. I thought of teaching a course on international relations theories, where I could include a section on social constructivism, but I would not be able to develop my analysis of multinational enterprises. I also thought of teaching a course on multinational enterprises, but my department was concerned that this course would not attract many students in the international relations and political science majors and they thought that this was a topic that should be covered by the department of economics and management. The best I could do was to include a section on multinational enterprises in my course on international political economy. However, since I had to provide a general overview of international political economy (main economic models, international trade, international finance, development), I could only include a brief section devoted to multinational enterprises. Although I felt this section was very superficial, the students have found it useful and interesting.

It was obvious to me that teaching in my field of research gave me great advantages in the classroom. I knew the main arguments and texts in the field and could select the most accessible readings for my students. I could also stretch myself more easily to give students suggestions for their research papers, so that they could explore those aspects of multinational enterprises that they were most interested in. Developing in-class and off-class assignments, such as a role-play exercise, to facilitate learning was also easier. The advantages of marrying research with teaching were clear, but I could only draw on my research for a small section of one of my courses. In addition, very few of my students have been interested in multinational enterprises. The strengths of our international relations program are in human rights, development, and environmental politics.

I have been thinking about ways to take my research to one of these areas, so that I can strengthen the program more directly by building on its existing strengths.

I intend to continue to research on political economy, but with a focus on environmental politics. I have been teaching a course called "Global Environmental Politics" that has generated a lot of interest on campus. This course serves several programs on campus, mainly the majors in international relations, political science, environmental studies and health and society. However, sometimes I have found myself stretching a bit to cover many aspects of the discipline that the students were interested in, but I did not have a strong background in. I have begun to build bridges between my current research on multinational enterprises and environmental politics and have developed a couple of new research projects that I hope to pursue during my sabbatical year.

The first research project is on multinational enterprises from Latin America. Theorists of MNEs have focused on manufacturing enterprises from the US and Western Europe. Their models were not always useful in my research, because the Spanish MNEs that I studied operate in service industries. This allowed me to develop my social constructivist theoretical model. At the same time, since the 1980s scholars began to study MNEs from other countries, including developing countries. After some initial interest in Latin America, most studies focused on MNEs from East and South Asia, in part due to the phenomenal economic growth experienced in this region. My new project will focus on the rise of MNEs from Latin America. Some of these firms became strong as a result of the implementation of the reforms of the 1990s (that allowed the entry of the Spanish multinationals). This research project will allow me to build on my knowledge of multinational enterprise theory, while at the same time covering a very important aspect of the new political economy of Latin America that scholars have not paid too much attention to. I could use my own research to inform a section of my political economy course, as well as another section in one of my courses on Latin American politics.

My second research project seeks to explore some of the environmental impacts caused by the new development strategy implemented since the 1990s. In part these environmental impacts were caused by the actions of the Spanish MNEs that I have researched in the past, and some by the new Latin American multinational enterprises that I will address in my other research project. I could thus build a bridge between my research and my course on environmental politics. The introduction of agriculture for export in the Andes and the growth of the tourist industry are increasing demands for water resources at a time when climate change is causing glaciers to recede, thereby reducing water availability in the dry season. I plan to evaluate the environmental impact of "the new Andean economy" in the rural areas of Bolivia, Ecuador and Peru, with a focus on the use of water resources and the tensions that are emerging among the different actors who compete for access to water, mainly the local rural communities, local firms, and the new multinational enterprises. This new area of research could inform many of the sections of my course on environmental politics, allowing me to draw more heavily on my own research.

The critical point is to find the right type of research project that will help the professor learn in areas that can be easily used to improve the quality of teaching.

These courses will give me the background on environmental, economic and political aspects that I can use in my course. Research will be learning that can directly inform the selection of topics for the syllabus, reading and writing assignments and role-play exercises. Research will also help me develop a network on contacts in the field that can help the students arrange internships. The overlap between research and teaching is important. However, it requires that doctoral graduates understand that not every topic of research will have direct bearing on teaching. The very specialized topics will be harder to bring to the classroom, because most of our courses are general. Professors at R1 schools teach courses in their own field of research and do not have to worry about survey or general courses. This allows them to focus almost exclusively on their research. At a liberal arts college this is not possible. All of the professors have to teach courses that cover the introduction to the field, as well as some general courses in the discipline. It is very difficult to teach a whole course in the field of research. However, by developing a research agenda that builds on the interest of the students, it will be possible to put together one or two courses in our own field of research. Good research and good teaching go hand in hand and it is not only possible, but expected, that professors at a liberal arts college will find the way to marry the two.

CONCLUSIONS

In conclusion, doctoral graduates find themselves ill-equipped to deal with some of the pressures and expectations they will find when taking up a job at a liberal arts institution. While they are expected to educate many of the students who will eventually go on to pursue doctorates, their own doctoral programs have not given them the tools to train these students properly. In this chapter I focused on three main areas that doctoral programs could address to help their graduates excel when they get a job at a liberal arts college: teaching and advising, interdisciplinary thinking and research. Some doctoral programs do not prepare their candidates to be effective teachers. As a result, many find it hard to get jobs at institutions where the expectation of teaching excellence is high. Those who get jobs find themselves struggling to develop the appropriate teaching and advising skills to meet the expectations of the institution. As institutions of higher education place more emphasis on good teaching (in addition to research) doctoral programs would serve their own graduates better if they paid more attention to pedagogy. Doctoral programs require students to prove their research skills, but these skills do not translate directly into teaching and advising skills.

Working at small institutions also requires doctoral graduates to make contributions in a wide array of areas, not just their field of research. They will be expected to teach introductory courses. They will also need to teach courses in a few areas within their discipline. Many schools will also expect them to build bridges between their discipline and others, especially schools that have embraced interdisciplinarity. Asking doctoral graduates heavily trained in a single discipline to stretch themselves along these lines could set them up for failure. At the same time, asking doctoral programs built on a decades-old tradition of specialization and compartmentalization

ignores the deeper epistemological arguments that justify compartmentalization and interdisciplinarity in the first place. However, the fact remains that by not exposing doctoral graduates to the implications of this tension, not only are doctoral programs depriving them from the opportunity to explore the processes of knowledge construction, but they also produce poorer educators.

