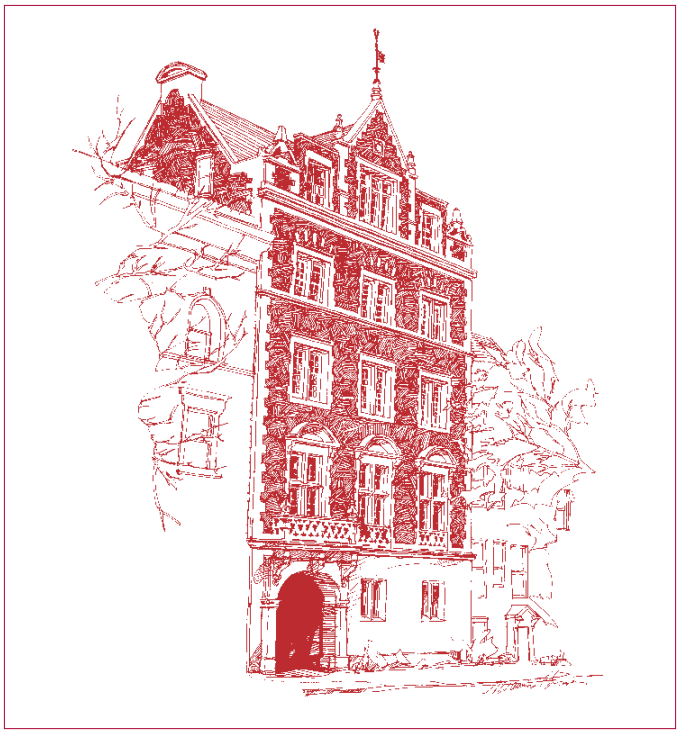
TEACHER PREPARATION



Prepared for the Office of the Provost
Rockefeller Institute of Government
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The Nelson A. Rockefeller Institute of Government

Center —for the— *Study of the States*

Executive Summary

Teacher preparation is an important activity at the State University of New York. Sixteen campuses offer teacher preparation programs. By one measure teacher preparation accounts for more than one-quarter of the activity at eight campuses. At the master's degree level, teacher preparation and other education programs accounted for 38 percent of all master's degrees granted in 1996-97. The State University, in turn, is a major supplier of New York's public school teachers, accounting for approximately 40 percent of teaching certificates granted to university-based teacher candidates.

The State University's teacher preparation programs face challenges from several forces impinging at once: the drive for higher learning standards for students, growing teacher shortages in selected regions and fields, and new regulations for teacher preparation programs and teacher certification, all in an environment of vigorous and sometimes harsh debate. We believe teacher preparation at the State University would benefit from active involvement by the Provost's office in these challenges, in encouraging campuses to take advantage of new opportunities, in rewarding them for doing so, and in helping them deal with difficulties and risks that they face.

The key opportunities and risks that campuses face include:

- ***Expanding and strengthening the talent pool of potential teachers:*** **New York State currently faces teacher shortages in selected fields such as mathematics, the sciences, and bilingual education. It also faces shortages in urban areas. These shortages will grow significantly in coming years. The State University currently plays a major role in supplying New York's teachers and should play a major role in filling these gaps. One of the most important issues facing the University is how to develop programs and incentives that will encourage bright students to enroll in programs for high-demand teaching fields. The University should pay special attention to approaches that might attract the most academically capable students to these fields. Another major challenge is to find ways to encourage and assist students both in school, and after they graduate, to increase the number of individuals able and willing to teach in urban areas.**

- ***Developing intensive and streamlined programs for career changers:*** **One of the biggest challenges New York public education faces is finding enough qualified people to teach in high-demand fields and regions, and the challenge will increase as teacher shortages grow in the years ahead. New regulations from the State Education Department provide campuses with explicit flexibility and encouragement to design intensive streamlined programs for career changers and others with academic and professional degrees. This is a huge opportunity for the State University. It is also a huge opportunity for people who may wish to teach, as it can drastically reduce the opportunity cost of teacher preparation by allowing individuals to avoid prolonged periods without salary. The Provost's office should consider incentives and assistance to encourage campuses to develop innovative programs that will take advantage of this flexibility.**

- ***Strengthening the subject matter training of teachers:*** **The new State Education Department regulations generally require secondary education students to take a full major equivalent to that taken by non-education majors. Some campuses already require this of their teacher preparation students, and most others require programs that are almost the same as full majors. Nonetheless, some schools will have to begin requiring much more rigorous majors and may need to work especially closely with their arts and sciences faculty to help students adjust to the new requirements.**

- ***Responding to regional gaps and gaps in specific certification fields:*** **There are severe teacher shortages in New York City and other urban areas, and shortages in selected fields such as math, the sciences, and bilingual education. The State University should consider establishing an Urban Teacher Education Center in New York City as a place for teacher education students from all campuses to be based and to develop knowledge and skills for teaching in urban schools. Such an initiative could include incentives to faculty and campuses to participate. Indeed, it makes sense to adopt a similar approach for dealing with what are determined to be the major areas of special curricular needs for teacher preparation — e.g., math, science, reading.**

  While the State University should look for creative ways to encourage students to teach in urban areas and in fields with shortages, there are limits to the University's ability to "push" students. Students also need to be pulled, requiring policies that go beyond the reach of the State University. For example, a would-be teacher choosing between New York City or an outlying suburb faces the prospect of earning at least an additional quarter-million dollars in the suburbs in present-value terms over the course of a teaching career. It is hard for the State University to design an urban education program to compete with this — a full scholarship for graduates who teach in urban settings wouldn't even begin to make up the difference.

- ***Student teaching and field experiences*****: Student teaching and other field experiences are probably the most important part of teacher preparation. The State University faces a number of challenges in this area, including providing earlier and more frequent field experiences prior to student teaching, providing greater opportunities to student-teach in urban settings and other high-need areas, and integrating student teaching with on-campus coursework. State University teacher preparation programs have been criticized for relying unduly on adjunct faculty, especially to supervise student teachers. New regulations will impose minimum requirements for full-time faculty that may enhance student teaching but will also raise costs for campuses. The Provost's office will have to examine these and other new rules regarding the number and kind of faculty that campuses must have. They may drive up the cost of teacher preparation in New York.**

- ***Addressing the accreditation requirement:*** **New regulations require teacher preparation programs to be accredited. This risks imposing additional and possibly changing rules from an outside body on top of rules developed by the State Education Department. The State University should examine the alternatives carefully and should investigate the Regents accreditation option as a possible alternative to outside accreditation.**
- ***Improving coordination with the State Education Department:*** **Teacher preparation in New York could benefit from improved policy and analytic coordination between the State Education Department and the State University. It makes sense to establish regular, formal, policy-level communication with the State University regarding teacher preparation. This might be especially helpful, for example, in ensuring that State University campuses develop intensive and streamlined teacher preparation programs for career changers.**

These are exciting times for teacher preparation programs. The Provost's office has an important role to play in shaping the State University's response to the challenges ahead.

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Introduction

Across the nation, states are raising standards for education. Children are expected to learn more, and they are expected to demonstrate it. The consequences of failure to perform on tests are greater than ever before. Amidst this current ferment about education, a number of strong voices have urged reforming teacher preparation and certification. This makes a lot of sense. Student learning is influenced greatly by the person in the front of the classroom. In fact, one of the clearest findings of research in this field, which in other areas unfortunately is lacking or unclear, is that good teachers make a big contribution to good outcomes for students, although defining precisely what makes a good teacher remains slippery.

Teacher preparation is an important part of what the State University of New York does, and the University plays a major role in preparing New York's schoolteachers. University campuses and the university system as a whole will have to confront many issues in coming months and years, driven by growing demand for teachers, increasing demands placed upon teachers, and reforms adopted by New York's State Education Department, which regulates teacher certification and preparation in New York.

This report is about teacher preparation in the State University of New York. We have prepared it for the University Provost, but its audience goes beyond the Provost's Office and includes faculty and leadership in the University's teacher preparation programs, as well as interested individuals inside and outside of SUNY. The report's ultimate purpose is to inform discussion about issues that campuses and the system as a whole are confronting or will need to confront. It does not intend to answer all questions. Its objective is to raise issues and place them in context, to facilitate analysis and debate leading to policymaking within the University.

The report begins by describing the State University Role in teacher preparation. It then discusses the current policy environment and issues under debate, and describes new regulations adopted by the state Board of Regents. The report next provides a "walkthrough" of teacher preparation at the State University, describing what students do in teacher preparation programs. It ends with issues and options that we think the Provost's Office should explore in greater depth.

