

The Changing Nature of Graduate Education: Inputs and Outcomes

Keynote address by Suzanne Ortega & Carol Lynch

I. Introduction

- A. Our starting premise is that the defining characteristic of the great research university of the 21st century will be its *agility* (“nimbleness,” “flexibility,” “capacity to change quickly” are other terms that might be used) in meeting the educational demands of increasingly savvy customers and organizing to answer the most important research questions of our times.
- B. Our conclusion is that research libraries will be called upon to (1) support scholarship in an educational environment characterized by increasingly fluid boundaries between disciplines, departments, and curricula, and (2) provide services to a new type of student—one that many folks now refer to as the “millennials.” Their capacity to do so will, in fact, make possible the new forms of scholarship/research that may characterize 21st-century knowledge production.
- C. There is a lot in between our starting point and the end and we can only begin to outline all of the questions that need to be considered, especially in thinking through all of the implications for libraries. However, we would like to start by providing some of the demographic, economic, and educational trends and data that shape our thinking, discuss several illustrative best practices in graduate education, and end with a case study or two of emerging issues.
- D. The organization (and substance) of our talk builds on the analysis our colleague Debra shared with you last year, I believe, in her assessment of the five guiding assumptions/trends influencing the quality of graduate education (from The Council of Graduate Schools’ *Graduate Education: The Backbone of American Competitiveness and Innovation*):
 1. A highly skilled workforce operation and the frontiers of knowledge creation *and professional practice* are key to healthy economies and a safer world; also to American competitiveness and national security.
 2. Because graduate program quality is the driver of American higher education success, efforts to evaluate and improve all aspects of it must be advanced and supported.
 3. Interdisciplinary research and education are central to future competitiveness, innovation, and knowledge creation.
 4. Expansion of US citizen participation, particularly from historically under-represented groups must be a priority. Development of STEM careers among domestic students in general must be encouraged.

5. US graduate programs must be global—attracting the best and brightest from around the world but also creating globally competent scholars, scientists, and citizens.

E. Basically, we will divide our talk into three parts.

1. I will discuss how the forces Debra identifies have coalesced to produce changes in the way scholarship is organized and produced, the way graduate education is delivered, and how the research product—the journal article, the dissertation, or increasingly the capstone project/portfolio—is evolving.
2. Carol will then speak to changes in student demographics and labor force demands. She will speak to the implications of these changes for producing faculty of the future but also to the rapid growth in masters enrollment, particularly in those identified as professional masters programs. It is around masters education—program format, duration, curricula, and quality—that some of the most interesting global conversations are now occurring, and Carol will speak to that issue as well.
3. Finally, I will conclude with a brief discussion of the Council of Graduate Schools whitepaper (mentioned earlier). We will discuss less from the standpoint of the report's substantive recommendations and more from the standpoint of the new partnerships it implies will be fundamental to the quality and success of the enterprise—the collaboration among the private sector, government, and the university.

II. The Changing Nature of Disciplines, Programs, and the Academy

A. Forces driving change

1. The *knowledge explosion*
 - a. “big science”
 - b. the importance of inquiry-based approaches to pedagogies
 - c. the increasing importance of synthetic/inductive “ways of knowing”
2. Increased global awareness of the importance of R&D to *economic competitiveness*
3. *Accountability*
 - a. To funding agencies and corporate sponsors—the rise in mission driven agency support
 - b. To the public that supports the work

