EDUCATING RESEARCHERS

BY ARTHUR LEVINE

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The Education Schools Project

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PREFACE

This is the third in a series of policy reports on the results of a four-year study of America's education schools. This report focuses on the need for quality education research and on the preparation of the scholars and researchers who conduct it.

After more than two decades of a school improvement movement, education research, traditionally an academic matter of little public interest, has taken on new importance. In today's assessment-driven, standards-based school systems, it is essential to be able to measure what students learn. It is also critical in a time when a cornucopia of reform measures are being touted and a plethora of improvement initiatives are being undertaken to know what works. In an era when the nation needs a more educated population to compete globally and sustain a democratic society, we need to advance our knowledge of teaching and learning. In an age when our children need higher-level skills and knowledge than ever before to get a decent job, it is important to understand what educational policies and practices are most effective.

There is widespread disagreement among policymakers, researchers and practitioners about what constitutes good research and how to prepare education researchers.

Hand in hand with our need to find answers to the educational challenges that face us, we need to agree on what constitutes "good" research and on how best to prepare education researchers, the next generation of scholars, to study education and to teach in the nation's universities and colleges. Today, researchers, policymakers and practitioners disagree about both subjects.

This is the context for the third report. The first focused on the education of school administrators. The second dealt with the education of school teachers. This third report examines the quality of education research and the preparation of education scholars and researchers.

Education schools have strengths that go unrecognized by their detractors and they have weaknesses that they are unwilling to acknowledge.

The nation's 1,206 schools, colleges and departments of education constitute a sprawling enterprise, located at 78 percent of all four-year colleges and universities.[1] They award one out of every 12 bachelor's diplomas; a quarter of all master's degrees; and 15 percent of all doctorates, more than any other branch of the academy.[2]

They have been the subject of mounting criticism over the past decade from academics, foundations, think tanks, professional and scholarly associations, and government. This four-year study is intended to go beyond the usual, untested assertions of education schools by critics and the too-often defensive posture of the schools themselves. The simple fact is that education schools have strengths that go unrecognized by their detractors, and they have weaknesses they are unwilling to acknowledge.

This study began with the belief that an insider and president of a well-known school of education could speak candidly to the education school community and, while the findings would doubtless spark disagreement, they could not be dismissed as the work of a know-nothing or an ideologue. I asked an education journalist whose work has focused on higher education to join me in the project, both to counter any impression that the study was an insider's whitewash and to give credibility to any positive findings of the research. Alvin Sanoff, former *U.S. News and World Report* assistant managing editor and senior staffer on the magazine's annual rankings projects, served as project manager for the study.

This study is unlike any other I have conducted. It quickly became apparent that in today's highly charged environment, those interviewed for this study had less interest in "truth telling" than in defending their positions. Repeatedly, members of the education school community asked for a compelling defense of their schools and those external to the academy requested a stirring condemnation. Insiders worried that any criticism would provide fodder for their opponents and outsiders feared any praise would protect the status quo.

Our work is neither the defense desired by some, nor the attack sought by others. It is an effort to produce a candid assessment rooted in extensive data collection, supplemented by past research and years of personal experience in the field. The aim is to let the data speak for themselves and to allow the chips to fall where they may.

A number of studies, described in Appendices 1 and 2, were carried out in the course of this research. National surveys were conducted to examine the perspectives of deans, chairs and directors of education

schools (referred to in this report as the "Deans Survey"); education school faculty (referred to as "Faculty Survey"); education school alumni (referred to as "Alumni Survey"); and school principals (referred to as "Principals Survey").

The research also includes case studies of 28 schools and departments of education. These sites were chosen to reflect the diversity of the nation's education schools by region, control, religion, racial composition, and gender makeup, and by the Carnegie Foundation's institutional classifications—the traditional typology used to categorize institutions of higher education, which makes it possible both to distinguish among colleges and universities and to group them according to their shared characteristics (Table 1; see Appendix 2 for a fuller description of the Carnegie classifications.)[3] Participating schools were promised anonymity, and individuals interviewed were guaranteed confidentiality. Only in instances of good practice are the names of schools mentioned.

In addition, the project team oversaw a series of studies on the characteristics of education schools (referred to as "Demographic Study"), the programs they offer, the credentials of their faculty and the degrees they award, as well as an examination of doctoral student dissertations. Databases from other organizations supplemented this research.

The study began with the belief that it made no sense to study the nation's 1,206 education schools as a uniform entity without acknowledging their differences or to view them separately without recognizing their commonalities. It is clear that there is no such thing as a typical education school. Their diversity is extraordinary. They are both free-standing institutions and subunits within larger colleges and universities. They are for-profit and not-for-profit, public and private, sectarian and non-sectarian. They are large and they are small, undergraduate, graduate, and combinations of both. Some are departments of education that offer only programs to prepare teachers. Others are colleges of education with scores of programs in a variety of subject areas, covering education 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.

Throughout this research, deans, professors and others familiar with the nation's colleges, schools and departments of education told the researchers the challenge would be to make sense of the diversity of pro-

Education schools differ in their emphases on teaching and research. Some model themselves after professional schools; others favor the graduate school of arts and sciences model. Most try to blend both.

Deans, professors and others note that it is difficult to make sense of the diversity of programs and settings lumped under the banner of schools of education.

grams and settings that are lumped together under the banner of schools of education. In truth, the name conceals as much as it reveals.

Education schools include a very small number of specialized and free-standing institutions such as the Bank Street College of Education and Teachers College. There are also a small but increasing number of for-profit and online institutions such as the University of Phoenix and Kaplan's new education school. None of these were included in the research because they are anomalous; traditionally, education schools are not-for-profits and subunits within larger universities. It was also useful to omit Teachers College from this study to eliminate the appearance of bias on the part of the author. This study focuses on the rest of America's departments, schools and colleges of education located in non-profit institutions of higher education.

Readers will notice that throughout the text that follows, I use the pronoun "we" rather than "I." This is because the study was the work of many—a project team and thousands of research participants. The project had the support of the Annenberg, Ford and Kauffman foundations. The Wallace Foundation provided additional funding for the dissemination of this report, as discussed in Appendix 3. I am grateful to them all.

Since beginning this study, I have moved from the presidency of Teachers College, Columbia University, to the presidency of the Woodrow Wilson National Fellowship Foundation. The Woodrow Wilson Foundation provides an opportunity to continue and expand this study of education schools and to develop implementation strategies for its findings and recommendations.

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TABLE 1

Definitions and Characteristics of the Six Carnegie Types of Colleges and Universities

Throughout this report, schools of education are differentiated according to the "Carnegie type" of the college or university to which they belong. (See Appendix 3 for a full explanation of types.) In the table below, definitions of Carnegie types are on the right (percentages add up to 102% owing to rounding); information on education programs is on the left.

Baccalaureate Granting Colleges

401 departments of education are located at baccalaureate colleges, which are schools primarily engaged in undergraduate education. These institutions do not offer doctoral degrees.

Baccalaureate General
- 268 schools of education
- up to half of all degrees awarded by the college are in the liberal arts

Baccalaureate Liberal Arts
- 133 schools of education
- more than half of degrees awarded are in the liberal arts

Master's Granting Universities

562 schools and departments of education, constituting 47 percent of the nation's education schools, are located at master's level institutions. Of these, 13 percent offer doctoral degrees in education.

Masters I
- 467 schools of education
- predominantly regional public universities
- award 40+ master's degrees per year across 3+ disciplines
- tend to be much larger in enrollment than the Masters IIs

Masters II
- 95 schools of education
- mostly private, tuition-dependent colleges
- grant at least 20 degrees annually without regard to field

Doctorate Granting Universities

228 schools and departments of education are located at doctorate granting universities. Of these, 89 percent offer doctoral degrees in education.

Doctoral Extensive
- 138 schools of education
- award 50+ doctoral degrees per year in at least 15 disciplines

Doctoral Intensive
- 90 schools of education
- award at least 10 doctorates across three disciplines annually (or at least 20 doctorates overall, regardless of field)

Source: McCormick, *The Carnegie Classification of Institutions of Higher Education: 2000 Edition* (Menlo Park, Calif.: Carnegie Foundation for the Advancement of Teaching, 2001)

A HEATED DEBATE

Until recently, the preparation of education researchers and scholars would have seemed a fairly esoteric matter. After all, preparing education scholars is a rather small enterprise. Less than a tenth of the nation's colleges and universities and only 24 percent of all education schools (290) award doctoral degrees—the traditional credential for researchers in the academy (Table 2).

Relatively few people receive doctoral degrees in education—6,229 were awarded in 2005, and the number has dropped every decade since 1980. This amounts to 14 percent of all doctorates granted in 2005 (Table 3). And of the doctoral degrees awarded in education, only 43 percent were in research.[4]

Historically, the interest quotient for education research has been low. Indeed, the late Ernest Boyer, who served as U.S. Commissioner of Education in the Carter Administration, said the eyes of members of Congress and their staffs would glaze over in seconds at the mere mention of education research. When Boyer was running late and needed to bring a Capitol Hill meeting to an instant close, he knew just how to do it. This was, Boyer joked, the real power of education research in Washington.

But the attitude toward research has changed profoundly in recent years, reflecting equally profound changes in the nation. As America has moved from an industrial to an information economy, we have demanded that our schools shift their focus from establishing common processes (e.g., entry at age five, 13 years of instruction, 180-day years and 40-minute classes) to achieving common outcomes. The result has been revolutionary, forcing schools to shift their emphasis from teaching to learning and from teachers to students. Making this change demands answers to an array of as-yet-unanswered, and often unasked, research questions: What curriculum, what pedagogy, what teacher preparation,

Revolutionary changes in education have created new demands for research that answers questions about what works to improve teaching and promote student learning.

TABLE 2

Percentage and Number of Institutions Awarding Education Doctorates, by Carnegie Type

Program Type	Number of institutions offering	Percentage of Institutions Offering
Doctoral Extensive Universities	131	95%
Doctoral Intensive Universities	74	82%
Masters I Colleges & Universities	83	18%
Masters II Colleges & Universities	2	2%
Total of Doctoral and Masters Universities with Education Schools	290	37%
Total of All Education Schools *(Including baccalaureate colleges)*	**290**	**24%**

Source: Deans Survey

More research is required to identify differences in how students learn and under what conditions students are most likely to learn.

what calendar, what mix and number of students and what finances best promote student learning? Under what conditions, with which populations, and in what subject areas is this true? How can student learning be effectively assessed?

At the same time, to compete in an increasingly global economy, it is essential that all of the nation's children develop higher levels of skills and knowledge than ever before in history if they are to succeed. The fastest-growing jobs demand more education, and jobs requiring low levels of education are moving abroad. This requires research on student achievement—identifying differences in how students learn, determining how different subjects are learned, establishing the conditions under which achievement and persistence in education are most likely to occur, and developing teachers' abilities to promote higher-level learning in their students.

Meanwhile, new technologies have created another research agenda. Brain research is advancing quickly. Each day we are discovering more about how human beings develop and learn. The challenges for education research and development are how to create software geared to differences in student development and learning styles; how to bring that software to our schools; and how to make it serve our children most effectively.

Changing demographics have raised still other research questions. America, as a nation, is aging, chang-

ing color, moving to the suburbs and arriving in large numbers from abroad. With a tidal wave of teacher retirements facing the schools, what are the dimensions of the teacher shortage; what is the best way for states to fill their classrooms with quality teachers; how should teachers be prepared; how should current teachers be educated to meet the demands of a changing world; how can teacher impact on student learning be assessed; and what types of teachers are most effective at promoting student learning?

The fastest-growing populations in the country are those that historically have had the lowest educational attainment rates. What are the causes, and what policies and practices are most effective in keeping these students in school and raising their achievement levels? How do we successfully teach reading and math to students with low levels of basic skills in our cities and rural areas? With an increasing proportion of students coming to school speaking a language other than English, what is the most effective way for them to learn English?

One question encompasses all of these areas of concern: After a quarter-century of a national school reform movement in which scores and scores of improvement initiatives have been attempted, what works in raising student achievement?

The answers to these questions have not been forthcoming. As a result, education policy in America has become a matter of ideology. The right, the left and single-interest groups are locked in a white-hot, self-righteous battle over the directions our schools need to take. There has been little rigorous research to produce empirical evidence in support of any position.

Nowhere has the importance of this research and the frustration over its absence been clearer than in the No Child Left Behind law (NCLB), which went so far as to prescribe appropriate methods for carrying out education research. The words "scientifically based research," or close approximations thereof, appeared more than 100 times in the reauthorization of the Elementary and Secondary Education Act (popularly known as "No Child Left Behind"). Such words were used in everything from provisions on technical assistance to schools to the selection of anti-drug-abuse programs.[5]

The rationale offered by the legislation's authors: After almost 20 years of educational reform, the country needed to know which of the myriad policies and practices that had been tried actually worked. This required rigorous, scientifically based research relying principally on random controlled trials, the gold

The No Child Left Behind law has raised the profile of education research by calling for "scientifically based research" to help determine effective educational strategies.

NCLB's prescription brought a loud and impassioned response from the education community, including allegations of ideological censorship and government intrusion.

standard for research studies. The authors of NCLB believed there was a paucity of such research in education at the time the bill became law.

The federal research prescription brought a loud and impassioned response from the education community. Since the passage of NCLB, we have heard critics reject the prescribed methodology of "scientifically based research" and the accompanying assessment of the condition of education research. The new research requirements are characterized as representing ideological censorship and opposition to the liberality of education schools. What No Child Left Behind termed "scientifically based research" was the most expensive form of research, which few education schools could afford. Qualitative research, the most common methodology in education and one rejected as not scientifically based, was said to be a more appropriate way to answer some research questions.

There also have been conspiracy theories: The Republican White House and Congress created the new requirements to shift research funding from education schools to conservative think tanks. By criticizing the methodology of much of the existing education research, the government could ignore undesired findings. The scientifically based research requirement would allow government to censor future research. Some very controversial questions cannot be answered with random trials, so to impose such a methodology would make the questions unaskable and unanswerable. The classic example is the effect of teacher salaries on student achievement because teachers cannot be randomly assigned to different salary levels.

For some, the effort to dictate research methods constituted government intrusion into academic freedom, curtailing the university's primary mission of discovering and

TABLE 3

Number of Education Doctorates Awarded, by Decade, 1920-2005

1920	48
1930	158
1940	469
1950	953
1960	1,590
1970	6,884
1980	7,941
1990	6,502
2000	6,830
2005	6,229

Source: Hoffer et al, *Doctorate Recipients from United States Universities: Summary Report 2005* (Chicago: National Opinion Research Center, 2006), Table 5, p. 45

disseminating truth. For others, "scientifically based research" was mild McCarthyism, an attempt to show the folks at home that their representatives in Washington were working—by labeling as deleterious to the country something in an area of intense national interest, such as education, and demanding that it be changed.

A Study

Because of the NCLB provisions, the subject of educational research is electric. There is a hunger for research to guide policy and practice. The differences of opinion about how that research should be conducted and about its current state are profound. The politics of what would ordinarily be an obscure and apolitical subject outside the academy are polarized. Education researchers and policymakers are cynical about each other's abilities and motivations.

In this context, this report examines the state of the programs that prepare education researchers in America and, by extension, considers the quality of educational research. It focuses on how researchers are educated rather than on the outcomes of that education in terms of graduate achievement. Measuring outcomes of researcher preparation programs was not within the scope of this project, given the wide variation in results within single universities and the large disparities in standards for hiring, promoting, granting awards and publishing in different education specialties.

This study asked a single question: Do current preparation programs have the capacity to equip researchers with the skills and knowledge necessary to carry out research that will strengthen education policy, improve practice or advance our understanding of how humans develop and learn? This study offers a nine-point template for judging the quality of researcher preparation programs.[6]

1. Purpose: The program's purpose is explicit, focusing wholly on the preparation of researchers; the skills and knowledge required of a researcher are clearly defined; and the definition of program success is rooted in the quality of the research produced by graduates and its salience for policymakers, practitioners and/or scholars.

2. Curricular coherence: The curriculum mirrors program purposes and goals. Rigorous and coherent, it is organized to teach the skills and knowledge—both theory and its application—that researchers need.

3. Curricular balance: The curriculum integrates the theory and practice of research, balancing study

in the classroom with an apprenticeship—an experience of increasingly responsible work with faculty on research.

4. Faculty composition: The faculty comprises highly productive scholars with the capacity and commitment to prepare the next generation of researchers. Their research is well funded. They receive competitive awards and fellowships for their work. Most of all, they model high standards in research and are expert teachers, scholars, advisors and placement agents. They are dedicated to the preparation of their students, the advancement of their fields and the enhancement of their programs, schools and institutions. Criteria for hiring and promotion reflect these values. The size of the faculty is also appropriate to the number of students enrolled.

5. Admissions: Admissions criteria are designed to recruit students with the capacity and motivation to become successful researchers.

6. Graduation and degree standards: Graduation standards are high, students are well prepared for careers in research and the degrees awarded are appropriate to the research profession. After graduation, alumni commonly receive major research fellowships and positions in strong universities and research organizations.

7. Research: Research carried out in the program is of high quality, receives ample external funding and is driven by the needs of policy, practice and/or scholarship.

8. Finances: Resources are adequate to support the program, the faculty who teach in the program, the students enrolled in the program and the physical and intellectual infrastructure needed to support the program.

9. Assessment: The program engages in continuing self-assessment and improvement of its performance.

Throughout this study, terms such as "model," "strong," "inadequate" or variations thereof are used to describe programs. A model or exemplary program is one that substantially meets all nine criteria. A strong program is one that substantially satisfies most of the criteria. An inadequate program is defined as one that fails to achieve most of the criteria or has a fatal flaw, such as having faculty who do not publish.

Four themes emerge from this report. First, there are excellent education researcher preparation programs at universities across the country. In fact, there were relatively

more of these than excellent school leadership or teacher education programs (see the previous two reports in this series). They are concentrated in research extensive universities. Part II of this report presents one example of excellence in researcher preparation.

Second, as Part III indicates, research preparation programs in general are weakened by the condition of education as a field. It lacks focus and has amorphous boundaries. Agreement about appropriate research methodologies and standards is absent. And the research is little cited by scholars or read by practitioners and policymakers.

Third, researcher preparation programs and the degrees they award suffer from confused and overlapping purposes. Too often, they provide the same program to meet the differing needs of future researchers and practitioners, and they arbitrarily award Ed.D. and Ph.D. degrees to mark completion of those programs. Part IV outlines this concern.

Fourth, researcher preparation programs are undermined by inadequate resources—too little money and too few faculty qualified to teach in these programs. The result is programs attended by part-time students and staffed by professors who lack the research experience to prepare future researchers or supervise a dissertation. Parts V and VI explore the resource issues and provide an example of the kind of weak program perpetuated when scarce resources, lack of research standards and indistinct purposes coincide.

Research preparation programs and the degrees they award suffer from confused and overlapping purposes.

AN EXCELLENT PROGRAM

The condition of the programs that prepare education researchers in America is reminiscent of the little girl with the curl: When they are good, they are very, very good and when they are bad, they are horrid. We saw excellent doctoral research programs from one end of the country to the other, from Boston College in Massachusetts to Stanford University in California. This section profiles a program in between—the special education doctoral research preparation program at Peabody College, Vanderbilt University, in Nashville, Tennessee.

Each of the excellent programs we saw was unique. For example, the Boston College program was rooted more in public schools and practice than most other programs, while Stanford's had a stronger connection with the university's graduate school of arts and sciences.

However, excellent programs shared a number of characteristics. They were committed to research preparation; had clarity of vision regarding the skills and knowledge students needed to become researchers; agreed on the contours, methodologies and quality expectations for their fields; created curriculums that mirrored the vision of what researchers need to know in the context of their fields; offered apprenticeships with faculty that began early in the doctoral program; were staffed by highly productive faculty with major research funding who served as mentors to their students; admitted qualified students who wanted to be researchers and provided financial aid sufficient to support their full-time attendance; had enrollments and workloads commensurate with faculty numbers and research commitments; and provided other resources such as appropriate facilities, equipment and support services.

Typical of the strongest programs was the doctoral program in special education at Vanderbilt. The education school, George Peabody College, enrolls

Excellent programs share many characteristics, including a commitment to research preparation, clarity of vision of what it takes to be a good researcher and appropriate resources to support research.

The Vanderbilt special education Ph.D. program is unabashedly research-oriented; it expects graduates to go on to careers in the academy or government.

1,101 undergraduates, 308 master's students and 301 doctoral students. Nineteen percent of Peabody graduate students are enrolled in special education, a concentration the college began offering in the early 1950's that includes three areas: high-incidence special education, incorporating learning disabilities and emotional/behavior disorders; severe disabilities, including hearing and visual impairments; and early childhood special education.

This program typically enrolls eight to 10 new doctoral students each year, although occasionally the number is higher. The overwhelming majority of students are women, ranging in age from 23 to 45. Students generally have backgrounds in special education, education or psychology; most have experience as classroom teachers. Their GRE scores, in the mid-1100's on the verbal and quantitative portions of the exam, are lower than the average for Peabody, but considerably higher than the national average for graduate students in special education. Peabody's dean is pressing for a rise to 1200, which will require the special education faculty to create a new program catering to younger students, more recently graduated from college, who tend to have higher scores on the GRE.

Even without the change, admission to the doctoral program in special education at Peabody is highly competitive. For the entering class of 2003, 13 students were admitted. Of these, 11 chose to enroll and a 12th deferred admission for a year, for an extraordinary 92 percent yield rate. Indeed, the special education program is ranked number one in the country by *U.S. News and World Report*.[7]

The Vanderbilt special education Ph.D. program is unabashedly research-oriented. It expects students to produce research as graduate students and to go on to careers in the academy or government. A faculty member interviewed at another top-ranked school in this field complained that his program "loses students all the time to Vanderbilt." He described Vanderbilt as "a high-powered research place," noting that his program did not "do as good a job in preparing people for [faculty positions in] Research I [Doctoral Extensive] universities."

Students are expected to attend full time; all admitted students receive full financial aid packages, typically tuition plus a stipend of $1,200 per month for at least two years, to make it possible for them to enroll full time, though many still apply for student loans to supplement the aid package. Much of the support is made possible through U.S. Department of Education training grants and faculty extramural

research funding. There are also honors, diversity and dean's fellowships for the most outstanding students admitted to the program.

In exchange for the full aid packages, all doctoral students are required to work 20 hours per week as research assistants, a commitment regarded as an apprenticeship in research and, therefore, a primary part of the doctoral education experience. Accordingly, full support is viewed as essential both for getting the students the special education faculty want and offering them a rigorous and intensive graduate education. Still, the arrangement is a struggle for the institution to sustain financially, and faculty wish the high cost of Vanderbilt tuition, $1,155 per credit, were lower.

Most students complete the doctoral program, including their dissertations, in three to four years. The formal program requires 72 credit hours of course work. Virtually all students, however, enter with a master's degree, typically arriving with approximately half the credits completed. Hence, many students require just two years to finish the 36 hours outstanding.

The remaining course work covers the content of the doctoral field, supervised college teaching and a heavy dose of research preparation, including statistics, research design in special education, qualitative methodology, single-subject research methodologies in special education, contrasting research methodologies in special education and implementing research in special education. The program is competency-based, so beyond taking courses, students must demonstrate mastery in each of these research areas as well as in college teaching. The university, however, has few teaching opportunities for doctoral candidates in special education, so the department is attempting to create a program in which local teachers would take courses from its doctoral students at reduced rates—a situation viewed as a plus for both the teachers and the graduate students.

The program includes a three-semester proseminar. The first semester focuses on writing different types of research; the second emphasizes research design; and the third stresses grant writing and establishing a research program. All students are required to write a grant, and there is a small pot of money available for student-initiated studies. All students also write articles with the expectation that they will have published at least one paper as senior author before they graduate.

To earn a degree, students must pass three written qualifying exams, prepare and defend a major paper and write and defend a dissertation. They must complete all

To earn a degree, the students must pass three written qualifying exams, prepare and defend a major paper and write and defend a dissertation.

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of the requirements, except for the dissertation, within four years. A strong incentive to complete the degree is that federal training grants have to be repaid, if the student fails to graduate.

While the formal requirements are substantial, 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.

The apprenticeship is possible for four reasons. First, faculty in special education have light teaching loads—two courses per term—and, as a result, have sufficient time to give to doctoral students. With grant money, faculty can buy out of one course each term, so most special education faculty teach only two courses each year, one undergraduate and one graduate.

Second, there is a high faculty-to-doctoral-student ratio. Given that the department has 16 full-time faculty, the dissertation load per professor is no more than two a year. More common is one or none in a given year.

Third, faculty members are top scholars in their fields, so they have the skills and knowledge to prepare students for research. They are also extraordinarily productive. In 2002, the average associate or full professor had, at this point of his or her career, published 2.5 books and was sole author of 1.7 book chapters and 6.7 articles. He or she had delivered 8.8 refereed papers or invited speeches and was editor of or sat on the editorial boards of five journals.

There were also software and test authorships. The average professor had 4.4 active grants, totaling over $3.25 million. Most had long lists of honors and awards for their publications and career achievements. And 90 percent had spent almost three years, on average, as schoolteachers or counselors, most commonly in the area of special education, before entering the academy.[8]

Fourth, faculty are supported in their scholarly activities. For instance, an administrative assistant, knowledgeable and experienced in federal grant making, works with professors preparing grant proposals.

She takes the lead on logistics, budgets and numbers and other routine but laborious matters related to successful proposal writing. The results show: Peabody has an excellent track record in winning special education grants from Washington.

Because of this approach, Peabody graduates are eagerly sought for faculty positions in special education programs around the country. As one student put it, "This program gives me prestige when I go out there. I am head and shoulders above others because of the research reputation of Peabody."

Over the past decade, approximately two out of three graduates have gone on to become college and university professors. In 2003, students were hired at schools ranging from the University of Wisconsin, Madison to Samford University. When asked why a number of students went to work at less research-oriented schools, the department chair said it was largely a matter of self-selection. After watching their professors and the amount and kind of work they do, some graduates opt not to work in research universities and others are required by personal circumstances to look for employment in a particular location. In any given year, moreover, a limited number of faculty positions are available at the top research universities, even though special education as a field claims to have a shortage of potential professors prepared to engage in quality research.

Conclusion

Using the nine criteria presented in the previous section, Table 4 summarizes what Vanderbilt demonstrates about the ingredients that make for strong research preparation.

Over the past decade, approximately two out of three graduates have gone on to become college and university professors.

TABLE 4

Criterion for Excellence Applied to Exemplary Doctoral Program to Prepare Researchers (Special Education at Vanderbilt University)

Criterion	Generally Meets Criterion	Explanation
Purpose • Purpose is explicit, focusing on the preparation of education researchers and scholars. • The field of research is explicitly defined and the skills and knowledge needed by researchers are clearly identified. • Success is tied quality of research by graduates and its impact on research, practice and policy.	Yes	The goal of the program is unambiguous—the preparation of top special education researchers. The field and its domains are explicitly defined, as are the methodologies for advancing them. The skills and knowledge needed by a quality researcher/scholar in the field are clear. The success of the program is measured by faculty productivity, grant support, research salience and the achievements of graduates.
Curricular Coherence • Curriculum is rigorous, coherent and organized to teach the skills and knowledge needed by researchers.	Yes	The curriculum mirrors program purposes in its design, content and sequence. It focuses not only on the content of special education, but also strongly on research and research methodology designed for the field. There is a mix of practice and theory, including formal instruction and practice in skills that researchers must master to be successful in the field, such as the preparation of grant proposals and the writing and presentation of research papers. Ultimately, providing all students with substantial teaching experience is a goal of the program.
Curricular Balance • Curriculum integrates the theory and practice of research; apprenticeship is combined with classroom instruction.	Yes	Beginning in the earliest days of the program, students enter into an apprenticeship, which involves one-on-one work and instruction with the professor as well as with advanced graduate students. Students are asked to take on larger and more responsible roles in faculty research projects the longer they participate Zin the apprenticeship. By the close of the apprenticeship, students have worked in a faculty research project from conception to conclusion. The formal curriculum and the apprenticeship are well connected, each teaching skills and knowledge generally well applied in the other. The match is not perfect.
Faculty Composition • The faculty is composed of highly productive scholars with the capacity and commitment to prepare the next generation of researchers. Their research is well funded. They receive competitive awards and fellowships for their work. But most of all, they model high standards in research and are expert teachers, scholars, advisors and placement agents. They are dedicated to the preparation of their students, the advancement of their fields and the enhancement of their programs, schools and institutions. • Total faculty numbers and fields of expertise are aligned with curriculum and student enrollment.	Yes	The faculty is composed of highly productive researchers, very well regarded in their field, high in grant funding, who sit on journal boards, and receive a great deal of grant funding. Many have experience working in the field of special education. They are expected to serve as mentors to their students, though some are so busy professionally that they are not as available as students would like. Faculty numbers are more than commensurate with student enrollments.

Criterion	Generally Meets Criterion	Explanation
Admissions		
• Admissions criteria are designed to recruit students with the capacity and motivation to become successful scholars and researchers.	Yes	While standardized test scores are not among the highest in the country for graduate students, they are very high for special education. The dean is pushing the program to raise them. Students generally come to the program with substantial experience in the field and high motivation to engage in special education research. No student is admitted unless a faculty member is willing to work with her. Student numbers are small relative to the number of faculty in the program in order to permit individualization of preparation for each student and close personal interaction between professors and students.
Graduation and Degree Standards		
• Graduation standards are high and the degrees awarded are appropriate to the field. • After graduation, alumni commonly receive major research fellowships and positions in strong universities and research organizations.	Yes	Students are required to and do complete their course work and exams in a relatively short and clearly specified period of time. There is also the pressure of having to repay traineeships should they fail to do this. Quality standards are enforced by continuing assessment of student performance in classes, apprenticeship, comprehensive exams, a major project and a dissertation. All students are expected to write a grant proposal and publish an article as lead author before earning a degree, Not surprisingly, special education students do very well in competition for faculty positions at research universities when they graduate.
Research		
• Research is of high quality, is well funded and is valued by policymakers, practitioners and/or scholars.	Yes	See Faculty Composition above. Publication rates in top journals, prestigious awards and the levels of extramural funding are impressively high. Research support structures include a special education administrative assistant to aid faculty in obtaining research funding.
Finances		
• Resources are adequate to support the program, the faculty who teach in the program, the students enrolled in the program and the physical and intellectual infrastructure needed to support the program.	Yes	The program is well supported, though there is a desire for greater support for students. Because faculty have light course loads and no more than two doctoral students a year, they have sufficient time to serve as mentors to doctoral students. Because all students are fully funded, though some support needs to be cobbled together, all students can attend full-time.
Assessment		
• The program undertakes continuing self-assessment and performance improvement.	?	This is uncommon in higher education. The special education faculty do talk about program improvements.

AN AMORPHOUS FIELD

The study found three obstacles that stand in the way of having more programs like Peabody's: the amorphous nature of education research, the confused character of doctoral preparation in education, with its inconsistent degrees, and inadequate resources to suppport doctoral programs.

Of these, perhaps the greatest challenge to preparing world-class education researchers is the state of education research itself, which has evolved over time into the study of all formal and informal activities that produce human learning. That includes just about everything. The result is an amorphous field, lacking focus and boundaries, which seemingly embraces all subjects. Beyond this, there is also little agreement
on the appropriate methods and standards for research in the field. The research that is published is little cited by academics; policymakers and practitioners say it is not useful. This combination—the lack of an agreed-upon focus, inconsistent methods of inquiry and standards and little or no utility for various audiences—makes the preparation of education researchers a serious challenge.

Perhaps the greatest challenge to preparing world-class education researchers is the state of education research itself.

A Field Without Focus or Boundaries

The field of education and its research agenda have grown by accretion, continually adding subfields, subject matters, specializations, professions and methods of inquiry.

Education, as a field, can be traced back more than two and a half millennia to the teachings of the great philosophers, best known today in the works of Plato and Aristotle. But it developed as a field of research more recently, when psychology emerged as a branch of philosophy in the 19th century, then became a distinct discipline separate from philosophy in the early 20th century. At first, a

transitional generation of scholars—including G. Stanley Hall at Clark University and William James at Harvard—bridged philosophy and psychology. Then came a newer breed of psychologists such as James McKeen Cattell at Columbia, Lewis Terman at Stanford, Edward L. Thorndike at Teachers College and Charles Judd at the University of Chicago. These second-wave psychologists gave birth to what would become educational psychology and the multiplicity of branches of psychology concerned with education, including developmental psychology, counseling psychology, clinical psychology, school psychology, organizational psychology and others.

In the years following, newly created education schools produced their own research fields, such as history of education, following innovators such as William Payne at Michigan, and educational administration, led by pioneers such as Paul Hanus at Harvard. Education also grew more specialized within these new fields. For instance, teacher education divided into sub-fields—based on the subjects teachers teach, such as social studies and reading, and based on the components of teaching, such as curriculum and testing. In practice, this meant education now had an augmented research agenda related to the field as whole, covering topics such as its history, governance and finances; the varying jobs people were being prepared to perform as administrator, teacher and counselor; the subject matters that teachers taught and students needed to learn; and the components of teaching and learning. Each area developed its own norms regarding scholarly standards and modes of inquiry appropriate for answering its research questions.

The post-World War II decades brought the various branches of the social sciences and their methods into education; economics, anthropology, sociology and political science became partners with psychology. The economics of education, anthropology of education, sociology of education and politics of education, each as a separate field with its own research questions and methods of inquiry, became staples in education schools.