This report is based upon many sources of information, including interviews with officials in teacher preparation programs and in the State Education Department; background research conducted for the Rockefeller Institute by teacher education researchers Gene P. Hall and Edward P. Caffarella of the University of Northern Colorado and Archie A. George of the University of Idaho; data and documents from the State Education Department and the State University's System Administration office; and many external documents and data sources describing teacher preparation, teachers, and teacher preparation programs.

Section I: The State University in the Current Policy Environment

The State University Role in Teacher Preparation

Teacher preparation is an important program at the State University, and the University is a major supplier of New York's teachers. Furthermore, the demand for graduates of SUNY teacher preparation programs will grow, making the issues surrounding teacher preparation all the more important in coming years.

Teacher Preparation is an Important Program at the State University

Sixteen State University of New York campuses offer teacher preparation programs, making it an important undergraduate program and a vital graduate program within the System. The University awarded 3,131 master's degrees in education in the 1996-97 academic year; accounting for 38 percent of all master's degrees granted that year.

Measuring the importance of these programs is difficult because undergraduate education programs often do not lead to a degree in education and instead may be coupled with a liberal arts major. Still, one indicator of the importance of teacher preparation at State University campuses is the number of teaching certificates recommended as a percentage of the number of degrees granted in all fields, as shown in Table 1 below. By this measure, teacher education accounts for more than 16 percent of the activity in the system, and more than one-quarter of the activity at eight campuses.

Table 1
Teaching Certificates Recommended by SUNY Institutions as a Percent of Degrees Granted between July 1, 1996 and June 30, 1997[1]

State University Campus	*Provisional and Permanent Certificates Recommended*	*B.A. and M.A. Degrees Granted*	*Percent of Degrees Granted*
Total	***6,124***	*37,459*	*16.3%*
Cortland	942	1,498	62.9
Potsdam	368	900	40.9
Buffalo College	864	2,237	38.6
Geneseo	483	1,338	36.1
Fredonia	401	1,125	35.6
New Paltz	641	1,814	35.3
Oneonta	357	1,140	31.3
Oswego	537	1,948	27.6
Brockport	472	1,979	23.9
Plattsburgh	243	1,322	18.4
Old Westbury	100	707	14.1
Albany[1]	291	3,643	8.0
Buffalo[1]	210	4,166	5.0
Stony Brook[1]	117	2,773	4.2
Binghamton[1]	75	2,834	2.6
Cornell[2]	23	1,449	1.6
Rest of SUNY	N/A	6,586	-

Source: SUNY Office of Provost-Academic Planning, Policy, and Evaluation
16 campuses reported certificates recommended.
1 Degrees granted does not include Associate Degrees or Ph.D.'s by University Centers
2 Cornell includes the schools of Human Ecology and Agriculture and Life Sciences

The State University is a Major Supplier of New York's Teachers

The State University plays a major role in supplying teachers to public schools in New York. It accounted for 39% of all university-recommended provisional and permanent teaching certificates issued by the State Education Department in 1997-98. Table 2 below shows university-recommended teaching certificates issued by sector.[1]

Table 2
Total Certificates by Sector and Type (1997-1998)

	Provisional	*Permanent*	***Provisional Plus*** *Permanent*
SUNY	2,733	1,305	4,038
CUNY	644	661	1,305
Independent	3,306	1,663	4,969
Total	6,683	3,629	10,312
SUNY % Share of Total	40.9%	36.0%	39.2%

Source: New York State Education Department Office of Teacher Certification

The Demand for the State University's Teacher Programs Will Grow

This report raises several questions that will increase in importance if teacher shortages grow. These questions include, How can campuses attract the highest caliber students to teacher preparation programs? How can they encourage career changers to enter teacher preparation programs? How can they encourage students to prepare to teach in high-demand fields and high-demand geographic areas?

An appendix examines the supply and demand for teachers in New York (see "Appendix: Teacher Supply and Demand in New York"). Although the State Department of Education has no current official projections of teacher demand, and although the available data are very limited, it is still clear that teacher shortages will grow, especially in urban areas and in high-demand teaching fields such as math, bilingual education, special education, and the sciences, at the same time that there are more than enough teachers available in some regions and some teaching fields. The appendix's key conclusions are summarized below.

At present, there are teacher shortages in some geographic areas and some teaching fields – especially urban areas and math, bilingual education and sciences – as measured by the numbers of temporary licenses granted and the difficulties some districts have in hiring certain kinds of teachers. For example, New York City has nearly 90 percent of the temporary licenses granted in New York State. The greatest number of temporary licenses in New York City are bilingual, elementary, and special education, and in the sciences and mathematics. By contrast, some teaching fields and some areas of the state have more than enough candidates to fill potential openings. For example, measured either by temporary licenses or by simple projection of need, upstate has a surplus of social studies teachers.

In the near future, demographic and other forces will increase the demand for teachers, especially in urban areas:

- ❖ Teaching is a high-turnover profession, with especially large percentages of new teachers leaving the profession in their first few years due to burnout, family leave,

and other reasons. Turnover is especially high in New York City, which has approximately 36% of the state's teachers.

- ❖ Turnover rates will increase dramatically in coming years due to the aging of the workforce, as more and more older teachers become eligible to retire. Thirty-five percent of New York's more than 200 thousand teachers are aged 48 or older and many will be retiring in the next decade.
- ❖ Public school enrollment is once again growing, albeit slowly (less than 1 percent annually), after the declines seen in the early and mid-1980's, as the children of baby boomers (the "baby boom echo") work their way through the grades, and as the school-age population is boosted in high-immigration urban areas. While this is not an especially large force driving the need for teachers in the state as a whole, it will be significant in some urban areas.

Most policy changes under discussion will exacerbate potential shortages by increasing demand or restricting supply:

- ❖ Higher standards and other K-12 reforms will increase the demand for teachers. For example, reduced social promotion may result in more students in school and more students in summer school, increasing the demand for teachers. New York City already has begun to see the effects of higher standards on student enrollment and teacher demand. Smaller class sizes could increase demand as well. Expansion of pre-K programs also could increase the demand for teachers.
- ❖ Tougher standards for teacher preparation programs recently adopted by the State Education Department, and discussed in more depth elsewhere in this report, could reduce the willingness of students to enter and complete these programs. New rules holding teacher education programs accountable for the pass rates of their students on teacher education exams could lead some schools to raise admissions standards for teacher preparation programs potentially reducing supply. This, however, is unlikely to have much direct impact on SUNY campuses, given the high pass rates of their students on teacher certification exams. (Our acknowledgment that the regulations will restrict supply is not a comment on the merit of the regulations.)
- ❖ The new regulations also will tighten certification standards, eliminating the alternative transcript evaluation route to certification, which currently represents a large minority of newly certified individuals. In addition, the new regulations will eliminate temporary licensing, which allows a large number of uncertified individuals to teach, especially in New York City where about 10% of all teachers teach under temporary licenses.
- ❖ About the only policy working in the other direction is the new rule allowing campus-based intensive but streamlined programs for career changers and others who hold academic graduate or professional degrees. This policy has the potential to increase teacher supply, but it is dependent on the actions of campuses.

There is not a "reserve pool" of certified potential teachers that could easily step in to fill the gaps:

- ❖ It is true that many more potential teachers pass certification exams each year than actually wind up teaching in classrooms, but there is little evidence that these individuals truly want to teach in New York public schools. Furthermore, many of these potential teachers are certified in low-demand fields such as elementary education or social studies, and not in shortage fields such as mathematics, bilingual education, or the sciences.
- ❖ It is true that there is a huge number of previously certified individuals who are not teaching for one reason or another and who might be enticed into the teaching force. But past experience suggests that relatively few of these individuals actually want under current conditions to teach in areas where they're needed most.

Taken together, these facts suggest that teacher shortages will grow considerably in coming years, especially in urban areas and in current shortage fields such as mathematics, bilingual education, and the sciences. At the same time, some suburban and rural areas of the state may be able to choose from far more certified teacher candidates than they need to hire, at least in "surplus" fields such as elementary education and social studies.

The Current Policy Environment

National Calls for Reform

University-based teacher preparation programs have received considerable attention in recent years by supporters who wish to see them made more rigorous, and by detractors who argue they stand in the way of a free supply of competent teachers. This is an extraordinarily polarized debate. Key issues include:

1. **Traditional vs. Alternative Teacher Preparation**
   Critics argue that teacher-preparation programs do not attract good students and furthermore that they are weak programs. They favor assigning higher priority to alternative routes to the classroom, such as allowing people who are changing careers to teach after modest amounts of pedagogical training and little or no student teaching experience. Supporters of teacher preparation programs argue that this leads to unqualified teachers being placed disproportionately in the poorest inner-city schools with high concentrations of minority students. To the extent they support alternative routes to certification, they often want them to be university based with a significant pedagogical component.