Finally, doctoral programs promote a divorce between teaching and research. While finding a new topic of research requires the doctoral candidate to explore highly specialized and often theoretical topics, many doctoral graduates will get a job at an institution in which they will only be able to teach the subject of their research marginally, if at all. Undergraduate institutions require their professors to cover the main subfields in each discipline, giving little or no freedom for faculty to teach a course in a highly specialized topic, due to lack of student interest. The alienation of the professor's research from teaching can add additional stress to the tenure process, because course development, grading, advising, etc. will compete directly with research for time, and vice versa. This chapter has suggested that doctoral programs affect the employability of their own graduates and their success in the tenure process directly by constraining the themes on which they choose to focus their research. The ability of doctoral graduates to become good teachers depends heavily on remaining on top of the latest developments in their discipline and their ability to convey these to their students. This can be more easily achieved when research and teaching go hand in hand.

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[1] Adopted by the Board of Trustees on October 8, 2005.

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JANICE SANDIFORD

14. DOCTORAL STUDY

A View from a Veteran of Advanced Study Wars

In the process of retiring – yes, there is retirement for some university professors – I had the opportunity to clean my office of 30 years out of a lot of memories. Such a milestone event causes one to reflect, not only about my career but on the lives of students that I had the opportunity to develop. Being a university professor was probably one of the best decisions I made in my life. Although I had been in higher education for 30 years since completing my degree, it was not my original career path. At the time of my admission into the doctoral program, I had no idea that I would have a 30 year career at a university. My motivation was "why not?" My employer at the time afforded me the opportunity to do graduate work and they paid for it through tuition vouchers. It would have stupid not to take advantage of the opportunity. Because I was working in education at the time and the pay grades for employees rewarded me for additional coursework it made sense to take the course work to obtain my doctorate.

I didn't realize what a having a doctorate meant, nor did I know what I would do with it. I did not do research on various programs like students today do. I lived in a university town – it was a good university, I could get a good education, my friends attended, no one in my family had a doctorate and it would not cost me too much money. I could continue working and even use what I was learning in class on my job. It did not really matter that at the time it was a research university of distinction and that it had a reputation, it was state supported, it was convenient and it fit into my schedule and life style at the time. I liked going to school, and I still do. I attended college part-time while working full time, except for one term in which I needed to complete a residency. I selected the summer term because I could easily take part of the term off from work while I took the requisite number of hours for the residency. I got through my course work, took my "comprehensive examination", passed and advanced to my dissertation. I had a lot of freedom in choosing my topic, it followed my course work somewhat but I don't remember that I had much guidance along the development stages. I counted on my coursework to guide me and periodic visits to my see my advisor who set up occasional meetings with my committee members. After reading, writing and re-writing, and hiring a typist and an editor, my dissertation was approved, defended and I graduated with one term delay. I was ready to go back to my position but decided I liked going to school and found an opportunity to do post-graduate study out of state. I took a leave of absence from my employer and headed for my-post graduate program. Because I had some more editing to do after

D.M.C. Pérez et al., (eds.), Higher Education and Human Capital: Re/thinking the Doctorate in America, 205–214.

I started the other program, my graduation was delayed by one term before I could officially graduate. I made a couple of trips to take care of the edits and planned for graduation. Incidentally, I missed my graduation because of bad weather and flight delays. Before I completed my post-graduate study, I came across an advertisement for a position at the university in the city where I was doing my post-graduate work that seemed perfect for my education and skills and I applied. I went through what I thought was a strange interview process and did my "presentation." (I later learned that this was how university professors get hired) and was offered the job – which I took. The university was a young, growing university, not with much of a reputation but with grand plans. Its founding president had recently resigned, not even over protest, but because he believed he had accomplished what he set out to do. The second president was just beginning his term of office. I even met him in the course of my interview along with others who would become my colleagues.

Over the years I was employed, I learned a lot about the function of universities. I had not learned this during my doctoral program. Perhaps my advisors intended to prepare me for a university career but they did not let me know that and I had no idea that is where I would end up. In the beginning, I built curriculum and programs, recruited students, taught classes and tried to fit the stereotypical role of a university professor. I learned the importance or teaching, scholarship and service. I was better at teaching and service, less so at scholarship but I understood the importance. I moved through the ranks which I consider a miracle because when I started I had no idea what they meant. I thought I had one of the best jobs and never once looked back at my decision to become a university professor. My most satisfying years were the most recent ones. I spent the last 10 or so years supervising doctoral students who were writing their dissertation. And that brings me to my reflections relative to the chapters in this book *Higher education and human capital: Re/thinking the doctorate in America.*

Going back the beginning of this chapter, in cleaning out my office I came across a copy of my dissertation completed some 30 years ago as well. What a shock it was reading it! I wondered how many others beside my committee had read it and what they thought. It sat on the library shelf of my degree-granting university and of my new employer. It is listed in Dissertation Abstracts International (DAI). It was supposed to be the development of "new knowledge". I wondered how many times it was checked out. I only remember one inquiry some years after it was posted, but only one. While I wasn't embarrassed, I wondered if I would have approved it under today's conditions and concluded I probably would not. As I mentioned earlier, I do not remember receiving much guidance in the actual conducting of the research nor the writing of the paper. I reflected on the curriculum of the program I developed and directed and the preparation I needed to confidently guide my students through the dissertation process. Surely, my dissertation chairperson did not think my program of studies prepared me adequately for the process of writing a dissertation with course-work that I took but I think they did as I don't remember getting much assistance. I guess I learned the process by doing it! I have often heard since that writing a dissertation is a lonely journey and mine certainly was very lonely except for my friends who were doing the same thing. But did that "on-the-job" experience qualify

me for directing research studies and dissertations of my students? Here I am in my career doing just that and I worked very hard at it. Surely my Department Chair and Dean didn't think I was adequately prepared to guide others just on having written my own dissertation? But that was my assignment and I take pride in my successes, but let's consider more reflections on doctoral study – then and now.

Selection Process

So how have student selections changed? When I considered continuing my education for a doctoral degree I followed the procedure printed in the catalogue. I needed to have a master's degree, take a standardized test, have an interview with the program leader and wait for the university's decision. Even though my standardized test score was not exceptional, I was admitted.

At my employing university, in my College, the admissions process was similar except for the interview. Our policy was a committee interview following the completed application paper work. At the interview, the committee members were interested in what the applicant understood about advanced graduate study, what their goals were, what their research agenda was and where they saw themselves in about 5 years. Committee members were clearly interested in how the applicant's research agenda fit with their own agenda. We used the GRE score as the standardized test and required a minimum score of 1000. Because we believed more in the person's background and motivation than the research about the value of GRE scores in predicting graduate success, we also made exceptions to the score. We admitted students provisionally or conditionally. Because we needed to have a requisite number of students in courses, we probably admitted applicants we should not have and clearly had students who should not have been in the program (many of them did not finish). Our policy even allowed students to try their hand at up to 12 semester hours before they needed formal admission to the program. Some even went beyond that because the computer was asleep and didn't catch the error.