The years that followed saw the advance of computers extend the possibilities for large-scale quantitative research. Cognitive study and brain research opened new frontiers in understanding how people learn. And postmodernism and cultural studies challenged authoritative knowledge and traditional methods of research. The scope of education as a field expanded over the years as well, with Lawrence Cremin, the Pulitzer Prize-winning historian and

TABLE 5

Faculty Ratings of Schools of Education on Faculty Research by Carnegie Type, by Percentage Selecting Each Rating Category

Rating	Total	BG	BLA	DRE	DRI	MI	MII
Excellent	1%	2%	-	4%	1%	1%	-
Good	22%	22%	21%	26%	21%	22%	23%
Fair	41%	53%	43%	37%	35%	39%	48%
Needs Improvement	24%	12%	33%	24%	27%	25%	25%
Needs Substantial Improvement	6%	7%	4%	4%	15%	7%	-
No Answer	5%	5%	-	5%	2%	6%	4%

BG=Baccalaureate General, **BLA**=Baccalaureate Liberal Arts, **MI**=Master's Granting I, **MII**=Master's Granting II, **DRI**=Doctoral Research Intensive, **DRE**=Doctoral Research Extensive
(Averages may not add up to 100% due to rounding.)

Source: Faculty Survey

president of Teachers College, declaring that the domain of education was not simply schools, but all of society's educating institutions throughout the lifespan: families, communities, libraries, museums, the media and so much more. Education research became the study of all of these institutions, all of the people involved in them, all of the associated fields, all of the questions about them and all of the methods by which they could be studied.

This history produced two very different types of education research faculty. One group can be described as disciplinary experts. They apply their area of expertise—rooted in a defined body of knowledge, established methods of inquiry and agreed-upon standards—to problems in education. These faculty might find homes in either a disciplinary department or an education school.

The other group might be called content experts. They study specific problems in education and adopt a variety of different methods of inquiry, depending on the problem being studied. Over time this form of scholarship develops a body of knowledge in the content area, but, as a result of its interdisciplinary character, lacks established methods of inquiry and agreed-upon standards. These faculty have homes only in education schools.

A Lack of Agreement on Methods and Standards

According to a committee convened by the National Research Council to

The deans of many high-ranking graduate schools of education are dissatisfied with the quality of research accepted for presentation at major conferences.

assess scientific research in education, chaired by the former dean of the Stanford Graduate School of Education:[9]

> [E]ducational research is perceived to be of low quality. …Educational researchers themselves are often their own harshest critics (e.g. Kaestle, 1993). They are often joined by a chorus of social scientists, engineers and business leaders who lament weak or absent theory, accumulations of anecdote masquerading as evidence, studies with little obvious policy relevance, seemingly endless disputes over the desired outcomes of schooling, low levels of replicability, large error margins, opaqueness of data and sources, unwillingness or inability to agree on a common set of metrics and the inevitable intrusion of ideology at the ground level.[10]

This was confirmed by our own research. Only a minority (24 percent) of faculty rate schools of education "excellent" or "good" in terms of their professors' scholarship. The overwhelming majority (71 percent) rank the schools "fair" to "need substantial improvement" in this area (Faculty Survey). There is a surprisingly high degree of consensus among the varying types of institutions (Table 5).

The authors of the National Research Council report cited a lack of "self regulation and focus."[11] The divisions among education researchers in philosophies, canons and research methods preclude common ground and make it impossible to achieve even minimum agreement about what constitutes acceptable research practice. There are no base standards and no quality floor. In her history of education research, Ellen Lagemann, former dean of the Harvard Graduate School of Education, suggests this inconsistency translates into a lack of common standards for publication, grant awards, research training and mechanisms for reconciling scholarly differences. It also explains the absence of a single professional association.[12] She concludes:

> [T]here … are very few filters of quality in education. There is neither a Better Business Bureau, nor the equivalent of the federal Food and Drug Administration. *Caveat emptor* is the policy in this field. This is because education research has never developed a close-knit professional community, which is the prerequisite for the creation of regulatory structures that can protect both the welfare and safety of the public at large and the integrity of the profession. Such communities exist in some disciplines, for example, physics and, to a lesser extent, psychology; they also exist in some professions, notably medicine and law. But such a community has never developed in education.[13]

The largest organization in the field, the American Educational Research Association (AERA), with 25,000 members divided into 12 different sections and 145 special interest groups, is not so much a close-knit research community as a research

TABLE 6

Education Journal Citations 2000-06 for Articles Published in 2000 by Science Expanded, Social Science, and Arts and Humanities Citation Indices Combined

Journal	Number of Articles	Percentage Articles Uncited	Average Number Citations/ Article	Largest Number Citations/ Article
Adult Education Quarterly	24	54%	1	7
American Educational Research Journal	33	6%	7	31
Applied Measurement in Education	24	38%	2	9
Early Childhood Research Quarterly	37	35%	4	28
Educational Administration Quarterly	29	24%	2	9
Harvard Educational Review	49	31%	1	18
The Journal of Education Research	39	18%	3	10
Journal of Higher Education	65	62%	2	13
Journal of Teacher Education	44	18%	4	19
Reading Research Quarterly	47	34%	5	48
Review of Educational Research	18	6%	13	52

Education journal data cover up to the month of July 2006. Article counts in this table omit book reviews, commentaries, editorials and responses to articles.

Source: ISI Journal Citation Reports

holding company in which differences among members loom larger than commonalities.[14]

The deans of many of the highest-ranked graduate schools of education expressed to the authors of this report dissatisfaction with the quality of the research accepted for presentation at the annual AERA conference. They did not suggest that the conference lacks high-quality research by excellent researchers, but rather commented that there is far too much low-quality work on the program. This is embarrassing for the profession, sends an unfortunate message about what the profession values and provides a poor example for graduate students who attend the event.

Little Utility or Impact

Education research has little impact on researchers, policymakers or practitioners (e.g., school administrators

TABLE 7

Five Highest-Impact Journals in Education, Law and Medicine with 2004 Impact Ratings

Education	
Journal of the Learning Sciences	**2.280**
Review of Educational Research	**1.960**
Journal of American College Health	**1.625**
Learning and Instruction	**1.617**
Health Education Research	**1.405**
Law	
Harvard Law Review	**6.623**
Yale Law Journal	**6.506**
Stanford Law Review	**4.600**
Columbia Law Review	**4.059**
Virginia Law Review	**3.717**
Medicine	
New England Journal of Medicine	**38.570**
Journal of the American Medical Association	**24.831**
Lancet	**21.713**
Annals of Internal Medicine	**13.114**
Annual Review of Medicine	**11.200**

Source: ISI Journal Citation Reports, 2004 JCR Social Science Edition

and teachers). With regard to researchers, the authors of this report carried out a study of the citation rates of articles published in nine diverse education journals. Three were comprehensive in their inclusion of education research: *American Educational Research Journal*, *Harvard Education Review* and *Journal of Education Research*. The other six—*Adult Education Quarterly*, *Applied Measurement in Education*, *Early Childhood Research Quarterly*, *Educational Administration Quarterly*, *Journal of Higher Education* and *Journal of Teacher Education*—were in education sub-fields. Using the ISI science, social science, and arts and humanities citation indices, we examined how often the articles published in

these journals in 2000 were cited from 2000 to 2006.

The study showed that the articles published in these journals were not cited frequently. Between 6 percent and 62 percent of the articles published, varying by journal, were never cited in a subsequent publication. The average number of citations per article varied between one and 13, with a mode of two. The largest number of citations for any one article was 52, with a mode of nine (Table 6).

ISI also assesses what it calls journal impact, a measure of the number of citations per article published in a journal. The 2004 impact rating for a journal is a ratio: the number of 2004 citations to all articles published in a given journal in 2002 and 2003, divided by the number of articles published in that journal over the two-year period. What stands out is the dramatic difference between citation rates for top journals in education and other fields. Articles in the major journals of medicine and law, for instance, are all cited at substantially higher rates than those in the leading education journals. The impact rate of the *New England Journal of Medicine* is more than 16 times that of the most-cited education journal, the *Journal of the Learning Sciences (JLS)*. The *Journal of the American Medical Association* has an impact rate nearly 11 times the *JLS'* rate; *Lancet*, more than 9 times the *JLS'* rate; and *Harvard Law Review*, nearly 3 times the *JLS'* rate. On average, the impact of the medical journals was more than 12 times that of the education journals; the law journals had more than double—and in some cases triple—the impact of the education journals. The point is this: Education research has little salience for education scholars (Table 7).

Education research is likewise connected only weakly with practice. School administrators interviewed in the course of this study were regularly asked which education publications they read. The most common answers were *Education Week*, the trade paper, and publications from their own professional associations, such as unions and principals' organizations. Almost never did they say they read scholarly journals; and when they did, the person being interviewed was invariably enrolled in a graduate program.

When asked why they didn't read education journals, most cited, in one way or another, the irrelevance of most articles, which they characterized variously as "impractical," "abstract," "out of touch" or "useless." A study of school superintendents, carried out for the federal Institute of Education Sciences (IES) and described in greater detail below, reached comparable conclusions.[15]

When asked which education publications they read, school administrators answered *Education Week* and publications from their own professional associations, but almost never did they say scholarly journals.

Policymakers criticized education research for differing reasons, including bias, self-promotion, inattention to implementation issues and absence of rigor.

Education research is also rated low by policymakers. The IES study—a far cry from the randomized trials or scientifically based research that IES itself champions—drew on interviews with 90 key school superintendents, chief state school officers, state higher education executive officers, state legislators, gubernatorial policy advisors, Congressional staff members and education association executives. Interviewees were asked to identify the highest-priority areas for further education research; the frequency with which they read education research reports and the sources from which they received information about education; their opinion of the quality and quantity of education research; and what steps could make education research more accessible, useful or relevant.[16]

For policymakers, the volume of education research is so large as to be inaccessible and incomprehensible, yet so eclectic as to leave gaping holes in coverage. Those interviewed obtained their information on education from their professional associations, colleagues and staff members rather than from published education research. They criticized education research for differing reasons—impracticality, bias, self-promotion, inattention to implementation issues, gaps in content, inappropriate and ineffective methods of dissemination, low quality and weak methods, lack of replication and absence of rigor. All the groups desperately wanted education research and used it to varying degrees, but it was not having the impact on their policymaking it could or should have.

Conclusion

The amorphous nature, uncertain standards and unclear relevance of education research are apparent in the doctoral curriculums designed to prepare education researchers. Deans and faculty, even at the highest-ranked schools of education, persistently complained that their doctoral curriculums did not equip students sufficiently for the dissertation. Professors regularly expressed dissatisfaction with student knowledge of research methods, offering comments such as “often they do not know how to interpret data” or “they have no idea what ‘empirical’ means.” Faculty and administrators sometimes lamented the condition of research preparation in their own doctoral programs, saying that the research “infrastructure was not there” or their department’s “research courses are historical artifacts and have not been reviewed for some time.”

University chief academic officers often agreed. One said that there is no “research paradigm” in schools of education. Another told us that the

shortcomings found in education school research preparation were not simply a matter of quantitative scientists' denigrating qualitative research: "If I take [the education school's course in] qualitative analysis and stack it up against what I see coming out of our sociology department, it's night and day—the difference is rigor."

There are certainly weak doctoral programs that contribute to the inadequacy of doctoral research preparation, but the problem extends to our best schools as well. The real issue is that there is no agreement within the education school community about how to prepare doctorally trained researchers. Nearly all students (88 percent) take classes in research methods during their doctoral studies. Eighty-six percent of doctoral alumni rate them as valuable, and 84 percent say they were high-quality. A third of the alumni (33 percent) wished they had more course work in the area, while fewer than one in 16 (6 percent) would have preferred less emphasis on research methods (Alumni Survey). Even more telling: Almost half (47 percent) of education school doctoral recipients thought their curriculum lacked rigor, and over a third (35 percent) believed education schools do not adequately prepare their graduates academically (Alumni Survey).

High percentages of education school doctoral recipients find that their curriculum lacked rigor and believe that education schools do not adequately prepare their graduates academically.

UNCERTAIN PURPOSES *and* DEGREES

Two different populations enroll in doctoral programs in education schools—one seeking preparation for professional careers in areas such as school leadership and the other wanting an education for jobs in research. Two different programs are required to educate students for these purposes—one focusing on practice and the other on scholarship. Two different degrees are awarded for completing a doctorate in education—the doctor of education (Ed.D.) and the doctor of philosophy (Ph.D.).

The problem is that the doctoral programs offered and the degrees awarded by education schools are a mishmash. Programs for the preparation of researchers and the education of practitioners generally look very much alike, with a decided predilection toward research. The degrees graduates receive are fungible. Some institutions award the Ph.D. to practitioners, others award the Ed.D. to future scholars, and a plurality grant both degrees, with the distinction generally determined by differences in the course credits required or the number of research courses students must complete (Table 8).

Doctoral programs offered and degrees awarded by education schools are a mishmash. Programs for the preparation of researchers and the education of practitioners generally look very much alike.

The History

Today's confusion is historical. A long struggle was required to introduce graduate study in the United States. The years before and after the Civil War saw any number of ill-fated experiments in post-baccalaureate education.

Perhaps the best known of these experiments occurred under the leadership of Philip Henry Tappan, president of the University of Michigan from 1852 to 1863. He hoped to eliminate Michigan's collegiate activities and focus instead on its becoming a true university, modeled after the German universities. Although a significant minority of the Michigan faculty supported him, Tappan was

TABLE 8

Doctoral Degrees Offered by Carnegie Type

	Percentage Offering Only Ph.D.	Percentage Offering Only Ed.D.	Percentage Offering Both Degrees
Doctoral Extensive Universities	26%	6%	68%
Doctoral Intensive Universities	20%	45%	35%
Masters I Colleges & Universities	18%	70%	11%
Average	**22%**	**40%**	**39%**

Masters II Colleges and Universities are omitted because only two offer degrees.

Source: Deans Survey

ultimately driven from the university by a barrage of criticism from the press, government and the public, charging him with anti-Americanism and attempting to Europeanize the university.[17]

The initial Ph.D.'s preceded the development of a "true" graduate school. Yale awarded the first doctorate in 1861 for two years of post-baccalaureate study off-campus. The University of Pennsylvania followed suit nine years later, conferring most of its degrees on medical students. Harvard began granting Ph.D.'s in 1873, demanding two years in residence, and Columbia joined the fray in 1875, adopting the Ph.D. in its school of mines for a year of graduate study.[18] Hence, from the very beginning, there was a lack of agreement about who should receive the Ph.D. and the requirements for earning it.

As late as 1876—the year America's first legitimate graduate school, the Johns Hopkins University, opened its doors—no more than five institutions were awarding Ph.D.'s; they were not awarding all that many of them either.

The University of Pennsylvania granted seven degrees in 1876. Harvard gave five; Syracuse, three; Michigan, two; and Illinois Wesleyan, one. Four times as many institutions awarded honorary Ph.D.'s, a practice begun at New York University in 1852. In 1876, 20 colleges and

universities awarded 26 honorary doctorates.[19]

At the turn of the 20th century, no more than 50 colleges and universities had ever granted an earned Ph.D. Those that did award the doctorate continued to do so for everything from correspondence and off-campus programs to one to three years in residence beyond the bachelor's degree.

Even the most eminent universities had profound differences in their Ph.D. programs. A study of 20 universities found wide variation in admission standards; students lacked anything resembling a uniform undergraduate preparation owing to disparities in their baccalaureate educations.

Residence requirements were one to two years. Programs varied in length from two to three years. There were substantial differences in the curricular requirements for the Ph.D. For instance, 40 percent of the schools had no language requirement, and the remainder required an assortment of languages, including French, German and Latin. Exam expectations varied from just an oral defense of the dissertation to a comprehensive assessment, including oral exams in major and minor areas as well as preliminary and final exams and a dissertation defense. The dissertation itself could be anything from a brief essay to be filed in the library to an original published work.[20]

The new century brought what would be the first of many, many periodic efforts to standardize and raise doctoral quality; in this case, the goal was to establish admission standards, faculty credentials and program requirements.

Within the academy, professional associations—including the Association of American Universities, the Association of Land-Grant Colleges and Universities, the National Association of State Universities and the American Association of University Professors—drove the changes, spurred by their membership.

Externally, newly created accrediting associations established minimum standards for schools and colleges, enabling graduate schools to admit student cohorts with more consistent preparation. Foundations provided incentives for adhering to standards and increasing quality. For example, the Carnegie Foundation for the Advancement of Teaching played a critical role in setting college admission requirements and requiring a minimum number of Ph.D.'s on each college's faculty in order for institutions to qualify for

Historically, even the most eminent universities had profound differences in their Ph.D. programs.

The Doctorate of Education was awarded first by Harvard University in 1922.

the Carnegie faculty pension program. These efforts were certainly ameliorative, but they did not achieve anything resembling standardization, nor did they uniformly raise quality in degree programs.

In fact, in the decades following World War I, the situation became even more confused: Student enrollment in doctoral programs mushroomed, the number of institutions awarding the doctorate expanded and an additional doctoral degree was created for educators. The Doctor of Education degree (Ed.D.) was awarded first by Harvard University in 1922.[21] Berkeley, Stanford and Teachers College were early adopters as well. By 1940, 24 institutions conferred Ed.D.'s at least periodically, versus 55 granting the Ph.D.[22]

The new degree was created for at least three reasons. The academic reason was to establish a professional degree for education practitioners, differentiated from the research-oriented Ph.D. The political reason for education schools was to dispel criticism from university faculty who were unhappy both with the content of practitioner Ph.D. programs and the large number of educators receiving the degree, relative to students in the arts and sciences. The autonomy-related reason was that education schools thought a degree of their own might be a way to gain more control over their doctoral curriculums, which often required approval of the respective arts and sciences schools, as the Ph.D. was their province.

From the very beginning, the clear differentiation between the degrees blurred. Some institutions adopted one degree or the other; the University of Chicago, for example, refused to differentiate preparation of administrators and academics, awarding the Ph.D. to both. Other schools adopted both degrees. The Ph.D. soon proved the more popular because it was the more prestigious. Practitioners often sought to move into the Ph.D. track, thereby defeating the purpose of the differentiation. Between 1930 and 1940, more than three times as many Ph.D. (2,731) as Ed.D. (804) degrees were awarded in education.[23]

In the end, there proved to be remarkably few differences between the degrees. The dissertations of the Ed.D. and Ph.D. students were comparable. This was true from the very beginning, as evidenced by a study of the dissertations of Ed.D. students at Harvard and Ph.D. students at

Teachers College during the 1920's. The conclusion was that any variation between them "derived much more from the differing size and character of the two institutions than from any fundamental difference in the problematics they embodied."[24] Originally the hope had been that Ed.D. students would focus on more pragmatic practice problems and the Ph.D. students would engage in more research-oriented studies.

The students even took remarkably similar jobs after completing their degrees. Between 1930 and 1940, 56 percent of Ph.D. recipients chose careers in teaching, compared with 50 percent of Ed.D. graduates. Slightly more than 6 percent of each group worked in research. The largest difference was in school administration, where 35 percent of Ph.D. holders were employed, as opposed to 44 percent of Ed.D.'s, which is a far cry from the intent in creating the new degree.[25]

The only real constant was that more and more degrees were being awarded each year. From 1920 to 1980, the number of degrees awarded rose by as much as fourfold each decade, from 48 in 1920 to 7,941 in 1980. Thereafter, numbers slowly declined, oscillating around the mid- to high 6,000's (Table 3).[26]

Driving the growth was an expansion in higher education. Enrollments in college and university programs grew from 4 percent of the age group in 1900 to more than 65 percent in 2000, necessitating a commensurate growth in the faculty—for whom a doctorate was increasingly the union card. School districts also developed a growing appetite for hiring superintendents with doctorates, and pay scales in the profession were geared to accumulation of credits and higher degrees. In addition, there was a continuing growth of research jobs outside of academe from World War I on. Plus, opportunities for women to enter historically male jobs as college professors and school and district administrators increased noticeably beginning in the 1970's.

The 1970's also witnessed the rise of nontraditional programs for the burgeoning number of doctoral students, with institutions such as Antioch University leading the way. Nontraditional programs, intended for older working professionals who simply lacked the time to leave work and study full time, characteristically granted credit for experience, encouraged part-time attendance and relied upon off-campus study.

From 1920 to 1980, the number of doctoral degrees awarded rose by as much as fourfold each decade, from 48 in 1920 to 7,941 in 1980.

In the 1990's, nontraditional education took a new form: anytime-anyplace learning via online doctoral programs. Hand in hand with this development came the rise of for-profit higher education institutions. This was the decade in which the University of Phoenix, founded in 1976, became an overnight success and was recognized as a force for the academy to reckon with.

Too often practitioners receive an education designed for researchers, and future scholars take courses with practitioners who have little interest in research or rigorous scholarly studies.

The Present

As shown in Table 2, the doctorate in education is currently awarded by 290 schools, colleges and departments of education (Deans Survey). This includes 95 percent of the Doctoral Extensive universities, 82 percent of the Doctoral Intensives, 18 percent of the Masters I universities and 2 percent of Masters II's (Deans Survey). More than 95 percent of all doctorates in education are awarded by research universities, although a larger number of Masters I institutions grant a doctoral degree than do Doctoral Intensives.

As the research orientation of a university increases, so does the likelihood it will offer the Ph.D. as the sole doctorate, as well as the probability that the institution will grant both Ph.D.'s and Ed.D.'s In contrast, the chance that a university awards only the Ed.D. increases as its emphasis on research declines (Degree Study).[27] A majority of Doctoral Extensives (68 percent) offer both degrees, while a majority of Masters I/II institutions (70 percent) and a plurality of Doctoral Intensives (45 percent) grant only the Ed.D. (Table 8).

The blurring in purpose of the Ed.D. and Ph.D. leads to a larger problem in the preparation of education researchers. It encourages a commensurate blurring in the programs to prepare researchers and practitioners. More often than not, they enroll in the same doctoral programs. The result is that practitioners too often receive an education designed for researchers, and future scholars take their course work with practitioners who have little interest in research or rigorous scholarly studies. This blurring is exacerbated by the status differences in the two degrees, which encourage practitioners to enroll in Ph.D. programs.

At the same time, university faculty trained in research generally construct doctoral programs emphasizing scholarship for both future practitioners and researchers, but water down the programs to meet the expectations and abilities of practitioners. These realities were

documented in an earlier Education Schools Project report entitled *Educating School Leaders*.[28]

The state of affairs is illustrated by a debate at a renowned research extensive university. The institution's faculty asked whether the school of education should create an Ed.D. for practitioners and reserve the traditional Ph.D., the only doctorate it awarded, for scholars. The driving concern was a mismatch between student and faculty goals in the department of educational administration. The doctoral program there sought to educate future scholars and focused its curriculum on research preparation, but only 10–15 percent of the students enrolled wanted to be academics. The department was being inundated by practitioners who desired a doctorate from their program for its prestige, not its announced purposes.

A familiar discussion followed. The dean said, "In many ways the department would be better if it could offer the Ph.D. to students who want to do research and offer the Ed.D. to practitioners who want a more applied degree, but will not necessarily contribute to fundamental knowledge." He went on to say there is "a widely held perception that the Ed.D. doesn't have the acceptance that a Ph.D. does." Calling this "a great shame," the dean concluded that an Ed.D. from "the right place and structured in the right way can be respected." A faculty colleague offered, "I see no reason why we want to provide a lower status degree for people who have contact with children on a regular basis." In the end, no action was taken. The education school decided by default to stay with the Ph.D. for all.

Conclusion

The simple fact is that so long as the education schools at eminent universities such as Harvard persist in awarding the Ed.D. to researchers as well as practitioners and the University of Wisconsin grants the Ph.D. to practitioners in addition to scholars, there will continue to be more confusion than clarity about the meaning of a doctorate in education. And there are really no incentives—and many disincentives—for institutions to clarify the purposes of the doctorate or to distinguish clearly between the two degrees.

The first such disincentive is financial. The market for practitioner doctoral degrees is huge, overshadowing the much smaller demand for research doctorates. These demographics mean larger admissions pools and enrollments in doctoral programs for practitioners than

There are really no incentives for institutions to clarify the purpose of the doctorate or to distinguish clearly between the Ed.D. and the Ph.D.

for programs preparing future researchers. Moreover, the preparation of scholars is considerably more time- and energy-intensive, and therefore more cost-intensive. So even if a faculty is more interested in preparing scholars, it usually needs to educate practitioners as well to keep the boat afloat financially.

The second disincentive to distinguishing the two doctorates is availability. It is generally easier to obtain state approval for a new Ed.D. than a Ph.D. As a result, the Ed.D. tends to be the degree of choice for ambitious master's granting institutions that want to raise their stature by awarding doctorates. It is also the best hope for schools of education in research universities that do not currently award the doctorate in education. The likelihood of a new Ph.D. is simply out of reach for these schools.

However, once an Ed.D. is authorized, it can be used fungibly for both practice and research purposes—that is, to educate practitioners and to enhance the school's scholarly standing. Among the institutions we visited, those that awarded the doctorate in only a few fields, or that were seeking authorization for new doctoral programs, were invariably focusing these programs on practitioners, usually educational administrators. Yet deans spoke of the Ed.D. as a vehicle for increasing the research orientation of their faculties, enhancing the scholarly climate of their schools, attracting external funding and recruiting professors with stronger research track records.

A third reason why schools of education are not quick to distinguish the Ed.D. from the Ph.D. is control. In contrast to the Ph.D., which is generally under the purview of the graduate school of arts and sciences in research universities, the Ed.D. tends to be the domain of the school of education. For reasons of autonomy, education schools are unlikely to give up this degree and the flexibility it offers.

Fourth is prestige. The Ph.D. is a more prestigious degree than the Ed.D., so students and institutions naturally gravitate to the Ph.D. for its status, regardless of whether they are planning on careers in research or practice. However, the status difference has encouraged several arts and science faculties to block their education schools from awarding Ph.D.'s, both because of their feelings about education schools and their wish to guard a prerogative.

The fifth reason is history. At Harvard, every school awards its own

degree. The Ph.D. is the doctorate awarded by the graduate school of arts and sciences; the D.B.A., by the graduate school of business; and the Ed.D., by the graduate school of education. "We have always done it this way" is a powerful rationale for maintaining the status quo.

The sixth and final force is politics and inertia. The debate at the research university recounted above is fairly typical of conversations at schools around the country. Equal treatment tends to trump differentiation and distinction in academe. Maintaining what a school has is a lot less work than changing it.

Unfortunately, none of these reasons for continuing current practice has academic substance.

"We have always done it this way" is a powerful rationale for maintaining the status quo.

INADEQUATE RESOURCES

The most glaring weakness in doctoral programs for education researchers is the quality of their faculty. Inadequate numbers of professors are qualified to educate researchers, and the most able faculty are concentrated at a single type of institution, Doctoral Extensive universities.

Research divides the nation's education schools into two worlds. One, consisting of schools at Baccalaureate and Masters II universities, focuses principally on teaching and puts less of a priority on research. The other, comprising Doctoral and Masters I schools, embraces research as its mission in varying degrees and with differing levels of success.

The nation's education schools are divided into two categories: those that focus primarily on teaching and those that embrace research as their mission.

A clear hierarchy exists in the second group. Doctoral Extensive schools of education are the most active in research. Doctoral Intensives follow significantly behind and Masters I institutions trail distantly.

This difference is apparent in the importance of research in faculty hiring. Only at Doctoral Extensive education schools do a majority of faculty and deans say the quality of publications is a very important factor in hiring (Deans and Faculty Surveys; Table 9). It is also mirrored in the research records of faculty at the differing institutions. A majority of the faculty at all three types of education schools have presented a paper at a conference in the past two years. However, only at Doctoral Extensives, Doctoral Intensives and Masters I's have a majority of professors published a paper in a refereed journal in the last two years. And only at Doctoral Extensives have most faculty gotten external funding for their research in the past two years (Faculty Survey; Table 10).

A scale can be created, ranging from the most productive researchers—those who have published a book and peer-reviewed article, delivered a paper and obtained external funding in the past two years—to unproductive faculty

TABLE 9

Quality of Publications Very Important in Decision to Hire Faculty

	Percentage of Faculty Reporting	Percentage of Deans Reporting
Doctoral Extensive Universities	<50%	60%
Doctoral Intensive Universities	22%	27%
Masters I Colleges & Universities	13%	9%
Masters II Colleges & Universities	5%	4%
Baccalaureate Liberal Arts Colleges	7%	13%
Baccalaureate General Colleges	2%	4%
Total	**16%**	**16%**

Source: Deans Survey

TABLE 10

Percentage of Education School Faculty Engaging in Various Research Activities in the Past Two Years

	Published Refereed Article	Published Book	Delivered Paper at Professional Meeting	Obtained External Research Funding
Doctoral Extensive Universities	80%	31%	89%	60%
Doctoral Intensive Universities	63%	22%	84%	35%
Masters I Colleges & Universities	57%	12%	80%	34%
Masters II Colleges & Universities	26%	13%	63%	18%
Baccalaureate Liberal Arts Colleges	28%	14%	70%	20%
Baccalaureate General Colleges	23%	7%	54%	23%
Total	**51%**	**15%**	**76%**	**34%**

Source: Faculty Survey

TABLE 11

Faculty Research Productivity, by Carnegie Type

	Most Productive	More Productive	Productive	Less Productive	Unproductive
Doctoral Extensive Universities	18%	37%	20%	6%	4%
Doctoral Intensive Universities	10%	22%	28%	20%	8%
Masters I Colleges & Universities	4%	22%	31%	17%	13%
Masters II Colleges & Universities	4%	8%	6%	32%	27%
Baccalaureate Liberal Arts Colleges	-	13%	22%	16%	42%
Baccalaureate General Colleges	-	3%	18%	28%	24%

Most productive: published a book + published peer-reviewed article + presented conference paper + obtained extramural funding in the past two years
More productive: three out of four of these activities
Productive: two out of four of these activities
Less productive: presented paper only
Nonproductive: none of these activities

The table rows do not add up to 100% because the category of having engaged in one activity was reduced from any activity to only presenting a paper for reasons described in the text. Having produced a book was considered a far more daunting task than writing a paper.

Source: Faculty Survey

members who have none of those accomplishments. In between would be more productive researchers, who have engaged in three out of four of the activities; productive researchers, who have carried out two; and less productive researchers, who have only presented a paper, which is the most common activity with the lowest threshold for selection. Table 11 shows that a majority of faculty members at Baccalaureate and Masters II institutions fit into the categories of less productive and unproductive. Doctoral Extensive education schools are the only institutions at which a majority of professors (55 percent) can be described as more or most productive, having engaged in at least three of the four—scholarly publishing, presenting, or funding activities.

Research funding marks the greatest difference among the schools. Doctoral Extensive education schools raise more than two and a half times as much in extramural research support per full-time professor as Doctoral Intensives. Masters I institutions place third, raising about three-eighths (37 percent) as much

TABLE 12

Amount of Education School External Research Funding, by Carnegie Type

	Average $ Per Institution (1000s)	Average $ Per Full-time Professor (1000s)
Doctoral Extensive Universities	$4,005	$64.6
Doctoral Intensive Universities	$1,469	$25.3
Masters I Colleges & Universities	$538	$18.6
Masters II Colleges & Universities	$99	$9.9
Baccalaureate Liberal Arts Colleges	$35	$5.8
Baccalaureate General Colleges	$44	$5.5

Source: Deans Survey

TABLE 13

Faculty Interest in Teaching Versus Research, by Carnegie Type

	Primarily Teaching	Both, More Teaching	Both, More Research	Primarily Research
Doctoral Extensive Universities	11%	43%	39%	7%
Doctoral Intensive Universities	24%	55%	20%	1%
Masters I Colleges & Universities	33%	50%	14%	1%
Masters II Colleges & Universities	58%	38%	2%	2%
Baccalaureate Liberal Arts Colleges	59%	34%	-	2%
Baccalaureate General Colleges	39%	51%	10%	-
Average	**36%**	**46%**	**14%**	**2%**

Source: Faculty Survey

as Doctoral Intensives institutionally and three-quarters (74 percent) as much per faculty member (Deans Survey; Table 12).

Yet if one looks beyond the institutional types to individual faculty members, what quickly becomes apparent is that most education school faculty are more interested in teaching than research. This is true at every type of institution. Faculty at the education schools surveyed were asked to characterize their interest as primarily teaching; primarily research; both, but primarily teaching; or both, but primarily research. Only 16 percent of the faculty chose the research options (Table 13). Even at Doctoral Extensives, only 7 percent selected "primarily research" and a total of 46 percent chose the two research options combined. The runner up was the Doctoral Intensives, at which one in five faculty (21 percent) said either "both, more research" or "primarily research."

Faculty predilections correspond to how they actually spend their time. Professors at Doctoral Extensive education schools teach less in the classroom and in the field than their colleagues at other types of colleges and universities. They spend more time engaged in research—a mode of 9-12 hours versus 5-8 hours for Doctoral Intensives and 1-4 hours for faculty in all other types of institutions. One in five professors at Doctoral Extensive education schools reports spending more than 12 hours a week engaged in scholarship, a time commitment to research more than double that of their peers at Doctoral Intensives (Table 14).

In sum, research extensive universities are fundamentally different from other universities in their research orientation. They emphasize research to a greater extent in their hiring and their faculty workloads. Their faculty are more interested in research and more productive in scholarship, receive greater research funding and spend more time engaged in research.