2. **Subject-Matter Training**
   Critics also fault teacher-preparation programs for lacking subject-matter content and giving undue emphasis to pedagogy. They argue that teacher education students do not take full majors, and that some courses they take in their major field are watered down specifically for education students, such as "___ for Teachers" courses (e.g., Mathematics for Teachers, Science for Teachers). Supporters of teacher preparation programs often argue for more of both subject matter and pedagogy, they argue that research shows the importance of pedagogical training, and they argue that emphasis on deep rather than broad subject matter knowledge for elementary school teachers is misplaced. Critics and supporters seem to agree

that pedagogical training is more important for teachers of early grades than for teachers of higher grades.

3. Content of Pedagogy Courses

Critics charge that many pedagogy courses advocate unproven teaching fashions based on flimsy research. Some are especially critical of constructivist approaches that assume students (as "learners") often should "construct" their own knowledge rather than be taught in a more traditional lecture fashion. Some criticize content-specific pedagogy such as "Teaching of ___" courses (Teaching of Mathematics, Teaching of Biology, etc.).[2] Multiculturalism courses also come under periodic attack. Supporters of these approaches argue they are based on research. They argue that teaching is a profession like medicine, and that just as physicians must be taught how to diagnose physical problems and how to deal with different kinds of patients and problems, teachers must be taught how to diagnose learning difficulties, and how to apply different approaches to different problems and people, under varying circumstances.

4. Accreditation

Supporters of teacher training programs in many states are pressing for higher and stronger standards for teacher-training, arguing that teacher preparation programs should meet rigorous process and performance standards, and that a good way to do this is via an accrediting body of industry professionals, as is done in medicine. The standards body they often recommend is the National Council for Accreditation of Teacher Education (NCATE). Some critics argue that NCATE will restrict the supply of teachers, drive up their cost, and do little to improve the quality of teachers. Critics say that research shows NCATE-accredited institutions do not produce better teachers and supporters argue just the opposite.

5. Teacher Certification Exams

There is also criticism of the tests used to certify teachers. Questions raised include: Are the standards high enough? Do they reflect an acceptable balance of subject-matter content, pedagogic knowledge, and classroom experience?

These criticisms have been nationwide. In New York, the Liberal Arts and Sciences Test is considered by many to be a basic literacy test and not a true test of liberal arts and sciences knowledge and understanding. Many of the questions are entirely self-contained. For example, here is a sample question from the New York State Education Department's 1998 test preparation booklet:

> ***Use the passage below to answer the question that follows.***
>
> In his long and illustrious career, Winston Churchill was successful not only because he was intelligent and inspiring to others, but also because he was lucky. Once, in school, this future prime minister of Great Britain was preparing to take an important geography test. He knew that the biggest question on the test would require a thorough description of the geography of one major country somewhere in the world. He also knew that his classmates would be spending hours studying every country in their atlases and geography books. He decided, however reckless the decision may have been, on a different study method.
>
> Churchill wrote on small pieces of paper the names of all the major countries in his atlas, put the pieces into his hat, and then drew one out. The country name he drew was New Zealand. He proceeded to spend all of his study time learning

everything he could about New Zealand. On the day of the test, Churchill discovered that the country the teacher had chosen was New Zealand.

Which of the following best states the main idea of this passage?

A. Churchill once took a geography test that changed his approach to learning.

B. Churchill was basically a mediocre student who often got lucky.

C. Churchill owed part of his considerable success to luck.

D. Churchill's best subject in school was geography.

New York, however, is in the midst of raising the difficulty of teacher certification exams and the cut points at which individuals will pass the exams, and so this example may no longer be a good indication of their level of difficulty. The 1999 test preparation booklet appears to include some more difficult questions than the 1998 booklet.

Although there are arguments about almost every facet of teacher preparation — including whether or not there is an actual shortage of teachers — there is a consensus about some challenges in the field. There is agreement, for example, on the need for more highly-qualified teachers in the inner city. There is also agreement on some areas of teaching shortages.

Polarized Debate

Much of the debate over teacher education is polarized. On one side of the debate are those who favor alternative routes to certification, strong subject matter preparation, and near-complete local control over the qualities required in a teacher. They oppose much of what is taught in education programs, NCATE certification, and other "education industry" controls over teacher preparation and certification.

On the other side of the debate are those who oppose expanded alternative routes, who believe that pedagogical knowledge is extremely important and that states need to play a stronger role in regulating teacher education.

But not everyone in the discussion fits neatly into one of these either/or boxes. Amidst the generally downbeat mood nationally about teacher education, some voices, notably that of U.S. Education Secretary Richard Riley, have called for change vigorously. In his February 1999 State of American Education speech, Secretary Riley said, "We must make sweeping efforts to make teaching a first-class profession. And, then, we must hold schools accountable for results." He added: "What else can we do?" And he gave this answer — "We can create rigorous alternative paths to give many more Americans the opportunity to become a teacher."

Another strong voice in favor of improved teacher education, teacher-ed reform and alternative routes is Arthur Levine, president of Teachers College at Columbia University. He argued recently in the *New York Times* that (1) States must strengthen teacher education: "The nation has too many weak education schools, with teachers, students and curriculums that are not up to the task at hand"; (2) They must improve financial incentives for entering the teaching profession, "… Federal and state governments will need to expand bonus programs for entering the field, loan forgiveness programs and tax preferences"; and (3) "Because education schools cannot prepare enough teachers to fill the anticipated vacancies, it is essential to create the machinery to immediately recruit people who can fill these positions — retired teachers, people with teacher preparation or partial preparation who went into other professions, career changers in allied fields, full-time parents and paraprofessionals in education who are in need of additional schooling. More states

need to establish programs tailored for these nontraditional recruits that will allow them to meet higher teacher standards."[3]

The Massachusetts Story

Recent Massachusetts experience is of interest here and is well known. Sixty percent of the people who took a teacher certification test introduced in 1998 failed. A magazine article from a Massachusetts public policy group that looked at the underpinnings of this controversy stated as follows:

> There are few subjects more political these days than education — and few educational subjects more political than education schools, the standard training ground for the nation's future teachers. Derided as programs for dimwits, ed schools have been blamed for everything from the decline in public school standards to the rise of anti-intellectualism in America. In Massachusetts, John Silber of Boston University ridiculed "mindless education courses" and "cockeyed theories" that shortchanged content for methodology long before he became chairman of the state Board of Education. But after almost 60 percent of teacher candidates flunked the state's first certification exam last year, many of the state's leading politicians started firing off their own anti-ed-school rhetoric.
>
> The shocking scores — which prompted House Speaker Thomas Finneran to call the test-takers who failed "idiots" — ignited one of the biggest public education debates of the decade. State officials immediately started drafting plans to improve the quality of the state's teaching corps by using scholarships, signing bonuses, and other incentives to attract better students to the field. And suddenly, five years into the state's massive seven-year education reform plan, attention turned to raising standards at the ed schools themselves.[4]

This comment is emotionally charged and opinionated, but not atypical of the kind of commentary one finds about schools of education.

This is the environment in which reform efforts in New York take place.

The Regents' Reforms in New York

The New York State Board of Regents has the power to set teacher certification standards and to approve teacher education programs. In July 1998, the Regents issued *Teaching to Higher Standards: New York's Commitment.* The report argued:

- Not enough teachers leave college sufficiently prepared, with one-sixth of would-be teachers failing one or more certification exams.
- Not enough teachers maintain knowledge and skills throughout their careers, due to inadequate and ill-focused continuing professional development; and
- Not enough of the best teachers end up where they are needed most: (1) Students who perform the poorest are in low-spending schools with the least experienced and least qualified teachers; (2) Teacher education programs are not producing enough qualified graduates who can teach mathematics, the sciences, special education, and bilingual programs; and (3) Minorities are underrepresented in teaching.

Just as students must meet higher standards, the Regents argued that teachers must meet higher standards as well.

The Regents reforms as proposed in 1998 would require teachers to (a) obtain a Master's Degree within two years of initial certification rather than the five or more years now allowed, (b) pass a Content Specialty Test upon initial certification, (c) complete one year of mentored teaching, and (d) engage in continuing professional development. The Regents also proposed that teacher preparation programs be accredited, and that the Commissioner of Education be given authority to "deregister" programs where fewer than 80 percent of graduates pass certification exams. The report also stated that "the Regents will encourage institutions to develop innovative programs designed to prepare individuals changing careers, returning to teaching, or changing teaching fields." At a May 1999 forum at Union College, Commissioner Richard P. Mills strongly advocated new and expanded efforts to establish alternative routes to attract new talent into the teaching profession. All of these proposals have been subject to intense debate. Finally, the report recommended establishing a Professional Standards and Practice Board, which it has since done.[5]

To turn its reform proposals into policy and practice, the Board of Regents must develop, adopt and implement two specific sets of new regulations – regulations governing teacher preparation programs in New York, and regulations governing teacher certification. In September 1999, after considerable debate and revision, the Board took the first major step by adopting new regulations for teacher preparation programs. New regulations governing teacher certification now are scheduled to be adopted in February 2000, but that schedule has slipped before and could slip again. (See the "Appendix: *State Education Department Teacher Preparation and Certification Requirements"* for a discussion of the pre-existing rules.)