As for a connection to the research of the faculty members – we often skirted that issue because students didn't know what their research agendas were or we believed we could convince them, through the plan of study, of the research direction they should take so that it fit the committee member's agenda and besides, a committee is more than one person, so surely there would be someone in the College that would be able to guide the students. We wanted to fill classes so we would have a good class schedule and students would have a number of choices. Was our program unlike others in the university?

Other programs in the university connect the students to faculty research in a more formal way by assigning applicants to a professor who had a grant and was doing research; like the scientific model. The student would eventually become the professor's research assistant and often obtained funding for their schooling so they could be immersed in the graduate experience. Students attend graduate school full time and develop research interests as they progress. The admissions process is standardized through the University Graduate School so there is much uniformity throughout the university and its graduate programs.

In reading on-line catalogues of doctoral programs at other universities admission procedures, the process is similar; the standardized test could be other than the GRE such as the Miller's Analogy. Sometimes the two were combined. As more and more programs began to be developed, many universities gave up on the use of a standardized test as admissions criteria and counted on the scholarship of applicants through their academic records. Some programs awarded admissions based on legacy.

So has the student selections process changed? I would say yes and no. There is evidence that more and more individuals are seeking admission to doctoral programs and programs are admitting more of these students. Are there really that many individuals that meet the historically rigid criteria? Probably not, so admission criteria must have changed. While there may be some similarities there is a wide range of selection criteria that fit the nature of the program, its mission and goals. Are all admitted students engaged in reflection and scholarship throughout their programs? Is their goal to join the academy? For these two questions, I would say no. Are doctoral programs becoming more commonplace? Upon reflection of my recent experiences, I would say absolutely. Let's look at some other indicators.

Plan of Study

Once a student is admitted to doctoral study, their first responsibility is to seek a supervisory committee and to develop a plan of studies. Together the new doctoral student maps out their coursework and future research agenda. They begin to master their discipline, develop research skills, engage in reflection, engage in discourse with researchers, and become scholars. In most cases this takes roughly three years. What kind of courses do they take? Again you will see some things are the same, some are different. Sometimes curriculum theory application is evident sometimes it is not. I have often heard "it is not your father's doctorate anymore." But how true is that?

Coursework

How is the coursework of a doctoral program decided? For years, there was very little change in the curriculum even by disciplines. The basic template was study was (a) the history and theories of the discipline in order to become an expert in the field; (b) knowledge and skills of the academic researcher and (c) guided electives that could include special courses or guided research. Along the way students had an opportunity to dialogue with experts, to engage in teaching once a certain level of knowledge was obtained. In some programs there was opportunity to develop a presentation for a national conference based upon their mentor's research. Some students garnered research experience and tuition assistance by serving as a graduate, teaching, or research assistant. In many cases the University course offerings were unlimited.

Under the current curriculum not much has changed except the breadth of courses available for selection. Today, the student is guided into courses that generate larger enrolments and assignments for faculty. Curriculum is still planned using a

modicum of curriculum theory and is focused on outcomes determined through university and faculty self study. Delivery of the open curriculum of the program of study is limited. The designated outcomes and the assessment of them are critical to program review.

Non-traditional programs have re-purposed the course work to fit some of the historical categories but have taken much lee-way in the delivery of courses. Students can attend a virtually offered degree program and never visit a campus of the university that is offering the degree. Some of the non-traditional programs review past credentials and award their degrees without formal coursework. Today correspondence via virtual programming results in the delivery of "papers" to the virtual university faculty, review and delivery back to the student often with re-writes allowed. For the student who is paying fees and attending classes, the temptation to simply pay fees and write papers is very strong.

What is the student really learning in doctoral study through the established coursework requirements? Many are learning how to work their way through the requirements and end up checking off course that overtime become irrelevant to their desired research project. Why is following curricular development theory so difficult? It is my belief that is because a committee process hampers any creativity. When a committee of more two persons becomes responsible for curriculum, the wheels of progress slow to a virtual stop. Large committees are bogged down in making everyone happy that the consensus decisions never get made. Another difficulty is the time consuming, rigid process that is required in university bureaucracy. While most faculty take their committee work seriously, a few represent negativity that causes the faculty developers to simply give up the quests. Often years are spent in planning before implementation can begin. Thoughtful discourse and discussion based upon solid curriculum theory is necessary to establish a good doctoral course sequence but the bottom line becomes recruitment of students and delivery of the courses that in the end produce the "stuff" to adequately assess the end product.

Assessment/Outcomes

Once the coursework is completed the student engages in some form of assessment. Historically these were qualifying or comprehensive examinations. They take different forms, some students did both qualifying and comprehensive, others did only one but not the other. Both involved some sort of writing exercise, either written in a controlled setting or in a "take home" fashion. Most of the writing is focused; students are given general as well as specific areas in which they offer the reader a review of how much they have learned through their program of studies. In recent years, some changes in the process have occurred, but there is always some sort of outcome assessment at the conclusion of coursework. Today some students may prepare their proposal for their dissertation research as the assessment and have it accepted as part of the journey to candidacy. There is some evidence that the more seamless process of progression from course work to research is becoming preferred. This is particularly true in programs that are offered via distance technologies in what are often described as non-traditional programs.

The writing component is reviewed by committee members and often the student undergoes an oral examination. Historically students were grilled and questioned in what often was a humbling experience and one that was not forgotten – it was the "ritual," the right of passage. I would argue that this is not so much the case in many programs today. From my recent experience, the oral examination is often rushed, some of the faculty members only reviewed but did not constructively critique the examination, the faculty members talked more than the student, the student was rarely questioned about what they wrote but told what they needed to do in the re-writing that would help them as they write their dissertation. This type of assessment often does not have any correlation to an examination of discipline knowledge nor research skill. While the examination was designed to be a milestone experience of the doctoral study – a right of passage, rarely does a student "fail" the assessment and as a result, they advanced to candidacy, many of them unprepared for what lied ahead. Some years later this came back to haunt the program faculty as these students failed to make adequate progress in their journey and dropped out of the program contributing to the national statistic of 45% of doctoral students failing to complete the degree.

The Dissertation

What is the value of writing a dissertation? Historically, most would agree that the dissertation, in addition to being the culminating experience of the doctoral degree, was a labor of scholarly production that contributed to the development of new knowledge. Research was original work; it contributed to the intellectual capital of not only the author but also to the reader. Research was rigorous, it followed conventions, it was recognized as important to the discipline. Many individuals with advanced research degrees "discovered" new knowledge that was published in scientific journals and many received deserved recognition by their peers and others as well as awards. Many doctoral prepared individuals continued their research agendas in gainful employment in research laboratories and universities.