The problem is that doctoral programs for researchers are found at Doctoral Extensive, Doctoral Intensive and Masters I universities, many of which lack the institutional commitment—finances, philosophy and climate—to support doctoral education, as well as the quality and critical mass of productive faculty members necessary to sustain doctoral programs.

Insufficient Faculty Resources

To become a master surgeon, silversmith or pianist, students study with masters in that field, as demonstrated by the body of work these experts have produced. The expectation in education research is the same. The most productive researchers, both in

If one looks beyond the institutional types to individual faculty members, it quickly becomes apparent that most education school faculty are more interested in teaching than research.

TABLE 14

Faculty Reports of Numbers of Hours Per Week Spent on Scheduled Teaching, Field Work with Students and Scholarly Research, by Carnegie Type

Activity and Hours Spent	DRE	DRI	MI	MII	BG	BLA	Total
Zero hours							
Scheduled teaching	6%	4%	3%	4%	-	-	3%
Field work with students	32%	22%	22%	9%	15%	10%	20%
Scholarly research	6%	8%	15%	25%	23%	26%	16%
1-4 hours							
Scheduled teaching	19%	11%	9%	5%	12%	7%	10%
Field work with students	34%	39%	32%	37%	15%	40%	32%
Scholarly research	22%	39%	44%	46%	51%	43%	44%
5-8 hours							
Scheduled teaching	45%	24%	27%	27%	13%	4%	26%
Field work with students	15%	16%	21%	36%	38%	26%	24%
Scholarly research	23%	28%	22%	14%	12%	18%	20%
9-12 hours							
Scheduled teaching	24%	49%	43%	44%	47%	53%	44%
Field work with students	8%	2%	11%	9%	10%	18%	10%
Scholarly research	27%	13%	7%	7%	2%	7%	9%
More than 12 hours							
Scheduled teaching	4%	11%	16%	19%	15%	20%	14%
Field work with students	3%	7%	10%	6%	14%	6%	9%
Scholarly research	20%	9%	9%	8%	3%	4%	9%

DRE = Doctoral Research Extensive, **DRI** = Doctoral Research Intensive, **MI** = Master's Granting I, **MII** = Master's Granting II, **BG** = Baccalaureate General, **BLA** = Baccalaureate Liberal Arts

Source: Faculty Survey

terms of the quantity and quality of their work, are the people who should be preparing the next generation of scholars.

The problem is that there are too few master researchers staffing the education doctoral programs at Doctoral Extensive, Doctoral Intensive and Masters I universities. Recall that Table 11 showed that Doctoral Extensive education schools are the only institutions at which a majority of professors (55 percent) can be described as more or most productive. By contrast, at Doctoral Intensives and Masters I's, fewer than a third of the faculty members—32 percent and 26 percent, respectively—are so rated (Faculty Survey).

Translating the percentages into actual faculty numbers makes this situation even more apparent. The average Masters I school of education has 29 full-time faculty members, while the average Doctoral Intensive has 16 (Demographic Study). This means the average Masters I institution has 7.5 education school faculty members who rank in the "more productive" or "most productive" categories, while the average Doctoral Intensive education school has 5.1. This is a small base on which to build strong doctoral programs.

But the greater difficulty is that the 7.5 highly productive faculty members at Masters I universities have 21.5 colleagues who are less productive, and the 5.1 faculty members at Doctoral Intensive universities have 10.9 colleagues who vary from productive to non-productive. These numbers suggest an education school climate that does not make research a priority, does not put a premium on research productivity in faculty hiring and promotion, does not provide the resources necessary to support research and does not have the critical mass of faculty needed to mount a doctoral program.

The difference in climate between the most research-oriented universities and less research-oriented peers is probably best captured in our conversations with faculty. A junior professor at a high-ranking Doctoral Extensive education school—who had moved from a much lower-ranked institution in the same geographic area—put into words what we observed in our site visits at the most research-oriented universities. She described what was different about her new school; it was important not simply to publish but to publish in the best journals. "There is far more emphasis on where you publish and how that establishes you as a scholar," she said.

Toward this end, she added, "there is far less emphasis on service, and junior professors get a strong message to limit service until you get tenure." What stands out in her

These numbers suggest an education school climate that does not make research a priority, does not put a premium on research productivity in faculty hiring, and does not provide the resources to support research.

description is a set of characteristics we found at many other top research universities: The research focus dominates. Productivity expectations deal not only with numbers of publications, but even more with their quality. The other demands for teaching and service typically placed on junior faculty are reduced to make research possible.

Top research universities not only expect faculty to publish, but to publish in the best journals. Other demands for teaching and service typically placed on junior faculty are reduced at these universities to make research possible.

This is not what we witnessed at other types of schools, or even at the less research-oriented doctoral universities. There is a sharp divide in research expectations. One senior professor at a doctorate granting Masters I education school in the Southwest, speaking about the difficulties in publishing she had encountered, noted, "The hardest part is finding places where you can publish where everything doesn't have to be original research." The emphasis at her school and many others was simply on getting faculty work into print. Another faculty member at the same school had turned down an invitation to present a paper at an international conference; she said heavy teaching loads, service activities and meager travel funds made the paper a much lower priority than other activities. "Why would I go?" she asked. "I only have so much time." Her colleague, faced with growing pressure to publish by the institution and with the same set of competing activities, said simply and sadly, "I don't know when I am supposed to write."

The deans we spoke with at the schools with such profiles generally had scholarly aspirations far higher than their schools could realistically hope to achieve and found it extraordinarily difficult to recruit master scholars, the leading national researchers, to their faculties. Deans often hoped that if they could recruit just one, it would serve as a catalyst for transforming their schools, making them a magnet for attracting others, or permiting them to establish a research center that might serve as an island of excellence. Offering doctorates was invariably part of the plan, an inducement for scholars to come and a base for institutional transformation. In no case did this seem a wise direction for an institution to choose, as it would dissipate the education school's resources, distract the school from the professional and teaching activities at which it might potentially succeed and result in one more inadequate doctoral program.

The conclusion is that most Doctoral Intensive and Masters I universities do not have the faculty resources to offer doctoral programs to prepare education researchers.

Poor Dissertation Advising

Beyond the somewhat abstract issue of capacity to support doctoral programs, it is critical to examine the impact of current staffing on doctoral programs for scholars. Who is actually teaching and advising the current doctoral students? Who is guiding and evaluating them on their dissertations, the research capstone of their doctoral programs?

The answer is that many of the faculty members advising doctoral students today are not productive scholars and lack the skills, knowledge and experience necessary to mentor students in preparing a substantial piece of research (Faculty Survey). Slightly more than one-third of education school professors (36 percent) sit on dissertation committees.

As might be expected, the percentage is highest at Doctoral Extensives (93 percent), followed by Doctoral Intensives (47 percent), and lowest at master's granting universities (16 percent; Faculty Survey). The dissertation committee, typically with three or four members, has the task of assisting and evaluating a doctoral candidate in conceiving, carrying out and completing a significant research study, generally resulting—in the field of education—in a book-length manuscript.

The committee, chaired by the student's dissertation advisor, is charged with advising the student in formulating a research question and developing a research design to answer it. The committee, which must approve the resulting research proposal, then guides, monitors, assesses and often motivates the student as research and writing progress. Ultimately, the committee must approve or disapprove the student's dissertation. To do this work, faculty expertise in scholarship is essential for every member of the committee, even though the dissertation advisor may assume the lion's share of the effort and responsibility.

But this is not the case. Dissertation committees commonly include significant numbers of the lowest-productivity faculty. More than a fifth (22 percent) of faculty who have not published a book or paper, made a conference presentation or received external funding in the past two years nonetheless sit on dissertation committees. More than a quarter of the professors (26 percent) who have only made conference presentations also serve on dissertation committees, as do more than half of the faculty (52 percent) who have accomplished just one of the four research activities (Faculty Survey). Indeed, when asked to identify the most important resources needed to improve graduate education,

Many of the faculty members advising doctoral students lack the skills, knowledge and expectations necessary to mentor students in preparing a substantial piece of research.

TABLE 15

Percentage of Faculty Chairing or Sitting on Different Numbers of Dissertation Committees, by Carnegie Type

Committee	Doctoral Extensive	Doctoral Intensive	Masters I	Masters II
More than 5	34%	15%	7%	15%
10 or more	20%	7%	4%	11%
20 or more	2%	<1%	1%	11%

The percentage of faculty who report being members of 10 or more and 20 or more dissertation committees appears to be the same at Masters II education schools, due to rounding errors. In reality 10.8% of professors at these institutions indicated that they were membersof 20 or more committees and 11.2% sat on 10 or more committees.

Source: Faculty Survey

30 percent of the education school professors surveyed said "faculty colleagues with more research expertise" (Faculty Survey).

The consequences are apparent in the dissertations students produce and dissertation committees approve. Three factors generally result in low-quality dissertations. The first, which has already been discussed, is faculty members lacking the skills and knowledge necessary to supervise a quality dissertation. The second is professors' supervising too many dissertations, intentionally or inadvertently making it impossible to give them the scrutiny they deserve. They become the academic equivalent of mass-produced fast food. The third factor is advisors' and education schools' setting low standards. When this is the rule rather than the exception at an education school, the name commonly given to that school is "degree mill."

Based on conversations with faculty members, supervising and completing three reputable dissertations in one year is a heavy load. It dominates the year, consumes the professor's calendar and changes the way she spends her time.

However, 34 percent of faculty at Doctoral Extensives, 15 percent at Doctoral Intensives and Masters II's and 7 percent at Masters I's chaired or were members of more than five dissertation committees in a single year. Of this group, many reported serving on 10 or more dissertation committees, particularly at Doctoral Extensive (20 percent) and Masters II (11 percent) education schools. There were even some faculty

members serving on 20 or more dissertation committees, most notably at Masters II schools of education (11 percent; Table 15).

These numbers are problematic, not heroic. They are a neon sign, indicating that faculty are not giving student dissertations adequate attention at these schools. In a single year, professors are simply unable to give the time needed to counsel and monitor 10 education doctoral students in the production of 10 high-quality dissertations.

In the course of this study, we heard all sorts of explanations for these numbers, none of them compelling: too many doctoral students being admitted; students piling on to the best, the easiest, or one of a few minority faculty members supervising dissertations; dissertation advising being offloaded disproportionately to junior faculty members or less-productive colleagues in order to free others; the best-funded faculty members buying out of their teaching activities with grant money, increasing the dissertation loads of their lesser-funded colleagues; departments being understaffed in professorial numbers or academic expertise, having only one or two potential dissertation advisors for all of their doctoral students; the education school being used as a cash cow to generate revenues to support the rest of the university; and large numbers of part-time students being enrolled, causing dissertations to remain on the books, but inactive for years on end. Whatever the reasons, the numbers translate into low doctoral standards.[29]

This situation is exacerbated by the fact that excellence in dissertation supervision is usually punished. The professor who is a poor dissertation advisor—unavailable to students, inattentive to their e-mails and phone calls and unwilling to return their work in a timely fashion—is rewarded by having few students interested in working with her. The worse the professor is, the fewer dissertation committees she has to sit on. By contrast, a faculty member who excels in this area is punished by being asked by large numbers of students to advise them on their dissertations. The reward is a passel of dissertation committees.

In short, dissertation loads are now inequitably apportioned. Too many students are being advised by too few faculty members for a panoply of bad reasons. This is no surprise to the institutions where this occurs, as deans and department chairs made clear. These schools of education are willing to diminish quality for the money this dynamic produces or the peace it maintains. It also works for any students who have come to graduate school to obtain a degree rather than an education.

The worse the professor is, the fewer dissertation committees she has to sit on. By contrast, a faculty member who excels in this area is punished by being asked by larger numbers of students to advise them on their dissertations.

Weak Dissertations

We examined a random sample of more than 1,300 dissertation descriptors (400 Ph.D.'s and 920 Ed.D.'s)—titles, authors, sponsoring universities, degrees awarded and page lengths—for the year 2002. We read abstracts for dissertations at institutions rated at the extremes in research productivity and followed up by reading the first 24 pages of a number of the dissertations.[30] In like manner, we also examined the dissertations sponsored by specific faculty members at these schools, those who had chaired what appeared to be two or more high- or low-quality dissertations in that year. We did not seek to compare education dissertations with dissertations in other fields. We did not attempt any systematic assessment of the quality of education dissertations.

Though neither is the norm, embarrassingly poor dissertations can be found at top-ranked education schools and commendable dissertations can be discovered at lower-ranked education schools.

We learned what one might expect. Though embarrassingly poor dissertations can be found at top-ranked education schools and commendable dissertations can be discovered at lower-ranked education schools, neither is the norm. We defined poor dissertations as those that asked trivial or low-level questions, more appropriate to a term paper than a doctoral dissertation; employed research methods or carried out studies inconsistent with or incapable of answering the question posed; exhibited shoddy research methods; collected data with little meaning; analyzed data inappropriately (e.g., a frequent error was using ANOVA instead of MANOVA); drew conclusions inconsistent with the data collected; were badly written in terms of grammar, spelling and jargon; never rose above the level of description; and were so short as to appear stunted and superficial, the sort of thing that might suffice for a class project.

The most troubling finding of this review: A number of institutions routinely produced bad dissertations. An example is a Doctoral Extensive in the southern United States. The education school has a faculty of slightly more than 100. They are low in productivity. In the course of their careers, the faculty collectively has produced 11 books, 164 articles and 308 conference papers, which translates into one-tenth of a book, one and one-half articles and 2.9 conference presentations per faculty member. Professors are offered summer research grants, but in a typical year somewhere from zero to two faculty members will actually receive one. The average faculty course load is high—19 credit hours for professors teaching only graduate students, 24 for those teaching only undergraduates and 21 for those teaching a combination. Ninety-two percent of the faculty have doctorates; most of their degrees come from

less research-oriented universities.

In 2002, this school of education awarded 11 Ph.D.'s. The dissertations tended to be very short, averaging 117 pages. Forty-five percent were under 100 pages, 36 percent were less than 85 pages including appendices, and the briefest was 59 pages. The typical dissertation was a trivial research question, translated into a series of mundane hypotheses and studied via a survey of the perceptions of local area actors—often teachers, school administrators or students—regarding issues such as special education, alternative education or parental involvement in schools. The study might then go on to examine the relationship between these perceptions and a phenomenon such as student suspension rates or achievement test scores. The data would then be subjected to anything from chi square testing to multivariate analysis. The significance of the findings would then be reported as well as their implications for the hypotheses.

In general, the research questions were unworthy of a doctoral dissertation, literature reviews were dated and cursory, study designs were seriously flawed, samples were small and particularistic, confounding variables were not taken into account, perceptions were commonly used as proxies for reality, statistical analyses were performed frequently on meaningless data, and conclusions and recommendations were often superficial and without merit since they were based on the meaningless data collected, and the dissertations were written in cookie-cutter fashion. They followed an exact outline published in the university student handbook listing the five chapters that should constitute a dissertation and the appropriate subsections within each.

The same level of dissertation quality was found at a Masters I school of education in the same region of the country. Reading dissertation abstracts, we found that many of the poorest dissertations were sponsored by the same professors. These faculty members not only sponsored weak Ed.D. dissertations; they were also high-volume dissertation sponsors. For instance, two faculty members at this institution chaired 16 dissertations and also served as members of a number of other committees in 2001 and 2002. Generally, their students produced short dissertations, averaging 103 pages in one case and 111 pages in the other, including appendices, bibliographies and other end matter.

We began looking for professors like these on other campuses. We located them at some of the most research-oriented education schools, but much more frequently at less research-oriented schools. Students

Students seeking quickie dissertations gravitate toward certain types of institutions and faculty members.

seeking quickie dissertations gravitated to them.

In short, there are two problems. First, although some very poor dissertations can be found at the most research-oriented universities, the proportion rises significantly at the less research-oriented universities. Second, although a class of faculty who produce many dissertations of low quality can be found at Doctoral Extensive universities, their numbers grow substantially at the least research-oriented ones. This is just another manifestation of what has already been discussed—universities offering doctorates without the capacity or faculty quality to support them.

Our country has too many under-resourced doctoral programs for the preparation of education scholars.

Conclusion

Our country has too many under-resourced doctoral programs for the preparation of education scholars. This section focused on the major resource shortage—faculty—but inadequate resources take a variety of forms, ranging from insufficient facilities and equipment to a lack of financial aid and research support.

For example, with a few notable exceptions, the schools of education we visited or have known over the years lack the financial aid necessary to provide their doctoral students with adequate research assistantships to attend full time. Fewer than 30 percent of doctoral alumni report that they were able to finance their doctoral studies without working or with a graduate assistantship (Alumni Study).

The differences in doctoral education for full-time and part-time students is stunning. A nationally known scholar at an eminent Doctoral Extensive institution said of his own program that "full-time students get apprenticeships and part-time students get mentoring." More typically, part-time students get much less. As another professor at a less esteemed Doctoral Extensive put it, part-timers "run into class and run out; they have to take care of their families and jobs." They get course work, exams and a dissertation, hardly enough to embark on a research career.

Of faculty interviewed at Doctoral Extensive universities, 65 percent rated the ability to offer more financial aid the top resource needed to do a better job of preparing students at the graduate level. Doctoral Intensive faculty (39 percent) and Masters I faculty (32 percent) ranked it second, and Masters II faculty (33 percent) designated it fifth (Faculty Survey).

At the more research-oriented institutions, the problems are too few assistantships and inadequate funding for each student. At the less research-oriented schools, the difficulty is few assistantships.

Doctoral Extensive universities have the strongest resources for offering researcher preparation programs. This study suggests that, as a class, Doctoral Intensive and Masters I universities are not strong enough to sustain such programs in terms of their missions, hiring practices, faculty quantity and quality, research funding and climate.

In drawing these conclusions, it must be pointed out that they apply to classes of institutions, not to the individual schools they comprise. There are Doctoral Extensive education schools that lack the capacity to offer quality programs, as was discussed earlier in this section, and there are Doctoral Intensive institutions that do offer quality programs. As a rule, we believe Masters I institutions should not be in the business of offering research doctorates.

As a rule, Masters I institutions should not be in the business of offering research doctorates.

A PERFECT STORM: ANATOMY *of a* FAILING PROGRAM

In October 1991, the strongest storm in recorded history struck off the coast of Gloucester, Massachusetts. It came to be called a perfect storm because three separate storms combined to form one disastrous event.

Something akin to this has happened with the nation's programs to prepare education researchers. They have been struck simultaneously by the forces described in the past three sections—the amorphous character of education research; confusion over the purposes of doctoral programs in education and the degrees they award; and the lack of adequate resources to support doctoral education. Those circumstances have weakened most programs and caused many to fail. The result is research training programs staffed by faculty who are not very productive scholars and who lack the experience and expertise to impart to students the skills and knowledge required of productive scholars. These programs lack high, clear and agreed-upon standards for judging the quality of education research. Their resources are insufficient to provide faculty and students with the support necessary to engage in productive scholarship. This section presents a case study of one of those schools and also a comparison of that school with a neighbor noted for its strong doctoral programs in education.[31]

Programs that prepare education researchers are being struck simultaneously by a variety of forces.

Regional University (RU) is a Doctoral Extensive institution in the eastern United States that enrolls more than 25,000 students in its nine schools and colleges. Most of its students come from the counties immediately surrounding the university, though almost 15 percent of the student body comes from abroad. Graduate students make up about one-third of the enrollment at the sprawling suburban campus and the six off-campus satellites. RU looks the way a university is supposed to look, with lush lawns and colonnaded buildings.

Different institutions in the same state allocate resources and faculty assignments differently and with varying impact on the preparation of researchers.

Throughout its history, Regional University has lived in the shadow of one of the more highly rated universities in the country, Major Research University (MRU), a private institution. A significant number of RU staff members and students have to pass by MRU each day on the way to the main RU campus.

RU's education school awards undergraduate and graduate degrees, enrolling more than 3,500 students, about three-quarters in graduate programs. The school employs about 65 full-time and 125 part-time faculty, who are organized into five departments—curriculum and teaching, educational leadership, psychology and counseling, foundations of education, and health.

It is useful to compare this with MRU, which has a graduate school of education with 13 more full-time faculty and a student population—overwhelmingly full-time—of 700, one-fifth the size of RU. The result is that RU has a student-to-full-time-faculty ratio of 54:1 for all students and 40:1 for graduate students. In contrast, MRU has a ratio of less than nine to one for all students in its education school. The dean at RU acknowledged the problem, saying, "I am burning my faculty." RU has too many students per faculty member to offer a quality doctoral program in research preparation, which is dependent on close student/faculty interaction. RU is also heavily reliant on part-time faculty, who teach just under two-thirds of the school of education classes.

Additionally, the RU faculty members have heavy teaching loads. As noted in Part V, 70 percent of Doctoral Extensive professors teach less than eight hours a week. The median and the mode are five to eight hours. At Regional University, the average for senior faculty is 10 hours per week, though the load is reduced for junior faculty, and professors can buy out of teaching with grants. Nonetheless, the higher-than-average load means RU professors have less time for their own research and doctoral advising.

Faculty at the Regional University school of education are not strong in the area of scholarship. The school as a whole received just over $3 million in external support, which is less than a fifth of the funding at MRU. Much of the RU research funding comes from the local school district for data collection and evaluation projects. This contract work produces little in the way of published research, which is reflected in the fact that in the past two years, the RU faculty received no major academic awards, nor did they serve as editors of a major journal. By contrast, nearly one out of every six faculty members at MRU received such recognition.

One RU education school professor put it this way: "I don't think we have a center of excellence in research," meaning there was not one department, program or research center producing excellent scholarship at the education school. Colleagues in arts and sciences agreed. Pointing to poor research expectations and standards at the education school, a humanities professor echoed the sentiments of colleagues: "I am the complaint department [in my program]. Two-thirds of the complainants, I would say, are in the school of education. The kinds of demands and the kinds of rigor that our discipline insists on from the get-go are not the kinds of discipline and the kinds of rigor [education school students] have been prepared for. So they seem to feel that we are a lot meaner than the folks in the education school."

RU enrolls about 275 doctoral students in Ed.D. and Ph.D. programs; the MRU doctoral cohort is roughly the same size. But a major difference between the two schools is that fewer than a fifth of RU doctoral students attend full-time, versus more than nine out of 10 MRU students. RU residency requirements are low. A doctoral student in education psychology said he rejected schools like MRU, as well as programs in the arts and sciences at RU, because he did not want a full-time program. In his words, the RU program "offers a chance to hold a job and have time for a family and still study at night. Students in the [arts and sciences] department of psychology struggle to attend during the day. That isn't for me. Ed psych allows me to get paid well as a school psychologist and attend evening classes." He was not interested in preparing to become a scholar, but instead wanted a credential and greater knowledge to practice his profession. Indeed, one professor noted that even when a research assistantship is available, students often don't take it because they make much more money working off-campus and going to school part-time. Students at Regional University have no time for an apprenticeship with a professor to learn the work of scholarship.

Part-time attendance also leads to high student attrition from the doctoral program. In theory, RU rules require students to complete their degrees within seven years. The RU vice president for academic affairs complains that the education school violates the rule more often than not. Nonetheless, at least one program refuses to waive the requirement, which causes the part-time student who is taking a couple of courses a semester and is not yet at the dissertation stage to leave. Other departments regularly waive the requirement, allowing students to

Part-time attendance can lead to high attrition from doctoral programs at some large universities.

Large regional universities often lack the financial aid to compete for the best and brightest doctoral students, who are grabbed up by smaller major research universities.

pursue doctoral studies for years and years until they give up. The high student/faculty ratio means less time is available for faculty to follow up on student progress.

Even if students were able to attend full time, the overwhelming majority would be unable to take advantage of the opportunity for lack of financial aid to support them. RU has fewer than 10 teaching and research assistantships in education. There are no fellowships. At MRU, there are more than two fellowships and assistantships per student.

The lack of financial support means that RU offers what might be called a wholesale doctoral education rather than the far more desirable retail version. The distinction is that the former is a relatively high-volume, low-personal-contact way to earn a doctorate as students go through doctoral study in groups taking courses and writing exams. They go from work to class to home, spending time on campus only to take classes and handle administrative tasks. The dissertation is the first (and therefore the only) time that most students work individually with a professor over any sustained period.

The latter approach, retail doctoral study, is low-volume, individualized and highly personal. Students also take courses and exams in the retail version of doctoral study, but their primary education comes from faculty mentoring via an apprenticeship. This is where they learn the trade of research, which requires a strong researcher as mentor.

The lack of financial aid also leaves RU unable to compete for the best and brightest doctoral students, who are grabbed up by schools like MRU. Admission standards for RU are low. The average GRE score for RU graduate students in the 2003 academic year was slightly under 400, far below the national average. In comparison, MRU scores are just above 600. RU graduate students have an average undergraduate grade below B, which is surprising because RU requires a minimum of B for admission to the doctoral program. The academic quality is also a troubling aspect of RU doctoral studies. As one professor said, “I don’t think we have a strong doctoral program.” Even in the field the dean picked as the most outstanding—educational psychology—the program is merely a collection of courses augmented by a first-year preliminary exam and a dissertation. However, this program is the most successful in finding financial aid. Wishing there were research assistantships, which faculty see as “unlikely to happen,” the educational psychology program instead cobbles together support for some students—a distinct minority—through work-study, research grants and university scholarships.

The educational psychology program requires students to complete 100 credits beyond the baccalaureate. They must take three specific courses in their first year—Basics of Educational Psychology 1, 2 and 4, dealing with learning, child growth and development, and selected topics to be announced. A look through the course listing shows no course designated as Basics of Educational Psychology 3, nor is there an explanation as to why a "to be announced" special topics class is a must for all students.

Students are also required to take five courses under the banner of research. These include Fundamentals of Statistics, Computer Use in Research, Variance and Covariance Analysis, Multivariate Analysis, and Research and Experimental Design. Four out of five of these courses are about techniques and tools. Only in the fifth course do students learn about carrying out research, meaning they have a maximum of 45 hours of instruction about how to engage in research before undertaking a dissertation. The battery of courses is also limited in content, focusing entirely on quantitative research and ignoring qualitative research, the method of choice for most doctoral student dissertations in the school. When asked why students employ qualitative approaches to research so much more frequently, faculty members said that students and some of their colleagues do not really understand quantitative research, and standards for qualitative research are much less demanding.

Beyond this, students are required to take two doctoral seminars in a foundations of education field; they may choose from a list of six, ranging from educational administration to history of education. This is a distribution requirement that says all doctoral students should know something about history, sociology or perhaps educational administration. All have equal value and the virtue of being fungible. Thirty credits are required in the student's major area, and 12 more in a cognate area in a professional area or single field.

This curriculum is little more than an organized assortment of courses. It does not prepare students to engage in scholarly research. In point of fact, the faculty could remember only a handful of students who went on to professorial careers, most under the guidance of a single RU professor.

The weaknesses of RU's education school are exacerbated—or perhaps caused, in part—by the fact that it is used as a cash cow by the university. As the school's dean said, his school is "a profit-maker for the university." From continuing education alone, he said, millions of

Doctoral coursework at many universities focuses on quantitative research while ignoring qualitative research, the method of choice for most doctoral student dissertations in the schools.

Many colleges and universities dilute their historical commitment to teaching and professional preparation in the quest to produce research, but fail to achieve either aim.

dollars go to the university coffers. RU's vice president for academic affairs confirmed this. She said the school of education was, in fact, not the university priority "highest on the food chain," an approach she saw as common at major universities. But the chief academic officer said that she treats the education school "as appropriately well as I can." That treatment is not, in practice, very good, as the transfer of funds from the education school to other departments higher on the food chain leads to inadequate staffing, high enrollments, low salaries for adjuncts and minimal financial aid for education doctoral students.

The dean of the education school saw research as the only way to generate needed additional funds and an enhanced reputation for his school. He believed that "an institute or center allows us to attract different kinds of money, more money. That's the purpose really—to be an entity that in and of itself attracts more money." The hope is that extramural money can be used to strengthen programs, provide more financial aid and help build an endowment. The vice president for academic affairs saluted the dean's initiative and approach.

Conclusion

The story of Regional University is repeated all over the country. Because research is prestigious and the doctorate is the top degree a university can award, education schools and their faculties, without the human and financial resources to produce either successfully, are expected by their deans and provosts to embrace both. As at RU, the results are poor doctoral programs and low faculty productivity. The irony is that such schools never achieve their goals. The research and doctoral programs are so deficient that their existence only confirms the impressions of faculty outside the education school about the low quality inside. These doctoral programs do not receive sufficient external funding to support their dreams of substantial increases in financial aid or additions to the faculty. These schools find themselves caught between two worlds—a historic commitment to teaching and professional preparation, on one hand, and a quest for research production and preparation of scholars on the other. In order to engage in the quest, they are forced to dilute their historical commitment. In the end, they achieve neither aim.

The shortcomings at RU, and at the majority of education doctoral programs like it around the country, are shown in Table 16, which applies the criteria for excellent research-preparation doctoral programs discussed in Part I. They satisfy none of the nine criteria.

TABLE 16

Criteria for Excellence Applied to America's Doctoral Programs to Prepare Education Researchers, as a Class

Criterion	Generally Meets Criterion	Explanation
Purpose ● Purpose is explicit, focusing on the preparation of education researchers and scholars. ● The field of research is explicitly defined and the skills and knowledge needed by researchers are clearly identified. ● Success is tied to quality of research by graduates and its impact on research, practice and policy.	No	The purposes of researcher preparation programs are confused by the amorphousness of the subject area, the lack of agreed-upon research methods, the absence of quality standards, and uncertainty regarding the goals of doctoral education.
Curricular Coherence ● Curriculum is rigorous, coherent and organized to teach the skills and knowledge needed by researchers.	No	The curriculum is generally an assortment of poorly coordinated courses, including research classes, subject matter courses, electives, a dissertation and a variety of exams, which vary significantly from program to program. Research preparation programs do not provide the integrated experience, depth of study or opportunities to apply classroom theory necessary to prepare quality researchers.
Curricular Balance ● Curriculum integrates the theory and practice of research; apprenticeship is combined with classroom instruction.	No	For most students, the curriculum emphasizes course work with little opportunity for application. Few students are given the chance to engage in an apprenticeship with a faculty member.
Faculty Composition ● The faculty is composed of highly productive scholars with the capacity and commitment to prepare the next generation of researchers. Their research is well funded. They receive competitive awards and fellowships for their work. But most of all, they model high standards in research and are expert teachers, scholars, advisors, and placement agents. They are dedicated to the preparation of their students, the advancement of their fields and the enhancement of their programs, schools and institutions. ● Total faculty numbers and fields of expertise are aligned with curriculum and student enrollment.	No	Only in education doctoral programs at research extensive universities are a majority of faculty highly productive. Research is substantially better funded at these institutions as well. In general, education doctoral programs lack a sufficient number of highly productive and well-funded faculty. This is reflected in the composition of doctoral dissertation committees. Faculty members with the capacity to prepare researchers are disproportionately concentrated in a small number of institutions.
Admissions ● Admissions criteria are designed to recruit students with the capacity and motivation to become successful scholars and researchers.	No	Programs generally admit students with incompatible goals—future practitioners and researchers. The students are commonly offered programs that meet the needs of neither. The curriculum is more research than practice oriented, but watered down to meet the needs of practitioners.
Graduation and Degree Standards ● Graduation standards are high and the degrees awarded are appropriate to the field. ● After graduation, alumni commonly receive major research fellowships and positions in strong universities and research organizations.	No	The degrees initially intended for practitioners and scholars, the Ed.D. and Ph.D., are awarded interchangeably. This blurs the distinction between education for practice and for research.
Research ● Research is of high quality, is well funded, and and is valued by policymakers, practitioners or scholars.	No	Research reflecting the lack of agreed-upon standards is of mixed quality, much more weak than strong. At most institutions, with the exception of research extensive universities, research funding is low and education research is not valued by practitioners, policymakers or scholars. Citation rates for publications are lower than in other fields. There is a troubling tendency for many less selective teacher education programs to defend their absence of rigor and standards on the grounds of being committed to access for underrepresented populations.
Financial Aid ● Resources are adequate to support the program, the faculty who teach in the program, the students enrolled in the program, and and the physical and intellectual infrastructure needed to support the program	No	Financial aid is insufficient to support doctoral students and faculty numbers are inadequate in number to sustain student enrollments.

STRENGTHENING RESEARCH PREPARATION *in* EDUCATION

This study asked a single question: Do current preparation programs have the capacity to educate researchers with the skills and knowledge necessary to carry out research required to improve education policy, strengthen education practice, or advance our understanding of how human beings develop and learn? The answer is that a minority of programs do, but most do not.

There are three major obstacles to creating and sustaining strong programs:

1. The field of education is amorphous, lacking agreed-upon methodologies for advancing knowledge, common standards of quality and shared mechanisms for quality control;

2. Education doctoral programs have conflicting purposes and award inconsistent degrees; and

3. Research preparation programs are under-resourced, with inadequate funding and insufficient faculty expertise.

Education research is of very mixed quality, more weak than strong, with low readership.

The result is a body of research of very mixed quality, more weak than strong, with low readership by practitioners and policymakers and low citation rates by scholars.

As a nation, the price we pay for inadequately prepared researchers and inadequate research is an endless carousel of untested and unproven school reform efforts, dominated by the fad du jour. Ideology trumps evidence in formulating educational policy. And our children are denied the quality of education they need and deserve.

This report offers five proposals to strengthen research preparation in education schools. They come with two caveats. First, this is a report about education research. It does not compare research or research preparation in

Schools of education have direct influence over many aspects of education research and researcher preparation.

education with that in any other field—so it would be a mistake to conclude that the quality of education research and research preparation is better or worse than in other fields.