Teacher Preparation Program Regulations

The adopted regulations for teacher preparation programs include the following key elements.

Subject matter training: Although the original Regents report did not speak extensively to subject matter training, the adopted regulations are quite rigorous and precise, and evolved considerably in successive drafts. The regulations have two main elements:

1. All teacher preparation programs in New York will have to train their students how to teach to New York's new learning standards. In other words, potential teachers must know and be able to teach students the material they are expected to know in New York. This might seem noncontroversial, but one teacher education dean we spoke with felt that it is unnecessarily restrictive: this individual felt that teacher education programs should prepare teachers to teach generally, and not just to teach in New York.

2. In addition, the new regulations were widely touted in the press as requiring education students to take academic majors. In particular, the regulations require students seeking certification for grades 7-12 to have an academic major in a liberal arts field that is "equivalent to the major the institution may require of non-education students in that subject or field."[6] This language is much stronger than that found in earlier drafts, which did not require the major to be the same as that taken by non-education students. As we shall see later, for many SUNY schools this requirement will have little or no practical effect, but several schools will have to strengthen their subject matter requirements. Students seeking certification for earlier grades generally will not need to have a major, but they will need broad-based coursework in the liberal arts.

Pedagogy requirements: The new regulations are much fuller and more precise than previous regulations in describing the kinds of pedagogical knowledge that teacher preparation programs should teach, covering many separate areas of pedagogy. For example, it will require all teacher preparation programs, regardless of certification area, to teach students about "human developmental processes and variations…learning processes, motivation, communication, and classroom management…the nature of students within the full range of disabilities and special health-care needs, and the effect of those disabilities and needs on learning and behavior …language acquisition and literacy development by native English speakers and students who are English language learners"

In some ways the new regulations are less restrictive than the old regulations, at least as they had been interpreted by teacher preparation programs. For example, the new regulations do not establish minimum credit hours for pedagogical training as a whole or for most individual components of pedagogy. This gives campuses freedom to combine several pedagogical areas into a single course, and to highlight or downplay areas as they see fit, within the confines of the intent of the regulations. Previous regulations did not really establish specific credit-hour minimums for teacher preparation programs, but the old regulations did establish specific requirements for teacher candidates applying under the alternative transcript evaluation route and some campuses apparently used these very precise requirements as guidelines when developing their programs.

Classroom experiences: Whereas previous regulations said very little about classroom experiences, the new regulations are quite explicit. For example, in programs preparing students for initial certification:[7,8,9]

> All programs "shall include at least 100 clock hours of field experiences related to coursework *prior to* student teaching…" (emphasis added)
>
> "Full-time faculty shall participate in supervising students during their student-teaching or practica experiences"
>
> Field experiences, student teaching, and practica shall "provide candidates with experiences in a variety of communities and across the range of student developmental levels of the certificate, an opportunity to work in high need schools, and an opportunity to work with each of the following student populations: socioeconomically disadvantaged students, students who are English language learners, and students with disabilities;"[10]

Alternative routes for career changers: The adopted regulations are much more explicit than the original Regents report. Teacher education schools will be allowed and perhaps even encouraged to develop intensive and streamlined programs for people with graduate academic or professional degrees who have obtained a "transitional certificate." These programs would not necessarily lead to a degree in teacher education and would not include a student-teaching component. Instead of student teaching, enrollees would spend two school years of teaching under the supervision of a faculty member, mentored by a support team – years in which the individual would receive pay as a teacher, reducing one of the major opportunity costs facing career changers. Teacher education schools may allow enrollees to satisfy some of the coursework requirements in the pedagogical core through assessment of their knowledge and skills, reducing another barrier to entry for career changers. The general rules governing faculty requirements and institutional accountability would still apply to these programs. State Education Department staff say that teacher preparation programs could have developed streamlined routes under prior regulations, but generally did not do so, and that the new regulations might succeed in encouraging colleges to develop these programs.

Faculty requirements: The new regulations impose a number of faculty requirements on teacher preparation programs, including:[11]

> "Institutions shall demonstrate how faculty in the arts and sciences and faculty in education cooperate for the purpose of ensuring that prospective teachers receive academic preparation of high quality equivalent to that of students in other fields."
>
> Requirements to recruit faculty from historically underrepresented groups, and to recruit and retain faculty who understand the problems of high need schools.
>
> "Institutions shall provide sufficient numbers of qualified, full-time faculty in order to: foster and maintain continuity and stability in teacher education programs and policies; ensure that the majority of credit-bearing courses in the program are offered by full-time faculty; and ensure the proper discharge of all other faculty responsibilities. Faculty teaching assignments shall not exceed 12 semester hours per semester for undergraduate courses…Individual faculty members shall not supervise more than 18 student teachers per semester."
>
> "Institutions shall provide sufficient resources and equipment and adequate facilities and physical space…to support effective teaching and scholarship by faculty and effective learning and scholarship by students in the program."

In addition, as noted in the section on field experiences, full-time faculty would have to participate in supervising student teaching and practica.

These are highlights. There are many additional requirements, such as those relating to the nature of cooperation expected between education faculty and arts and sciences faculty.

Accreditation: Under prior regulations there was no accreditation requirement, and the State Education Department ostensibly conducted reviews of teacher preparation programs. We have been told by several observers inside and outside the State Education Department that due to insufficient funding the Department does not review teacher preparation programs vigorously. The new regulations require programs to be accredited by a professional education accrediting association with standards equivalent to those in the regulations, or by the Regents, according to a Regents accreditation process that is not yet spelled out in regulations. According to the State Education Department, NCATE (the National Council for the Accreditation of Teacher Education) would be an acceptable professional accrediting body, and its competitor TEAC (the Teacher Education Accreditation Council) might also become acceptable. The State Education Department does not intend to implement the Regents accreditation process unless it is granted authority by the state legislature to charge fees to teacher preparation programs to finance the costs of accreditation, as is done by outside accrediting bodies.

Institutional accountability: The State Education Department "shall conduct a registration review in the event that fewer than 80 percent of those students who satisfactorily complete the institution's program and also apply for certification pass each required examination for a teaching certificate." An institution that is reviewed must submit a corrective action plan, and if SED does not approve the plan of if the institution does not follow the plan, it may be denied reregistration.

One general theme throughout the new regulations is that all teacher candidates should be prepared to teach diverse students in diverse environments – they should know how to teach and in many cases have classroom experience with children in "high need schools," children who are socioeconomically disadvantaged, children with disabilities and special health care needs, children at different developmental levels, and children who are "English language learners."

Teacher Certification Proposals

The State Board of Regents has not yet adopted new regulations relating to teacher certification but when adopted they will include important changes. There are several in particular that we will be interested in.

- *New kinds of certification:* The State Education Department will move from the current system of provisional and permanent certificates to one with initial and professional certificates. This is more than just a change in name. For example, there will be no new "permanent" certificates — teachers acquiring professional certificates under the new system will have to maintain their certificates in good standing, through professional development, to remain certified.
- *Accelerated master's degree requirement:* Unlike most other states, New York requires permanently certified teachers to have a master's degree, which under current regulations they must have within five years of the start of teaching. The original Regents report proposed accelerating the requirement to within two years of the start of teaching. Discussions with people drafting and reviewing regulations suggest that the master's degree might not be required until three or even more years of teaching, although it is an open question.
- *Accelerated content test requirement:* Under current regulations, New York requires teachers to pass a content specialty test (CST) in their teaching field or fields to become permanently certified (i.e., generally within 5 years of the start of teaching). The Regents proposal and subsequent draft regulations would require teachers to pass the CST's by the time they start teaching.
- *Professional development requirements:* All teachers who receive professional certificates under the new system will be required to complete at least 175 hours of professional development every five years, directly related to student learning needs, state initiatives, and state standards in order to maintain their certificates in good standing.

Teacher Certification Exams

In addition to the above reforms that require regulations, the State Education Department also will make its teacher certification exams more rigorous, and to raise the cut points for passing these exams. These changes can be accomplished without regulations, and in fact they have already begun.