Such is not the case today. Too many doctoral graduates begin their advanced graduate study thinking of contributing to intellectual capital but too many do not do so. During the time they are doing the research, they believe it is going to set the world on fire and they will receive numerous invitations to present their results to a wide array of the public. However, too many do not publish their research because they do not believe in it or because it is too difficult to do so. Often they view the lack of significant results as unworthy of publication and rather than getting rejection, they don't even attempt to publish. And the invitations – they don't come either. Often they do not change their practice based on their research. They don't need the results of their study to maintain or even to advance in their positions so why bother. So who beside their parents, emerging doctoral students and their dissertation committee ever read their work? It is certainly not the glamorous life they dreamed about. What is the value of conducting research and writing the dissertation? Many non-traditional programs, unable to come up with an answer have simply omitted it from the program and substituted it with some other means of outcome assessment or capstone experience.

What about the nature of the dissertation? Has anyone conducted research about the dissertations that are being written for the credential of "doctor?" Next time you are at your university's graduation ceremony take time to listen to the titles (or read them in the program). How would you judge the contribution to the intellectual capital? If that is not enough for you, check out the titles in Dissertation Abstracts International. At the same time you can get an idea about which university is producing the most dissertations, the better titles and the significant research. You can even get a glimpse of the "quality" of the research by the abstract. Ask yourself if you really believe these dissertations are as good as yours? What has changed over the years? Certainly the quantity has changed, but what about the quality? Granted quality is in the eye of the reader but you will certainly agree that there are definite changes. And that does not account for individuals who received the same degree – a doctorate - and who were not required, because of program mission and goals, to even conduct research or write it in rigorous academic style. What is wrong with the picture?

These thoughts are focused on the end product. I must turn my attention to the faculty who supervise dissertation research. One must ask what are the credentials of those individual supervising doctoral students?

The Dissertation Supervisors

Is there any credential that is essential to doctoral student supervision? In all of education – the minimum criteria for teaching in higher education is a degree higher than the level of the course. For example, to teach a bachelor's level course, the teacher must have a master's degree and to teach master's level courses, the teacher must have a doctorate degree. The credential for teaching at the doctoral level and supervising doctoral students should be a degree higher than the doctorate. But this does not exist so universities have implemented a caste system of undergraduate and graduate faculty. In addition, doctoral faculty might also need to obtain doctoral advising status that in most cases goes through some vetting process. Vetting is standard in higher education. You process through academic ranks by peer/colleague review; you obtain merit through a similar process; and you obtain graduate status by a similar review process even though it is often more easily awarded based upon the degree you earned and your faculty rank. Achieving the university's permission to supervise doctoral students in their research is most often the result of the amount of research and writing that the professor has accomplished. So, the credentials to supervise doctoral research generally are a doctorate – you wrote one and some grants and research reports that presents evidence that you can conduct research. Sometimes it helps to have money for students in your grants so you can support students. None of these are evidence you can assist students through the process. Where do you get the knowledge to guide the students though their research? Since doctoral study is a lonely journey, you don't need much knowledge. You rely on the courses the student took that will help them in the knowledge of their discipline i.e. the theoretical grounding, and their research and statistics courses (or the university's research office). You meet with students, engage is discourse about their study and off they go.

Your practical knowledge comes from on the job muddling your way through along with the student. Perhaps this is why students get little guidance. What has the faculty caste system done for higher education? I believe it has stifled cooperation and cross-discipline inquiry. It has allowed some experts to avoid supervising students because it is too much effort and work It has forced students to deal with faculty who they don't know and who may not even be interested in their research. Certainly the chances of working with certain faculty are minimized and they become less sought out by colleagues and students even when they may be able to offer the needed guidance. Some just simply give up. That is but one problem with doctoral study. Another is the ability of programs to support the number of students necessary to support the program faculty.

Faculty Load

I would be remiss I had did not discuss faculty load in my discussion of doctoral study. Just what is a reasonable load for faculty involved with doctoral supervision? I have heard of faculty who have no course teaching load; their responsibility is to research, write, consult and guide students in their study. I have also hear of faculty who teach three courses per term and receive no "credit" for supervising an unlimited number of doctoral students; I have heard tales that this number may exceed 30. And of course there are others in between the extremes. Since doctoral research and the dissertation is a lonely journey maybe faculty load should not be discussed. Having taken my role and responsibility conscientiously, I would disagree. Doctoral students need a lot of guidance and support to complete a quality dissertation. To seriously read and critique a manuscript in overwhelmingly time consuming. To guide a student in the development of a research proposal requires a great deal of skill. To teach a student the academic writing process is difficult when many of the samples are weak. For just about all of my students, their doctoral research was the first "real" research they conducted. In coursework, they learned the process and the skills but the term was over before they had an opportunity to practice their skills. The next term they took the next sequential course and repeated the pattern. It was not until they ended their coursework when they were faced with planning and conducting research did they get an opportunity to practice what they had learned in class. Guiding students took a lot of work and a lot of knowledge that I did not learn by writing my dissertation and writing professionally. Credit in my assignment for doing this work became much more important than recognition.

Program Financial Stability

Doctoral programs today contribute to the financial stability of the university. In most states, the funding received for doctoral students exceeds that of the under-graduate and even the graduate students. Therefore it is an advantage for the university to engage in research (the primary mission) through advanced graduate study programs. In many cases students become more valuable because they generate more money than they use. They attract grant sponsors who award financial resources to

the university. Knowing that graduate students will be conducting supervised research is attractive to agencies seeking a scientific solution to an identified problem. The more graduate students a university graduates raises their reputation and a high reputation generates more interest in sponsors awarding money. Graduate students and research are profitable.

Accreditation guidelines also count doctoral graduations toward coveted recognition. All universities strive to be recognized as research universities and this brings prestige and prestige brings money. High research recognition by Carnegie is coveted by all universities. In an era of a recessed economy, universities must continuously seek sources of outside funding which will help them "balance the budget."

One way to generate more credits is to offer program of studies in a cohort system where an entire class is admitted at the same time, moves though the program in a planned manner that guarantees "full" class sessions. Through this planning, the coursework part goes smoothly; the students know the plan and all of them are on the same plan. The biggest problem comes when the cohort begins the "writing of the dissertation" stage. All of a sudden there are 20 students seeking committee members in programs that have only 2–4 faculty. Depending upon the size of the committee needed this puts a burden on the remainder of the department and college. It also puts pressure on the student to quickly get a committee and get the dissertation done. That would be good if students knew how to conduct research and write an academic report but they do not. It is a learning process that takes considerable time by both the supervisor and the student. It rarely takes less than a year and more often closer to 2 years time making steady process without life's interruptions. The students that I supervised seem to have numerous life interruptions and often didn't get started until 3 years after the candidacy period began (we used passing the written and oral comprehensive examination as the beginning of candidacy). So while the cohort admissions kept the program financially stable and faculty employed it was not all smooth sailing.