Second, it would be an error to hold education schools entirely responsible for the quality of America's educational research. There certainly is a good deal of truly terrible stuff in circulation that is called education research. But education schools are just one of a multiplicity of research producers. The others include think tanks; non-profit research firms such as the American Institutes for Research, the Education Testing Service, Rand and SRI International; corporations like McGraw-Hill; professional associations; foundations, government and more.

Of this group the worst offenders have been the growing number of ideological think tanks, overwhelmingly conservative. For the most part, they have not engaged in disinterested research, but rather have collected data to support the policy positions they advocate. Their publications are among the most visible in education because these organizations have been remarkably successful in disseminating, publicizing and getting them into the hands of policymakers.[32]

Here, then, are five recommendations regarding the aspects of educational research and researcher preparation on which schools of education *do* have direct influence:

RECOMMENDATION ONE:
Award the Ph.D. and only the Ph.D. to students who have successfully completed doctoral programs to prepare researchers.
Today, the doctor of philosophy degree (Ph.D.) and the doctor of education degree (Ed.D.), the two doctorates awarded in education, are used interchangeably. This was not the intention when the Ed.D. was created as a doctoral degree for practitioners, an alternative to the Ph.D. for scholars. That distinction was never realized. From the earliest days, the degrees were fungible.

The result is that some schools offer both degrees. Some offer Ed.D.'s solely for students from doctoral programs for school leaders. Some grant the Ph.D. only for researchers. Some, like Harvard, award the Ed.D. to all students completing doctoral programs, whether they are headed for careers as researchers or practitioners. And some, such as the University of Wisconsin, do the reverse, granting the Ph.D. to all doctoral degree recipients. It's a grab bag.

To suggest that the Ph.D. be reserved for researchers is not merely an exercise in tidying up. At the moment, the primary difference

between the degrees is that the Ph.D. has greater status. When possible, this causes practitioners to seek what should be a research degree; as a result, education schools too often must make their programs do double duty, enrolling both practitioners and scholars. So, the practitioners attend programs that emphasize research over practice and scholars take programs that might be described as "research-lite" to accommodate practitioner needs.[33] In the end, neither group receives the education that will best prepare them for their careers.

Reserving the Ph.D. strictly for research is a step in alleviating this problem. Recommendation Three discusses other steps that might be taken.

RECOMMENDATION TWO:
Diversify the research missions of America's colleges and universities; offer programs to prepare education researchers at only Doctoral Extensive universities and selected Doctoral Intensive institutions.

American higher education has developed a unitary conception of research. Rooted in the German universities of the 18th and 19th centuries, it was transplanted to the United States with the founding of Johns Hopkins University in 1876 and reproduced on a mass scale with the rise of the research university. It is a conception of research that prizes the advancement of knowledge for knowledge's sake—embracing basic over applied research, the discovery of knowledge over its application and theory over practice. It has served the nation well in terms of advances in knowledge, most visibly in areas such as science and medicine that yield Nobel Prize-winning breakthroughs.

However, the unitary conception has served higher education less well. The reason is that it has been adopted throughout higher education as the best form of research, the type of research every institution—with the exception of most liberal arts colleges—should aspire to perform. It has been translated into a set of values that holds research to be of higher status than teaching, educating scholars of greater importance than teaching undergraduates and awarding doctoral degrees of greater stature than granting master's, baccalaureate or associate degrees. The most esteemed institutions in higher education are the doctoral granting universities with the highest research productivity and the greatest extramural funding.

This prestige system encourages institutions without the resources to engage in doctoral education to seek doctoral granting authority; gives those whose faculty lack adequate research expertise incentives to push

The most esteemed institutions in higher education are the doctoral granting universities with the highest research productivity and the greatest extramural funding.

If higher education is to remain vibrant, all institutions and their faculties must be engaged in research in the broadest sense of the word.

for publication and research grants; and leads those without the reward structure, culture and essential workload conditions to attempt to establish research centers or recruit eminent scholars in the hope of establishing their research bona fides. The fact that research productivity, research funding and doctoral production play a prominent role in *U.S. News and World Report* rankings also encourages this behavior.

However, if higher education is to remain vibrant, all institutions and their faculties must be engaged in research in the broadest sense of the word. The alternative is for faculty members simply to report the knowledge discovered by others. Colleges and universities would grow stale, if the role of faculty were merely that of academic news anchors. Toward this end, research needs to be redefined in schools of education.

The late Ernest Boyer proposed a means for accomplishing this. In a report for the Carnegie Foundation for the Advancement of Teaching entitled *Scholarship Reconsidered*, Boyer identified four kinds of scholarship—discovery, application, integration and teaching.[34] Traditionally, research and scholarship have been thought of in only one of those categories—discovery of new knowledge. The Boyer model enlarges this notion by recognizing that the application of newly discovered knowledge, the integration of bodies of knowledge and the greater understanding of how knowledge is communicated and gained are scholarship as well.

This suggests a set of scholarly missions for the six sectors of education schools. The Doctoral Extensives, along with the very strongest of the Doctoral Intensives, would focus on the scholarship of discovery, though engaging, too, in the other modes of scholarship as they wished. Our study found these institutions to be the only ones with adequate capacity to offer research preparation at the doctoral level. These institutions would offer the Ph.D. as their highest degree.

Most Doctoral Intensives and Masters I universities would specialize in the scholarship of application and integration. They would grant the master's degree as their highest degree and, when sufficiently strong, these institutions might also offer the Ed.D. for practitioners.

The Baccalaureate colleges and Masters II universities could then focus on their area of strength—the scholarship of teaching. Their highest degree would be the baccalaureate and, when justified, a master's in teaching.

This differentiation of roles might slow the race by institutions with insufficient resources to gain doctoral degree authority and build research programs that focus on the

scholarship of discovery. It could also raise research quality and reduce the costs of higher education by limiting the number of Ph.D. programs to correspond to the need for education researchers and scholars.

RECOMMENDATION THREE:
Establish high and clearly defined standards for education research and doctoral preparation in research; close doctoral programs that do not meet those standards. There are two elements here—research quality and doctoral program quality.

Research Quality: It doesn't matter whether education research is better or worse than research in other fields. This study found that the quality of education research, in and of itself, was mixed; education professors were critical of the quality of research in the field; standards and quality controls for research were absent; and the research was cited and replicated at lower rates than research in other fields.

The National Research Council's Committee on Scientific Principles for Education Research proposed a foundation for education research, consisting of "six guiding principles [that] underlie all scientific inquiry, including education research:"[35]

1. Pose significant questions that can be investigated empirically;
2. Link research to relevant theory;
3. Use methods that permit direct investigation of the question;
4. Provide a coherent and explicit chain of reasoning;
5. Replicate and generalize across studies; and
6. Disclose research to encourage professional scrutiny and critique.

These principles reflect the norms and practices that have evolved over time and govern scientific research. The education research community should embrace them.

Doctoral Program Quality:
Doctoral programs in education fall into two categories—wholesale and retail. In wholesale programs, students attend classes, take exams and write dissertations. In simplistic terms, such programs focus on students as a group, education occurs principally in the classroom, and a student's first opportunity to work closely with a faculty member is usually the dissertation.

In contrast, retail programs also have classes, exams and a dissertation, but the heart of the program is an apprenticeship in which an accomplished scholar teaches the student how to be a researcher. The student is mentored, moving from the most basic research activities to major project responsibility. In comparison with wholesale programs, retail doctoral education is more

Research quality could be raised and costs to higher education reduced by limiting the number of Ph.D. programs to correspond to the need for education researchers and scholars.

individualized; the apprenticeship is the central education experience; and close contact with faculty begins upon entrance into the program.

Retail education is the ideal way to produce excellent education researchers. Unfortunately, most doctoral programs for education researchers are wholesale.

It is the responsibility of universities to ensure that their doctoral programs for researchers are strong.

The most successful programs encountered in the course of this study shared a number of characteristics. They included a clarity of vision regarding the skills and knowledge that students need to become researchers; agreement on the contours, methodologies and quality expectations for their fields; curriculums that mirrored the vision of what researchers need to know in the context of their fields; apprenticeships with faculty members that began early in the doctoral program; highly productive faculty members with major research funding who served as mentors to their students; qualified students who wanted to be researchers; financial aid sufficient to support students' full-time attendance; enrollments and workloads commensurate with faculty numbers and research commitments; and resources such as appropriate facilities, equipment and support services.

In this light, education schools need to rethink and strengthen their research doctoral programs if they are to prepare graduates with the skills and knowledge necessary to carry out the research required to improve education policy and practice, or to advance our understanding of how human beings develop and learn. Part I of this report offered nine criteria for assessing the quality of programs to prepare researchers, and Part II provided the case study of an exemplary program at Vanderbilt University, which demonstrates those criteria in practice.

It is the responsibility of universities to ensure that their doctoral programs for researchers are strong. They need to evaluate existing and prospective programs. Weak programs should be closed; mediocre programs must be strengthened; and excellent programs must be supported. These assessments and plans for action should be accomplished within the next seven years. If universities fail to act, it is the responsibility of the states to do so.

Our nation needs a limited number of education scholars. This study indicates there are too many programs trying to produce such scholars today. States should act not only to maintain quality, but also to reduce expenditures on doctoral education in cases where the returns are insufficient and to redirect those resources to better uses—for

instance, to provide financial aid to students in strong programs.

RECOMMENDATION FOUR:
Establish effective means of quality control within the education research community.
Education lacks the quality standards and controls of most established disciplines. The education research community is characterized by diversity and differences. As noted earlier, the American Educational Research Association (AERA), the largest research organization in education, has not served as an effective arbiter or monitor of quality. It has been unable to lead the profession in developing high, agreed-upon standards for quality research. Its annual conference is more of a bazaar, displaying the best and worst of education research. Indeed, in interviews for this study, the deans of a number of the highest-ranked graduate schools of education lamented how much poor research is presented at AERA.

Change is essential. The Spencer Foundation, the preeminent funder of quality research in education, could take the lead in ameliorating these conditions. Perhaps in cooperation with the National Academy of Education, education's equivalent of the National Academy of Sciences, the Spencer Foundation could create an alternative to the American Educational Research Association annual meeting, inviting only the most distinguished scholars to present their work and, over time, enlarging participation through peer review of scholarly works. The AERA meeting could continue to offer the full range of research in education, weak as well as strong, and the Spencer meeting would serve as an exhibition of the best research, establishing standards of excellence for the field.

Spencer might also fund a study of education journals, which would assess the degree to which they employ rigorous and appropriate standards—growing out of the National Research Council report—in their acceptance and publication of research. Today, while there are well-known hierarchies among academic journals in particular fields, there are no cross-field comparisons. The same kind of study might be done with existing doctoral programs designed to prepare education researchers.

The simple fact is that if strong and clear standards are not set for education research by the education community, they will surely be set by government, which is likely to become increasingly intrusive in the field.

If strong and clear standards are not set for education research by the education community, they will surely be set by government.

By failing to engage policymakers and practitioners, education schools have allowed government, the press and others to seize the initiative on education reform and dismiss education schools as trivial.

RECOMMENDATION FIVE:
Strengthen connections between education research and the worlds of policy and practice; establish closer ties between education researchers and their colleagues in the arts and sciences.

This study found that research programs at education schools are isolated. Their faculty are disconnected from colleagues in colleges of arts and sciences. Their research is not read by policymakers or practitioners.

Education Policy and Practice:
Seeking to win the approval of universities that have historically been critical of their research, programming, staffing and admissions standards, education schools have retreated from the worlds of policy and practice in favor of more academic scholarship. In the first report in this series, this retreat was described as "the pursuit of irrelevance."

The simple fact is that, no matter how much education schools twist and turn, they cannot remake themselves in the image of colleges of arts and sciences. They are professional schools. Like other professional schools, they need to focus on a single social institution—in this case, the P-12 schools. The primary audience for education research should be policymakers and practitioners.

Education schools have paid a very high price for failing to act in this fashion. For a quarter-century, education reform has been a high priority for the country, and education schools should rightly have been the leaders in shaping the national debate and leading the improvement effort. Instead, their unwillingness to engage policymakers and practitioners allowed government, the press, corporations, philanthropists and a cornucopia of reform groups to seize the initiative and dismiss education schools as trivial. This is unfortunate not only for education schools, but for the nation.

The past can't be changed, but a new future is possible. Education schools have the capacity to refocus their research on school policy and practice, to shift some of their teaching activities from the campus to the schoolhouse and statehouse, and to become more involved with policy and practice in their research, teaching and service. A place to begin: the 1990 recommendation by the Holmes Group, an assemblage of education school deans, that education schools create professional development schools—the equivalent of teaching hospitals. These are places where university faculty and students could work together with school teachers and their students to

the mutual benefit of all, providing research opportunities, research training, professional development that melds theory and practice, curricular enrichment and enhanced learning opportunities.

Arts and Sciences Colleges: This does not mean that education schools should turn away from colleges of arts and sciences. While they should not ape these schools, they need to learn from them. Professional schools embody applications of arts and sciences disciplines; some focus primarily on a single discipline, others on several disciplines. For instance, medical schools facilitate applications of the basic sciences; business schools, applications of the discipline of economics. Education, by contrast, is an interdisciplinary field, employing methods of inquiry and bodies of knowledge from across the arts and sciences.

Education schools have been criticized for lagging behind their disciplinary peers in the research methods they employ and in their awareness of the most recent advances in the disciplines.[36] Building stronger relationships with the arts and sciences is a first step in reducing lag time. But collaborations of this sort offer so much more—from the cross-registration of students and team teaching to joint appointments and shared research activities. The first step is meetings between faculty in a university's school of education and their counterparts in arts and sciences. Bag lunches and cosponsored symposia are good ice-breakers. At some institutions, the Ph.D. is the province of arts and sciences and the Ed.D. is lodged in the education school. Creating a joint Ph.D. for students seeking preparation in education research is an essential collaborative activity.

Deans, department chairs and provosts can grease the skids with both conversation and small amounts of funding. The promise of such cross-school efforts is that they can break down current stereotypes, strengthen education schools and build productive relationships that benefit both education faculty and their arts and sciences colleagues.

Conclusion

In the past two reports, I closed with two comments. They are worth reiterating here. First, little in this report is surprising. The short comings of education research and doctoral preparation for research are well known. These shortcomings are being documented and recounted again in this report because they have not been acted upon by the education research community.

Second, in offering this analysis and set of recommendations, which are critical, it is important to

Education schools have been criticized for lagging behind their disciplinary peers in the research methods they employ and in their awareness of recent advances.

recognize that I am not an education school basher. I have spent more than half of my career in education schools. I believe in them, but think they need to be stronger in carrying out education research and preparing scholars for the future. I am convinced that universities are the best place to carry out education research.

However, if education schools do not improve the quality of their work in this area, they are in danger of losing their franchise to carry out education research and to prepare education researchers. The number of organizations engaged in education research is booming, as noted earlier. The expansion of corporate, government and not-for-profit education companies such as Rand, the American Institutes for Research, SRI International and the Educational Testing Service is both a reaction and a threat to education school research.

As for doctoral preparation, the Spencer Foundation offers dissertation and postdoctoral fellowships in education. Spencer is giving more of those fellowships to students and graduates outside of education schools than inside. This means that students prepared in or working in departments and organizations outside of education schools are seen as having a greater likelihood of making a scholarly contribution than those inside.

It is time for education schools and the universities in which they operate to act on what they already know. It will benefit them and it will benefit the country.

DATA SOURCES

A number of studies were conducted in the course of this research. All of the heads (deans, chairs and directors) of U.S. education schools and departments were surveyed (53 percent responded) regarding their school's demographics and practices, as well as their personal experiences, attitudes and values with respect to their own education school and education schools collectively (Deans Survey).

A representative sample of 5,469 education school faculty were surveyed (40 percent responded) regarding their work and, again, their experiences, attitudes and values with respect to their own education school and education schools generally (Faculty Survey). A representative sample of 15,468 education school alumni who received degrees, from the baccalaureate to the doctorate, in 1995 and 2000 were also surveyed (34 percent responded) regarding their careers, their experiences in the schools that awarded their degrees and their attitudes and values regarding education schools (Alumni Survey).

Finally, 1,800 principals were surveyed (41 percent responded) regarding their own education, the education of the people they hire and their attitudes and values with respect to education schools collectively (Principals Survey).

With the exception of the Deans Survey, which included all of the education school heads, the Faculty, Principals and Alumni Surveys used randomly chosen samples of each population. The faculty and alumni samples were stratified by Carnegie type, region of the country and institutional size. The sample of principals was stratified by geographic region and school type. The responses were either representative of the universe or, when necessary, weighted to recreate the universe. A technical manual on the surveys conducted by Synovate is available.

The research also included case studies of 28 schools and departments of education. Teams of academics and journalists conducted site visits at each school for the purpose of going beyond the survey data to paint a more in-depth portrait of the education school. They spent several days on each campus, with the length of their stay dictated by the size and complexity of the school. At each school, they studied its history, mission, programs, admission and graduation requirements, plans, funding and the characteristics of the student body, staff and administration. Particular attention was given to programs in teacher

education, educational administration and research preparation. The choice of schools was designed to reflect the diversity of the nation's education schools by region, control, religion, race, gender and Carnegie type. The participating schools were promised anonymity and those interviewed were promised confidentiality. Only in instances of exemplary practice is the name of any institution mentioned.

There were also inventories of the different programs offered and the types of doctoral degrees awarded by education schools, again stratified by Carnegie type. A random sample of doctoral dissertation abstracts and descriptive characteristics for both Ph.D.'s and Ed.D's. was examined. A demographic profile of education schools was produced by combining the data collected in the Deans Survey with data collected by the National Council for the Accreditation of Teacher Education (Demographic Study). Other materials used included databases created and maintained by the College Board, the Graduate Record Examination, the Educational Testing Service, the National Center for Educational Statistics, the American Association for the Advancement of Sciences, the National Council for the Advancement of Teacher Education, ProQuest Digital Dissertations (Dissertation Study) and the CIRP Freshman Survey, conducted annually by the Higher Education Research Institute at UCLA.

A DESCRIPTION *of the* NATION'S EDUCATION SCHOOLS *by* CARNEGIE TYPE

The nation's education schools can be sorted into three broad Carnegie classes—institutions granting the baccalaureate degree; colleges awarding the master's degree; and research universities granting the doctorate. Within each of these classes, the Carnegie typology identifies two types of institutions. Here's how it works:

Education Schools and Departments in Baccalaureate Granting Colleges

A third of the nation's "schools of education," more accurately described as education departments, are found at baccalaureate-granting colleges. The 401 departments located at these schools primarily engage in undergraduate education, though slightly more than a quarter (28 percent) offer relatively small graduate programs, usually in teaching. The departments are small in size, graduating collectively only 13 percent of the nation's teachers prepared in undergraduate programs, 4 percent of teachers educated in graduate programs and 1 percent of the country's school administrators. Their budgets average $594,000 per year. Education departments at these schools focus more on teaching than research. Course loads are heavy and publication rates and research funding are low.

The Carnegie Foundation for the Advancement of Teaching classification divides baccalaureate colleges into two distinct types of institutions—liberal arts colleges, which award at least half their degrees in the liberal arts, and baccalaureate general colleges, more broad-gauged institutions offering fewer than half their degrees in the liberal arts. Our data show that based on SAT scores, liberal arts colleges, constituting one-third of the education departments at baccalaureate institutions, are more selective in student admissions. They are more academically oriented and more rooted in the arts and science tradition, and a greater proportion of their faculty hold Ph.D.'s. The general baccalaureate

colleges are more concerned with practice and view themselves to a greater extent as professional schools.

Education Schools at Master's Granting Universities

In contrast to baccalaureate colleges, education schools at master's grantng universities tend to be larger. There are 562 schools and departments of education, and they constitute 47 percent of the nation's education schools. They graduate 54 percent of teachers prepared as undergraduates, 62 percent of teachers educated at the graduate level and 57 percent of school administrators earning degrees each year.

The reason for the enormous impact of this sector is not that each school produces so many graduates but that there are so many schools. The typical master's degree granting school of education produces slightly more than 200 teachers and administrators each year. Nearly all of the education schools and departments at these universities (96 percent) offer undergraduate degrees/programs in education. More than nine out of 10 (92 percent) award master's degrees, and 10 percent grant doctoral degrees.

As with the baccalaureate colleges, the Carnegie Foundation divides master's universities into two categories. The first is Masters Colleges and Universities I (MI) and the second is Masters Colleges and Universities II (MII).

The MI's, predominantly regional public universities, award 40 or more master's degrees per year across three or more disciplines, while the MII's—commonly private, tuition-dependent colleges—grant a minimum of 20 master's degrees without regard to field. The MI's have on average more than twice as many full-time and part-time undergraduates, more than six times as many full-time graduate students and over three times as many part-time graduate students. Their budgets mirror the size differential. While both are defined as offering a wide range of undergraduate programs and graduate education up through the master's degree, their education schools differ substantially in the scope of their programs (Demographic Study).

Neither can be regarded as selective in admissions, as measured by SAT scores. The Masters II colleges are a tiny sector of the education school world, consisting of 95 schools of education that together are just slightly ahead of liberal arts colleges in degree production. In contrast, Masters I schools of education account for 467 education schools and graduate 49 percent of teachers prepared in undergraduate schools, 60 percent of teachers prepared in graduate schools and

55 percent of school administrators receiving degrees each year. They have a stronger scholarly orientation than the MII's but are weaker in teaching. The MI is in this sense in an unenviable position. It is weaker in teaching than the best of the MII and baccalaureate schools and weaker in research than the research universities.

Education Schools at Doctorate Granting Universities

The final category of education school is located at research universities. There are 228 doctorate granting schools of education, a smaller number than either baccalaureate or master's institutions, but these schools graduate a larger number of teachers, school administrators and researchers per capita than other Carnegie types. They produce 33 percent of the teachers prepared at the baccalaureate level, 34 percent of the teachers educated in graduate schools, 42 percent of degrees awarded to school administrators and 97 percent of the doctorates granted in education. The typical doctoral institution in our survey produced 263 undergraduate teachers, 69 graduate teachers, 47 school administrators and 24 holders of doctorates.

Of the three sectors, doctorate granting schools place the greatest emphasis on graduate education, with graduate student headcounts slightly exceeding their undergraduate numbers. They are also more research-oriented than any of their peers—their faculty have the highest publication records, receive the most extramural funding, have the highest proportion of doctorates and are least likely to be concerned with practice. Doctorate granting education schools offer the greatest number of programs in the broadest range of fields and have the largest annual budgets of all education schools.

As with master's and baccalaureate institutions, there are two distinct types of doctoral schools of education. One is what the Carnegie Foundation terms Doctoral/Research Extensive Universities (DRE), which award 50 or more doctoral degrees per year in at least 15 disciplines. The other is termed Doctoral/Research Intensive Universities (DRI), schools that either grant annually at least 10 doctoral degrees across three disciplines or at least 20 doctorates overall, regardless of field. Doctoral Extensives, which number 138 schools of education, make up 61 percent of this sector.

Both types of schools are selective in admissions, though the DRE's are the most selective education schools in the nation as measured by SAT and GRE scores. Both offer undergraduate education programs, although not universally. Eighteen

percent of the Doctoral Extensives and 5 percent of the Doctoral Intensives offer strictly graduate programs in education.

The master's degree is, however, nearly universal; it is awarded at 95 percent of the DRE's and 98 percent of the DRI's. This sector also has a near monopoly on the education doctorate with 95 percent of the Doctoral Extensives and 82 percent of the Doctoral Intensives awarding the degree.

Schools of education at Doctoral Extensive universities are in a class by themselves when it comes to research. They are the most research-oriented of the nation's education schools with the highest publication rates, grant dollars for research, proportion of graduate students and faculty with Ph.D.s. They are the only type of education school that stresses publication in hiring faculty members (Deans Survey; Demographic Study).

Cautions

In sum, the Carnegie Foundation classification identifies six different types of schools of education—Baccalaureate General Colleges, Baccalaureate Liberal Arts Colleges, Masters Granting Colleges and Universities I, Masters Granting Colleges and Universities II, Doctoral Intensive Universities and Doctoral Extensive Universities. This study employed the typology throughout as a vehicle for capturing the commonality and diversity among the nation's schools of education.

The reader is offered two cautions in this regard. First, the classes should be viewed as composites, meaning no school of education in any of the six categories can be expected to mirror all of the characteristics of its class. Second, neither the strengths nor the weaknesses discovered in the course of this research regarding a specific class of education school can be ascribed to any particular school within the class.

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This project would not have been possible without the funding of the Annenberg Foundation, Ford Foundation, Kauffman Foundation and Wallace Foundation, which provided funding for dissemination of the reports. For their counsel and support I thank Gail Levin at the Annenberg Foundation; Alison Bernstein, Janice Petrovich, Jorge Balan, Janet Lieberman and Joe Aguerrebere of the Ford Foundation;[37] and Margot Quariconi and Susan Wally of the Kauffman Foundation.

This report is the product of hard work by many individuals. By far the most important is Alvin Sanoff, who spent four years working on this study. My job at Teachers College made it impossible for me to oversee research on a daily basis. Al did that. He was my partner in planning the study. He served as its project manager. He carried out the research design, directed data collection, identified and secured access to potential case study schools, visited schools, assembled and supervised project personnel, oversaw the writing of the case studies, worked with a host of subcontractors and much more. He also reviewed this manuscript; suggested edits, sometimes significant ones to a sensitive author; and was not shy about arguing with me when we disagreed. In the end, I take full credit for all the weaknesses in this report; no doubt, they can be found in those places where I failed to follow Al's advice.

Al and I were assisted in this research by literally thousands of people. Three stand out. Tara Niraula took on the role of project director in spring 2005, overseeing every aspect of the project from its budget and organization to its research and scheduling. Bob Hochstein was with this project from the start and stayed through its conclusion. A good friend and fount of wisdom, he provided sage advice on everything from how we define education schools to the dissemination of our research. And I am grateful to Claudette Reid of Teachers College, who worked with us from the beginning of the project to its conclusion as the administrative director, engaging in a million activities including the oversight of a slew of supplementary research projects and recruiting a number of very resourceful and hardworking graduate students to carry them out, including Jennifer Lee, Anna Stanzione, Jessica Chung, Safara Fisher, Julie Flores, Kelli-Lee Harford, Tamara Mieles, Barbra Miller, Fong Yee Nyeu, Kristina Pawlak, Katrina

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I am particularly thankful to five people who agreed to serve as an advisory board for me on the first two reports in this series—Tony Alvarado, Gaston Caperton, Gerry House, Ted Sanders and Ted Sizer.

I am also grateful to the thousands of deans, faculty, alumni and principals who participated in this research by completing a questionnaire. I am especially thankful to the 28 education school deans who organized our site visits and allowed the research team to prepare case studies of their schools. I owe a debt of gratitude to the many people who permitted us to interview them in the course of the site visits, including education school administrators, faculty, alumni and students as well as faculty and administrators outside the education school. They were generous in giving us their precious time and expertise, even permitting us to call them following site visits so that we could update data, ask additional questions and test conclusions.

I am grateful to the individuals who served on site visit teams, including Steven Bossert, Jim Cooper, Allen Glenn, Anne Lewis, Cecil Miskel, Keith Moore, Judith Phair, Bob Rosenblatt, Bob Rothman, Gail Schneider, Clement Selden, Claire Smrekar, Rochelle Stanfield and Stanley Wellborne. Their reporting, insights and analysis of the schools they visited were essential to this project. On the several occasions when I had the chance to be a member of a visiting team, I found them marvelous companions as well. They were also kind enough to come together as a group as the site visits were ending in order to describe, discuss and compare observations.

I was assisted also by a number of colleagues at Teachers College. Jacquie Spano, assistant to the president, handled all aspects of this project in one fashion or another with her usual style, grace and intelligence. She was joined in this work by Alisa Lawrence of the TC president's office. Laura Scheiber generously took time away from another study she was directing to help us get this project off the ground. Diane Dean, now a professor at Illinois State University, found time beyond a full-time administrative job, a dissertation, a marriage and two children to assist us in the early research, to serve as a site visitor and to read, edit and comment on drafts of this report. Scott Fahey, secretary to the board of trustees, Bill Baldwin, associate dean, and Peter Cookson, now dean of the education school at Lewis & Clark College, served on site visiting teams and helped develop the protocol for visits. Tim Freeman, director of foundation and corporate funding, was instrumental in helping us gain

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I also want to thank Shep Ranbom and Communication*Works* for supervising the dissemination of our research. They are creative, smart and effective.

Arthur Levine
Princeton, New Jersey, 2007

NOTES

[1]Twelve hundred and six is the number of schools, colleges, and departments of education identified in this study. Slightly higher and lower numbers appear in the literature, which may be a consequence of the openings and closings of teacher education programs as well as differing definitions of what constitutes a program. In this study, the universe of schools, colleges, and departments of education is referred to as "education schools" and "schools of education."

[2]Department of Education, National Center for Education Statistics, *Digest of Education Statistics 2003* (Washington D.C.: NCES, 2005-06), table 253. (See also http://nces.ed.gov/programs/digest/d04/list_tables3.asp#c3a_5.)

[3]Alexander C. McCormick, *The Carnegie Classification of Institutions of Higher Education: 2000 Edition* (Menlo Park, Calif.: Carnegie Foundation for the Advancement of Teaching, 200l).

[4]Thomas B. Hoffer, Vincent Welch, Jr., et al., *Doctorate Recipients from United States Universities: Summary Report 2005*, "Appendix Table A-1: Number of Doctorate Recipients, by Sex and Subfield of Study" (Chicago: National Opinion Research Center, 2006), 91.

[5]Lynn Olson and Debra Viadero, "Law Mandates Scientific Base for Research," *Education Week*, 30 January 2002.

[6]The criteria are the elements commonly used in program evaluation in higher education—purpose, students, staffing, curriculum, assessment, and resources. Scholarship is included because it is a staple of graduate education and the means by which fields of study like teaching advance. We developed the template from the literature in the field, drawing on scores and scores of publications and studies of curriculum and teacher education.

[7]"Annual Graduate School Rankings in Education," *U.S. News and World Report*, 5 April 2004.

[8]This is based on an examination of the 2003 vitae of the 10 tenured or tenure-track full and associate professors in the department. Two listed the number of grants they had received, but neglected to include the amounts. One failed to include editorial boards, papers delivered, and awards received. These professors were omitted in calculating the average for the categories they had not included. Several professors collaborated on grants. In these cases, each professor was credited with the grant and the total amount of funding received.

[9]National Research Council, Richard J. Shavelson and Lisa Towne (eds.), *Scientific Research in Education* (Washington, D.C.: National Academy Press, 2002).

[10]Michael J. Feuer, Lisa Towne, and Richard Shavelson, "Scientific Culture and Educational Research," *Educational Researcher* 31, no. 8 (2002): 5. Carl Kaestle, "The Awful Reputation of Educational Research," *Educational Researcher* 22, no. 1 (1993): 26-31.

[11]Feuer, Towne, and Shavelson, "Scientific Culture and Educational Research," 10.

[12]Ellen Condliffe Lagemann, *An Elusive Science: The Troubling History of Education Research* (Chicago: University of Chicago Press, 2000), 238, 240-241.

[13]Lagemann, *An Elusive Science,* 239.

[14]"About AERA," Web site of the American Educational Research Association, http://www.aera.net/aboutaera/?id=177.

[15]Gary Huang, Mindy Rieser, Albert Parker, Judith Muniec, and Sameena Salvucci, "Institute of Education Sciences Findings from Interviews with Education Policymakers," prepared for the Institute of Education Sciences at the U.S. Department of Education (Arlington, Va.: Synectics, 2003).

[16]Ibid.

[17]Ernest V. Hollis, "Toward Improving Ph.D. Programs" (Washington D.C.: American Council on Education, 1945), 6-7.

[18]Ibid., 10.

[19]Ibid., 10-12.

[20]Ibid., 21-22.

[21]In most histories Harvard is given credit for awarding the first Ed.D., but Geraldine Clifford and James Guthrie in their book *Education School* (Chicago: University of Chicago Press, 149) say that Berkeley had an Ed.D. in place in 1921.

[22]Hollis, 86, 96.

[23]Ibid., 98.

[24]Lawrence Cremin, "The Education of the Educating Professions," Nineteenth Charles W. Hunt Lecture, American Association of Colleges of Teacher Education, Chicago, 21 February 1978; Clifford and Guthrie, *Education School,* 151.

[25]Hollis, 102.

[26]Hollis, 98; Clifford and Guthrie, 156; National Center for Education Statistics, *Digest of Education Statistics, 2001* (Washington D.C.: U.S. Government Printing Office, 2003), Table 283 ("Earned Degrees in Education Conferred by Degree-Granting Institutions by Level of Degree and Sex of Students"), 336; U.S. Census Bureau, *Statistical Abstracts of the United States, 2002* (Washington D.C.: U.S. Government Printing Office, 2003), Table 280 ("Master's and Doctorate Degrees Earned by Field: 1971-2000"), 177.

[27]These findings are based on a study conducted in March 2004 of the Web sites of each of the schools in which the dean responded to the Deans Survey. This will be called the Degree Study.

[28]Levine et al., *Educating School Leaders* (Washington, D.C.: CommunicationWorks, 2005).