An Observation

The Regents reforms appear to have shifted in emphasis as they have moved through the regulatory process. The reforms now appear to be more focused on subject matter knowledge and on program flexibility than the original proposals: for example, the adopted regulations now clearly require a full academic major for most secondary teachers and there appears to be less emphasis on an accelerated master's degree (which likely would focus on pedagogy), and the intensive and streamlined routes for career changers now are clearly encouraged in the adopted regulations.

Section II: What Is Teacher Preparation at the State University?

We now conduct a *"walk through"* of teacher training at the University – describing what students do from admission to exit in the current environment, before implementation of the reforms discussed above. Our goals are to paint a broad-brush picture of the steps students take, to describe the different approaches to teacher education at State University campuses, and to view these programs in relation to the teacher preparation debate.

Our analysis is based on detailed examination of documents for a majority of campuses, including course catalogs, advisement manuals, mission-review documents, brochures, and World Wide Web pages; on less-intensive review of documents for other campuses; and on detailed telephone interviews we conducted with experts at five campuses we selected because they conduct relatively large bachelor's or master's degree teacher preparation programs, and represent a broad range of approaches within the State University. Our document review included schools that in aggregate educate more than 80 percent of the teacher preparation students at the University. Our campus telephone interviews included officials at the University at Albany, and at the colleges of Brockport, Cortland, New Paltz, and Potsdam — schools that in aggregate educate more than 40 percent of teacher preparation students.

Students preparing to become teachers generally take one of two paths. The first path typically is taken by those who know as undergraduates that they want to become teachers. They enter teacher preparation programs as undergraduates, student teach, obtain their provisional certification, and either teach and earn their master's degree while teaching, or go on directly to a master's degree before beginning teaching. These students often earn their advanced degree in an education-related field with considerable coursework in education theory, frequently termed a master of science in education (MSEd).

The second path more often is taken by a career changer or someone who learns after completing their baccalaureate that they want to become a teacher. They may have an undergraduate degree in one of the arts and sciences, and possibly considerable work experience, but likely no undergraduate training in pedagogy. They usually take a master's degree designed to fulfill New York's educational requirements for permanent certification; the degree usually focuses on pedagogy, student teaching, and filling gaps in academic education to meet SED requirements.[12] This type of program often is termed a master of arts in teaching (MAT) or master of science in teaching (MST), although some are granted MSEd status.

The remainder of this section describes what students do in their teacher preparation programs, focusing initially on those who take the first path.

The Overall Structure of Undergraduate Programs

To understand what students learn in teacher preparation programs, we have to understand how these programs fit into the overall structure of an undergraduate education program. For purposes of this paper, we have classified student coursework as falling into one (or sometimes more) of the following categories:

> *General education and other core requirements.* Most campuses currently have faculty-determined general education requirements for all students – teacher preparation students and other students — in areas that stress fundamental knowledge and intellectual skills. These requirements likely will undergo considerable change in response to the new general education resolution adopted by the Board of Trustrees in 1998. General education programs usually require

students to complete courses or satisfy requirements in the arts, natural sciences, social sciences, and the humanities, and they often have specific required courses in English composition and in mathematics. The current requirements vary significantly from campus to campus, and some campuses allow students considerable latitude in structuring a general education program. Schools often allow students to count toward their general education requirement one or more courses also required in their education program, such as English composition, mathematics for elementary teachers, and the foreign language requirement. In addition, sometimes campuses allow students to waive courses based on high school coursework or test scores. Nonetheless, the general education requirement can be substantial. For example, New Paltz's general education requirement can range from 42 to 62 credits, depending on the background of the student.

In addition to general education, teacher education programs – especially elementary education programs — usually require students to take courses that fall outside of professional education and that may fall outside of their academic concentration, such as a foreign language requirement, basic math requirements, and sciences. Campuses call these core requirements, or curriculum support, or pre-professional training. We include these courses in this category as well. Certain core requirements courses count toward the general education requirement on some campuses.

Professional education (including student teaching). Campuses require students to take courses traditionally thought of as part of a teacher preparation program, such as history and philosophy of education, child and adolescent development and psychology, teaching methods, and student teaching. The debate over the content of pedagogy is over theories and practices taught in this category.

Academic major or concentration. Teacher preparation students generally must take an academic major or concentration. Some of these courses may count toward general education requirements as well, although the extent of this varies from campus to campus. This is where much of the debate over teacher subject-matter training is concentrated, although the debate also is related to general education coursework.

Electives. To the extent that general education, other core requirements, professional education, and the academic concentration do not exhaust the entire degree requirements, teacher preparation students may have credits left over for electives, subject to campus and program-specific rules on allowable courses.

While practices vary across campuses and programs, students usually focus on their general education courses in freshman and sophomore years, with moderate amounts of coursework in their academic concentration and some professional education courses in sophomore year. Junior year usually focuses on professional education courses and the academic concentration, while senior year is devoted to student teaching and remaining courses in education and the academic concentration. There are some considerable departures from this pattern. For example, at one end, Potsdam students begin taking considerable education coursework in their sophomore year, while at the other end University at Albany students usually do not begin education coursework until junior year.[13]

How and When Do Students Enter a Teacher Preparation Program?

Many students come to State University campuses intending to become teachers as this has been an important area of instruction at University institutions for a long time. In almost all cases,

entering undergraduates do not enroll immediately in a teacher training program – admission to a college is not sufficient for admission to a teacher preparation program. They usually enroll in their second year. The typical route is to apply either to the elementary or secondary education department, which is likely to require a certain GPA (2.5, or C+, is common), an application, an essay, and in some cases letters of recommendation and an interview. Schools also have minimum GPA requirements that students must maintain to stay in the program, and another minimum, usually higher, before a student can advance from coursework to student teaching. Several State University campuses are in the midst of raising their GPA requirements.

We do not have sufficient data to make strong statements about the academic capabilities of SUNY teacher preparation candidates. Very high percentages of SUNY teacher preparation students pass the teacher certification exams in New York. More than 95 percent of SUNY students pass the Liberal Arts and Sciences Test (LAST) and the Assessment of Teaching Skills-Written (ATS-W), as highlighted in research conducted for the Rockefeller Institute by Professors Hall, Caffarella, and George. These pass rates are higher than for students at private institutions where 87% of teacher candidates pass the LAST and 93% pass the ATS-W) — and much higher than for CUNY students, who had pass rates of 64% and 74% respectively. On their face, these are encouraging rates of passage, but of course their relevance depends on the relevance of the tests to student outcomes, the difficulty of tests, and the pass-fail cut points. Other data about the academic capabilities of SUNY education students are less encouraging: SUNY students graduating with education degrees — including elementary, secondary, and other programs — have entering SAT scores about 50-60 points below those of graduates in other fields as a whole, and 100 or more points below score of graduates in mathematics and science fields.[14] National research suggests that secondary education students often have scores comparable to students in other academic fields.

This suggests that on average SUNY teacher preparation students perform better than their peers in other teacher preparation programs but may not be as capable as their peers in other subjects.

Subject Matter Preparation

The next questions, and the most important ones, are what do education students study and how are their programs structured? The trend nationally has been for secondary education students not to major in education, but to major in a *subject* area, presumably one they will teach, and to take the requisite number of education courses.

The New York State Education Department has not until recently required an academic major, although it did require an academic concentration. At the secondary level, this concentration usually would include at least 36 credit hours, although the Department does not specify what sorts of courses must be included in the concentration.[15] Campuses therefore have freedom to choose whether students major in an academic field or in education (or in some combination), and to choose the kinds of courses that will count toward the academic major or concentration.

State University campuses have widely differing views on this. Oswego, which provides an education major and does not allow double majors, says its teacher preparation program is:

> …far different from traditional methods of teacher education, in which students were required to spend their undergraduate years learning subject matter, then go on to graduate school to gain the necessary teaching skills. Here, content and method are one — what you teach and how you teach are closely intertwined.[16]

By contrast, Stony Brook's view is that:

> The strength of the teacher education programs at Stony Brook is that they are based in the academic departments and all students in the teacher education program major in the content area in which they will be certified.[17]

The State University campuses offering teacher education programs cover these two extremes and much of the ground in between. Several, such as the University at Albany, Brockport, and Stony Brook clearly require an academic major in the arts and sciences. Others, such as Geneseo, Old Westbury, Oneonta, Oswego, and Plattsburgh generally require an education major. Cortland and Buffalo State sit partly in both camps, requiring an education major for PreK-6 and PreK-9 certification programs, and a liberal arts major for programs leading to secondary certification. New Paltz says in mission review documents that it requires an academic major, but an examination of course requirements makes clear that the major is much less rigorous than that taken by non-education students. Potsdam is unusual in requiring teacher preparation students to have two majors, one in the arts and sciences and one in education. As a general rule elementary-teacher candidates are more likely than secondary-teacher candidates to major in education, and face requirements for more breadth and less depth.