CONCLUSIONS

What is wrong with our thinking about doctoral study? What errors did we make and which ones are we still making? Bottom line – my reflection – we put too much effort into advanced graduate study because it is well funded. It becomes more about the standards and recognition than it does about the emerging scholar. It becomes more about opening the floodgates for financial gain than it does maintaining the quality and integrity of the academy. It becomes more about meeting targeted goals than it does about the meaning and value of the doctoral degree.

We are arguing about the difference between the EdD, the PhD, the SciD, etc., and which one is better. We are creating degrees in every discipline because each college or school wants to benefit from the funding available. Yet, we do not have enough faculty to supervise the students that we have. We do have qualified faculty – we don't' have skilled faculty and we often don't reward the work. So are our practices creating confusion in the eye of the public and the student? Are we supporting doctoral programs because it is the right thing to do or are our motives different.

First there are too many students who have been led to believe they can achieve the doctorate. Not all students are qualified, nor do they need the degree. Too many want the degree for wrong the wrong reasons.

Second, there are too many programs of varying degrees of rigor and invented disciplines because universities need programs (and success) to achieve status and doctoral programs (via students) award higher monetary value to decreasing budgets in these unstable financial times.

Third, the value of the advanced degree has been watered down by lower standards, non-traditional programs, unclear missions and goals, moving away from the scientific approach or at least consistent standards and the pursuit of the dollar. Curricular decisions are not well thought out and the need for doctoral study to the research agenda of universities is unclear.

Fourth, too many students are not seeking the doctoral degree to enter the academy but to enrich their personal agendas. Many are looking for the easiest and quickest route to their own goals without thought to the value of the degree.

Last, if we continue to expand our doctoral degree production will we need to invent a higher degree to return value to the degree? I hope not – how about you?

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JOSHUA J. ODE

15. RE-DEFINING THE MEANING OF IMPACT

A major concern for doctoral students finishing their doctoral degree program is determining if they can make a significant contribution to their discipline. How is it possible for someone to have a definitive impact on their field of study? The majority of doctoral students I have worked with feel their biggest impact to the field will be through research. In graduate school we spend a great deal of time thinking and reading about how impact is measured through our research. With a sense of optimism and idealism, the expectation when beginning a career as a faculty member is to have a significant impact on the field one works in—in my case Kinesiology. That certainly was my goal when I took a tenure-track, assistant professor position in 2006. However, the impact that I believe I was going to make took a dramatically different direction than I originally intended. In this chapter, I hope to provide insight on how the meaning of impact has changed for me as I transitioned from a doctoral student to an assistant professor at a regional comprehensive university. I hope to also elaborate on specific strategies that I have used to redefine impact while developing a standing within my field at the university and beyond. The position I take in this chapter is that adapting one's vision depends on career choices and maximizing one's impact rests on the ability to wrestle among obligations to one's field and institution. In this case, then as one's career is engendered by choices so can one make an impact on one's institution and field of study.

I am currently in my fifth year as an assistant professor and second year as department chair of Kinesiology at Saginaw Valley State University (SVSU), a small university (~10,500 students) located in Mid-Michigan. SVSU is a teaching institution, whose mission statement reads,

> The University creates opportunities for individuals to achieve intellectual and personal development through academic, professional, and cultural programs. By fostering an environment of inquiry and openness that respects the diversity of all whom it serves, the University prepares graduates whose leadership and expertise contribute to the advancement of a pluralistic society. The University serves as a cultural and intellectual center dedicated to the pursuit and propagation of knowledge (http://www.svsu.edu/mission).

When beginning the position at SVSU, as an alumnus I was fully aware of the mission of the university and that it was primarily a teaching institution. However, I did not fully understand the responsibilities associated with a tenure track faculty position at a teaching institution. I felt as if my biggest impact would be to take the skills I learned in my doctoral program to increase and improve the quality of

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research from the Kinesiology Department. Very quickly I realized that I had to use my experiences and education from by doctoral degree in vastly different ways to have an impact at SVSU.

I obtained a Ph.D. in 2007 in kinesiology from Michigan State University. I had the privilege of working under what I consider to be one of the best and most prominent doctoral advisors in the field. I have yet to meet an individual who cares more about his students and their success. What I learned from my advisor extends well beyond research and has molded my practice and who I am as a faculty member today. I was provided the opportunity as a doctoral student to help administer a clinical trial, participate in multiple research projects, learn how to successfully analyze data sets, prepare and success successfully present academic presentations at a variety of conferences, and successfully publish articles. These unique experiences prepared me to have an impact on the field of Kinesiology. However, using these skills in the same capacity in a tenure track position at SVSU has been difficult if not impossible and I have had to re-think how to use these skills to have an impact. Therefore, I think it is essential that doctoral students pursuing tenure-track positions at schools such as Saginaw Valley State University be willing to re-evaluate how they will impact their field.

When starting a career in higher education, I was told that there are three specific areas in which we should focus for tenure. These included research, teaching, and service. Within the majority of doctoral degree programs, the primary focus is developing skills in the area for research. Because so much time is focused on research during a doctoral program, a common perception is that the biggest impact an individual can have on their respective field is through scholarship such as authoring a book, peer-reviewed publications, and external funding. It is without question that those individuals who are successful in these areas of research have a dramatic impact on policy within their respective field. However, the majority of these individuals are employed at large institutions that place a greater emphasis on research production. What about the large percentage of doctoral students who will not work at research institutions? What about the large percentage of doctoral students who will work at schools like Saginaw Valley State University who will not publish in high impact journals and receive large amounts of external funding to the extent where policy within their respective fields will change? Is it possible for these individuals to have an impact? The answer is a resounding ‘yes’ but only if we are able to rethink what the definition of impact in higher education.