[29]The most troubling aspect is that the ballooning is most common at Doctoral Extensive education schools, where one would expect the highest standards, yet one in five faculty members are involved in 10 or more dissertations. It is important to note than an even higher proportion of Doctoral Extensive faculty members (21 percent) are chairing or sitting on just one or no dissertation committees (Faculty Survey). This inequity produces two classes of professors and two classes of dissertations.

[30]Dissertations accessed through *ProQuest Digital Dissertations,* wwwlib.umi.com/dissertations (Ann Arbor, Mich.: ProQuest Information and Learning).

[31]Once again, the name and some of the immaterial descriptive details of the two schools described in the case study have been changed in order to disguise their identity.

[32]The Heritage Foundation, founded in 1973 as a "research and educational institute whose mission is to formulate and promote conservative public policies," has a Web site listing over 200 conservative think tanks and policy organizations engaged in research on education. Exemplary of the listings is the New Mexico Independence Research Institute, which seeks to advance education by providing "high quality scientifically based policy research which fosters personal responsibility, limited government, and free market economics" (http://policyexperts.org/organizations/organizations_results.cfm).

[33]The watering-down was documented in *Educating School Leaders*. That report also called for eliminating the Ed.D. degree on the grounds that future school leaders might better be prepared with a terminal master's degree akin to the master's of business administration (M.B.A.). It would be a two-year program, consisting of classes in education and leadership, clinical and academic instruction, and an apprenticeship and mentoring. Called the master's in education administration (M.E.A.), it would be a terminal degree for school leaders.

If institutions decide to retain the Ed. D., this new report, *Educating Researchers*, urges that it be defined as a doctorate for practitioners.

[34]Ernest Boyer, *Scholarship Reconsidered: Priorities of the Professorship* (San Francisco: Jossey-Bass, 1990).

[35]NRC (Shavelson and Towne, 2002), 2, 3-5.

[36]Lagemann, *An Elusive Science,* 241.

[37]Soon after this study began, Joe Aguerrebere became president of the National Board for Professional Teaching Standards, where he continues to serve.

[38]Tim Freeman is now vice president at the Woodrow Wilson National Fellowship Foundation.

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EDUCATING RESEARCHERS

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BY ARTHUR LEVINE

EDUCATING RESEARCHERS

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The Education Schools Project

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PREFACE

This is the third in a series of policy reports on the results of a four-year study of America's education schools. This report focuses on the need for quality education research and on the preparation of the scholars and researchers who conduct it.

After more than two decades of a school improvement movement, education research, traditionally an academic matter of little public interest, has taken on new importance. In today's assessment-driven, standards-based school systems, it is essential to be able to measure what students learn. It is also critical in a time when a cornucopia of reform measures are being touted and a plethora of improvement initiatives are being undertaken to know what works. In an era when the nation needs a more educated population to compete globally and sustain a democratic society, we need to advance our knowledge of teaching and learning. In an age when our children need higher-level skills and knowledge than ever before to get a decent job, it is important to understand what educational policies and practices are most effective.

There is widespread disagreement among policymakers, researchers and practitioners about what constitutes good research and how to prepare education researchers.

Hand in hand with our need to find answers to the educational challenges that face us, we need to agree on what constitutes "good" research and on how best to prepare education researchers, the next generation of scholars, to study education and to teach in the nation's universities and colleges. Today, researchers, policymakers and practitioners disagree about both subjects.

This is the context for the third report. The first focused on the education of school administrators. The second dealt with the education of school teachers. This third report examines the quality of education research and the preparation of education scholars and researchers.

Education schools have strengths that go unrecognized by their detractors and they have weaknesses that they are unwilling to acknowledge.

The nation's 1,206 schools, colleges and departments of education constitute a sprawling enterprise, located at 78 percent of all four-year colleges and universities.[1] They award one out of every 12 bachelor's diplomas; a quarter of all master's degrees; and 15 percent of all doctorates, more than any other branch of the academy.[2]

They have been the subject of mounting criticism over the past decade from academics, foundations, think tanks, professional and scholarly associations, and government. This four-year study is intended to go beyond the usual, untested assertions of education schools by critics and the too-often defensive posture of the schools themselves. The simple fact is that education schools have strengths that go unrecognized by their detractors, and they have weaknesses they are unwilling to acknowledge.

This study began with the belief that an insider and president of a well-known school of education could speak candidly to the education school community and, while the findings would doubtless spark disagreement, they could not be dismissed as the work of a know-nothing or an ideologue. I asked an education journalist whose work has focused on higher education to join me in the project, both to counter any impression that the study was an insider's whitewash and to give credibility to any positive findings of the research. Alvin Sanoff, former *U.S. News and World Report* assistant managing editor and senior staffer on the magazine's annual rankings projects, served as project manager for the study.

This study is unlike any other I have conducted. It quickly became apparent that in today's highly charged environment, those interviewed for this study had less interest in "truth telling" than in defending their positions. Repeatedly, members of the education school community asked for a compelling defense of their schools and those external to the academy requested a stirring condemnation. Insiders worried that any criticism would provide fodder for their opponents and outsiders feared any praise would protect the status quo.

Our work is neither the defense desired by some, nor the attack sought by others. It is an effort to produce a candid assessment rooted in extensive data collection, supplemented by past research and years of personal experience in the field. The aim is to let the data speak for themselves and to allow the chips to fall where they may.

A number of studies, described in Appendices 1 and 2, were carried out in the course of this research. National surveys were conducted to examine the perspectives of deans, chairs and directors of education

schools (referred to in this report as the "Deans Survey"); education school faculty (referred to as "Faculty Survey"); education school alumni (referred to as "Alumni Survey"); and school principals (referred to as "Principals Survey").

The research also includes case studies of 28 schools and departments of education. These sites were chosen to reflect the diversity of the nation's education schools by region, control, religion, racial composition, and gender makeup, and by the Carnegie Foundation's institutional classifications—the traditional typology used to categorize institutions of higher education, which makes it possible both to distinguish among colleges and universities and to group them according to their shared characteristics (Table 1; see Appendix 2 for a fuller description of the Carnegie classifications.)[3] Participating schools were promised anonymity, and individuals interviewed were guaranteed confidentiality. Only in instances of good practice are the names of schools mentioned.

In addition, the project team oversaw a series of studies on the characteristics of education schools (referred to as "Demographic Study"), the programs they offer, the credentials of their faculty and the degrees they award, as well as an examination of doctoral student dissertations. Databases from other organizations supplemented this research.

The study began with the belief that it made no sense to study the nation's 1,206 education schools as a uniform entity without acknowledging their differences or to view them separately without recognizing their commonalities. It is clear that there is no such thing as a typical education school. Their diversity is extraordinary. They are both free-standing institutions and subunits within larger colleges and universities. They are for-profit and not-for-profit, public and private, sectarian and non-sectarian. They are large and they are small, undergraduate, graduate, and combinations of both. Some are departments of education that offer only programs to prepare teachers. Others are colleges of education with scores of programs in a variety of subject areas, covering education 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.

Throughout this research, deans, professors and others familiar with the nation's colleges, schools and departments of education told the researchers the challenge would be to make sense of the diversity of pro-

Education schools differ in their emphases on teaching and research. Some model themselves after professional schools; others favor the graduate school of arts and sciences model. Most try to blend both.

Deans, professors and others note that it is difficult to make sense of the diversity of programs and settings lumped under the banner of schools of education.

grams and settings that are lumped together under the banner of schools of education. In truth, the name conceals as much as it reveals.

Education schools include a very small number of specialized and free-standing institutions such as the Bank Street College of Education and Teachers College. There are also a small but increasing number of for-profit and online institutions such as the University of Phoenix and Kaplan's new education school. None of these were included in the research because they are anomalous; traditionally, education schools are not-for-profits and subunits within larger universities. It was also useful to omit Teachers College from this study to eliminate the appearance of bias on the part of the author. This study focuses on the rest of America's departments, schools and colleges of education located in non-profit institutions of higher education.

Readers will notice that throughout the text that follows, I use the pronoun "we" rather than "I." This is because the study was the work of many—a project team and thousands of research participants. The project had the support of the Annenberg, Ford and Kauffman foundations. The Wallace Foundation provided additional funding for the dissemination of this report, as discussed in Appendix 3. I am grateful to them all.

Since beginning this study, I have moved from the presidency of Teachers College, Columbia University, to the presidency of the Woodrow Wilson National Fellowship Foundation. The Woodrow Wilson Foundation provides an opportunity to continue and expand this study of education schools and to develop implementation strategies for its findings and recommendations.

Arthur Levine
Princeton, New Jersey

TABLE 1

Definitions and Characteristics of the Six Carnegie Types of Colleges and Universities

Throughout this report, schools of education are differentiated according to the "Carnegie type" of the college or university to which they belong. (See Appendix 3 for a full explanation of types.) In the table below, definitions of Carnegie types are on the right (percentages add up to 102% owing to rounding); information on education programs is on the left.

Baccalaureate Granting Colleges

401 departments of education are located at baccalaureate colleges, which are schools primarily engaged in undergraduate education. These institutions do not offer doctoral degrees.

Baccalaureate General
- 268 schools of education
- up to half of all degrees awarded by the college are in the liberal arts

Baccalaureate Liberal Arts
- 133 schools of education
- more than half of degrees awarded are in the liberal arts

Master's Granting Universities

562 schools and departments of education, constituting 47 percent of the nation's education schools, are located at master's level institutions. Of these, 13 percent offer doctoral degrees in education.

Masters I
- 467 schools of education
- predominantly regional public universities
- award 40+ master's degrees per year across 3+ disciplines
- tend to be much larger in enrollment than the Masters IIs

Masters II
- 95 schools of education
- mostly private, tuition-dependent colleges
- grant at least 20 degrees annually without regard to field

Doctorate Granting Universities

228 schools and departments of education are located at doctorate granting universities. Of these, 89 percent offer doctoral degrees in education.

Doctoral Extensive
- 138 schools of education
- award 50+ doctoral degrees per year in at least 15 disciplines

Doctoral Intensive
- 90 schools of education
- award at least 10 doctorates across three disciplines annually (or at least 20 doctorates overall, regardless of field)

Source: McCormick, *The Carnegie Classification of Institutions of Higher Education: 2000 Edition* (Menlo Park, Calif.: Carnegie Foundation for the Advancement of Teaching, 2001)

A HEATED DEBATE

Until recently, the preparation of education researchers and scholars would have seemed a fairly esoteric matter. After all, preparing education scholars is a rather small enterprise. Less than a tenth of the nation's colleges and universities and only 24 percent of all education schools (290) award doctoral degrees—the traditional credential for researchers in the academy (Table 2).

Relatively few people receive doctoral degrees in education—6,229 were awarded in 2005, and the number has dropped every decade since 1980. This amounts to 14 percent of all doctorates granted in 2005 (Table 3). And of the doctoral degrees awarded in education, only 43 percent were in research.[4]

Historically, the interest quotient for education research has been low. Indeed, the late Ernest Boyer, who served as U.S. Commissioner of Education in the Carter Administration, said the eyes of members of Congress and their staffs would glaze over in seconds at the mere mention of education research. When Boyer was running late and needed to bring a Capitol Hill meeting to an instant close, he knew just how to do it. This was, Boyer joked, the real power of education research in Washington.

But the attitude toward research has changed profoundly in recent years, reflecting equally profound changes in the nation. As America has moved from an industrial to an information economy, we have demanded that our schools shift their focus from establishing common processes (e.g., entry at age five, 13 years of instruction, 180-day years and 40-minute classes) to achieving common outcomes. The result has been revolutionary, forcing schools to shift their emphasis from teaching to learning and from teachers to students. Making this change demands answers to an array of as-yet-unanswered, and often unasked, research questions: What curriculum, what pedagogy, what teacher preparation,

Revolutionary changes in education have created new demands for research that answers questions about what works to improve teaching and promote student learning.

TABLE 2

Percentage and Number of Institutions Awarding Education Doctorates, by Carnegie Type

Program Type	Number of institutions offering	Percentage of Institutions Offering
Doctoral Extensive Universities	131	95%
Doctoral Intensive Universities	74	82%
Masters I Colleges & Universities	83	18%
Masters II Colleges & Universities	2	2%
Total of Doctoral and Masters Universities with Education Schools	290	37%
Total of All Education Schools *(Including baccalaureate colleges)*	**290**	**24%**

Source: Deans Survey

More research is required to identify differences in how students learn and under what conditions students are most likely to learn.

what calendar, what mix and number of students and what finances best promote student learning? Under what conditions, with which populations, and in what subject areas is this true? How can student learning be effectively assessed?

At the same time, to compete in an increasingly global economy, it is essential that all of the nation's children develop higher levels of skills and knowledge than ever before in history if they are to succeed. The fastest-growing jobs demand more education, and jobs requiring low levels of education are moving abroad. This requires research on student achievement—identifying differences in how students learn, determining how different subjects are learned, establishing the conditions under which achievement and persistence in education are most likely to occur, and developing teachers' abilities to promote higher-level learning in their students.

Meanwhile, new technologies have created another research agenda. Brain research is advancing quickly. Each day we are discovering more about how human beings develop and learn. The challenges for education research and development are how to create software geared to differences in student development and learning styles; how to bring that software to our schools; and how to make it serve our children most effectively.

Changing demographics have raised still other research questions. America, as a nation, is aging, chang-

ing color, moving to the suburbs and arriving in large numbers from abroad. With a tidal wave of teacher retirements facing the schools, what are the dimensions of the teacher shortage; what is the best way for states to fill their classrooms with quality teachers; how should teachers be prepared; how should current teachers be educated to meet the demands of a changing world; how can teacher impact on student learning be assessed; and what types of teachers are most effective at promoting student learning?

The fastest-growing populations in the country are those that historically have had the lowest educational attainment rates. What are the causes, and what policies and practices are most effective in keeping these students in school and raising their achievement levels? How do we successfully teach reading and math to students with low levels of basic skills in our cities and rural areas? With an increasing proportion of students coming to school speaking a language other than English, what is the most effective way for them to learn English?

One question encompasses all of these areas of concern: After a quarter-century of a national school reform movement in which scores and scores of improvement initiatives have been attempted, what works in raising student achievement?

The answers to these questions have not been forthcoming. As a result, education policy in America has become a matter of ideology. The right, the left and single-interest groups are locked in a white-hot, self-righteous battle over the directions our schools need to take. There has been little rigorous research to produce empirical evidence in support of any position.

Nowhere has the importance of this research and the frustration over its absence been clearer than in the No Child Left Behind law (NCLB), which went so far as to prescribe appropriate methods for carrying out education research. The words "scientifically based research," or close approximations thereof, appeared more than 100 times in the reauthorization of the Elementary and Secondary Education Act (popularly known as "No Child Left Behind"). Such words were used in everything from provisions on technical assistance to schools to the selection of anti-drug-abuse programs.[5]

The rationale offered by the legislation's authors: After almost 20 years of educational reform, the country needed to know which of the myriad policies and practices that had been tried actually worked. This required rigorous, scientifically based research relying principally on random controlled trials, the gold

The No Child Left Behind law has raised the profile of education research by calling for "scientifically based research" to help determine effective educational strategies.

NCLB's prescription brought a loud and impassioned response from the education community, including allegations of ideological censorship and government intrusion.

standard for research studies. The authors of NCLB believed there was a paucity of such research in education at the time the bill became law.

The federal research prescription brought a loud and impassioned response from the education community. Since the passage of NCLB, we have heard critics reject the prescribed methodology of "scientifically based research" and the accompanying assessment of the condition of education research. The new research requirements are characterized as representing ideological censorship and opposition to the liberality of education schools. What No Child Left Behind termed "scientifically based research" was the most expensive form of research, which few education schools could afford. Qualitative research, the most common methodology in education and one rejected as not scientifically based, was said to be a more appropriate way to answer some research questions.

There also have been conspiracy theories: The Republican White House and Congress created the new requirements to shift research funding from education schools to conservative think tanks. By criticizing the methodology of much of the existing education research, the government could ignore undesired findings. The scientifically based research requirement would allow government to censor future research. Some very controversial questions cannot be answered with random trials, so to impose such a methodology would make the questions unaskable and unanswerable. The classic example is the effect of teacher salaries on student achievement because teachers cannot be randomly assigned to different salary levels.

For some, the effort to dictate research methods constituted government intrusion into academic freedom, curtailing the university's primary mission of discovering and

TABLE 3

Number of Education Doctorates Awarded, by Decade, 1920-2005

1920	48
1930	158
1940	469
1950	953
1960	1,590
1970	6,884
1980	7,941
1990	6,502
2000	6,830
2005	6,229

Source: Hoffer et al, *Doctorate Recipients from United States Universities: Summary Report 2005* (Chicago: National Opinion Research Center, 2006), Table 5, p. 45

disseminating truth. For others, "scientifically based research" was mild McCarthyism, an attempt to show the folks at home that their representatives in Washington were working—by labeling as deleterious to the country something in an area of intense national interest, such as education, and demanding that it be changed.

A Study

Because of the NCLB provisions, the subject of educational research is electric. There is a hunger for research to guide policy and practice. The differences of opinion about how that research should be conducted and about its current state are profound. The politics of what would ordinarily be an obscure and apolitical subject outside the academy are polarized. Education researchers and policymakers are cynical about each other's abilities and motivations.

In this context, this report examines the state of the programs that prepare education researchers in America and, by extension, considers the quality of educational research. It focuses on how researchers are educated rather than on the outcomes of that education in terms of graduate achievement. Measuring outcomes of researcher preparation programs was not within the scope of this project, given the wide variation in results within single universities and the large disparities in standards for hiring, promoting, granting awards and publishing in different education specialties.

This study asked a single question: Do current preparation programs have the capacity to equip researchers with the skills and knowledge necessary to carry out research that will strengthen education policy, improve practice or advance our understanding of how humans develop and learn? This study offers a nine-point template for judging the quality of researcher preparation programs.[6]

1. Purpose: The program's purpose is explicit, focusing wholly on the preparation of researchers; the skills and knowledge required of a researcher are clearly defined; and the definition of program success is rooted in the quality of the research produced by graduates and its salience for policymakers, practitioners and/or scholars.

2. Curricular coherence: The curriculum mirrors program purposes and goals. Rigorous and coherent, it is organized to teach the skills and knowledge—both theory and its application—that researchers need.

3. Curricular balance: The curriculum integrates the theory and practice of research, balancing study

in the classroom with an apprenticeship—an experience of increasingly responsible work with faculty on research.

4. Faculty composition: The faculty comprises highly productive scholars with the capacity and commitment to prepare the next generation of researchers. Their research is well funded. They receive competitive awards and fellowships for their work. Most of all, they model high standards in research and are expert teachers, scholars, advisors and placement agents. They are dedicated to the preparation of their students, the advancement of their fields and the enhancement of their programs, schools and institutions. Criteria for hiring and promotion reflect these values. The size of the faculty is also appropriate to the number of students enrolled.

5. Admissions: Admissions criteria are designed to recruit students with the capacity and motivation to become successful researchers.

6. Graduation and degree standards: Graduation standards are high, students are well prepared for careers in research and the degrees awarded are appropriate to the research profession. After graduation, alumni commonly receive major research fellowships and positions in strong universities and research organizations.

7. Research: Research carried out in the program is of high quality, receives ample external funding and is driven by the needs of policy, practice and/or scholarship.

8. Finances: Resources are adequate to support the program, the faculty who teach in the program, the students enrolled in the program and the physical and intellectual infrastructure needed to support the program.

9. Assessment: The program engages in continuing self-assessment and improvement of its performance.

Throughout this study, terms such as "model," "strong," "inadequate" or variations thereof are used to describe programs. A model or exemplary program is one that substantially meets all nine criteria. A strong program is one that substantially satisfies most of the criteria. An inadequate program is defined as one that fails to achieve most of the criteria or has a fatal flaw, such as having faculty who do not publish.

Four themes emerge from this report. First, there are excellent education researcher preparation programs at universities across the country. In fact, there were relatively

more of these than excellent school leadership or teacher education programs (see the previous two reports in this series). They are concentrated in research extensive universities. Part II of this report presents one example of excellence in researcher preparation.

Second, as Part III indicates, research preparation programs in general are weakened by the condition of education as a field. It lacks focus and has amorphous boundaries. Agreement about appropriate research methodologies and standards is absent. And the research is little cited by scholars or read by practitioners and policymakers.

Third, researcher preparation programs and the degrees they award suffer from confused and overlapping purposes. Too often, they provide the same program to meet the differing needs of future researchers and practitioners, and they arbitrarily award Ed.D. and Ph.D. degrees to mark completion of those programs. Part IV outlines this concern.

Fourth, researcher preparation programs are undermined by inadequate resources—too little money and too few faculty qualified to teach in these programs. The result is programs attended by part-time students and staffed by professors who lack the research experience to prepare future researchers or supervise a dissertation. Parts V and VI explore the resource issues and provide an example of the kind of weak program perpetuated when scarce resources, lack of research standards and indistinct purposes coincide.

Research preparation programs and the degrees they award suffer from confused and overlapping purposes.

AN EXCELLENT PROGRAM

The condition of the programs that prepare education researchers in America is reminiscent of the little girl with the curl: When they are good, they are very, very good and when they are bad, they are horrid. We saw excellent doctoral research programs from one end of the country to the other, from Boston College in Massachusetts to Stanford University in California. This section profiles a program in between—the special education doctoral research preparation program at Peabody College, Vanderbilt University, in Nashville, Tennessee.

Each of the excellent programs we saw was unique. For example, the Boston College program was rooted more in public schools and practice than most other programs, while Stanford's had a stronger connection with the university's graduate school of arts and sciences.

However, excellent programs shared a number of characteristics. They were committed to research preparation; had clarity of vision regarding the skills and knowledge students needed to become researchers; agreed on the contours, methodologies and quality expectations for their fields; created curriculums that mirrored the vision of what researchers need to know in the context of their fields; offered apprenticeships with faculty that began early in the doctoral program; were staffed by highly productive faculty with major research funding who served as mentors to their students; admitted qualified students who wanted to be researchers and provided financial aid sufficient to support their full-time attendance; had enrollments and workloads commensurate with faculty numbers and research commitments; and provided other resources such as appropriate facilities, equipment and support services.

Typical of the strongest programs was the doctoral program in special education at Vanderbilt. The education school, George Peabody College, enrolls

Excellent programs share many characteristics, including a commitment to research preparation, clarity of vision of what it takes to be a good researcher and appropriate resources to support research.

The Vanderbilt special education Ph.D. program is unabashedly research-oriented; it expects graduates to go on to careers in the academy or government.

1,101 undergraduates, 308 master's students and 301 doctoral students. Nineteen percent of Peabody graduate students are enrolled in special education, a concentration the college began offering in the early 1950's that includes three areas: high-incidence special education, incorporating learning disabilities and emotional/behavior disorders; severe disabilities, including hearing and visual impairments; and early childhood special education.

This program typically enrolls eight to 10 new doctoral students each year, although occasionally the number is higher. The overwhelming majority of students are women, ranging in age from 23 to 45. Students generally have backgrounds in special education, education or psychology; most have experience as classroom teachers. Their GRE scores, in the mid-1100's on the verbal and quantitative portions of the exam, are lower than the average for Peabody, but considerably higher than the national average for graduate students in special education. Peabody's dean is pressing for a rise to 1200, which will require the special education faculty to create a new program catering to younger students, more recently graduated from college, who tend to have higher scores on the GRE.

Even without the change, admission to the doctoral program in special education at Peabody is highly competitive. For the entering class of 2003, 13 students were admitted. Of these, 11 chose to enroll and a 12th deferred admission for a year, for an extraordinary 92 percent yield rate. Indeed, the special education program is ranked number one in the country by *U.S. News and World Report*.[7]

The Vanderbilt special education Ph.D. program is unabashedly research-oriented. It expects students to produce research as graduate students and to go on to careers in the academy or government. A faculty member interviewed at another top-ranked school in this field complained that his program "loses students all the time to Vanderbilt." He described Vanderbilt as "a high-powered research place," noting that his program did not "do as good a job in preparing people for [faculty positions in] Research I [Doctoral Extensive] universities."

Students are expected to attend full time; all admitted students receive full financial aid packages, typically tuition plus a stipend of $1,200 per month for at least two years, to make it possible for them to enroll full time, though many still apply for student loans to supplement the aid package. Much of the support is made possible through U.S. Department of Education training grants and faculty extramural

research funding. There are also honors, diversity and dean's fellowships for the most outstanding students admitted to the program.

In exchange for the full aid packages, all doctoral students are required to work 20 hours per week as research assistants, a commitment regarded as an apprenticeship in research and, therefore, a primary part of the doctoral education experience. Accordingly, full support is viewed as essential both for getting the students the special education faculty want and offering them a rigorous and intensive graduate education. Still, the arrangement is a struggle for the institution to sustain financially, and faculty wish the high cost of Vanderbilt tuition, $1,155 per credit, were lower.

Most students complete the doctoral program, including their dissertations, in three to four years. The formal program requires 72 credit hours of course work. Virtually all students, however, enter with a master's degree, typically arriving with approximately half the credits completed. Hence, many students require just two years to finish the 36 hours outstanding.

The remaining course work covers the content of the doctoral field, supervised college teaching and a heavy dose of research preparation, including statistics, research design in special education, qualitative methodology, single-subject research methodologies in special education, contrasting research methodologies in special education and implementing research in special education. The program is competency-based, so beyond taking courses, students must demonstrate mastery in each of these research areas as well as in college teaching. The university, however, has few teaching opportunities for doctoral candidates in special education, so the department is attempting to create a program in which local teachers would take courses from its doctoral students at reduced rates—a situation viewed as a plus for both the teachers and the graduate students.

The program includes a three-semester proseminar. The first semester focuses on writing different types of research; the second emphasizes research design; and the third stresses grant writing and establishing a research program. All students are required to write a grant, and there is a small pot of money available for student-initiated studies. All students also write articles with the expectation that they will have published at least one paper as senior author before they graduate.

To earn a degree, students must pass three written qualifying exams, prepare and defend a major paper and write and defend a dissertation. They must complete all

To earn a degree, the students must pass three written qualifying exams, prepare and defend a major paper and write and defend a dissertation.

While the formal requirements are substantial, the heart of the program is the apprenticeship.

of the requirements, except for the dissertation, within four years. A strong incentive to complete the degree is that federal training grants have to be repaid, if the student fails to graduate.

While the formal requirements are substantial, 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.

The apprenticeship is possible for four reasons. First, faculty in special education have light teaching loads—two courses per term—and, as a result, have sufficient time to give to doctoral students. With grant money, faculty can buy out of one course each term, so most special education faculty teach only two courses each year, one undergraduate and one graduate.

Second, there is a high faculty-to-doctoral-student ratio. Given that the department has 16 full-time faculty, the dissertation load per professor is no more than two a year. More common is one or none in a given year.

Third, faculty members are top scholars in their fields, so they have the skills and knowledge to prepare students for research. They are also extraordinarily productive. In 2002, the average associate or full professor had, at this point of his or her career, published 2.5 books and was sole author of 1.7 book chapters and 6.7 articles. He or she had delivered 8.8 refereed papers or invited speeches and was editor of or sat on the editorial boards of five journals.

There were also software and test authorships. The average professor had 4.4 active grants, totaling over $3.25 million. Most had long lists of honors and awards for their publications and career achievements. And 90 percent had spent almost three years, on average, as schoolteachers or counselors, most commonly in the area of special education, before entering the academy.[8]

Fourth, faculty are supported in their scholarly activities. For instance, an administrative assistant, knowledgeable and experienced in federal grant making, works with professors preparing grant proposals.

She takes the lead on logistics, budgets and numbers and other routine but laborious matters related to successful proposal writing. The results show: Peabody has an excellent track record in winning special education grants from Washington.

Because of this approach, Peabody graduates are eagerly sought for faculty positions in special education programs around the country. As one student put it, "This program gives me prestige when I go out there. I am head and shoulders above others because of the research reputation of Peabody."

Over the past decade, approximately two out of three graduates have gone on to become college and university professors. In 2003, students were hired at schools ranging from the University of Wisconsin, Madison to Samford University. When asked why a number of students went to work at less research-oriented schools, the department chair said it was largely a matter of self-selection. After watching their professors and the amount and kind of work they do, some graduates opt not to work in research universities and others are required by personal circumstances to look for employment in a particular location. In any given year, moreover, a limited number of faculty positions are available at the top research universities, even though special education as a field claims to have a shortage of potential professors prepared to engage in quality research.

Conclusion

Using the nine criteria presented in the previous section, Table 4 summarizes what Vanderbilt demonstrates about the ingredients that make for strong research preparation.

Over the past decade, approximately two out of three graduates have gone on to become college and university professors.

TABLE 4

Criterion for Excellence Applied to Exemplary Doctoral Program to Prepare Researchers (Special Education at Vanderbilt University)

Criterion	Generally Meets Criterion	Explanation
Purpose • Purpose is explicit, focusing on the preparation of education researchers and scholars. • The field of research is explicitly defined and the skills and knowledge needed by researchers are clearly identified. • Success is tied quality of research by graduates and its impact on research, practice and policy.	Yes	The goal of the program is unambiguous—the preparation of top special education researchers. The field and its domains are explicitly defined, as are the methodologies for advancing them. The skills and knowledge needed by a quality researcher/scholar in the field are clear. The success of the program is measured by faculty productivity, grant support, research salience and the achievements of graduates.
Curricular Coherence • Curriculum is rigorous, coherent and organized to teach the skills and knowledge needed by researchers.	Yes	The curriculum mirrors program purposes in its design, content and sequence. It focuses not only on the content of special education, but also strongly on research and research methodology designed for the field. There is a mix of practice and theory, including formal instruction and practice in skills that researchers must master to be successful in the field, such as the preparation of grant proposals and the writing and presentation of research papers. Ultimately, providing all students with substantial teaching experience is a goal of the program.
Curricular Balance • Curriculum integrates the theory and practice of research; apprenticeship is combined with classroom instruction.	Yes	Beginning in the earliest days of the program, students enter into an apprenticeship, which involves one-on-one work and instruction with the professor as well as with advanced graduate students. Students are asked to take on larger and more responsible roles in faculty research projects the longer they participate Zin the apprenticeship. By the close of the apprenticeship, students have worked in a faculty research project from conception to conclusion. The formal curriculum and the apprenticeship are well connected, each teaching skills and knowledge generally well applied in the other. The match is not perfect.
Faculty Composition • The faculty is composed of highly productive scholars with the capacity and commitment to prepare the next generation of researchers. Their research is well funded. They receive competitive awards and fellowships for their work. But most of all, they model high standards in research and are expert teachers, scholars, advisors and placement agents. They are dedicated to the preparation of their students, the advancement of their fields and the enhancement of their programs, schools and institutions. • Total faculty numbers and fields of expertise are aligned with curriculum and student enrollment.	Yes	The faculty is composed of highly productive researchers, very well regarded in their field, high in grant funding, who sit on journal boards, and receive a great deal of grant funding. Many have experience working in the field of special education. They are expected to serve as mentors to their students, though some are so busy professionally that they are not as available as students would like. Faculty numbers are more than commensurate with student enrollments.

Criterion	Generally Meets Criterion	Explanation
Admissions		
• Admissions criteria are designed to recruit students with the capacity and motivation to become successful scholars and researchers.	Yes	While standardized test scores are not among the highest in the country for graduate students, they are very high for special education. The dean is pushing the program to raise them. Students generally come to the program with substantial experience in the field and high motivation to engage in special education research. No student is admitted unless a faculty member is willing to work with her. Student numbers are small relative to the number of faculty in the program in order to permit individualization of preparation for each student and close personal interaction between professors and students.
Graduation and Degree Standards		
• Graduation standards are high and the degrees awarded are appropriate to the field. • After graduation, alumni commonly receive major research fellowships and positions in strong universities and research organizations.	Yes	Students are required to and do complete their course work and exams in a relatively short and clearly specified period of time. There is also the pressure of having to repay traineeships should they fail to do this. Quality standards are enforced by continuing assessment of student performance in classes, apprenticeship, comprehensive exams, a major project and a dissertation. All students are expected to write a grant proposal and publish an article as lead author before earning a degree, Not surprisingly, special education students do very well in competition for faculty positions at research universities when they graduate.
Research		
• Research is of high quality, is well funded and is valued by policymakers, practitioners and/or scholars.	Yes	See Faculty Composition above. Publication rates in top journals, prestigious awards and the levels of extramural funding are impressively high. Research support structures include a special education administrative assistant to aid faculty in obtaining research funding.
Finances		
• Resources are adequate to support the program, the faculty who teach in the program, the students enrolled in the program and the physical and intellectual infrastructure needed to support the program.	Yes	The program is well supported, though there is a desire for greater support for students. Because faculty have light course loads and no more than two doctoral students a year, they have sufficient time to serve as mentors to doctoral students. Because all students are fully funded, though some support needs to be cobbled together, all students can attend full-time.
Assessment		
• The program undertakes continuing self-assessment and performance improvement.	?	This is uncommon in higher education. The special education faculty do talk about program improvements.

AN AMORPHOUS FIELD

The study found three obstacles that stand in the way of having more programs like Peabody's: the amorphous nature of education research, the confused character of doctoral preparation in education, with its inconsistent degrees, and inadequate resources to suppport doctoral programs.

Of these, perhaps the greatest challenge to preparing world-class education researchers is the state of education research itself, which has evolved over time into the study of all formal and informal activities that produce human learning. That includes just about everything. The result is an amorphous field, lacking focus and boundaries, which seemingly embraces all subjects. Beyond this, there is also little agreement
on the appropriate methods and standards for research in the field. The research that is published is little cited by academics; policymakers and practitioners say it is not useful. This combination—the lack of an agreed-upon focus, inconsistent methods of inquiry and standards and little or no utility for various audiences—makes the preparation of education researchers a serious challenge.