Some campuses requiring liberal arts majors advise students to avoid some allowable majors, such as sociology, philosophy, and psychology, and to major instead in math, one of the sciences, or other fields in demand.[18]

Schools usually offer a bachelor of arts and sometimes offer bachelor of science degrees (most often in an academic field coupled with teacher education, rather than in teacher education), with the latter more common in secondary programs than in elementary programs. Where there is a difference, the bachelor of science usually requires more in-depth study in the academic major and related fields, at the expense of less breadth.

Knowing whether a school requires an academic major or an education major is not enough to know the extent to which it emphasizes subject matter preparation relative to pedagogy. We also need to look at whether the academic major or concentration courses teacher preparation students take are comparable to those taken by non-education students. The campuses are mixed again in this regard.

The nearby table summarizes the extent to which teacher preparation programs leading to certification to teach secondary mathematics, biology, and English at each of the 16 campuses require majors that are as rigorous in subject matter content as the comparable majors taken at those same schools by noneducation students.

The range of offerings is illustrated below for the field of mathematics, for four campuses we selected because of their differing academic-major requirements. In more or less increasing order of subject matter emphasis, the campuses are: (1) Oswego, which requires an education major with a liberal arts concentration, (2) New Paltz, which requires a liberal arts major less rigorous than that required of a traditional major, (3) Buffalo State, which requires an education major with liberal arts concentration for elementary education students and an academic major for secondary education students, and (4) Brockport, which requires an academic major and does not offer an education major. In the discussion below we describe programs for both elementary and secondary education students, although the table focuses on secondary programs only. Education researchers generally agree that elementary teachers need more breadth and less depth of subject matter training than do secondary teachers, and that academic majors are less important here.

Major Requirements for Noneducation Students and Secondary Education Students

	Math			Biology			English		
	Noneducation	*Secondary*	*Comments*	*Noneducation*	*Secondary*	*Comments*	*Noneducation*	*Secondary*	*Comments*
Albany	36 cr. BA	36 cr., all accepted in regular major	Education student has fewer electives, and has required science courses	52 cr. (biology and chemistry) plus 14 in math and physics	51 cr. (biology and chemistry) plus 14 in math and physics, all accepted in regular major		36 cr.	36 cr., all accepted in regular major	Must take Linguistics course
Binghamton		n/a			n/a		n/a		
Brockport	40 cr. (36 math, 4 computer science)	40, all accepted in regular major	Education student has fewer electives	38 cr. BS	38 cr. BS, all accepted in regular major		36 cr.	36 cr., all accepted in regular major	Different specific requirements and electives
Buffalo	51-52 cr. BA	55-56, all accepted in regular major	Education student has fewer electives	33 cr.	33 cr., all accepted in regular major		39 cr.	39 cr., all accepted in regular major	
Buffalo State	39 cr. BA	39, all accepted in regular major	Education student has fewer electives	36 cr.	30 cr.	Fewer upper division courses required of education students	42 cr.	42 cr., of which 33-39 cr, are accepted in regular major	Young Adult Literature (ENG 461) required, not in regular major
Cornell		same as noneducation			same as noneducation		n/a		
Cortland	36 cr BA, math and computer science	36, all accepted in regular major	Education student has fewer electives	36 cr.	30 cr.	Fewer biology courses required	36 cr.	36 cr., all accepted in regular major	Advanced Writing for Teachers and Grammar for Teachers required, can be taken by regular major
Fredonia	45-46 cr.	42-43 cr., all accepted in regular major	Advanced Calculus (420) not required of education student but could be elective	36 cr.	36 cr., all accepted in regular major		37 cr.	36 cr.	same differences in required courses; 21 cr. are same as for noneducation majors
Geneseo	36 cr. math and computer science	36 cr., all accepted in regular major		33 cr. BA	33 cr., all accepted in regular major		36 cr.	36 cr., all accepted in regular major	

Major Requirements for Noneducation Students and Secondary Education Students

	Math			Biology			English		
	Noneducation	*Secondary*	*Comments*	*Noneducation*	*Secondary*	*Comments*	*Noneducation*	*Secondary*	*Comments*
New Paltz	52 cr. math and computer science	39-40 (plus 8 of physics), of which 36-40 are accepted in regular major		45-61 cr.	30-34 cr, all accepted in regular major	Education students take fewer biology courses	42 cr.	42 cr., of which 21-39 are accepted in regular major	
Old Westbury	48 cr. math and computer science	48, all accepted in regular major		36 cr.	36, all accepted in regular major			n/a	
Oneonta	36 cr.	39 cr., of which 21-30 are accepted in regular major	Education student's major includes computer science	36-38 cr.	32 cr., of which 31 are accepted in regular major		30 cr.	36 cr., 30 of which are accepted in regular major	Additional composition and English education courses
Oswego	42 math and computer science	40-43, of which 33-39 are accepted in regular major		36 cr.	34, all of which are accepted in regular major		39-42 cr.	36 cr., 33-36 of which are accepted in regular major	
Plattsburgh	32 cr.	32, all accepted in regular major	Education student has fewer electives	37-38 cr	26-28 cr., all of which are accepted in regular major		39 cr.	33 cr., of which 30-33 are accepted in regular major	
Potsdam	33 cr.	33, all accepted in regular major		36 cr.	36, all accepted in regular major		30-36 cr.	36-37 cr., 22-29 of which are accepted in regular major	Required and elective composition courses
Stony Brook	33-37 cr.	30-34 cr., all accepted in regular major	One Analysis course required in the major not required of education students	32 cr.	32 cr, all of which are accepted in regular major		36 cr.	36 cr., all accepted in regular major	

Oswego

Oswego offers an education major coupled with a liberal arts concentration, rather than an academic major. The academic concentration generally requires fewer credits than an academic major, although the extent of difference depends greatly on the sort of teacher certification a student is seeking. The concentration for an elementary education student usually requires about 24-26 credits, compared with 40 or more credits for a major.[19] The concentration for a secondary education student seeking certification in a specific field requires much more depth than the elementary education student's concentration and can be much closer to a full major.

Illustration for mathematics:

- A traditional non-education student would need 42 credits to complete a B.A. in math: 39 credits in math and 3 in computer science.
- An elementary education student would take 25-26 math credits, 9 of which would not be allowed in a major.[20] These latter 9 credits include (1) a two-course sequence in "mathematics for the elementary teacher" that focuses on the curriculum recommended by the National Council of Teachers of Mathematics and on the State Education Department's "Framework for Mathematics, Science, and Technology," and (2) a course in geometry and probability for elementary teachers.[21] The mathematics concentration for elementary education also includes up to 9 credits of electives that would not be allowed in a non-education mathematics major or in a non-education mathematics minor.
- The mathematics concentration for a secondary education student seeking mathematics certification is closer to a major. It requires 40-43 credit hours and requires only one course that would not be allowed in a traditional mathematics major (an overview of the mathematics curriculum from Math 7 through pre-calculus, with emphasis on the New York State course of study). However, many of the electives (e.g., History of Mathematics) and cognates – required courses in related fields, such as introductory physics or chemistry — would not count toward a mathematics major.

New Paltz

At New Paltz, although mission-review documents say that "liberal arts and sciences majors are required for all students in elementary and secondary education," examination of the undergraduate catalog shows that an education student's major is less intensive than that for regular majors, although the requirements, especially in mathematics, are often greater than at other campuses.

Illustration for mathematics:

- A non-education mathematics major must have 52 credits — 33 credits of math requirements, 12 credits of math or computer science electives at the 300 level or higher, and 7 specific required credits in computer science.
- By contrast, an elementary education student's math major would include 32-34 credits in math and computer science, 9-12 of which would not count toward a traditional major because they are 100 or 200 level courses (examples: Mathematics for Elementary School Teachers (64140), Geometry: A Modern Introduction (64240), and introduction to Statistics (64241)).