Prior to rethinking the meaning of impact at a smaller institution, it is important to provide insight on what my job has entailed aver the past four years. When I first took the position at SVSU, I was ABD (all but dissertation) with approximately one year left to finish. The Exercise Science program was relatively new (2 years) and I was the first faculty hired for an exercise science position in the department. In brief, the contract read that 50% of my load is teaching, 25% service, and 25% scholarship. During my first four years at SVSU, my teaching responsibilities have included teaching 14 different courses and advising over 100 students. In the past four years at SVSU, I have served on 17 University committees including the Institutional Review Board, the Student Research and Creativity Institute, College of Health and

Human Sciences Leadership Team, Honors Program, Task Force for High Achieving Students, and the Cardinal Athletic Advisory Board. I am currently the Department Chair of Kinesiology in which I oversee the exercise science major, athletic training major, athletic coaching minor, CPR and First Aid courses, and all activity/health/wellness classes. I oversee four full-time faculty, two administrative professionals, and approximately 30 adjunct faculty. This position at a regional university brings another aspect to the job that I have been learning on the go—mentorship of faculty with terminal degrees entering doctoral programs, faculty working on their dissertation, and former and current students looking to enhance their portfolios for entrance into Ph.D. programs. For the past four years, I also was the Exercise Science Program Coordinator. Within the community, I have worked with the local fire department, professional hockey teams, and youth sports programs to promote physical activity and fitness. I am currently a member-at-larger (elected position) of the Midwest American College of Sports Medicine and the Co-chair American College of Sports Medicine Epidemiology Special Interest Group. With the numerous responsibilities I have in regards to teaching and service, it has been difficult to develop a robust research line adequate enough to impact the field in which I originally hoped. This is why it is a mistake if a doctoral student's main agenda is to make an impact through publishing in high impact journals and obtaining million dollar grants. Although scholarship is valued at a school like SVSU, it should not be done at the expense of teaching and developing the education experiences of undergraduate students. This is why I had to rethink the meaning of impact.

TEACHING

This past summer is when I truly realized that someone can impact the field through teaching when I attended the Annual American College of Sports Medicine (ACSM) meeting in Baltimore, Maryland. ACSM is the primary organization internationally with respect to the field of exercise science. Over the past four years, our department has created a culture within our students that it is important to not only attend, but present research at these meetings. This past year, I happened to advise two student research projects which were selected for oral presentations at the conference. My doctoral advisor, who happened to be the current president of the organization, attended one of the presentations (his commitment to his graduate students extends to those his graduate students advise). I am not sure what his expectations were for the presentation given that it was an undergraduate student conducting her first talk at a meeting in which 5000 people attend. Nevertheless, he sent me an email the next day praising her presentation and my advising. The e-mail read "Every year you keep turning out high quality students. You make me proud." Those comments strengthened my belief that an impact on the field can be made through teaching.

I have heard faculty members at multiple institutions (both big and small) say that it is almost impossible to be both a great teacher and a great researcher. I have also heard many faculty members take offense to this statement and say there are numerous professors who are proliferate scholars and exceptional in the classroom. Personally, I agree with both statements. I have witnessed some of the best scholars

in my field deliver great lectures. However, I believe that delivering an interesting two-hour lecture once a week is only a small percentage of being an exceptional teacher. In comparison, there are a variety of areas of scholarly activity that are considered important such as peer reviewed publications, writing books and book chapters, presenting at national and international conferences, and obtaining external grants. The best researchers are able to succeed in all areas of scholarship. However, is a professor who prepares and gives engaging presentations at two conferences per year over their entire career considered a great researcher? What if they do not publish or obtain any grants in that same time period? I would assume that leading researchers would answer "no" to this question. Therefore, is the professor who delivers a good two-hour lecture once a week considered a great teacher? In my eyes, the answer is "no" because teaching includes much more than simply developing and delivering an engaging lecture. I do not have the definition of what makes a great undergraduate teacher, but after my experiences at SVSU, I feel the following areas are most important: (1) delivering lectures using a variety of teaching methodologies, (2) ability to teach courses outside of your expertise, (3) developing an effective strategy for student assessment, and (4) a willingness to academically advise students.

Delivering Lectures Using a Variety of Teaching Methodologies

In order to encourage the success of my students, my teaching practices involve caring tremendously about the topics and students I teach. I was recently asked to write about these practices by the *Literacy Links*, a SVSU publication dedicated to teaching. I thought about my work as a teacher and concluded that I have devoted my career to Kinesiology and have an unwavering passion for the field since I was an undergrad at SVSU and thought about graduate school. In order to convince my students of this passion, I prepare for class with great attention to detail; I enter a classroom with a tremendous amount of energy; and, I engage my class with enthusiasm. I believe it is essential that my students understand that I care about their success. In the classroom, this requires an atmosphere in which students are comfortable, challenged, and involved. In addition, I believe that an atmosphere promoting conversation in the classroom often results in conversation outside the classroom. I make it a point to engage in conversation with my students about topics unrelated to school in an attempt to reduce the intimidation that is often present when talking with a professor. SVSU has a large percentage of first generation college students who face different obstacles than I did as an undergrad. I sometimes believe that we act on the idea that they do not have the necessary skills and expect little from them. I have learned that passion is a great motivator and that the passion to learn can be harnessed in a variety of way. A lesson I have learned at SVSU is that when I challenge my students and ask for more than is typically expected, I encounter very little resistance. I believe that students are more apt to succeed when I set high expectations and challenge them beyond what is typical.

Understanding the content within any field is a major priority for professors. I believe college students want detailed information, which requires a tremendous commitment on behalf of the professor. However, content knowledge is only a

small piece of facilitating student learning. I have faith that the delivery of content is essential for student success. I spend time searching for teaching strategies to enhance learning, and as a result, my teaching strategies are diverse. One of my biggest goals is to engage students in conversation during my presentation. In order to accomplish this, I cover a topic by asking a series of questions. The initial question is usually very broad and uncomplicated with the goal of initiating student involvement. For example, for a lecture on cardiovascular disease, I may begin by asking the question "What is a heart attack?" Student responses will include answers such as "myocardial tissue death", "lack of oxygen", and "lack of blood flow." I write these answers on the board in front of the class. I then follow this question with a series of additional prompts that require more detailed, thoughtful answers. For example, I may ask the follow-up question: "Why is there inadequate oxygen delivery to the myocardial tissue?" Common answers that students provide include "the atherosclerotic process," "blood clot formation," or "increased demand of exercise." Each of these answers serves as a foundation for additional questions that we explore as a class. I use PowerPoint presentations, which include many pictures and minimal text, to guide this process. As a practitioner working on my teaching skills, I have to have a clear plan of what information I want to cover during the class and then utilize the answers given by the students to guide the presentation. This strategy allows students to develop the answer, rather than me providing the answer.