Perhaps the greatest challenge to preparing world-class education researchers is the state of education research itself.

A Field Without Focus or Boundaries

The field of education and its research agenda have grown by accretion, continually adding subfields, subject matters, specializations, professions and methods of inquiry.

Education, as a field, can be traced back more than two and a half millennia to the teachings of the great philosophers, best known today in the works of Plato and Aristotle. But it developed as a field of research more recently, when psychology emerged as a branch of philosophy in the 19th century, then became a distinct discipline separate from philosophy in the early 20th century. At first, a

transitional generation of scholars—including G. Stanley Hall at Clark University and William James at Harvard—bridged philosophy and psychology. Then came a newer breed of psychologists such as James McKeen Cattell at Columbia, Lewis Terman at Stanford, Edward L. Thorndike at Teachers College and Charles Judd at the University of Chicago. These second-wave psychologists gave birth to what would become educational psychology and the multiplicity of branches of psychology concerned with education, including developmental psychology, counseling psychology, clinical psychology, school psychology, organizational psychology and others.

In the years following, newly created education schools produced their own research fields, such as history of education, following innovators such as William Payne at Michigan, and educational administration, led by pioneers such as Paul Hanus at Harvard. Education also grew more specialized within these new fields. For instance, teacher education divided into sub-fields—based on the subjects teachers teach, such as social studies and reading, and based on the components of teaching, such as curriculum and testing. In practice, this meant education now had an augmented research agenda related to the field as whole, covering topics such as its history, governance and finances; the varying jobs people were being prepared to perform as administrator, teacher and counselor; the subject matters that teachers taught and students needed to learn; and the components of teaching and learning. Each area developed its own norms regarding scholarly standards and modes of inquiry appropriate for answering its research questions.

The post-World War II decades brought the various branches of the social sciences and their methods into education; economics, anthropology, sociology and political science became partners with psychology. The economics of education, anthropology of education, sociology of education and politics of education, each as a separate field with its own research questions and methods of inquiry, became staples in education schools.

The years that followed saw the advance of computers extend the possibilities for large-scale quantitative research. Cognitive study and brain research opened new frontiers in understanding how people learn. And postmodernism and cultural studies challenged authoritative knowledge and traditional methods of research. The scope of education as a field expanded over the years as well, with Lawrence Cremin, the Pulitzer Prize-winning historian and

TABLE 5

Faculty Ratings of Schools of Education on Faculty Research by Carnegie Type, by Percentage Selecting Each Rating Category

Rating	Total	BG	BLA	DRE	DRI	MI	MII
Excellent	1%	2%	-	4%	1%	1%	-
Good	22%	22%	21%	26%	21%	22%	23%
Fair	41%	53%	43%	37%	35%	39%	48%
Needs Improvement	24%	12%	33%	24%	27%	25%	25%
Needs Substantial Improvement	6%	7%	4%	4%	15%	7%	-
No Answer	5%	5%	-	5%	2%	6%	4%

BG=Baccalaureate General, **BLA**=Baccalaureate Liberal Arts, **MI**=Master's Granting I, **MII**=Master's Granting II, **DRI**=Doctoral Research Intensive, **DRE**=Doctoral Research Extensive
(Averages may not add up to 100% due to rounding.)

Source: Faculty Survey

president of Teachers College, declaring that the domain of education was not simply schools, but all of society's educating institutions throughout the lifespan: families, communities, libraries, museums, the media and so much more. Education research became the study of all of these institutions, all of the people involved in them, all of the associated fields, all of the questions about them and all of the methods by which they could be studied.

This history produced two very different types of education research faculty. One group can be described as disciplinary experts. They apply their area of expertise—rooted in a defined body of knowledge, established methods of inquiry and agreed-upon standards—to problems in education. These faculty might find homes in either a disciplinary department or an education school.

The other group might be called content experts. They study specific problems in education and adopt a variety of different methods of inquiry, depending on the problem being studied. Over time this form of scholarship develops a body of knowledge in the content area, but, as a result of its interdisciplinary character, lacks established methods of inquiry and agreed-upon standards. These faculty have homes only in education schools.

A Lack of Agreement on Methods and Standards

According to a committee convened by the National Research Council to

The deans of many high-ranking graduate schools of education are dissatisfied with the quality of research accepted for presentation at major conferences.

assess scientific research in education, chaired by the former dean of the Stanford Graduate School of Education:[9]

> [E]ducational research is perceived to be of low quality. …Educational researchers themselves are often their own harshest critics (e.g. Kaestle, 1993). They are often joined by a chorus of social scientists, engineers and business leaders who lament weak or absent theory, accumulations of anecdote masquerading as evidence, studies with little obvious policy relevance, seemingly endless disputes over the desired outcomes of schooling, low levels of replicability, large error margins, opaqueness of data and sources, unwillingness or inability to agree on a common set of metrics and the inevitable intrusion of ideology at the ground level.[10]

This was confirmed by our own research. Only a minority (24 percent) of faculty rate schools of education "excellent" or "good" in terms of their professors' scholarship. The overwhelming majority (71 percent) rank the schools "fair" to "need substantial improvement" in this area (Faculty Survey). There is a surprisingly high degree of consensus among the varying types of institutions (Table 5).

The authors of the National Research Council report cited a lack of "self regulation and focus."[11] The divisions among education researchers in philosophies, canons and research methods preclude common ground and make it impossible to achieve even minimum agreement about what constitutes acceptable research practice. There are no base standards and no quality floor. In her history of education research, Ellen Lagemann, former dean of the Harvard Graduate School of Education, suggests this inconsistency translates into a lack of common standards for publication, grant awards, research training and mechanisms for reconciling scholarly differences. It also explains the absence of a single professional association.[12] She concludes:

> [T]here … are very few filters of quality in education. There is neither a Better Business Bureau, nor the equivalent of the federal Food and Drug Administration. *Caveat emptor* is the policy in this field. This is because education research has never developed a close-knit professional community, which is the prerequisite for the creation of regulatory structures that can protect both the welfare and safety of the public at large and the integrity of the profession. Such communities exist in some disciplines, for example, physics and, to a lesser extent, psychology; they also exist in some professions, notably medicine and law. But such a community has never developed in education.[13]

The largest organization in the field, the American Educational Research Association (AERA), with 25,000 members divided into 12 different sections and 145 special interest groups, is not so much a close-knit research community as a research

TABLE 6

Education Journal Citations 2000-06 for Articles Published in 2000 by Science Expanded, Social Science, and Arts and Humanities Citation Indices Combined

Journal	Number of Articles	Percentage Articles Uncited	Average Number Citations/ Article	Largest Number Citations/ Article
Adult Education Quarterly	24	54%	1	7
American Educational Research Journal	33	6%	7	31
Applied Measurement in Education	24	38%	2	9
Early Childhood Research Quarterly	37	35%	4	28
Educational Administration Quarterly	29	24%	2	9
Harvard Educational Review	49	31%	1	18
The Journal of Education Research	39	18%	3	10
Journal of Higher Education	65	62%	2	13
Journal of Teacher Education	44	18%	4	19
Reading Research Quarterly	47	34%	5	48
Review of Educational Research	18	6%	13	52

Education journal data cover up to the month of July 2006. Article counts in this table omit book reviews, commentaries, editorials and responses to articles.

Source: ISI Journal Citation Reports

holding company in which differences among members loom larger than commonalities.[14]

The deans of many of the highest-ranked graduate schools of education expressed to the authors of this report dissatisfaction with the quality of the research accepted for presentation at the annual AERA conference. They did not suggest that the conference lacks high-quality research by excellent researchers, but rather commented that there is far too much low-quality work on the program. This is embarrassing for the profession, sends an unfortunate message about what the profession values and provides a poor example for graduate students who attend the event.

Little Utility or Impact

Education research has little impact on researchers, policymakers or practitioners (e.g., school administrators

TABLE 7

Five Highest-Impact Journals in Education, Law and Medicine with 2004 Impact Ratings

Education	
Journal of the Learning Sciences	**2.280**
Review of Educational Research	**1.960**
Journal of American College Health	**1.625**
Learning and Instruction	**1.617**
Health Education Research	**1.405**
Law	
Harvard Law Review	**6.623**
Yale Law Journal	**6.506**
Stanford Law Review	**4.600**
Columbia Law Review	**4.059**
Virginia Law Review	**3.717**
Medicine	
New England Journal of Medicine	**38.570**
Journal of the American Medical Association	**24.831**
Lancet	**21.713**
Annals of Internal Medicine	**13.114**
Annual Review of Medicine	**11.200**

Source: ISI Journal Citation Reports, 2004 JCR Social Science Edition

and teachers). With regard to researchers, the authors of this report carried out a study of the citation rates of articles published in nine diverse education journals. Three were comprehensive in their inclusion of education research: *American Educational Research Journal*, *Harvard Education Review* and *Journal of Education Research*. The other six—*Adult Education Quarterly*, *Applied Measurement in Education*, *Early Childhood Research Quarterly*, *Educational Administration Quarterly*, *Journal of Higher Education* and *Journal of Teacher Education*—were in education sub-fields. Using the ISI science, social science, and arts and humanities citation indices, we examined how often the articles published in

these journals in 2000 were cited from 2000 to 2006.

The study showed that the articles published in these journals were not cited frequently. Between 6 percent and 62 percent of the articles published, varying by journal, were never cited in a subsequent publication. The average number of citations per article varied between one and 13, with a mode of two. The largest number of citations for any one article was 52, with a mode of nine (Table 6).

ISI also assesses what it calls journal impact, a measure of the number of citations per article published in a journal. The 2004 impact rating for a journal is a ratio: the number of 2004 citations to all articles published in a given journal in 2002 and 2003, divided by the number of articles published in that journal over the two-year period. What stands out is the dramatic difference between citation rates for top journals in education and other fields. Articles in the major journals of medicine and law, for instance, are all cited at substantially higher rates than those in the leading education journals. The impact rate of the *New England Journal of Medicine* is more than 16 times that of the most-cited education journal, the *Journal of the Learning Sciences (JLS)*. The *Journal of the American Medical Association* has an impact rate nearly 11 times the *JLS'* rate; *Lancet*, more than 9 times the *JLS'* rate; and *Harvard Law Review*, nearly 3 times the *JLS'* rate. On average, the impact of the medical journals was more than 12 times that of the education journals; the law journals had more than double—and in some cases triple—the impact of the education journals. The point is this: Education research has little salience for education scholars (Table 7).

Education research is likewise connected only weakly with practice. School administrators interviewed in the course of this study were regularly asked which education publications they read. The most common answers were *Education Week*, the trade paper, and publications from their own professional associations, such as unions and principals' organizations. Almost never did they say they read scholarly journals; and when they did, the person being interviewed was invariably enrolled in a graduate program.

When asked why they didn't read education journals, most cited, in one way or another, the irrelevance of most articles, which they characterized variously as "impractical," "abstract," "out of touch" or "useless." A study of school superintendents, carried out for the federal Institute of Education Sciences (IES) and described in greater detail below, reached comparable conclusions.[15]

When asked which education publications they read, school administrators answered *Education Week* and publications from their own professional associations, but almost never did they say scholarly journals.

Policymakers criticized education research for differing reasons, including bias, self-promotion, inattention to implementation issues and absence of rigor.

Education research is also rated low by policymakers. The IES study—a far cry from the randomized trials or scientifically based research that IES itself champions—drew on interviews with 90 key school superintendents, chief state school officers, state higher education executive officers, state legislators, gubernatorial policy advisors, Congressional staff members and education association executives. Interviewees were asked to identify the highest-priority areas for further education research; the frequency with which they read education research reports and the sources from which they received information about education; their opinion of the quality and quantity of education research; and what steps could make education research more accessible, useful or relevant.[16]

For policymakers, the volume of education research is so large as to be inaccessible and incomprehensible, yet so eclectic as to leave gaping holes in coverage. Those interviewed obtained their information on education from their professional associations, colleagues and staff members rather than from published education research. They criticized education research for differing reasons—impracticality, bias, self-promotion, inattention to implementation issues, gaps in content, inappropriate and ineffective methods of dissemination, low quality and weak methods, lack of replication and absence of rigor. All the groups desperately wanted education research and used it to varying degrees, but it was not having the impact on their policymaking it could or should have.

Conclusion

The amorphous nature, uncertain standards and unclear relevance of education research are apparent in the doctoral curriculums designed to prepare education researchers. Deans and faculty, even at the highest-ranked schools of education, persistently complained that their doctoral curriculums did not equip students sufficiently for the dissertation. Professors regularly expressed dissatisfaction with student knowledge of research methods, offering comments such as “often they do not know how to interpret data” or “they have no idea what ‘empirical’ means.” Faculty and administrators sometimes lamented the condition of research preparation in their own doctoral programs, saying that the research “infrastructure was not there” or their department’s “research courses are historical artifacts and have not been reviewed for some time.”

University chief academic officers often agreed. One said that there is no “research paradigm” in schools of education. Another told us that the

shortcomings found in education school research preparation were not simply a matter of quantitative scientists' denigrating qualitative research: "If I take [the education school's course in] qualitative analysis and stack it up against what I see coming out of our sociology department, it's night and day—the difference is rigor."

There are certainly weak doctoral programs that contribute to the inadequacy of doctoral research preparation, but the problem extends to our best schools as well. The real issue is that there is no agreement within the education school community about how to prepare doctorally trained researchers. Nearly all students (88 percent) take classes in research methods during their doctoral studies. Eighty-six percent of doctoral alumni rate them as valuable, and 84 percent say they were high-quality. A third of the alumni (33 percent) wished they had more course work in the area, while fewer than one in 16 (6 percent) would have preferred less emphasis on research methods (Alumni Survey). Even more telling: Almost half (47 percent) of education school doctoral recipients thought their curriculum lacked rigor, and over a third (35 percent) believed education schools do not adequately prepare their graduates academically (Alumni Survey).

High percentages of education school doctoral recipients find that their curriculum lacked rigor and believe that education schools do not adequately prepare their graduates academically.

UNCERTAIN PURPOSES *and* DEGREES

Two different populations enroll in doctoral programs in education schools—one seeking preparation for professional careers in areas such as school leadership and the other wanting an education for jobs in research. Two different programs are required to educate students for these purposes—one focusing on practice and the other on scholarship. Two different degrees are awarded for completing a doctorate in education—the doctor of education (Ed.D.) and the doctor of philosophy (Ph.D.).

The problem is that the doctoral programs offered and the degrees awarded by education schools are a mishmash. Programs for the preparation of researchers and the education of practitioners generally look very much alike, with a decided predilection toward research. The degrees graduates receive are fungible. Some institutions award the Ph.D. to practitioners, others award the Ed.D. to future scholars, and a plurality grant both degrees, with the distinction generally determined by differences in the course credits required or the number of research courses students must complete (Table 8).

Doctoral programs offered and degrees awarded by education schools are a mishmash. Programs for the preparation of researchers and the education of practitioners generally look very much alike.

The History

Today's confusion is historical. A long struggle was required to introduce graduate study in the United States. The years before and after the Civil War saw any number of ill-fated experiments in post-baccalaureate education.

Perhaps the best known of these experiments occurred under the leadership of Philip Henry Tappan, president of the University of Michigan from 1852 to 1863. He hoped to eliminate Michigan's collegiate activities and focus instead on its becoming a true university, modeled after the German universities. Although a significant minority of the Michigan faculty supported him, Tappan was

TABLE 8

Doctoral Degrees Offered by Carnegie Type

	Percentage Offering Only Ph.D.	Percentage Offering Only Ed.D.	Percentage Offering Both Degrees
Doctoral Extensive Universities	26%	6%	68%
Doctoral Intensive Universities	20%	45%	35%
Masters I Colleges & Universities	18%	70%	11%
Average	**22%**	**40%**	**39%**

Masters II Colleges and Universities are omitted because only two offer degrees.

Source: Deans Survey

ultimately driven from the university by a barrage of criticism from the press, government and the public, charging him with anti-Americanism and attempting to Europeanize the university.[17]

The initial Ph.D.'s preceded the development of a "true" graduate school. Yale awarded the first doctorate in 1861 for two years of post-baccalaureate study off-campus. The University of Pennsylvania followed suit nine years later, conferring most of its degrees on medical students. Harvard began granting Ph.D.'s in 1873, demanding two years in residence, and Columbia joined the fray in 1875, adopting the Ph.D. in its school of mines for a year of graduate study.[18] Hence, from the very beginning, there was a lack of agreement about who should receive the Ph.D. and the requirements for earning it.

As late as 1876—the year America's first legitimate graduate school, the Johns Hopkins University, opened its doors—no more than five institutions were awarding Ph.D.'s; they were not awarding all that many of them either.

The University of Pennsylvania granted seven degrees in 1876. Harvard gave five; Syracuse, three; Michigan, two; and Illinois Wesleyan, one. Four times as many institutions awarded honorary Ph.D.'s, a practice begun at New York University in 1852. In 1876, 20 colleges and

universities awarded 26 honorary doctorates.[19]

At the turn of the 20th century, no more than 50 colleges and universities had ever granted an earned Ph.D. Those that did award the doctorate continued to do so for everything from correspondence and off-campus programs to one to three years in residence beyond the bachelor's degree.

Even the most eminent universities had profound differences in their Ph.D. programs. A study of 20 universities found wide variation in admission standards; students lacked anything resembling a uniform undergraduate preparation owing to disparities in their baccalaureate educations.

Residence requirements were one to two years. Programs varied in length from two to three years. There were substantial differences in the curricular requirements for the Ph.D. For instance, 40 percent of the schools had no language requirement, and the remainder required an assortment of languages, including French, German and Latin. Exam expectations varied from just an oral defense of the dissertation to a comprehensive assessment, including oral exams in major and minor areas as well as preliminary and final exams and a dissertation defense. The dissertation itself could be anything from a brief essay to be filed in the library to an original published work.[20]

The new century brought what would be the first of many, many periodic efforts to standardize and raise doctoral quality; in this case, the goal was to establish admission standards, faculty credentials and program requirements.

Within the academy, professional associations—including the Association of American Universities, the Association of Land-Grant Colleges and Universities, the National Association of State Universities and the American Association of University Professors—drove the changes, spurred by their membership.

Externally, newly created accrediting associations established minimum standards for schools and colleges, enabling graduate schools to admit student cohorts with more consistent preparation. Foundations provided incentives for adhering to standards and increasing quality. For example, the Carnegie Foundation for the Advancement of Teaching played a critical role in setting college admission requirements and requiring a minimum number of Ph.D.'s on each college's faculty in order for institutions to qualify for

Historically, even the most eminent universities had profound differences in their Ph.D. programs.

The Doctorate of Education was awarded first by Harvard University in 1922.

the Carnegie faculty pension program. These efforts were certainly ameliorative, but they did not achieve anything resembling standardization, nor did they uniformly raise quality in degree programs.

In fact, in the decades following World War I, the situation became even more confused: Student enrollment in doctoral programs mushroomed, the number of institutions awarding the doctorate expanded and an additional doctoral degree was created for educators. The Doctor of Education degree (Ed.D.) was awarded first by Harvard University in 1922.[21] Berkeley, Stanford and Teachers College were early adopters as well. By 1940, 24 institutions conferred Ed.D.'s at least periodically, versus 55 granting the Ph.D.[22]

The new degree was created for at least three reasons. The academic reason was to establish a professional degree for education practitioners, differentiated from the research-oriented Ph.D. The political reason for education schools was to dispel criticism from university faculty who were unhappy both with the content of practitioner Ph.D. programs and the large number of educators receiving the degree, relative to students in the arts and sciences. The autonomy-related reason was that education schools thought a degree of their own might be a way to gain more control over their doctoral curriculums, which often required approval of the respective arts and sciences schools, as the Ph.D. was their province.

From the very beginning, the clear differentiation between the degrees blurred. Some institutions adopted one degree or the other; the University of Chicago, for example, refused to differentiate preparation of administrators and academics, awarding the Ph.D. to both. Other schools adopted both degrees. The Ph.D. soon proved the more popular because it was the more prestigious. Practitioners often sought to move into the Ph.D. track, thereby defeating the purpose of the differentiation. Between 1930 and 1940, more than three times as many Ph.D. (2,731) as Ed.D. (804) degrees were awarded in education.[23]

In the end, there proved to be remarkably few differences between the degrees. The dissertations of the Ed.D. and Ph.D. students were comparable. This was true from the very beginning, as evidenced by a study of the dissertations of Ed.D. students at Harvard and Ph.D. students at

Teachers College during the 1920's. The conclusion was that any variation between them "derived much more from the differing size and character of the two institutions than from any fundamental difference in the problematics they embodied."[24] Originally the hope had been that Ed.D. students would focus on more pragmatic practice problems and the Ph.D. students would engage in more research-oriented studies.

The students even took remarkably similar jobs after completing their degrees. Between 1930 and 1940, 56 percent of Ph.D. recipients chose careers in teaching, compared with 50 percent of Ed.D. graduates. Slightly more than 6 percent of each group worked in research. The largest difference was in school administration, where 35 percent of Ph.D. holders were employed, as opposed to 44 percent of Ed.D.'s, which is a far cry from the intent in creating the new degree.[25]

The only real constant was that more and more degrees were being awarded each year. From 1920 to 1980, the number of degrees awarded rose by as much as fourfold each decade, from 48 in 1920 to 7,941 in 1980. Thereafter, numbers slowly declined, oscillating around the mid- to high 6,000's (Table 3).[26]

Driving the growth was an expansion in higher education. Enrollments in college and university programs grew from 4 percent of the age group in 1900 to more than 65 percent in 2000, necessitating a commensurate growth in the faculty—for whom a doctorate was increasingly the union card. School districts also developed a growing appetite for hiring superintendents with doctorates, and pay scales in the profession were geared to accumulation of credits and higher degrees. In addition, there was a continuing growth of research jobs outside of academe from World War I on. Plus, opportunities for women to enter historically male jobs as college professors and school and district administrators increased noticeably beginning in the 1970's.

The 1970's also witnessed the rise of nontraditional programs for the burgeoning number of doctoral students, with institutions such as Antioch University leading the way. Nontraditional programs, intended for older working professionals who simply lacked the time to leave work and study full time, characteristically granted credit for experience, encouraged part-time attendance and relied upon off-campus study.

From 1920 to 1980, the number of doctoral degrees awarded rose by as much as fourfold each decade, from 48 in 1920 to 7,941 in 1980.

In the 1990's, nontraditional education took a new form: anytime-anyplace learning via online doctoral programs. Hand in hand with this development came the rise of for-profit higher education institutions. This was the decade in which the University of Phoenix, founded in 1976, became an overnight success and was recognized as a force for the academy to reckon with.

Too often practitioners receive an education designed for researchers, and future scholars take courses with practitioners who have little interest in research or rigorous scholarly studies.

The Present

As shown in Table 2, the doctorate in education is currently awarded by 290 schools, colleges and departments of education (Deans Survey). This includes 95 percent of the Doctoral Extensive universities, 82 percent of the Doctoral Intensives, 18 percent of the Masters I universities and 2 percent of Masters II's (Deans Survey). More than 95 percent of all doctorates in education are awarded by research universities, although a larger number of Masters I institutions grant a doctoral degree than do Doctoral Intensives.

As the research orientation of a university increases, so does the likelihood it will offer the Ph.D. as the sole doctorate, as well as the probability that the institution will grant both Ph.D.'s and Ed.D.'s In contrast, the chance that a university awards only the Ed.D. increases as its emphasis on research declines (Degree Study).[27] A majority of Doctoral Extensives (68 percent) offer both degrees, while a majority of Masters I/II institutions (70 percent) and a plurality of Doctoral Intensives (45 percent) grant only the Ed.D. (Table 8).

The blurring in purpose of the Ed.D. and Ph.D. leads to a larger problem in the preparation of education researchers. It encourages a commensurate blurring in the programs to prepare researchers and practitioners. More often than not, they enroll in the same doctoral programs. The result is that practitioners too often receive an education designed for researchers, and future scholars take their course work with practitioners who have little interest in research or rigorous scholarly studies. This blurring is exacerbated by the status differences in the two degrees, which encourage practitioners to enroll in Ph.D. programs.

At the same time, university faculty trained in research generally construct doctoral programs emphasizing scholarship for both future practitioners and researchers, but water down the programs to meet the expectations and abilities of practitioners. These realities were

documented in an earlier Education Schools Project report entitled *Educating School Leaders*.[28]

The state of affairs is illustrated by a debate at a renowned research extensive university. The institution's faculty asked whether the school of education should create an Ed.D. for practitioners and reserve the traditional Ph.D., the only doctorate it awarded, for scholars. The driving concern was a mismatch between student and faculty goals in the department of educational administration. The doctoral program there sought to educate future scholars and focused its curriculum on research preparation, but only 10–15 percent of the students enrolled wanted to be academics. The department was being inundated by practitioners who desired a doctorate from their program for its prestige, not its announced purposes.

A familiar discussion followed. The dean said, "In many ways the department would be better if it could offer the Ph.D. to students who want to do research and offer the Ed.D. to practitioners who want a more applied degree, but will not necessarily contribute to fundamental knowledge." He went on to say there is "a widely held perception that the Ed.D. doesn't have the acceptance that a Ph.D. does." Calling this "a great shame," the dean concluded that an Ed.D. from "the right place and structured in the right way can be respected." A faculty colleague offered, "I see no reason why we want to provide a lower status degree for people who have contact with children on a regular basis." In the end, no action was taken. The education school decided by default to stay with the Ph.D. for all.

Conclusion

The simple fact is that so long as the education schools at eminent universities such as Harvard persist in awarding the Ed.D. to researchers as well as practitioners and the University of Wisconsin grants the Ph.D. to practitioners in addition to scholars, there will continue to be more confusion than clarity about the meaning of a doctorate in education. And there are really no incentives—and many disincentives—for institutions to clarify the purposes of the doctorate or to distinguish clearly between the two degrees.

The first such disincentive is financial. The market for practitioner doctoral degrees is huge, overshadowing the much smaller demand for research doctorates. These demographics mean larger admissions pools and enrollments in doctoral programs for practitioners than

There are really no incentives for institutions to clarify the purpose of the doctorate or to distinguish clearly between the Ed.D. and the Ph.D.

for programs preparing future researchers. Moreover, the preparation of scholars is considerably more time- and energy-intensive, and therefore more cost-intensive. So even if a faculty is more interested in preparing scholars, it usually needs to educate practitioners as well to keep the boat afloat financially.

The second disincentive to distinguishing the two doctorates is availability. It is generally easier to obtain state approval for a new Ed.D. than a Ph.D. As a result, the Ed.D. tends to be the degree of choice for ambitious master's granting institutions that want to raise their stature by awarding doctorates. It is also the best hope for schools of education in research universities that do not currently award the doctorate in education. The likelihood of a new Ph.D. is simply out of reach for these schools.

However, once an Ed.D. is authorized, it can be used fungibly for both practice and research purposes—that is, to educate practitioners and to enhance the school's scholarly standing. Among the institutions we visited, those that awarded the doctorate in only a few fields, or that were seeking authorization for new doctoral programs, were invariably focusing these programs on practitioners, usually educational administrators. Yet deans spoke of the Ed.D. as a vehicle for increasing the research orientation of their faculties, enhancing the scholarly climate of their schools, attracting external funding and recruiting professors with stronger research track records.

A third reason why schools of education are not quick to distinguish the Ed.D. from the Ph.D. is control. In contrast to the Ph.D., which is generally under the purview of the graduate school of arts and sciences in research universities, the Ed.D. tends to be the domain of the school of education. For reasons of autonomy, education schools are unlikely to give up this degree and the flexibility it offers.

Fourth is prestige. The Ph.D. is a more prestigious degree than the Ed.D., so students and institutions naturally gravitate to the Ph.D. for its status, regardless of whether they are planning on careers in research or practice. However, the status difference has encouraged several arts and science faculties to block their education schools from awarding Ph.D.'s, both because of their feelings about education schools and their wish to guard a prerogative.

The fifth reason is history. At Harvard, every school awards its own

degree. The Ph.D. is the doctorate awarded by the graduate school of arts and sciences; the D.B.A., by the graduate school of business; and the Ed.D., by the graduate school of education. "We have always done it this way" is a powerful rationale for maintaining the status quo.

The sixth and final force is politics and inertia. The debate at the research university recounted above is fairly typical of conversations at schools around the country. Equal treatment tends to trump differentiation and distinction in academe. Maintaining what a school has is a lot less work than changing it.

Unfortunately, none of these reasons for continuing current practice has academic substance.

"We have always done it this way" is a powerful rationale for maintaining the status quo.

INADEQUATE RESOURCES

The most glaring weakness in doctoral programs for education researchers is the quality of their faculty. Inadequate numbers of professors are qualified to educate researchers, and the most able faculty are concentrated at a single type of institution, Doctoral Extensive universities.

Research divides the nation's education schools into two worlds. One, consisting of schools at Baccalaureate and Masters II universities, focuses principally on teaching and puts less of a priority on research. The other, comprising Doctoral and Masters I schools, embraces research as its mission in varying degrees and with differing levels of success.

The nation's education schools are divided into two categories: those that focus primarily on teaching and those that embrace research as their mission.

A clear hierarchy exists in the second group. Doctoral Extensive schools of education are the most active in research. Doctoral Intensives follow significantly behind and Masters I institutions trail distantly.

This difference is apparent in the importance of research in faculty hiring. Only at Doctoral Extensive education schools do a majority of faculty and deans say the quality of publications is a very important factor in hiring (Deans and Faculty Surveys; Table 9). It is also mirrored in the research records of faculty at the differing institutions. A majority of the faculty at all three types of education schools have presented a paper at a conference in the past two years. However, only at Doctoral Extensives, Doctoral Intensives and Masters I's have a majority of professors published a paper in a refereed journal in the last two years. And only at Doctoral Extensives have most faculty gotten external funding for their research in the past two years (Faculty Survey; Table 10).

A scale can be created, ranging from the most productive researchers—those who have published a book and peer-reviewed article, delivered a paper and obtained external funding in the past two years—to unproductive faculty

TABLE 9

Quality of Publications Very Important in Decision to Hire Faculty

	Percentage of Faculty Reporting	Percentage of Deans Reporting
Doctoral Extensive Universities	<50%	60%
Doctoral Intensive Universities	22%	27%
Masters I Colleges & Universities	13%	9%
Masters II Colleges & Universities	5%	4%
Baccalaureate Liberal Arts Colleges	7%	13%
Baccalaureate General Colleges	2%	4%
Total	**16%**	**16%**

Source: Deans Survey

TABLE 10

Percentage of Education School Faculty Engaging in Various Research Activities in the Past Two Years

	Published Refereed Article	Published Book	Delivered Paper at Professional Meeting	Obtained External Research Funding
Doctoral Extensive Universities	80%	31%	89%	60%
Doctoral Intensive Universities	63%	22%	84%	35%
Masters I Colleges & Universities	57%	12%	80%	34%
Masters II Colleges & Universities	26%	13%	63%	18%
Baccalaureate Liberal Arts Colleges	28%	14%	70%	20%
Baccalaureate General Colleges	23%	7%	54%	23%
Total	**51%**	**15%**	**76%**	**34%**

Source: Faculty Survey

TABLE 11

Faculty Research Productivity, by Carnegie Type

	Most Productive	More Productive	Productive	Less Productive	Unproductive
Doctoral Extensive Universities	18%	37%	20%	6%	4%
Doctoral Intensive Universities	10%	22%	28%	20%	8%
Masters I Colleges & Universities	4%	22%	31%	17%	13%
Masters II Colleges & Universities	4%	8%	6%	32%	27%
Baccalaureate Liberal Arts Colleges	-	13%	22%	16%	42%
Baccalaureate General Colleges	-	3%	18%	28%	24%

Most productive: published a book + published peer-reviewed article + presented conference paper + obtained extramural funding in the past two years
More productive: three out of four of these activities
Productive: two out of four of these activities
Less productive: presented paper only
Nonproductive: none of these activities

The table rows do not add up to 100% because the category of having engaged in one activity was reduced from any activity to only presenting a paper for reasons described in the text. Having produced a book was considered a far more daunting task than writing a paper.

Source: Faculty Survey

members who have none of those accomplishments. In between would be more productive researchers, who have engaged in three out of four of the activities; productive researchers, who have carried out two; and less productive researchers, who have only presented a paper, which is the most common activity with the lowest threshold for selection. Table 11 shows that a majority of faculty members at Baccalaureate and Masters II institutions fit into the categories of less productive and unproductive. Doctoral Extensive education schools are the only institutions at which a majority of professors (55 percent) can be described as more or most productive, having engaged in at least three of the four—scholarly publishing, presenting, or funding activities.