- A secondary education student's math major would include 47-48 credits, rather than the 52 for the traditional major: 36 in math, 3-4 in computer science, and 8 in physics. All 36 math hours are required (no choices), and all count toward a traditional math major. Depending on the course taken, 0 or 4 credits in computer science would count toward a traditional math major. The physics credits would not count toward a traditional math major (math majors are expected but not required to take physics in addition to their major requirements). A secondary education student thus could satisfy requirements for a math major while taking only 36 of the 52 credits required of a non-education student majoring in math.[22] An enterprising student, however, might take a program with 43 of the 52 credits in a traditional math major.[23]

Buffalo State College

Buffalo State College, the only NCATE-accredited State University campus, offers a major in elementary education with an academic concentration (rather than an academic major), about which it says:

Specific course requirements for the content academic concentrations were determined by the various academic departments (not by the Department of Elementary Education & Reading). Each content area includes a requirement of at least 15 credits in upper division course work. No content area includes courses specifically designed/taught for teacher education students (e.g., Mathematics for Teachers).[24]

Illustration for mathematics:

- A non-education mathematics major at Buffalo State College is required to take 39 credit hours in math, consisting of 24 required credits mostly at the 100 and 200 level, and 15 upper division credits. (NOTE: elementary – not available in course catalog.)
- Secondary education students majoring in math take essentially the same program as a traditional major, except that they have 27 required credits and 12 elective credits — a Modern Geometry (MAT 322W) elective for regular majors is required for secondary education students. The secondary education student's mathematics major meets the full requirements for a major.

Brockport

Several other campuses say that their academic majors are the same as those taken by non-education students. We examined one school in detail – Brockport – and this generally is the case.

Illustration for mathematics:

- A non-education mathematics major at Brockport must complete a 40-credit program including 27 required credits in math, 9 electives in math numbered 399 or higher, and 4 credits in computer science. (NOTE: elementary not available from course catalog.)
- A student seeking secondary certification in mathematics must complete precisely the same program as a traditional major, with the proviso that one of the electives

must be College Geometry (MTH 432) or Projective Geometry (MTH 438). These courses are available to non-education mathematics majors, and would count toward the traditional major. Brockport does offer two 300-level "Mathematics for Elementary Teachers" courses but they would not count toward a secondary education student's mathematics major and would have to be in addition to major requirements. It also offers a "History of Mathematics" course, which is available equally to education and non-education students.[25]

Observations

Whether teachers *should* take subject matter courses comparable to those taken by non-education students is a fair matter for debate. "Mathematics for Teachers" courses often teach material included in the mathematics curriculum recommended by the National Council of Teachers of Mathematics and many education schools would argue that is a good thing. Other courses, such as history of mathematics, or similar courses in other disciplines, might provide a useful context for a teacher. In any event, the table and illustrative examples make clear that many teacher education programs at the State University require academic training comparable to that received by non-education students in similar disciplines, but some campuses and programs require considerably less rigor and depth, perhaps to make room for additional professional education courses.

This would change under the new regulations adopted by the State Education Department, which appear to require courses and majors for teacher preparation programs to be the same as those for all other students. Teacher education programs no longer would be able to count courses such as "mathematics for teachers" toward an academic major – these would be considered instead to be professional education courses.[26]

As we will see in a subsequent section, between evolving general education requirements, academic major or concentration requirements, and professional education requirements, education students at many schools have almost no room in a traditional four-year program for additional coursework. Expanding subject matter requirements might necessitate fewer courses in either general education or professional education, or fewer courses of the "mathematics for teachers" variety within an academic concentration.

Professional Education Courses

The State Education Department requires teacher candidates seeking a transcript evaluation for a provisional elementary education certificate to have 30 credits in professional education plus student teaching, with no specific number of credits for the latter required. Students seeking secondary education certification must have 18 credit hours of professional education.[27] While these transcript evaluation rules are not imposed on teacher preparation programs, campuses sometimes use them as guidelines.

Professional education courses often fall into one of the following categories: history and philosophy of education, child and adolescent development and psychology, methods (instruction, classroom management, curriculum development), and student teaching. It can be difficult to classify campus programs in a fashion that allows ready comparison. Professional education programs vary considerably across campuses. Some include "cognates" courses offered in other departments under the umbrella of professional education, while others consider those courses as in addition to professional education courses. In addition, it is not always easy to categorize a course

as a philosophy of education course or a methods course. Nonetheless, we can draw some general conclusions. In all cases below, course categories are based on our analysis of campus offerings – campuses generally do not classify courses into categories using a common set of definitions, and so we did that ourselves.

History and Philosophy of Education

Campuses generally require elementary and secondary teacher education students to take one course that introduces the student to the field of education as a profession, making this the smallest of our categories. These courses often have titles such as Self, School and Society, or Sociological and Philosophical Foundations of Education. Here is a fairly typical description of a required course, from the Geneseo undergraduate catalog:

> Intd. 203 Social Foundations of American Education: This course focuses on the multicultural conditions confronting schools in America. Students examine significant social and cultural challenges emerging in our country, legal and judicial issues, the economics and politics of schooling, the history and philosophy of education, the federal and the New York State constitutions, and the nature of curriculum and instruction.

Most campus programs we examined do not require more than one history and philosophy of education course although they generally offer several. Students usually take these courses after they enter an education program, typically in their sophomore year.

Child and Adolescent Development and Psychology

Teacher education students usually are required to take 3-9 credits in child and adolescent development and psychology, with 6 credits apparently most common. Sometimes the courses are offered in the psychology department and sometimes they are offered in the education department; sometimes they are upper division courses and sometimes they are lower division. Required courses in this category usually include one of more of the following: introductory psychology, child development, adolescence, and educational psychology.

Not surprisingly, elementary education courses tend to focus more on child psychology, and secondary programs more on adolescent psychology. At most schools, elementary education students take as many or more credits than secondary education students, but Oswego is an exception in requiring 9 credits for its secondary students and only 6 for its elementary students.

Students typically take these courses in their freshman or sophomore year, often before they are admitted to a teacher preparation program.

Methods

Methods courses usually are the largest component of professional education, or the second largest after student teaching. Education programs usually require more methods courses for elementary education students than for secondary students.

Campuses vary considerably in the number and kind of methods courses they require. At one end of the schools we examined, NCATE-accredited Buffalo State requires only 12 credits of methods courses for its elementary education students: a 6-credit course in Teaching Reading and Other Language Arts, and another 6-credit course in Teaching Social Studies, Science, and

Mathematics. Students of course can take additional courses, but they are not required. At the other end, Cortland's elementary education program requires the following 23 credits that might fall into this category, depending on how broadly it is defined:

- Introduction to Computers for Teachers (2 credits)
- Classroom Discipline
- Measurement and Evaluation
- Reading and Language Arts I
- Reading and Language Arts II
- Teaching Elementary School Math
- Teaching Elementary School Science
- Teaching Elementary School Social Studies

Campuses require considerably fewer methods credits for secondary education students, and there is less variation across campuses. We classified professional education courses in secondary mathematics education programs at four campuses. Brockport and Buffalo State each required 6 credits of methods courses, Oswego required 8-11 credits depending on how one course was classified, and New Paltz required 9.[28] Most of the methods courses we examined for secondary mathematics were specific to the teaching of mathematics.

Methods courses form the meat of a teacher preparation program, and students generally do not take them until they have been admitted into the program. As a result they are usually not taken until the second semester of sophomore year, or the junior year.

Student Teaching Requirements and Other Field Experiences

Student teaching is an important part of all teacher-education programs, and typically is organized through cooperative agreements with school districts, supervised by State University faculty or adjuncts. Some campuses couple student teaching with a senior seminar or practicum. Campuses generally do not allow students to enter student teaching unless they have completed education coursework and have maintained a suitable grade point average – usually 2.5 or higher.

State University campuses are quite similar in their student teaching requirements, despite the fact that until recently SED had almost no regulations governing student teaching. Most campuses require 12-15 credits of student teaching.

Student teaching is demanding, and it is the point at which students sometimes learn that teaching is not right for them, or that faculty learn the same about a given student. Campuses usually defer student teaching until the senior year. However, Albany and Brockport expect students to begin student teaching in the junior year. In addition, Brockport encourages early field experiences and observations in several courses taken before student teaching begins. Fredonia has a 4-year field-based program in which students can reflect on whether teaching is the correct profession for them beginning in their freshman year. By comparison, students in its traditional elementary and secondary programs do not enter methods or student teaching until their senior year.

Campuses usually try to give their students a variety of student-teaching experiences, sometimes requiring that secondary education students get experience with both junior and senior high school students, or that elementary education students get experience with different grade levels. Some

campuses also try to provide experiences with diverse environments, including for example urban and suburban environments, and children of different ethnic backgrounds.

Student teaching and other field experiences are probably the most important part of teacher preparation. The State University faces a number of challenges in this area, including providing earlier and more frequent field experiences prior to student teaching, providing greater opportunities to student-teach in urban settings and other high-need areas, and integrating student teaching with on-campus coursework.

NOTE: Oswego and Plattsburgh provided extensive responses to questions regarding field experiences that we asked of all campuses, which we will provide to the Provost's office for its use in subsequent analyses. We will provide responses from the other campuses after they are provided by the campuses.