I believe the goal of most professors is to encourage their students to think critically. In order to accomplish this, I challenge each student to view topics with idealism and skepticism. I purposely ask questions that challenge students to organize their thoughts to answer a question. Often, there is not a right or wrong answer, but a requirement to justify an answer with critical thought. In my eyes, the most rewarding aspect of teaching occurs when a student is able to critically analyze a topic with idealism while maintaining a sense of skepticism. In order to promote idealism and skepticism, I use research articles from the leading medical journals for class assignments. I assign a research article from the previous month's journal regarding a topic related to the class. Although they do complete a summary of the article, the main purpose of this assignment is to answer the question "how do the results of this study impact the general public?" This is not often easy question to answer and requires the students to look at the study more critically. Earlier this semester I assigned an article to a group of students regarding healthcare reform in America. It was clearly the most difficult article I have ever assigned. Initially, I was hesitant to assign this article due to its complexity. However, I was amazed by the attention to detail, energy, and effort that the students put into understanding the article. They were able to critically evaluate the health care system in this country and provide me with the pros and cons of various health care reform strategies. What they gained from this assignment was far beyond what I initially expected. In conclusion, not only did I encourage my students to think critically I set high expectations and challenge them to complete a difficult task. They succeeded. This past summer, to realize that impact of teaching on students and increase their exposure to research and literature in the field, I implemented Problem-based Learning (PBL) into an advance exercise physiology course. This served two purposes; first, many of our students will enter

graduate school in a variety of fields and if we can expose them to working with research it makes them competitive and second, as researchers we possess skills that we can teach. These skills should be taught to undergraduates and we should not wait until graduate school to work with them.

Ability to Teach Courses Outside of Your Expertise

One of the keys to my success as a teacher at SVSU was my ability to teach a variety of different topics within the Kinesiology. I was able to do this was largely due to the breadth of knowledge that was covered in my doctoral program and out of the necessity of being the "expert" in my field until we hired another Kinesiology faculty. However, it is almost impossible to prepare for the amount of teaching that you may do at a smaller institution. It is common to teach four, three credit courses in one semester. Although, this is difficult, it becomes even more cumbersome when all four courses are different during the semester. Nevertheless, this is a reality of teaching at a smaller institution and therefore, it is indispensable to have the ability to teach multiple content areas. There is no substitute for hard work when preparing for multiple different classes. However, having the ability to using a variety of teaching strategies within the classroom may lessen the burden of preparation. I often witness professors, instructors and adjuncts spending an inordinate amount of time creating PowerPoint lectures for classes. When prepping for four different courses, it is possible to spend hours preparing the PowerPoint and not preparing the substantive material within the presentation that can enrich and deepen the students' understanding of the topic. I have learned through practice that it is in this delving into the breadth of a field that one improves as teacher. A mistake that many professors make is they assume that the PowerPoint presentation is the lecture when in all reality it is a supplement to the lecture. In a field like Kinesiology—where hands on is key to the learning experiences—a picture is indeed worth a 1000 words. I find that for many students pictures initiate more conversation within the class. As a result, you can spend more time organizing the content of class and developing good questions designed to stimulate classroom discussion. It is much easier to manage a course in which the content area is outside of your expertise when you are able to stimulate classroom discussion.

Developing an Effective Strategy for Student Assessment

I believe the developing effective ways to evaluate the student enrolled I course is one of the most difficult and cumbersome tasks of teaching. However, developing an effective way to evaluate student is one of the most important aspects of teaching. First of all, I do not think multiple-choice exams are effective strategies for student assessment. I find that students spend more time trying to figure out what the professor is going to put on an exam instead of studying the material that was taught in class. This creates an atmosphere in which the pressure paced on the student is from the questioned being asked rather than the thought that should be going into the answer.

I encourage students to take ownership in the class and their grade. For example, students are required to complete assignments, projects, and exams by a specific due date. I stress that they have ownership of these assignments and are allowed to make corrections or changes to their original work. I do not provide specific details about the mistakes they make. For example, a student may receive 7 out of 10 points on an exam question. I will not provide a specific reason for the deduction. I will make a general statement about the mistake such as "need more detail as it relates to…." or "clarify the following statement…" on the test. Each student then has the ability to revise his/her answer to a question by addressing the comment provided. Each revision must include a justification of the correct portion of the original answer, as well as a detailed revision of the incorrect portion of the original answer. This allows the student to have ownership in their grade. With their own initiative, they have the opportunity to correct a mistake and receive a percentage of the points that they missed on the original exam. I find students who partake in this strategy, not only improve their grade, but develop a deeper understanding of the material.

Student Advising

Student advising may be the most critical aspect of defining the meaning of impact. In my eyes, advising is much more than helping students choose the courses in which they need to enroll. Although this is a significant part of the job at SVSU (I have academically advised more than 100 students), advising also entails a willingness to adapt departmental curriculum based on students needs, being actively involved in student organizations, and advising student travel to conferences.

Willingness to adapt departmental curriculum. Scheduling is a troublesome situation for many students. There are often conflicting classes, closed courses, and unforeseen computer glitches that drop students from classes that prevent students from maintaining a schedule encouraging graduation. A great teacher is willing to work with students when these situations arise. I am not suggesting that the curriculum of the program should change for a specific student, but a good advisor is willing to adjust to help a student achieve their academic goals. I have heard stories of professors who routinely tell students "too bad, take the class next semester" without considering the situation of the student. At a minimum, a good advisor will at least consider the students request or advise an alternative solution for the student. An example of adapting the departmental curriculum occurred in a student who realized a mistake in the middle of her last semester of courses before graduation. This student was enrolled in a physical therapy graduate program that started two weeks following her graduation. Halfway through her last semester, she realized that she was four upper-division credits short for graduation. Essentially, there were two options in order to handle the situation. Make her take a four credit class in the next semester which would compromise her eligibility into graduate school or create a four credit upper division independent study course half way through the semester. I chose the latter and designed a course in a short period of time, which met University requirements.

In response to her unique situation, I spent a great deal of time getting this approved by the University, designing a four credit course within a short period, and evaluating her through throughout the remaining eight weeks of the semester. She is now successfully completing her doctorate of physical therapy.

Student organizations. Active advising in student organizations can enhance the educational experience of students. During my first year at Saginaw Valley State University, I was a faculty advisor for the Student Exercise Science Association. This was the first year this student organization was implemented. Advising a student organization allow you to give ownership to the students and provides an opportunity for students to take leadership roles. Although a faculty advisor is essentially in the background within the operations of a student organization, it is necessary that the advisor provide support, feedback, and encouragement to the students involved. During the first year of this organization, our primary goal was to be seen on campus. We participated in a variety of service activities both on campus and in the community. The participation from our students far exceeded my expectations and their commitment to the organization earned them the 2007 best new student organization on campus. This served as a foundation for what has been an incredibly successful student organization. This organization has brought positive attention and accolades to our department.