Research funding marks the greatest difference among the schools. Doctoral Extensive education schools raise more than two and a half times as much in extramural research support per full-time professor as Doctoral Intensives. Masters I institutions place third, raising about three-eighths (37 percent) as much

TABLE 12

Amount of Education School External Research Funding, by Carnegie Type

	Average $ Per Institution (1000s)	Average $ Per Full-time Professor (1000s)
Doctoral Extensive Universities	$4,005	$64.6
Doctoral Intensive Universities	$1,469	$25.3
Masters I Colleges & Universities	$538	$18.6
Masters II Colleges & Universities	$99	$9.9
Baccalaureate Liberal Arts Colleges	$35	$5.8
Baccalaureate General Colleges	$44	$5.5

Source: Deans Survey

TABLE 13

Faculty Interest in Teaching Versus Research, by Carnegie Type

	Primarily Teaching	Both, More Teaching	Both, More Research	Primarily Research
Doctoral Extensive Universities	11%	43%	39%	7%
Doctoral Intensive Universities	24%	55%	20%	1%
Masters I Colleges & Universities	33%	50%	14%	1%
Masters II Colleges & Universities	58%	38%	2%	2%
Baccalaureate Liberal Arts Colleges	59%	34%	-	2%
Baccalaureate General Colleges	39%	51%	10%	-
Average	**36%**	**46%**	**14%**	**2%**

Source: Faculty Survey

as Doctoral Intensives institutionally and three-quarters (74 percent) as much per faculty member (Deans Survey; Table 12).

Yet if one looks beyond the institutional types to individual faculty members, what quickly becomes apparent is that most education school faculty are more interested in teaching than research. This is true at every type of institution. Faculty at the education schools surveyed were asked to characterize their interest as primarily teaching; primarily research; both, but primarily teaching; or both, but primarily research. Only 16 percent of the faculty chose the research options (Table 13). Even at Doctoral Extensives, only 7 percent selected "primarily research" and a total of 46 percent chose the two research options combined. The runner up was the Doctoral Intensives, at which one in five faculty (21 percent) said either "both, more research" or "primarily research."

Faculty predilections correspond to how they actually spend their time. Professors at Doctoral Extensive education schools teach less in the classroom and in the field than their colleagues at other types of colleges and universities. They spend more time engaged in research—a mode of 9-12 hours versus 5-8 hours for Doctoral Intensives and 1-4 hours for faculty in all other types of institutions. One in five professors at Doctoral Extensive education schools reports spending more than 12 hours a week engaged in scholarship, a time commitment to research more than double that of their peers at Doctoral Intensives (Table 14).

In sum, research extensive universities are fundamentally different from other universities in their research orientation. They emphasize research to a greater extent in their hiring and their faculty workloads. Their faculty are more interested in research and more productive in scholarship, receive greater research funding and spend more time engaged in research.

The problem is that doctoral programs for researchers are found at Doctoral Extensive, Doctoral Intensive and Masters I universities, many of which lack the institutional commitment—finances, philosophy and climate—to support doctoral education, as well as the quality and critical mass of productive faculty members necessary to sustain doctoral programs.

Insufficient Faculty Resources

To become a master surgeon, silversmith or pianist, students study with masters in that field, as demonstrated by the body of work these experts have produced. The expectation in education research is the same. The most productive researchers, both in

If one looks beyond the institutional types to individual faculty members, it quickly becomes apparent that most education school faculty are more interested in teaching than research.

TABLE 14

Faculty Reports of Numbers of Hours Per Week Spent on Scheduled Teaching, Field Work with Students and Scholarly Research, by Carnegie Type

Activity and Hours Spent	DRE	DRI	MI	MII	BG	BLA	Total
Zero hours							
Scheduled teaching	6%	4%	3%	4%	-	-	3%
Field work with students	32%	22%	22%	9%	15%	10%	20%
Scholarly research	6%	8%	15%	25%	23%	26%	16%
1-4 hours							
Scheduled teaching	19%	11%	9%	5%	12%	7%	10%
Field work with students	34%	39%	32%	37%	15%	40%	32%
Scholarly research	22%	39%	44%	46%	51%	43%	44%
5-8 hours							
Scheduled teaching	45%	24%	27%	27%	13%	4%	26%
Field work with students	15%	16%	21%	36%	38%	26%	24%
Scholarly research	23%	28%	22%	14%	12%	18%	20%
9-12 hours							
Scheduled teaching	24%	49%	43%	44%	47%	53%	44%
Field work with students	8%	2%	11%	9%	10%	18%	10%
Scholarly research	27%	13%	7%	7%	2%	7%	9%
More than 12 hours							
Scheduled teaching	4%	11%	16%	19%	15%	20%	14%
Field work with students	3%	7%	10%	6%	14%	6%	9%
Scholarly research	20%	9%	9%	8%	3%	4%	9%

DRE = Doctoral Research Extensive, **DRI** = Doctoral Research Intensive, **MI** = Master's Granting I, **MII** = Master's Granting II, **BG** = Baccalaureate General, **BLA** = Baccalaureate Liberal Arts

Source: Faculty Survey

terms of the quantity and quality of their work, are the people who should be preparing the next generation of scholars.

The problem is that there are too few master researchers staffing the education doctoral programs at Doctoral Extensive, Doctoral Intensive and Masters I universities. Recall that Table 11 showed that Doctoral Extensive education schools are the only institutions at which a majority of professors (55 percent) can be described as more or most productive. By contrast, at Doctoral Intensives and Masters I's, fewer than a third of the faculty members—32 percent and 26 percent, respectively—are so rated (Faculty Survey).

Translating the percentages into actual faculty numbers makes this situation even more apparent. The average Masters I school of education has 29 full-time faculty members, while the average Doctoral Intensive has 16 (Demographic Study). This means the average Masters I institution has 7.5 education school faculty members who rank in the "more productive" or "most productive" categories, while the average Doctoral Intensive education school has 5.1. This is a small base on which to build strong doctoral programs.

But the greater difficulty is that the 7.5 highly productive faculty members at Masters I universities have 21.5 colleagues who are less productive, and the 5.1 faculty members at Doctoral Intensive universities have 10.9 colleagues who vary from productive to non-productive. These numbers suggest an education school climate that does not make research a priority, does not put a premium on research productivity in faculty hiring and promotion, does not provide the resources necessary to support research and does not have the critical mass of faculty needed to mount a doctoral program.

The difference in climate between the most research-oriented universities and less research-oriented peers is probably best captured in our conversations with faculty. A junior professor at a high-ranking Doctoral Extensive education school—who had moved from a much lower-ranked institution in the same geographic area—put into words what we observed in our site visits at the most research-oriented universities. She described what was different about her new school; it was important not simply to publish but to publish in the best journals. "There is far more emphasis on where you publish and how that establishes you as a scholar," she said.

Toward this end, she added, "there is far less emphasis on service, and junior professors get a strong message to limit service until you get tenure." What stands out in her

These numbers suggest an education school climate that does not make research a priority, does not put a premium on research productivity in faculty hiring, and does not provide the resources to support research.

description is a set of characteristics we found at many other top research universities: The research focus dominates. Productivity expectations deal not only with numbers of publications, but even more with their quality. The other demands for teaching and service typically placed on junior faculty are reduced to make research possible.

Top research universities not only expect faculty to publish, but to publish in the best journals. Other demands for teaching and service typically placed on junior faculty are reduced at these universities to make research possible.

This is not what we witnessed at other types of schools, or even at the less research-oriented doctoral universities. There is a sharp divide in research expectations. One senior professor at a doctorate granting Masters I education school in the Southwest, speaking about the difficulties in publishing she had encountered, noted, "The hardest part is finding places where you can publish where everything doesn't have to be original research." The emphasis at her school and many others was simply on getting faculty work into print. Another faculty member at the same school had turned down an invitation to present a paper at an international conference; she said heavy teaching loads, service activities and meager travel funds made the paper a much lower priority than other activities. "Why would I go?" she asked. "I only have so much time." Her colleague, faced with growing pressure to publish by the institution and with the same set of competing activities, said simply and sadly, "I don't know when I am supposed to write."

The deans we spoke with at the schools with such profiles generally had scholarly aspirations far higher than their schools could realistically hope to achieve and found it extraordinarily difficult to recruit master scholars, the leading national researchers, to their faculties. Deans often hoped that if they could recruit just one, it would serve as a catalyst for transforming their schools, making them a magnet for attracting others, or permiting them to establish a research center that might serve as an island of excellence. Offering doctorates was invariably part of the plan, an inducement for scholars to come and a base for institutional transformation. In no case did this seem a wise direction for an institution to choose, as it would dissipate the education school's resources, distract the school from the professional and teaching activities at which it might potentially succeed and result in one more inadequate doctoral program.

The conclusion is that most Doctoral Intensive and Masters I universities do not have the faculty resources to offer doctoral programs to prepare education researchers.

Poor Dissertation Advising

Beyond the somewhat abstract issue of capacity to support doctoral programs, it is critical to examine the impact of current staffing on doctoral programs for scholars. Who is actually teaching and advising the current doctoral students? Who is guiding and evaluating them on their dissertations, the research capstone of their doctoral programs?

The answer is that many of the faculty members advising doctoral students today are not productive scholars and lack the skills, knowledge and experience necessary to mentor students in preparing a substantial piece of research (Faculty Survey). Slightly more than one-third of education school professors (36 percent) sit on dissertation committees.

As might be expected, the percentage is highest at Doctoral Extensives (93 percent), followed by Doctoral Intensives (47 percent), and lowest at master's granting universities (16 percent; Faculty Survey). The dissertation committee, typically with three or four members, has the task of assisting and evaluating a doctoral candidate in conceiving, carrying out and completing a significant research study, generally resulting—in the field of education—in a book-length manuscript.

The committee, chaired by the student's dissertation advisor, is charged with advising the student in formulating a research question and developing a research design to answer it. The committee, which must approve the resulting research proposal, then guides, monitors, assesses and often motivates the student as research and writing progress. Ultimately, the committee must approve or disapprove the student's dissertation. To do this work, faculty expertise in scholarship is essential for every member of the committee, even though the dissertation advisor may assume the lion's share of the effort and responsibility.

But this is not the case. Dissertation committees commonly include significant numbers of the lowest-productivity faculty. More than a fifth (22 percent) of faculty who have not published a book or paper, made a conference presentation or received external funding in the past two years nonetheless sit on dissertation committees. More than a quarter of the professors (26 percent) who have only made conference presentations also serve on dissertation committees, as do more than half of the faculty (52 percent) who have accomplished just one of the four research activities (Faculty Survey). Indeed, when asked to identify the most important resources needed to improve graduate education,

Many of the faculty members advising doctoral students lack the skills, knowledge and expectations necessary to mentor students in preparing a substantial piece of research.

TABLE 15

Percentage of Faculty Chairing or Sitting on Different Numbers of Dissertation Committees, by Carnegie Type

Committee	Doctoral Extensive	Doctoral Intensive	Masters I	Masters II
More than 5	34%	15%	7%	15%
10 or more	20%	7%	4%	11%
20 or more	2%	<1%	1%	11%

The percentage of faculty who report being members of 10 or more and 20 or more dissertation committees appears to be the same at Masters II education schools, due to rounding errors. In reality 10.8% of professors at these institutions indicated that they were membersof 20 or more committees and 11.2% sat on 10 or more committees.

Source: Faculty Survey

30 percent of the education school professors surveyed said "faculty colleagues with more research expertise" (Faculty Survey).

The consequences are apparent in the dissertations students produce and dissertation committees approve. Three factors generally result in low-quality dissertations. The first, which has already been discussed, is faculty members lacking the skills and knowledge necessary to supervise a quality dissertation. The second is professors' supervising too many dissertations, intentionally or inadvertently making it impossible to give them the scrutiny they deserve. They become the academic equivalent of mass-produced fast food. The third factor is advisors' and education schools' setting low standards. When this is the rule rather than the exception at an education school, the name commonly given to that school is "degree mill."

Based on conversations with faculty members, supervising and completing three reputable dissertations in one year is a heavy load. It dominates the year, consumes the professor's calendar and changes the way she spends her time.

However, 34 percent of faculty at Doctoral Extensives, 15 percent at Doctoral Intensives and Masters II's and 7 percent at Masters I's chaired or were members of more than five dissertation committees in a single year. Of this group, many reported serving on 10 or more dissertation committees, particularly at Doctoral Extensive (20 percent) and Masters II (11 percent) education schools. There were even some faculty

members serving on 20 or more dissertation committees, most notably at Masters II schools of education (11 percent; Table 15).

These numbers are problematic, not heroic. They are a neon sign, indicating that faculty are not giving student dissertations adequate attention at these schools. In a single year, professors are simply unable to give the time needed to counsel and monitor 10 education doctoral students in the production of 10 high-quality dissertations.

In the course of this study, we heard all sorts of explanations for these numbers, none of them compelling: too many doctoral students being admitted; students piling on to the best, the easiest, or one of a few minority faculty members supervising dissertations; dissertation advising being offloaded disproportionately to junior faculty members or less-productive colleagues in order to free others; the best-funded faculty members buying out of their teaching activities with grant money, increasing the dissertation loads of their lesser-funded colleagues; departments being understaffed in professorial numbers or academic expertise, having only one or two potential dissertation advisors for all of their doctoral students; the education school being used as a cash cow to generate revenues to support the rest of the university; and large numbers of part-time students being enrolled, causing dissertations to remain on the books, but inactive for years on end. Whatever the reasons, the numbers translate into low doctoral standards.[29]

This situation is exacerbated by the fact that excellence in dissertation supervision is usually punished. The professor who is a poor dissertation advisor—unavailable to students, inattentive to their e-mails and phone calls and unwilling to return their work in a timely fashion—is rewarded by having few students interested in working with her. The worse the professor is, the fewer dissertation committees she has to sit on. By contrast, a faculty member who excels in this area is punished by being asked by large numbers of students to advise them on their dissertations. The reward is a passel of dissertation committees.

In short, dissertation loads are now inequitably apportioned. Too many students are being advised by too few faculty members for a panoply of bad reasons. This is no surprise to the institutions where this occurs, as deans and department chairs made clear. These schools of education are willing to diminish quality for the money this dynamic produces or the peace it maintains. It also works for any students who have come to graduate school to obtain a degree rather than an education.

The worse the professor is, the fewer dissertation committees she has to sit on. By contrast, a faculty member who excels in this area is punished by being asked by larger numbers of students to advise them on their dissertations.

Weak Dissertations

We examined a random sample of more than 1,300 dissertation descriptors (400 Ph.D.'s and 920 Ed.D.'s)—titles, authors, sponsoring universities, degrees awarded and page lengths—for the year 2002. We read abstracts for dissertations at institutions rated at the extremes in research productivity and followed up by reading the first 24 pages of a number of the dissertations.[30] In like manner, we also examined the dissertations sponsored by specific faculty members at these schools, those who had chaired what appeared to be two or more high- or low-quality dissertations in that year. We did not seek to compare education dissertations with dissertations in other fields. We did not attempt any systematic assessment of the quality of education dissertations.

Though neither is the norm, embarrassingly poor dissertations can be found at top-ranked education schools and commendable dissertations can be discovered at lower-ranked education schools.

We learned what one might expect. Though embarrassingly poor dissertations can be found at top-ranked education schools and commendable dissertations can be discovered at lower-ranked education schools, neither is the norm. We defined poor dissertations as those that asked trivial or low-level questions, more appropriate to a term paper than a doctoral dissertation; employed research methods or carried out studies inconsistent with or incapable of answering the question posed; exhibited shoddy research methods; collected data with little meaning; analyzed data inappropriately (e.g., a frequent error was using ANOVA instead of MANOVA); drew conclusions inconsistent with the data collected; were badly written in terms of grammar, spelling and jargon; never rose above the level of description; and were so short as to appear stunted and superficial, the sort of thing that might suffice for a class project.

The most troubling finding of this review: A number of institutions routinely produced bad dissertations. An example is a Doctoral Extensive in the southern United States. The education school has a faculty of slightly more than 100. They are low in productivity. In the course of their careers, the faculty collectively has produced 11 books, 164 articles and 308 conference papers, which translates into one-tenth of a book, one and one-half articles and 2.9 conference presentations per faculty member. Professors are offered summer research grants, but in a typical year somewhere from zero to two faculty members will actually receive one. The average faculty course load is high—19 credit hours for professors teaching only graduate students, 24 for those teaching only undergraduates and 21 for those teaching a combination. Ninety-two percent of the faculty have doctorates; most of their degrees come from

less research-oriented universities.

In 2002, this school of education awarded 11 Ph.D.'s. The dissertations tended to be very short, averaging 117 pages. Forty-five percent were under 100 pages, 36 percent were less than 85 pages including appendices, and the briefest was 59 pages. The typical dissertation was a trivial research question, translated into a series of mundane hypotheses and studied via a survey of the perceptions of local area actors—often teachers, school administrators or students—regarding issues such as special education, alternative education or parental involvement in schools. The study might then go on to examine the relationship between these perceptions and a phenomenon such as student suspension rates or achievement test scores. The data would then be subjected to anything from chi square testing to multivariate analysis. The significance of the findings would then be reported as well as their implications for the hypotheses.

In general, the research questions were unworthy of a doctoral dissertation, literature reviews were dated and cursory, study designs were seriously flawed, samples were small and particularistic, confounding variables were not taken into account, perceptions were commonly used as proxies for reality, statistical analyses were performed frequently on meaningless data, and conclusions and recommendations were often superficial and without merit since they were based on the meaningless data collected, and the dissertations were written in cookie-cutter fashion. They followed an exact outline published in the university student handbook listing the five chapters that should constitute a dissertation and the appropriate subsections within each.

The same level of dissertation quality was found at a Masters I school of education in the same region of the country. Reading dissertation abstracts, we found that many of the poorest dissertations were sponsored by the same professors. These faculty members not only sponsored weak Ed.D. dissertations; they were also high-volume dissertation sponsors. For instance, two faculty members at this institution chaired 16 dissertations and also served as members of a number of other committees in 2001 and 2002. Generally, their students produced short dissertations, averaging 103 pages in one case and 111 pages in the other, including appendices, bibliographies and other end matter.

We began looking for professors like these on other campuses. We located them at some of the most research-oriented education schools, but much more frequently at less research-oriented schools. Students

Students seeking quickie dissertations gravitate toward certain types of institutions and faculty members.

seeking quickie dissertations gravitated to them.

In short, there are two problems. First, although some very poor dissertations can be found at the most research-oriented universities, the proportion rises significantly at the less research-oriented universities. Second, although a class of faculty who produce many dissertations of low quality can be found at Doctoral Extensive universities, their numbers grow substantially at the least research-oriented ones. This is just another manifestation of what has already been discussed—universities offering doctorates without the capacity or faculty quality to support them.

Our country has too many under-resourced doctoral programs for the preparation of education scholars.

Conclusion

Our country has too many under-resourced doctoral programs for the preparation of education scholars. This section focused on the major resource shortage—faculty—but inadequate resources take a variety of forms, ranging from insufficient facilities and equipment to a lack of financial aid and research support.

For example, with a few notable exceptions, the schools of education we visited or have known over the years lack the financial aid necessary to provide their doctoral students with adequate research assistantships to attend full time. Fewer than 30 percent of doctoral alumni report that they were able to finance their doctoral studies without working or with a graduate assistantship (Alumni Study).

The differences in doctoral education for full-time and part-time students is stunning. A nationally known scholar at an eminent Doctoral Extensive institution said of his own program that "full-time students get apprenticeships and part-time students get mentoring." More typically, part-time students get much less. As another professor at a less esteemed Doctoral Extensive put it, part-timers "run into class and run out; they have to take care of their families and jobs." They get course work, exams and a dissertation, hardly enough to embark on a research career.

Of faculty interviewed at Doctoral Extensive universities, 65 percent rated the ability to offer more financial aid the top resource needed to do a better job of preparing students at the graduate level. Doctoral Intensive faculty (39 percent) and Masters I faculty (32 percent) ranked it second, and Masters II faculty (33 percent) designated it fifth (Faculty Survey).

At the more research-oriented institutions, the problems are too few assistantships and inadequate funding for each student. At the less research-oriented schools, the difficulty is few assistantships.

Doctoral Extensive universities have the strongest resources for offering researcher preparation programs. This study suggests that, as a class, Doctoral Intensive and Masters I universities are not strong enough to sustain such programs in terms of their missions, hiring practices, faculty quantity and quality, research funding and climate.

In drawing these conclusions, it must be pointed out that they apply to classes of institutions, not to the individual schools they comprise. There are Doctoral Extensive education schools that lack the capacity to offer quality programs, as was discussed earlier in this section, and there are Doctoral Intensive institutions that do offer quality programs. As a rule, we believe Masters I institutions should not be in the business of offering research doctorates.

As a rule, Masters I institutions should not be in the business of offering research doctorates.

A PERFECT STORM: ANATOMY *of a* FAILING PROGRAM

In October 1991, the strongest storm in recorded history struck off the coast of Gloucester, Massachusetts. It came to be called a perfect storm because three separate storms combined to form one disastrous event.

Something akin to this has happened with the nation's programs to prepare education researchers. They have been struck simultaneously by the forces described in the past three sections—the amorphous character of education research; confusion over the purposes of doctoral programs in education and the degrees they award; and the lack of adequate resources to support doctoral education. Those circumstances have weakened most programs and caused many to fail. The result is research training programs staffed by faculty who are not very productive scholars and who lack the experience and expertise to impart to students the skills and knowledge required of productive scholars. These programs lack high, clear and agreed-upon standards for judging the quality of education research. Their resources are insufficient to provide faculty and students with the support necessary to engage in productive scholarship. This section presents a case study of one of those schools and also a comparison of that school with a neighbor noted for its strong doctoral programs in education.[31]

Programs that prepare education researchers are being struck simultaneously by a variety of forces.

Regional University (RU) is a Doctoral Extensive institution in the eastern United States that enrolls more than 25,000 students in its nine schools and colleges. Most of its students come from the counties immediately surrounding the university, though almost 15 percent of the student body comes from abroad. Graduate students make up about one-third of the enrollment at the sprawling suburban campus and the six off-campus satellites. RU looks the way a university is supposed to look, with lush lawns and colonnaded buildings.

Different institutions in the same state allocate resources and faculty assignments differently and with varying impact on the preparation of researchers.

Throughout its history, Regional University has lived in the shadow of one of the more highly rated universities in the country, Major Research University (MRU), a private institution. A significant number of RU staff members and students have to pass by MRU each day on the way to the main RU campus.

RU's education school awards undergraduate and graduate degrees, enrolling more than 3,500 students, about three-quarters in graduate programs. The school employs about 65 full-time and 125 part-time faculty, who are organized into five departments—curriculum and teaching, educational leadership, psychology and counseling, foundations of education, and health.

It is useful to compare this with MRU, which has a graduate school of education with 13 more full-time faculty and a student population—overwhelmingly full-time—of 700, one-fifth the size of RU. The result is that RU has a student-to-full-time-faculty ratio of 54:1 for all students and 40:1 for graduate students. In contrast, MRU has a ratio of less than nine to one for all students in its education school. The dean at RU acknowledged the problem, saying, "I am burning my faculty." RU has too many students per faculty member to offer a quality doctoral program in research preparation, which is dependent on close student/faculty interaction. RU is also heavily reliant on part-time faculty, who teach just under two-thirds of the school of education classes.

Additionally, the RU faculty members have heavy teaching loads. As noted in Part V, 70 percent of Doctoral Extensive professors teach less than eight hours a week. The median and the mode are five to eight hours. At Regional University, the average for senior faculty is 10 hours per week, though the load is reduced for junior faculty, and professors can buy out of teaching with grants. Nonetheless, the higher-than-average load means RU professors have less time for their own research and doctoral advising.

Faculty at the Regional University school of education are not strong in the area of scholarship. The school as a whole received just over $3 million in external support, which is less than a fifth of the funding at MRU. Much of the RU research funding comes from the local school district for data collection and evaluation projects. This contract work produces little in the way of published research, which is reflected in the fact that in the past two years, the RU faculty received no major academic awards, nor did they serve as editors of a major journal. By contrast, nearly one out of every six faculty members at MRU received such recognition.

One RU education school professor put it this way: "I don't think we have a center of excellence in research," meaning there was not one department, program or research center producing excellent scholarship at the education school. Colleagues in arts and sciences agreed. Pointing to poor research expectations and standards at the education school, a humanities professor echoed the sentiments of colleagues: "I am the complaint department [in my program]. Two-thirds of the complainants, I would say, are in the school of education. The kinds of demands and the kinds of rigor that our discipline insists on from the get-go are not the kinds of discipline and the kinds of rigor [education school students] have been prepared for. So they seem to feel that we are a lot meaner than the folks in the education school."

RU enrolls about 275 doctoral students in Ed.D. and Ph.D. programs; the MRU doctoral cohort is roughly the same size. But a major difference between the two schools is that fewer than a fifth of RU doctoral students attend full-time, versus more than nine out of 10 MRU students. RU residency requirements are low. A doctoral student in education psychology said he rejected schools like MRU, as well as programs in the arts and sciences at RU, because he did not want a full-time program. In his words, the RU program "offers a chance to hold a job and have time for a family and still study at night. Students in the [arts and sciences] department of psychology struggle to attend during the day. That isn't for me. Ed psych allows me to get paid well as a school psychologist and attend evening classes." He was not interested in preparing to become a scholar, but instead wanted a credential and greater knowledge to practice his profession. Indeed, one professor noted that even when a research assistantship is available, students often don't take it because they make much more money working off-campus and going to school part-time. Students at Regional University have no time for an apprenticeship with a professor to learn the work of scholarship.

Part-time attendance also leads to high student attrition from the doctoral program. In theory, RU rules require students to complete their degrees within seven years. The RU vice president for academic affairs complains that the education school violates the rule more often than not. Nonetheless, at least one program refuses to waive the requirement, which causes the part-time student who is taking a couple of courses a semester and is not yet at the dissertation stage to leave. Other departments regularly waive the requirement, allowing students to

Part-time attendance can lead to high attrition from doctoral programs at some large universities.

Large regional universities often lack the financial aid to compete for the best and brightest doctoral students, who are grabbed up by smaller major research universities.

pursue doctoral studies for years and years until they give up. The high student/faculty ratio means less time is available for faculty to follow up on student progress.

Even if students were able to attend full time, the overwhelming majority would be unable to take advantage of the opportunity for lack of financial aid to support them. RU has fewer than 10 teaching and research assistantships in education. There are no fellowships. At MRU, there are more than two fellowships and assistantships per student.

The lack of financial support means that RU offers what might be called a wholesale doctoral education rather than the far more desirable retail version. The distinction is that the former is a relatively high-volume, low-personal-contact way to earn a doctorate as students go through doctoral study in groups taking courses and writing exams. They go from work to class to home, spending time on campus only to take classes and handle administrative tasks. The dissertation is the first (and therefore the only) time that most students work individually with a professor over any sustained period.

The latter approach, retail doctoral study, is low-volume, individualized and highly personal. Students also take courses and exams in the retail version of doctoral study, but their primary education comes from faculty mentoring via an apprenticeship. This is where they learn the trade of research, which requires a strong researcher as mentor.

The lack of financial aid also leaves RU unable to compete for the best and brightest doctoral students, who are grabbed up by schools like MRU. Admission standards for RU are low. The average GRE score for RU graduate students in the 2003 academic year was slightly under 400, far below the national average. In comparison, MRU scores are just above 600. RU graduate students have an average undergraduate grade below B, which is surprising because RU requires a minimum of B for admission to the doctoral program. The academic quality is also a troubling aspect of RU doctoral studies. As one professor said, “I don’t think we have a strong doctoral program.” Even in the field the dean picked as the most outstanding—educational psychology—the program is merely a collection of courses augmented by a first-year preliminary exam and a dissertation. However, this program is the most successful in finding financial aid. Wishing there were research assistantships, which faculty see as “unlikely to happen,” the educational psychology program instead cobbles together support for some students—a distinct minority—through work-study, research grants and university scholarships.

The educational psychology program requires students to complete 100 credits beyond the baccalaureate. They must take three specific courses in their first year—Basics of Educational Psychology 1, 2 and 4, dealing with learning, child growth and development, and selected topics to be announced. A look through the course listing shows no course designated as Basics of Educational Psychology 3, nor is there an explanation as to why a "to be announced" special topics class is a must for all students.

Students are also required to take five courses under the banner of research. These include Fundamentals of Statistics, Computer Use in Research, Variance and Covariance Analysis, Multivariate Analysis, and Research and Experimental Design. Four out of five of these courses are about techniques and tools. Only in the fifth course do students learn about carrying out research, meaning they have a maximum of 45 hours of instruction about how to engage in research before undertaking a dissertation. The battery of courses is also limited in content, focusing entirely on quantitative research and ignoring qualitative research, the method of choice for most doctoral student dissertations in the school. When asked why students employ qualitative approaches to research so much more frequently, faculty members said that students and some of their colleagues do not really understand quantitative research, and standards for qualitative research are much less demanding.

Beyond this, students are required to take two doctoral seminars in a foundations of education field; they may choose from a list of six, ranging from educational administration to history of education. This is a distribution requirement that says all doctoral students should know something about history, sociology or perhaps educational administration. All have equal value and the virtue of being fungible. Thirty credits are required in the student's major area, and 12 more in a cognate area in a professional area or single field.

This curriculum is little more than an organized assortment of courses. It does not prepare students to engage in scholarly research. In point of fact, the faculty could remember only a handful of students who went on to professorial careers, most under the guidance of a single RU professor.

The weaknesses of RU's education school are exacerbated—or perhaps caused, in part—by the fact that it is used as a cash cow by the university. As the school's dean said, his school is "a profit-maker for the university." From continuing education alone, he said, millions of

Doctoral coursework at many universities focuses on quantitative research while ignoring qualitative research, the method of choice for most doctoral student dissertations in the schools.

Many colleges and universities dilute their historical commitment to teaching and professional preparation in the quest to produce research, but fail to achieve either aim.

dollars go to the university coffers. RU's vice president for academic affairs confirmed this. She said the school of education was, in fact, not the university priority "highest on the food chain," an approach she saw as common at major universities. But the chief academic officer said that she treats the education school "as appropriately well as I can." That treatment is not, in practice, very good, as the transfer of funds from the education school to other departments higher on the food chain leads to inadequate staffing, high enrollments, low salaries for adjuncts and minimal financial aid for education doctoral students.

The dean of the education school saw research as the only way to generate needed additional funds and an enhanced reputation for his school. He believed that "an institute or center allows us to attract different kinds of money, more money. That's the purpose really—to be an entity that in and of itself attracts more money." The hope is that extramural money can be used to strengthen programs, provide more financial aid and help build an endowment. The vice president for academic affairs saluted the dean's initiative and approach.

Conclusion

The story of Regional University is repeated all over the country. Because research is prestigious and the doctorate is the top degree a university can award, education schools and their faculties, without the human and financial resources to produce either successfully, are expected by their deans and provosts to embrace both. As at RU, the results are poor doctoral programs and low faculty productivity. The irony is that such schools never achieve their goals. The research and doctoral programs are so deficient that their existence only confirms the impressions of faculty outside the education school about the low quality inside. These doctoral programs do not receive sufficient external funding to support their dreams of substantial increases in financial aid or additions to the faculty. These schools find themselves caught between two worlds—a historic commitment to teaching and professional preparation, on one hand, and a quest for research production and preparation of scholars on the other. In order to engage in the quest, they are forced to dilute their historical commitment. In the end, they achieve neither aim.

The shortcomings at RU, and at the majority of education doctoral programs like it around the country, are shown in Table 16, which applies the criteria for excellent research-preparation doctoral programs discussed in Part I. They satisfy none of the nine criteria.

TABLE 16

Criteria for Excellence Applied to America's Doctoral Programs to Prepare Education Researchers, as a Class

Criterion	Generally Meets Criterion	Explanation
Purpose ● Purpose is explicit, focusing on the preparation of education researchers and scholars. ● The field of research is explicitly defined and the skills and knowledge needed by researchers are clearly identified. ● Success is tied to quality of research by graduates and its impact on research, practice and policy.	No	The purposes of researcher preparation programs are confused by the amorphousness of the subject area, the lack of agreed-upon research methods, the absence of quality standards, and uncertainty regarding the goals of doctoral education.
Curricular Coherence ● Curriculum is rigorous, coherent and organized to teach the skills and knowledge needed by researchers.	No	The curriculum is generally an assortment of poorly coordinated courses, including research classes, subject matter courses, electives, a dissertation and a variety of exams, which vary significantly from program to program. Research preparation programs do not provide the integrated experience, depth of study or opportunities to apply classroom theory necessary to prepare quality researchers.
Curricular Balance ● Curriculum integrates the theory and practice of research; apprenticeship is combined with classroom instruction.	No	For most students, the curriculum emphasizes course work with little opportunity for application. Few students are given the chance to engage in an apprenticeship with a faculty member.
Faculty Composition ● The faculty is composed of highly productive scholars with the capacity and commitment to prepare the next generation of researchers. Their research is well funded. They receive competitive awards and fellowships for their work. But most of all, they model high standards in research and are expert teachers, scholars, advisors, and placement agents. They are dedicated to the preparation of their students, the advancement of their fields and the enhancement of their programs, schools and institutions. ● Total faculty numbers and fields of expertise are aligned with curriculum and student enrollment.	No	Only in education doctoral programs at research extensive universities are a majority of faculty highly productive. Research is substantially better funded at these institutions as well. In general, education doctoral programs lack a sufficient number of highly productive and well-funded faculty. This is reflected in the composition of doctoral dissertation committees. Faculty members with the capacity to prepare researchers are disproportionately concentrated in a small number of institutions.
Admissions ● Admissions criteria are designed to recruit students with the capacity and motivation to become successful scholars and researchers.	No	Programs generally admit students with incompatible goals—future practitioners and researchers. The students are commonly offered programs that meet the needs of neither. The curriculum is more research than practice oriented, but watered down to meet the needs of practitioners.
Graduation and Degree Standards ● Graduation standards are high and the degrees awarded are appropriate to the field. ● After graduation, alumni commonly receive major research fellowships and positions in strong universities and research organizations.	No	The degrees initially intended for practitioners and scholars, the Ed.D. and Ph.D., are awarded interchangeably. This blurs the distinction between education for practice and for research.
Research ● Research is of high quality, is well funded, and and is valued by policymakers, practitioners or scholars.	No	Research reflecting the lack of agreed-upon standards is of mixed quality, much more weak than strong. At most institutions, with the exception of research extensive universities, research funding is low and education research is not valued by practitioners, policymakers or scholars. Citation rates for publications are lower than in other fields. There is a troubling tendency for many less selective teacher education programs to defend their absence of rigor and standards on the grounds of being committed to access for underrepresented populations.
Financial Aid ● Resources are adequate to support the program, the faculty who teach in the program, the students enrolled in the program, and and the physical and intellectual infrastructure needed to support the program	No	Financial aid is insufficient to support doctoral students and faculty numbers are inadequate in number to sustain student enrollments.