- c. To the more sophisticated, student “consumer” this is a defining characteristic of millennials and their parents
4. Taken together, these forces mean that:
 - a. We will need to work hard to allow the possibility that some scholars, some of the time, can engage in *intellectual risk-taking*. Phrased another way, they will engage in *research with unknown outcomes*.
 - b. University programs and departments must be organized in ways that allow research teams to rapidly realign themselves to meet emerging research interests and funding opportunities.
 - c. More interdisciplinary research will occur—but fundamental tension will be in the mechanisms that *translate interdisciplinary research agendas into the more stable undergraduate curriculum*.
 - d. That universities and the scientists and scholars we produce will need to be able to work efficiently and productively across employment sectors and around the globe. *Three-way partnerships among universities, government agencies, and the private sector will be the norm*.
 - e. If any of these things come to pass, what are the possible implications for libraries—the importance of collecting, cataloguing in as granular a manner as possible, and the need for sophisticated, relational search engines and tools.
- B. Two examples of the kind of programs this convergence of factors might produce:
 1. Translational research
 2. The Professional Doctorate: What are these programs and what competencies does the capstone research project need to demonstrate?
 - a. Overview of the EdD, DNP, or PsyD
 - b. The capstone research project—requirements and committee structure
 3. What types of resources will young and established scholars need to do this kind of work?
 - a. grey literature
 - b. oral documents—mention Deborah Turner’s work
 - c. access to technologies that allow them to operate in a distributed knowledge environment—SKYPE etc.

III. The Globalization of Graduate Education

A. Challenges of the new global graduate environment

1. Changing US demographics
 - a. white workforce in decline
 - b. minority workforce doubling
 - c. minorities half as likely to earn graduate degrees
 - d. *no* comprehensive plan to bridge the gap!
2. Globalization of talent market
 - a. Past: oversupply of international applicants and US chose who to accept and who would stay.
 - b. Future: US competes globally for students and S&T talent; students have strong and growing global options; “Bologna process” in Europe accelerates competitions.
3. New “millennial” student values emerge.
 - a. Born between 1982 and 1994.
 - b. Confident, visual, multitasking learners
 - c. Highly technologically savvy
 - d. Outcome focused, demanding “customers” who want balanced lives.

B. Increasing international partnerships.

1. Nearly 60% of US graduate schools have collaborative degree programs with international partners.
2. More master’s than doctoral programs emerging.
3. Europe becoming the top region.
4. Partnerships of all kinds increasing, including joint and dual degrees.
5. Consequences to libraries
 - a. students need worldwide access to information.
 - b. Research librarians might profit from engaging international peers in discussion, as have graduate deans.

C. International trends in master's education

1. US, Canada, UK, and Australia all experiencing significant growth in master's degrees.
2. Australia expanding "coursework only" master's (to serve students not interested in the PhD); some programs are explicitly professional.
3. "Research" master's considered prerequisite for admission to PhD programs in Australia and Canada.
4. Many countries planning or implementing professional master's programs.

IV. Growth in Professional Master's Degrees

A. Forces demanding enhancement of master's programs and increases in master's degrees.

1. Students opting out of PhD—especially white, US citizens.
2. International competition means US market share of PhD students declining.
3. US policy makers have been critical of US graduate education for some time—especially that we don't educate students for the jobs they get.
4. Job growth is mostly outside academia—fueled by the "knowledge economy."
5. Universities, especially public universities, are increasingly engaged in local and regional economic development.
6. Changing demographics of student population:
 - a. More females and minorities in college
 - b. More issues of "family" in graduate populations
 - c. More students returning for graduate study.
7. Working professionals demand access—asynchronous and online availability of courses and counseling.

B. Response: professional master's—targeted as specific employment sector (especially but not exclusively in the sciences).

1. What is it?
 - a. Advanced courses in disciplines
 - b. Often more interdisciplinary courses

- c. Skills-based courses (marketing, management, statistics, policy and regulatory affairs, ethics)
 - d. Project/team experience and internship
 - e. Advisory board from employment sector
2. Why?
- a. Attractive option keeps students in science.
 - b. Addresses needs of employers for advanced training short of PhD plus professional skills.
- C. PhDs need professional skills also.
- 1. We have generally not responded to students who will seek non-academic employment.
 - 2. "Preparing Future Faculty" one big success.
 - a. Graduate schools run Graduate Teacher Programs
 - b. Libraries should play a major role—these are our future users of academic libraries.
- D. Engage your graduate students! Access graduate student organizations where they exist.

V. New Partnerships: Government, Business, and Higher Education

- A. Overview of *Graduate Education: The Backbone of American Competitiveness and Innovation* report as an illustration of this new approach and imperative.