Professional organizations and conferences. Over the past four years, nearly 100 students from SVSU have attended various American College of Sports Medicine meetings. This organization holds annual state, regional, and national meetings and provides a unique opportunity for my students to learn about research, increase knowledge within a variety of content areas in exercise science, and network with individuals across the country. The biggest hurdle in getting the student to attend the meetings is to convince them that it is worth spending money. Due to the difficulty of cost, I seek both internal and external funding opportunities for my students to attend these conferences. I think it is critical to find some funding to support this travel because the benefit far outweighs costs. Another difficulty is convincing a student to attend a conference a second time. The "loss to follow-up" is high among undergraduate students. With that said students are more likely to gain more from the meeting if they attend a second, third or even fourth time. One particular student attended an annual meeting in Seattle, Washington. The meeting was clearly overwhelming for her and she was not confident on how to navigate the meeting. She found herself confused on what sessions to attend, shied away from volunteering for the organization, and was very hesitant to ask various professionals at the meeting for advice. As a result, she was not certain that attending this meeting was a benefit to her career. The following year, she attended the same organization meeting in Baltimore and the experience was dramatically different. Her self-efficacy on how to handle the meeting was drastically different. She had sessions she wanted to attend planned in advance, volunteered every opportunity she could, and was able

to meet many people who are considered experts in the field, all of whom were willing to share experiences and offered advice. She was amazed at how much she gained from the experience and will attribute some of her current success in graduate school to this experience at the meeting. In the end, it is difficult to encourage undergraduate students to attend meetings. It may be more difficult to encourage those same students to attend a second meeting. However, the time and effort that is put into encouraging students to attend multiple meeting can have a tremendous impact on their view of the field and their career aspirations.

RESEARCH

My greatest successes as a professor at a small institution have come after I re-prioritized my goals within research and as a result I ask myself three questions prior beginning any research project. How can I involve students in the project? How can this project serve the university and/or community? Will this research result in publication or presentation? Essentially, I am asking myself whether the research project contains a teaching component, a service component, and a scholarship component. You may have to re-think the type of research that you want to conduct. In fact, I have classified my research into two categories; student-led and student-assisted research. These two categories are distinctly different, as I explain below, but there is one thing consistent with every research project that I conduct at SVSU and that is undergraduate students are involved in the some aspect of the project. Within student-led research, the undergraduate student is responsible for developing the study question, study design, and organizing data collection. My expectations are that they experience what it is like to be the primary investigator. This is not easy given that I have to be the actual primary investigator and that I am working with individuals who have never conducted research before. Therefore, rule number one is not to expect the "All American Study" from this project. Encourage the students to keep it simple and short. Student assisted projects include project that fall within my expertise, but encourage participation from students in data collection and data management. The key is that you are developing your own research agenda, but using aspects of your research to help advise and teach students.

Student-Led Research

I define student led the research as projects in which students take the role of primary investigator. One example of student led research included two Kinesiology students who wanted to implement an elementary and middle school physical activity intervention in an inner city low socioeconomic school in Saginaw. Two juniors in Exercise Science, who had an interest in evaluating health and fitness in children, initiated this study. My role as faculty advisor was to offer as much advice and mentoring about research while allowing the project to be their own. They first prepared a grant application and were awarded $10,000 from an internal grant they were also responsible for developing an appropriate study design, submitting and institutional review board application, making contacts within the school, and training all

individuals involved in data collection. These two students were able to train fifteen college students how to collect data, gather physical activity, fitness, and health related data on more than 250 elementary and middle school students, and implement a school-based wellness program for all students and staff. The data gathered during this project resulted in two peer-reviewed academic presentations and one non-peer-reviewed presentation for the students. As a result of this project, more than fifteen undergraduate college students were involved in a variety of aspects of the project, nearly 300 students faculty and staff benefited from a comprehensive school-based wellness program, local media coverage highlighted both the school and university in this project, and three academic presentations were given by the students as a result of the data collected.

A second example of a student led research project in which I advised included two kinesiology students evaluated cardiovascular disease risk factors and fitness levels and local fire fighters. My responsibilities as advisor for this project were very similar to the elementary and middle school project. However, the population was very different. The students involved received a $3500 grant to evaluate cardiovascular disease risk factors and implement a wellness program in multiple fire stations. This project involved over twenty kinesiology undergraduate students who were trained in data collection. Data was collected on more than 70 fire fighters throughout the area that resulted in multiple academic presentations. The importance of this project—an its impact I believe—is that heart attacks are the number one overall killer of fire fighters on the job. In each of these two examples of student led research, a large number of students were impacted and participated, various entities within the community were positively impacted, and the study's resulted in important scholarship.

Student-Assisted Research

I define student assisted research has projects in which students take an active role in data collection and management within studies that I am the primary investigator. The first example includes the evaluation of performance markers in professional hockey players. Within this project, our intent is to gather valuable performance data for numerous professional hockey players and provide information to the teams to improve performance. As the primary investigator of the project, it was my responsibility to make all contacts and design the study. However I recruit and train multiple students to gather the data. When compared to student led research, student assisted research lessens the role of the student, but still encourages participation within the project. In the last three years, we have gathered performance data on 90 professional hockey players, more than 70 students were involved in data collection, and for academic presentations have been given as a result of the project.

A second student-assisted project in which I am the primary investigator includes the evaluation of physical activity, fitness, and health and university students. Again, I am responsible for study design and implementation of the project. However, in the past two years over 30 students have participated in data collection. In addition, hundreds of SVSU students were study participants and received valuable information

on their current health status. Thus far the data gathered from this project has been presented multiple times, has been submitted for publication, and has received national media coverage in CNN, the *New York Times* and National Public Radio. This project has also been sustainable over a three-year period and currently there are plans to implement a campus wide physical activity intervention stemming from the results of these data. The impact has been substantial.

CONCLUSION

During my doctor degree program, I learned that I could impact my field for publication in research. However, after reflecting back on the past four years at Saginaw Valley State University it is clear that is extremely difficult to have that impact on the field given my current responsibilities. And as a result, it has been a struggle to determine how I can have a definitive impact my field. However, my doctoral degree advisor who clearly has had an impact on the field for research illustrated the answer to me when he praised me for the quality of students that I teach. Therefore, the way to have an impact at a smaller institution is through mentorship in teaching and research.

I remind fellow professors beginning their journey at similar institutions or graduate students entering the job market that research is a process where we can become informed practitioners. While our experiences (in and out of our graduate programs) allow us to understand each other and our students and professional fields, as professors we should reflect on the idea that research and teaching are complex matters that require multiple approaches, visions, and operate within a context—in my case a regional university. I would have to say that in thinking—or rethinking—the idea of impact the one constant throughout is stewardship of the field, the profession and the student.

CONTRIBUTOR

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