STRENGTHENING RESEARCH PREPARATION *in* EDUCATION

This study asked a single question: Do current preparation programs have the capacity to educate researchers with the skills and knowledge necessary to carry out research required to improve education policy, strengthen education practice, or advance our understanding of how human beings develop and learn? The answer is that a minority of programs do, but most do not.

There are three major obstacles to creating and sustaining strong programs:

1. The field of education is amorphous, lacking agreed-upon methodologies for advancing knowledge, common standards of quality and shared mechanisms for quality control;

2. Education doctoral programs have conflicting purposes and award inconsistent degrees; and

3. Research preparation programs are under-resourced, with inadequate funding and insufficient faculty expertise.

Education research is of very mixed quality, more weak than strong, with low readership.

The result is a body of research of very mixed quality, more weak than strong, with low readership by practitioners and policymakers and low citation rates by scholars.

As a nation, the price we pay for inadequately prepared researchers and inadequate research is an endless carousel of untested and unproven school reform efforts, dominated by the fad du jour. Ideology trumps evidence in formulating educational policy. And our children are denied the quality of education they need and deserve.

This report offers five proposals to strengthen research preparation in education schools. They come with two caveats. First, this is a report about education research. It does not compare research or research preparation in

Schools of education have direct influence over many aspects of education research and researcher preparation.

education with that in any other field—so it would be a mistake to conclude that the quality of education research and research preparation is better or worse than in other fields.

Second, it would be an error to hold education schools entirely responsible for the quality of America's educational research. There certainly is a good deal of truly terrible stuff in circulation that is called education research. But education schools are just one of a multiplicity of research producers. The others include think tanks; non-profit research firms such as the American Institutes for Research, the Education Testing Service, Rand and SRI International; corporations like McGraw-Hill; professional associations; foundations, government and more.

Of this group the worst offenders have been the growing number of ideological think tanks, overwhelmingly conservative. For the most part, they have not engaged in disinterested research, but rather have collected data to support the policy positions they advocate. Their publications are among the most visible in education because these organizations have been remarkably successful in disseminating, publicizing and getting them into the hands of policymakers.[32]

Here, then, are five recommendations regarding the aspects of educational research and researcher preparation on which schools of education *do* have direct influence:

RECOMMENDATION ONE:
Award the Ph.D. and only the Ph.D. to students who have successfully completed doctoral programs to prepare researchers.
Today, the doctor of philosophy degree (Ph.D.) and the doctor of education degree (Ed.D.), the two doctorates awarded in education, are used interchangeably. This was not the intention when the Ed.D. was created as a doctoral degree for practitioners, an alternative to the Ph.D. for scholars. That distinction was never realized. From the earliest days, the degrees were fungible.

The result is that some schools offer both degrees. Some offer Ed.D.'s solely for students from doctoral programs for school leaders. Some grant the Ph.D. only for researchers. Some, like Harvard, award the Ed.D. to all students completing doctoral programs, whether they are headed for careers as researchers or practitioners. And some, such as the University of Wisconsin, do the reverse, granting the Ph.D. to all doctoral degree recipients. It's a grab bag.

To suggest that the Ph.D. be reserved for researchers is not merely an exercise in tidying up. At the moment, the primary difference

between the degrees is that the Ph.D. has greater status. When possible, this causes practitioners to seek what should be a research degree; as a result, education schools too often must make their programs do double duty, enrolling both practitioners and scholars. So, the practitioners attend programs that emphasize research over practice and scholars take programs that might be described as "research-lite" to accommodate practitioner needs.[33] In the end, neither group receives the education that will best prepare them for their careers.

Reserving the Ph.D. strictly for research is a step in alleviating this problem. Recommendation Three discusses other steps that might be taken.

RECOMMENDATION TWO:
Diversify the research missions of America's colleges and universities; offer programs to prepare education researchers at only Doctoral Extensive universities and selected Doctoral Intensive institutions.

American higher education has developed a unitary conception of research. Rooted in the German universities of the 18th and 19th centuries, it was transplanted to the United States with the founding of Johns Hopkins University in 1876 and reproduced on a mass scale with the rise of the research university. It is a conception of research that prizes the advancement of knowledge for knowledge's sake—embracing basic over applied research, the discovery of knowledge over its application and theory over practice. It has served the nation well in terms of advances in knowledge, most visibly in areas such as science and medicine that yield Nobel Prize-winning breakthroughs.

However, the unitary conception has served higher education less well. The reason is that it has been adopted throughout higher education as the best form of research, the type of research every institution—with the exception of most liberal arts colleges—should aspire to perform. It has been translated into a set of values that holds research to be of higher status than teaching, educating scholars of greater importance than teaching undergraduates and awarding doctoral degrees of greater stature than granting master's, baccalaureate or associate degrees. The most esteemed institutions in higher education are the doctoral granting universities with the highest research productivity and the greatest extramural funding.

This prestige system encourages institutions without the resources to engage in doctoral education to seek doctoral granting authority; gives those whose faculty lack adequate research expertise incentives to push

The most esteemed institutions in higher education are the doctoral granting universities with the highest research productivity and the greatest extramural funding.

If higher education is to remain vibrant, all institutions and their faculties must be engaged in research in the broadest sense of the word.

for publication and research grants; and leads those without the reward structure, culture and essential workload conditions to attempt to establish research centers or recruit eminent scholars in the hope of establishing their research bona fides. The fact that research productivity, research funding and doctoral production play a prominent role in *U.S. News and World Report* rankings also encourages this behavior.

However, if higher education is to remain vibrant, all institutions and their faculties must be engaged in research in the broadest sense of the word. The alternative is for faculty members simply to report the knowledge discovered by others. Colleges and universities would grow stale, if the role of faculty were merely that of academic news anchors. Toward this end, research needs to be redefined in schools of education.

The late Ernest Boyer proposed a means for accomplishing this. In a report for the Carnegie Foundation for the Advancement of Teaching entitled *Scholarship Reconsidered*, Boyer identified four kinds of scholarship—discovery, application, integration and teaching.[34] Traditionally, research and scholarship have been thought of in only one of those categories—discovery of new knowledge. The Boyer model enlarges this notion by recognizing that the application of newly discovered knowledge, the integration of bodies of knowledge and the greater understanding of how knowledge is communicated and gained are scholarship as well.

This suggests a set of scholarly missions for the six sectors of education schools. The Doctoral Extensives, along with the very strongest of the Doctoral Intensives, would focus on the scholarship of discovery, though engaging, too, in the other modes of scholarship as they wished. Our study found these institutions to be the only ones with adequate capacity to offer research preparation at the doctoral level. These institutions would offer the Ph.D. as their highest degree.

Most Doctoral Intensives and Masters I universities would specialize in the scholarship of application and integration. They would grant the master's degree as their highest degree and, when sufficiently strong, these institutions might also offer the Ed.D. for practitioners.

The Baccalaureate colleges and Masters II universities could then focus on their area of strength—the scholarship of teaching. Their highest degree would be the baccalaureate and, when justified, a master's in teaching.

This differentiation of roles might slow the race by institutions with insufficient resources to gain doctoral degree authority and build research programs that focus on the

scholarship of discovery. It could also raise research quality and reduce the costs of higher education by limiting the number of Ph.D. programs to correspond to the need for education researchers and scholars.

RECOMMENDATION THREE:
Establish high and clearly defined standards for education research and doctoral preparation in research; close doctoral programs that do not meet those standards. There are two elements here—research quality and doctoral program quality.

Research Quality: It doesn't matter whether education research is better or worse than research in other fields. This study found that the quality of education research, in and of itself, was mixed; education professors were critical of the quality of research in the field; standards and quality controls for research were absent; and the research was cited and replicated at lower rates than research in other fields.

The National Research Council's Committee on Scientific Principles for Education Research proposed a foundation for education research, consisting of "six guiding principles [that] underlie all scientific inquiry, including education research:"[35]

1. Pose significant questions that can be investigated empirically;
2. Link research to relevant theory;
3. Use methods that permit direct investigation of the question;
4. Provide a coherent and explicit chain of reasoning;
5. Replicate and generalize across studies; and
6. Disclose research to encourage professional scrutiny and critique.

These principles reflect the norms and practices that have evolved over time and govern scientific research. The education research community should embrace them.

Doctoral Program Quality:
Doctoral programs in education fall into two categories—wholesale and retail. In wholesale programs, students attend classes, take exams and write dissertations. In simplistic terms, such programs focus on students as a group, education occurs principally in the classroom, and a student's first opportunity to work closely with a faculty member is usually the dissertation.

In contrast, retail programs also have classes, exams and a dissertation, but the heart of the program is an apprenticeship in which an accomplished scholar teaches the student how to be a researcher. The student is mentored, moving from the most basic research activities to major project responsibility. In comparison with wholesale programs, retail doctoral education is more

Research quality could be raised and costs to higher education reduced by limiting the number of Ph.D. programs to correspond to the need for education researchers and scholars.

individualized; the apprenticeship is the central education experience; and close contact with faculty begins upon entrance into the program.

Retail education is the ideal way to produce excellent education researchers. Unfortunately, most doctoral programs for education researchers are wholesale.

It is the responsibility of universities to ensure that their doctoral programs for researchers are strong.

The most successful programs encountered in the course of this study shared a number of characteristics. They included a clarity of vision regarding the skills and knowledge that students need to become researchers; agreement on the contours, methodologies and quality expectations for their fields; curriculums that mirrored the vision of what researchers need to know in the context of their fields; apprenticeships with faculty members that began early in the doctoral program; highly productive faculty members with major research funding who served as mentors to their students; qualified students who wanted to be researchers; financial aid sufficient to support students' full-time attendance; enrollments and workloads commensurate with faculty numbers and research commitments; and resources such as appropriate facilities, equipment and support services.

In this light, education schools need to rethink and strengthen their research doctoral programs if they are to prepare graduates with the skills and knowledge necessary to carry out the research required to improve education policy and practice, or to advance our understanding of how human beings develop and learn. Part I of this report offered nine criteria for assessing the quality of programs to prepare researchers, and Part II provided the case study of an exemplary program at Vanderbilt University, which demonstrates those criteria in practice.

It is the responsibility of universities to ensure that their doctoral programs for researchers are strong. They need to evaluate existing and prospective programs. Weak programs should be closed; mediocre programs must be strengthened; and excellent programs must be supported. These assessments and plans for action should be accomplished within the next seven years. If universities fail to act, it is the responsibility of the states to do so.

Our nation needs a limited number of education scholars. This study indicates there are too many programs trying to produce such scholars today. States should act not only to maintain quality, but also to reduce expenditures on doctoral education in cases where the returns are insufficient and to redirect those resources to better uses—for

instance, to provide financial aid to students in strong programs.

RECOMMENDATION FOUR:
Establish effective means of quality control within the education research community.
Education lacks the quality standards and controls of most established disciplines. The education research community is characterized by diversity and differences. As noted earlier, the American Educational Research Association (AERA), the largest research organization in education, has not served as an effective arbiter or monitor of quality. It has been unable to lead the profession in developing high, agreed-upon standards for quality research. Its annual conference is more of a bazaar, displaying the best and worst of education research. Indeed, in interviews for this study, the deans of a number of the highest-ranked graduate schools of education lamented how much poor research is presented at AERA.

Change is essential. The Spencer Foundation, the preeminent funder of quality research in education, could take the lead in ameliorating these conditions. Perhaps in cooperation with the National Academy of Education, education's equivalent of the National Academy of Sciences, the Spencer Foundation could create an alternative to the American Educational Research Association annual meeting, inviting only the most distinguished scholars to present their work and, over time, enlarging participation through peer review of scholarly works. The AERA meeting could continue to offer the full range of research in education, weak as well as strong, and the Spencer meeting would serve as an exhibition of the best research, establishing standards of excellence for the field.

Spencer might also fund a study of education journals, which would assess the degree to which they employ rigorous and appropriate standards—growing out of the National Research Council report—in their acceptance and publication of research. Today, while there are well-known hierarchies among academic journals in particular fields, there are no cross-field comparisons. The same kind of study might be done with existing doctoral programs designed to prepare education researchers.

The simple fact is that if strong and clear standards are not set for education research by the education community, they will surely be set by government, which is likely to become increasingly intrusive in the field.

If strong and clear standards are not set for education research by the education community, they will surely be set by government.

By failing to engage policymakers and practitioners, education schools have allowed government, the press and others to seize the initiative on education reform and dismiss education schools as trivial.

RECOMMENDATION FIVE:
Strengthen connections between education research and the worlds of policy and practice; establish closer ties between education researchers and their colleagues in the arts and sciences.

This study found that research programs at education schools are isolated. Their faculty are disconnected from colleagues in colleges of arts and sciences. Their research is not read by policymakers or practitioners.

Education Policy and Practice:
Seeking to win the approval of universities that have historically been critical of their research, programming, staffing and admissions standards, education schools have retreated from the worlds of policy and practice in favor of more academic scholarship. In the first report in this series, this retreat was described as "the pursuit of irrelevance."

The simple fact is that, no matter how much education schools twist and turn, they cannot remake themselves in the image of colleges of arts and sciences. They are professional schools. Like other professional schools, they need to focus on a single social institution—in this case, the P-12 schools. The primary audience for education research should be policymakers and practitioners.

Education schools have paid a very high price for failing to act in this fashion. For a quarter-century, education reform has been a high priority for the country, and education schools should rightly have been the leaders in shaping the national debate and leading the improvement effort. Instead, their unwillingness to engage policymakers and practitioners allowed government, the press, corporations, philanthropists and a cornucopia of reform groups to seize the initiative and dismiss education schools as trivial. This is unfortunate not only for education schools, but for the nation.

The past can't be changed, but a new future is possible. Education schools have the capacity to refocus their research on school policy and practice, to shift some of their teaching activities from the campus to the schoolhouse and statehouse, and to become more involved with policy and practice in their research, teaching and service. A place to begin: the 1990 recommendation by the Holmes Group, an assemblage of education school deans, that education schools create professional development schools—the equivalent of teaching hospitals. These are places where university faculty and students could work together with school teachers and their students to

the mutual benefit of all, providing research opportunities, research training, professional development that melds theory and practice, curricular enrichment and enhanced learning opportunities.

Arts and Sciences Colleges: This does not mean that education schools should turn away from colleges of arts and sciences. While they should not ape these schools, they need to learn from them. Professional schools embody applications of arts and sciences disciplines; some focus primarily on a single discipline, others on several disciplines. For instance, medical schools facilitate applications of the basic sciences; business schools, applications of the discipline of economics. Education, by contrast, is an interdisciplinary field, employing methods of inquiry and bodies of knowledge from across the arts and sciences.

Education schools have been criticized for lagging behind their disciplinary peers in the research methods they employ and in their awareness of the most recent advances in the disciplines.[36] Building stronger relationships with the arts and sciences is a first step in reducing lag time. But collaborations of this sort offer so much more—from the cross-registration of students and team teaching to joint appointments and shared research activities. The first step is meetings between faculty in a university's school of education and their counterparts in arts and sciences. Bag lunches and cosponsored symposia are good ice-breakers. At some institutions, the Ph.D. is the province of arts and sciences and the Ed.D. is lodged in the education school. Creating a joint Ph.D. for students seeking preparation in education research is an essential collaborative activity.

Deans, department chairs and provosts can grease the skids with both conversation and small amounts of funding. The promise of such cross-school efforts is that they can break down current stereotypes, strengthen education schools and build productive relationships that benefit both education faculty and their arts and sciences colleagues.

Conclusion

In the past two reports, I closed with two comments. They are worth reiterating here. First, little in this report is surprising. The short comings of education research and doctoral preparation for research are well known. These shortcomings are being documented and recounted again in this report because they have not been acted upon by the education research community.

Second, in offering this analysis and set of recommendations, which are critical, it is important to

Education schools have been criticized for lagging behind their disciplinary peers in the research methods they employ and in their awareness of recent advances.

recognize that I am not an education school basher. I have spent more than half of my career in education schools. I believe in them, but think they need to be stronger in carrying out education research and preparing scholars for the future. I am convinced that universities are the best place to carry out education research.

However, if education schools do not improve the quality of their work in this area, they are in danger of losing their franchise to carry out education research and to prepare education researchers. The number of organizations engaged in education research is booming, as noted earlier. The expansion of corporate, government and not-for-profit education companies such as Rand, the American Institutes for Research, SRI International and the Educational Testing Service is both a reaction and a threat to education school research.

As for doctoral preparation, the Spencer Foundation offers dissertation and postdoctoral fellowships in education. Spencer is giving more of those fellowships to students and graduates outside of education schools than inside. This means that students prepared in or working in departments and organizations outside of education schools are seen as having a greater likelihood of making a scholarly contribution than those inside.

It is time for education schools and the universities in which they operate to act on what they already know. It will benefit them and it will benefit the country.

DATA SOURCES

A number of studies were conducted in the course of this research. All of the heads (deans, chairs and directors) of U.S. education schools and departments were surveyed (53 percent responded) regarding their school's demographics and practices, as well as their personal experiences, attitudes and values with respect to their own education school and education schools collectively (Deans Survey).

A representative sample of 5,469 education school faculty were surveyed (40 percent responded) regarding their work and, again, their experiences, attitudes and values with respect to their own education school and education schools generally (Faculty Survey). A representative sample of 15,468 education school alumni who received degrees, from the baccalaureate to the doctorate, in 1995 and 2000 were also surveyed (34 percent responded) regarding their careers, their experiences in the schools that awarded their degrees and their attitudes and values regarding education schools (Alumni Survey).

Finally, 1,800 principals were surveyed (41 percent responded) regarding their own education, the education of the people they hire and their attitudes and values with respect to education schools collectively (Principals Survey).

With the exception of the Deans Survey, which included all of the education school heads, the Faculty, Principals and Alumni Surveys used randomly chosen samples of each population. The faculty and alumni samples were stratified by Carnegie type, region of the country and institutional size. The sample of principals was stratified by geographic region and school type. The responses were either representative of the universe or, when necessary, weighted to recreate the universe. A technical manual on the surveys conducted by Synovate is available.

The research also included case studies of 28 schools and departments of education. Teams of academics and journalists conducted site visits at each school for the purpose of going beyond the survey data to paint a more in-depth portrait of the education school. They spent several days on each campus, with the length of their stay dictated by the size and complexity of the school. At each school, they studied its history, mission, programs, admission and graduation requirements, plans, funding and the characteristics of the student body, staff and administration. Particular attention was given to programs in teacher

education, educational administration and research preparation. The choice of schools was designed to reflect the diversity of the nation's education schools by region, control, religion, race, gender and Carnegie type. The participating schools were promised anonymity and those interviewed were promised confidentiality. Only in instances of exemplary practice is the name of any institution mentioned.

There were also inventories of the different programs offered and the types of doctoral degrees awarded by education schools, again stratified by Carnegie type. A random sample of doctoral dissertation abstracts and descriptive characteristics for both Ph.D.'s and Ed.D's. was examined. A demographic profile of education schools was produced by combining the data collected in the Deans Survey with data collected by the National Council for the Accreditation of Teacher Education (Demographic Study). Other materials used included databases created and maintained by the College Board, the Graduate Record Examination, the Educational Testing Service, the National Center for Educational Statistics, the American Association for the Advancement of Sciences, the National Council for the Advancement of Teacher Education, ProQuest Digital Dissertations (Dissertation Study) and the CIRP Freshman Survey, conducted annually by the Higher Education Research Institute at UCLA.

A DESCRIPTION *of the* NATION'S EDUCATION SCHOOLS *by* CARNEGIE TYPE

The nation's education schools can be sorted into three broad Carnegie classes—institutions granting the baccalaureate degree; colleges awarding the master's degree; and research universities granting the doctorate. Within each of these classes, the Carnegie typology identifies two types of institutions. Here's how it works:

Education Schools and Departments in Baccalaureate Granting Colleges

A third of the nation's "schools of education," more accurately described as education departments, are found at baccalaureate-granting colleges. The 401 departments located at these schools primarily engage in undergraduate education, though slightly more than a quarter (28 percent) offer relatively small graduate programs, usually in teaching. The departments are small in size, graduating collectively only 13 percent of the nation's teachers prepared in undergraduate programs, 4 percent of teachers educated in graduate programs and 1 percent of the country's school administrators. Their budgets average $594,000 per year. Education departments at these schools focus more on teaching than research. Course loads are heavy and publication rates and research funding are low.

The Carnegie Foundation for the Advancement of Teaching classification divides baccalaureate colleges into two distinct types of institutions—liberal arts colleges, which award at least half their degrees in the liberal arts, and baccalaureate general colleges, more broad-gauged institutions offering fewer than half their degrees in the liberal arts. Our data show that based on SAT scores, liberal arts colleges, constituting one-third of the education departments at baccalaureate institutions, are more selective in student admissions. They are more academically oriented and more rooted in the arts and science tradition, and a greater proportion of their faculty hold Ph.D.'s. The general baccalaureate

colleges are more concerned with practice and view themselves to a greater extent as professional schools.

Education Schools at Master's Granting Universities

In contrast to baccalaureate colleges, education schools at master's grantng universities tend to be larger. There are 562 schools and departments of education, and they constitute 47 percent of the nation's education schools. They graduate 54 percent of teachers prepared as undergraduates, 62 percent of teachers educated at the graduate level and 57 percent of school administrators earning degrees each year.

The reason for the enormous impact of this sector is not that each school produces so many graduates but that there are so many schools. The typical master's degree granting school of education produces slightly more than 200 teachers and administrators each year. Nearly all of the education schools and departments at these universities (96 percent) offer undergraduate degrees/programs in education. More than nine out of 10 (92 percent) award master's degrees, and 10 percent grant doctoral degrees.

As with the baccalaureate colleges, the Carnegie Foundation divides master's universities into two categories. The first is Masters Colleges and Universities I (MI) and the second is Masters Colleges and Universities II (MII).

The MI's, predominantly regional public universities, award 40 or more master's degrees per year across three or more disciplines, while the MII's—commonly private, tuition-dependent colleges—grant a minimum of 20 master's degrees without regard to field. The MI's have on average more than twice as many full-time and part-time undergraduates, more than six times as many full-time graduate students and over three times as many part-time graduate students. Their budgets mirror the size differential. While both are defined as offering a wide range of undergraduate programs and graduate education up through the master's degree, their education schools differ substantially in the scope of their programs (Demographic Study).

Neither can be regarded as selective in admissions, as measured by SAT scores. The Masters II colleges are a tiny sector of the education school world, consisting of 95 schools of education that together are just slightly ahead of liberal arts colleges in degree production. In contrast, Masters I schools of education account for 467 education schools and graduate 49 percent of teachers prepared in undergraduate schools, 60 percent of teachers prepared in graduate schools and

55 percent of school administrators receiving degrees each year. They have a stronger scholarly orientation than the MII's but are weaker in teaching. The MI is in this sense in an unenviable position. It is weaker in teaching than the best of the MII and baccalaureate schools and weaker in research than the research universities.

Education Schools at Doctorate Granting Universities

The final category of education school is located at research universities. There are 228 doctorate granting schools of education, a smaller number than either baccalaureate or master's institutions, but these schools graduate a larger number of teachers, school administrators and researchers per capita than other Carnegie types. They produce 33 percent of the teachers prepared at the baccalaureate level, 34 percent of the teachers educated in graduate schools, 42 percent of degrees awarded to school administrators and 97 percent of the doctorates granted in education. The typical doctoral institution in our survey produced 263 undergraduate teachers, 69 graduate teachers, 47 school administrators and 24 holders of doctorates.

Of the three sectors, doctorate granting schools place the greatest emphasis on graduate education, with graduate student headcounts slightly exceeding their undergraduate numbers. They are also more research-oriented than any of their peers—their faculty have the highest publication records, receive the most extramural funding, have the highest proportion of doctorates and are least likely to be concerned with practice. Doctorate granting education schools offer the greatest number of programs in the broadest range of fields and have the largest annual budgets of all education schools.

As with master's and baccalaureate institutions, there are two distinct types of doctoral schools of education. One is what the Carnegie Foundation terms Doctoral/Research Extensive Universities (DRE), which award 50 or more doctoral degrees per year in at least 15 disciplines. The other is termed Doctoral/Research Intensive Universities (DRI), schools that either grant annually at least 10 doctoral degrees across three disciplines or at least 20 doctorates overall, regardless of field. Doctoral Extensives, which number 138 schools of education, make up 61 percent of this sector.

Both types of schools are selective in admissions, though the DRE's are the most selective education schools in the nation as measured by SAT and GRE scores. Both offer undergraduate education programs, although not universally. Eighteen

percent of the Doctoral Extensives and 5 percent of the Doctoral Intensives offer strictly graduate programs in education.

The master's degree is, however, nearly universal; it is awarded at 95 percent of the DRE's and 98 percent of the DRI's. This sector also has a near monopoly on the education doctorate with 95 percent of the Doctoral Extensives and 82 percent of the Doctoral Intensives awarding the degree.

Schools of education at Doctoral Extensive universities are in a class by themselves when it comes to research. They are the most research-oriented of the nation's education schools with the highest publication rates, grant dollars for research, proportion of graduate students and faculty with Ph.D.s. They are the only type of education school that stresses publication in hiring faculty members (Deans Survey; Demographic Study).

Cautions

In sum, the Carnegie Foundation classification identifies six different types of schools of education—Baccalaureate General Colleges, Baccalaureate Liberal Arts Colleges, Masters Granting Colleges and Universities I, Masters Granting Colleges and Universities II, Doctoral Intensive Universities and Doctoral Extensive Universities. This study employed the typology throughout as a vehicle for capturing the commonality and diversity among the nation's schools of education.

The reader is offered two cautions in this regard. First, the classes should be viewed as composites, meaning no school of education in any of the six categories can be expected to mirror all of the characteristics of its class. Second, neither the strengths nor the weaknesses discovered in the course of this research regarding a specific class of education school can be ascribed to any particular school within the class.

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Arthur Levine
Princeton, New Jersey, 2007

NOTES

[1]Twelve hundred and six is the number of schools, colleges, and departments of education identified in this study. Slightly higher and lower numbers appear in the literature, which may be a consequence of the openings and closings of teacher education programs as well as differing definitions of what constitutes a program. In this study, the universe of schools, colleges, and departments of education is referred to as "education schools" and "schools of education."

[2]Department of Education, National Center for Education Statistics, *Digest of Education Statistics 2003* (Washington D.C.: NCES, 2005-06), table 253. (See also http://nces.ed.gov/programs/digest/d04/list_tables3.asp#c3a_5.)

[3]Alexander C. McCormick, *The Carnegie Classification of Institutions of Higher Education: 2000 Edition* (Menlo Park, Calif.: Carnegie Foundation for the Advancement of Teaching, 200l).

[4]Thomas B. Hoffer, Vincent Welch, Jr., et al., *Doctorate Recipients from United States Universities: Summary Report 2005*, "Appendix Table A-1: Number of Doctorate Recipients, by Sex and Subfield of Study" (Chicago: National Opinion Research Center, 2006), 91.

[5]Lynn Olson and Debra Viadero, "Law Mandates Scientific Base for Research," *Education Week*, 30 January 2002.

[6]The criteria are the elements commonly used in program evaluation in higher education—purpose, students, staffing, curriculum, assessment, and resources. Scholarship is included because it is a staple of graduate education and the means by which fields of study like teaching advance. We developed the template from the literature in the field, drawing on scores and scores of publications and studies of curriculum and teacher education.

[7]"Annual Graduate School Rankings in Education," *U.S. News and World Report*, 5 April 2004.

[8]This is based on an examination of the 2003 vitae of the 10 tenured or tenure-track full and associate professors in the department. Two listed the number of grants they had received, but neglected to include the amounts. One failed to include editorial boards, papers delivered, and awards received. These professors were omitted in calculating the average for the categories they had not included. Several professors collaborated on grants. In these cases, each professor was credited with the grant and the total amount of funding received.

[9]National Research Council, Richard J. Shavelson and Lisa Towne (eds.), *Scientific Research in Education* (Washington, D.C.: National Academy Press, 2002).

[10]Michael J. Feuer, Lisa Towne, and Richard Shavelson, "Scientific Culture and Educational Research," *Educational Researcher* 31, no. 8 (2002): 5. Carl Kaestle, "The Awful Reputation of Educational Research," *Educational Researcher* 22, no. 1 (1993): 26-31.

[11]Feuer, Towne, and Shavelson, "Scientific Culture and Educational Research," 10.

[12]Ellen Condliffe Lagemann, *An Elusive Science: The Troubling History of Education Research* (Chicago: University of Chicago Press, 2000), 238, 240-241.

[13]Lagemann, *An Elusive Science,* 239.

[14]"About AERA," Web site of the American Educational Research Association, http://www.aera.net/aboutaera/?id=177.

[15]Gary Huang, Mindy Rieser, Albert Parker, Judith Muniec, and Sameena Salvucci, "Institute of Education Sciences Findings from Interviews with Education Policymakers," prepared for the Institute of Education Sciences at the U.S. Department of Education (Arlington, Va.: Synectics, 2003).

[16]Ibid.

[17]Ernest V. Hollis, "Toward Improving Ph.D. Programs" (Washington D.C.: American Council on Education, 1945), 6-7.

[18]Ibid., 10.

[19]Ibid., 10-12.

[20]Ibid., 21-22.

[21]In most histories Harvard is given credit for awarding the first Ed.D., but Geraldine Clifford and James Guthrie in their book *Education School* (Chicago: University of Chicago Press, 149) say that Berkeley had an Ed.D. in place in 1921.

[22]Hollis, 86, 96.

[23]Ibid., 98.

[24]Lawrence Cremin, "The Education of the Educating Professions," Nineteenth Charles W. Hunt Lecture, American Association of Colleges of Teacher Education, Chicago, 21 February 1978; Clifford and Guthrie, *Education School,* 151.

[25]Hollis, 102.

[26]Hollis, 98; Clifford and Guthrie, 156; National Center for Education Statistics, *Digest of Education Statistics, 2001* (Washington D.C.: U.S. Government Printing Office, 2003), Table 283 ("Earned Degrees in Education Conferred by Degree-Granting Institutions by Level of Degree and Sex of Students"), 336; U.S. Census Bureau, *Statistical Abstracts of the United States, 2002* (Washington D.C.: U.S. Government Printing Office, 2003), Table 280 ("Master's and Doctorate Degrees Earned by Field: 1971-2000"), 177.

[27]These findings are based on a study conducted in March 2004 of the Web sites of each of the schools in which the dean responded to the Deans Survey. This will be called the Degree Study.

[28]Levine et al., *Educating School Leaders* (Washington, D.C.: CommunicationWorks, 2005).

[29]The most troubling aspect is that the ballooning is most common at Doctoral Extensive education schools, where one would expect the highest standards, yet one in five faculty members are involved in 10 or more dissertations. It is important to note than an even higher proportion of Doctoral Extensive faculty members (21 percent) are chairing or sitting on just one or no dissertation committees (Faculty Survey). This inequity produces two classes of professors and two classes of dissertations.

[30]Dissertations accessed through *ProQuest Digital Dissertations,* wwwlib.umi.com/dissertations (Ann Arbor, Mich.: ProQuest Information and Learning).

[31]Once again, the name and some of the immaterial descriptive details of the two schools described in the case study have been changed in order to disguise their identity.

[32]The Heritage Foundation, founded in 1973 as a "research and educational institute whose mission is to formulate and promote conservative public policies," has a Web site listing over 200 conservative think tanks and policy organizations engaged in research on education. Exemplary of the listings is the New Mexico Independence Research Institute, which seeks to advance education by providing "high quality scientifically based policy research which fosters personal responsibility, limited government, and free market economics" (http://policyexperts.org/organizations/organizations_results.cfm).

[33]The watering-down was documented in *Educating School Leaders*. That report also called for eliminating the Ed.D. degree on the grounds that future school leaders might better be prepared with a terminal master's degree akin to the master's of business administration (M.B.A.). It would be a two-year program, consisting of classes in education and leadership, clinical and academic instruction, and an apprenticeship and mentoring. Called the master's in education administration (M.E.A.), it would be a terminal degree for school leaders.

If institutions decide to retain the Ed. D., this new report, *Educating Researchers*, urges that it be defined as a doctorate for practitioners.

[34]Ernest Boyer, *Scholarship Reconsidered: Priorities of the Professorship* (San Francisco: Jossey-Bass, 1990).

[35]NRC (Shavelson and Towne, 2002), 2, 3-5.

[36]Lagemann, *An Elusive Science,* 241.

[37]Soon after this study began, Joe Aguerrebere became president of the National Board for Professional Teaching Standards, where he continues to serve.

[38]Tim Freeman is now vice president at the Woodrow Wilson National Fellowship Foundation.

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