Observations

Campuses vary in the total professional education credits they require, in large measure because of variation in required methods courses. Elementary education programs at the five campuses we examined had requirements ranging from 36 credits at Buffalo State and New Paltz to 47 credits at Oswego. Secondary programs generally required less professional education, ranging from 28 credits at Brockport to 44 credits at New Paltz. The nearby table summarizes these requirements by campus.

Professional Education Requirements at Selected Campuses

	Brockport	*Buffalo State*	*Cortland*	*New Paltz*	*Oswego*
Elementary					
History and philosophy	3	3	3	3	4
Child development	9	6	6	6	6
Methods of teaching	15	12	18	15	20
Student teaching	15	15	15	12	14
Other	1		1		3
Total	43	36	43	36	47
Secondary					
History and philosophy	3	3	3	5	9
Child development	3	3	6	6	9
Methods of teaching	6	6	3-6	9	8
Student teaching	15	15	14-15	12	15
Other	1	3	3-6	3	3
Total	28	30	29-36	35	44

Under the regulations adopted by the State Education Department in September, campuses would by and large not face specific credit requirements for professional education courses. Instead, teacher education programs would be required to impart certain skills, knowledge, and understanding to their students, with no specific number of required courses.[29]

By and large, the State Education Department does not require any specific approach to pedagogy. Pedagogy theories and philosophies taught at campuses are campus or faculty-specific choices.[30]

Adding Up the Hours

Bachelor's degrees in many disciplines generally require at least 120 credit hours. As may be apparent from the discussion above, after education students complete their general education and core requirements, academic concentration, and professional education requirements, they may have exceeded 120 credit hours, before considering electives if any. The credit crunch is quite severe at many campuses, and Brockport even warns in its catalog, "Many teacher preparation programs require more than 120 credits and may require more than eight semesters of full-time study."

It is difficult to provide a precise accounting of required courses, because general education courses often overlap with courses in an academic major or in core requirements, and because general education requirements will differ from person to person depending on prior education and proficiency. Nonetheless, education students at many campuses clearly have a full load. To illustrate:

> Brockport elementary education students must complete or waive 34-49 credits in general education, and complete 24-30 credits in curriculum support, 43 credits in professional education, and 30-36 credits in an academic major. If some courses did not count toward multiple categories (e.g., a geography course counting toward general education and curriculum support), this would amount to 131-158 credits before electives! Even after counting some courses to several categories, students generally do not have room for electives.
>
> A Buffalo State secondary English student must complete 42 credits in general education, 30 in professional education, and 42 in the academic major, leaving room for 9 elective credits in a 123 credit program, compared with as many as 39 elective credits for the non-education English major.
>
> An Oswego elementary education student might take 35 general education credits, 12 curriculum support credits, 44 professional education credits, and 24 credits in an academic concentration, leaving room for only 8 elective credits for a student who wished merely to satisfy the 122 credit minimum for a B.A.

State Examinations

Under current State Education Department regulations, students must pass a Liberal Arts and Sciences Test (LAST) and an Assessment of Teaching Skills-Written (ATS-W) before they will be granted provisional certification. Before they can be granted permanent certification they also must pass a Content Specialty Test (CST) in their teaching field and a videotaped Assessment of Teaching Skills-Performance (ATS-P).

Students typically take the LAST exam in their junior year, after completion of most general education or liberal arts requirements. They typically take the ATS-W after they have completed most of their pedagogy coursework, sometime in the senior year.

As a rule, campuses recommend successful graduates to the State Education Department for provisional certification.

Master's Degrees

For "permanent" certification as a teacher in New York State, the Department of Education currently requires that a teacher with a provisional certificate obtain a master's degree in a functionally related field and pass a content specialty test (CST) and an assessment of teaching skills-performance (ATS-P) within five years of receiving the provisional certificate. The State is likely to accelerate the master's degree and CST requirements under the reforms proposed in July 1998 and currently being fleshed out in draft regulations. The current draft (July 1999) would require the master's degree and CST within three years of provisional certification, although the precise timing still could change in the final regulations.

In New York State, 75 percent of all teachers have a master's degree or other advanced degree, well above the national average of 48 percent.[31] The exceptions are (1) teachers operating under a temporary license, disproportionately in New York City, under circumstances in which certified teachers are not available, (2) teachers who have provisional certificates and have not yet earned a master's degree, and (3) teachers who received permanent certification before the master's degree requirement was imposed in 1978.

As noted in the box on SED requirements, the master's degree must be in a functionally related field so that, for example, a mathematics teacher might earn a master's degree in mathematics, or in teaching of mathematics, or in a number of other related fields. As a practical matter, most teachers appear to obtain their master's degree in an education or teaching-related field rather than in a subject matter discipline. As we shall see below, this means that from the perspective of the subject-matter versus pedagogy debate, teachers obtain most of their subject matter training at the undergraduate level as part of their academic major or concentration, not at the graduate level, and that they typically take a set of professional education courses at the undergraduate level, and an additional set at the graduate level.

There are two common master's degree routes: (1) A route for teachers who completed an undergraduate teacher education program and earned provisional certification, that will lead to permanent certification when the teacher meets the experience and examination requirements, and (2) A route for career changers who have a liberal arts undergraduate degree, no education coursework, and no provisional certificate, which will lead to provisional certification. The route for provisionally certified teachers sometimes is termed a master's in education and that for career changers a master's in teaching, although the terminology varies somewhat from school to school.

The master's program for a provisionally certified teacher typically requires 30-36 credit hours consisting mostly of education courses, includes no student teaching (since that was required to gain provisional certification), and is offered on a schedule amenable to teachers with full-time employment.

By contrast, master's programs for career changers usually require at least 45 or more credits, including 12 of student teaching. Most of the courses are in education and teaching. In addition, students often have to fill in liberal arts courses and courses in their academic concentration in order to meet campus or SED requirements. Sometimes these programs are offered on a part-time schedule and sometimes they can only be taken on a full-time basis.

Taking undergraduate and graduate programs together, most teachers in New York State will have taken somewhere between 10 and 20 *professional education courses*, not counting student teaching. The number is lowest for career changers who did not take education courses in their undergraduate program, and highest for students who complete both undergraduate and graduate education or teacher preparation programs (and especially high for students with undergraduate majors in education).

Flexible or Alternative Routes

The alternative routes "career changers" take to become teachers is an important subject now in the education field. This group consists of people who have been out of college and have worked in other fields and who want to become teachers at mid-career or after retiring from a different profession or type of job. The idea that there should be alternative routes to the classroom is popular on the part of critics of conventional teacher education programs.

State University campuses are unusually constrained in this regard. Unlike many other states, New York does not allow "alternative routes to certification" in the popular sense. With the exception of temporary licensing, discussed earlier, career changers are just like anyone else in New York – they must complete an approved teacher preparation program or undergo a transcript evaluation with essentially the same requirements.

The main teacher preparation program path is the master's program described above, which typically requires 45 or more graduate credit hours and could easily take three or more years on a part time basis, or one to one-and-a-half years on a full-time basis – a period in which a career changer might have to forego salary income.

Of course the State Education Department does not actually require a master's degree in education, and so an individual with a master's degree in a liberal arts field could, conceivably, take only the coursework needed to satisfy professional education and student teaching requirements without completing a master's in education. Most schools, however, appear to require matriculation in their graduate education programs after six credits or so and they generally only allow matriculated students to take student teaching.

As a practical matter, then, most campuses require career changers who wish to take more than a handful of courses to enroll in a master's program. One exception we have found is Cortland, which in an interview told us that nontraditional students may take undergraduate education courses, leading to a recommendation for certification but not a degree. Another campus told us that matriculation is attractive because having students enrolled in degree programs increases the revenue a campus receives under the State University's budgeting methodology.

Career changers in New York who do not want to earn a full master's degree in education or teaching currently have two other alternatives: (1) They can pick up selected courses at the graduate or undergraduate level from one or more colleges, until they meet the State Education Department's professional education requirements. If they can find a school that will enroll them in student teaching without being matriculated, they then can seek provisional certification from SED under its alternative transcript evaluation method; or (2) They can pick up the required professional education courses from one or more colleges, and begin mentored teaching under a temporary license, if they can find a school district that wants to hire them and that can navigate the temporary licensing requirements. They would then have the opportunity to gain provisional certification under the SED regulation that allows one year of mentored teaching to substitute for the student teaching requirement.[32]

Under the State Education Department's new regulations, alternative transcript evaluation and temporary licensing will be eliminated, so that the only route available to career changers will be university-based programs. The regulations also grant campuses explicit flexibility to design programs for career changers, allowing the possibility of shorter programs. Whether campuses will be aggressive about pursuing nondegree programs, and allowing nonmatriculated students to student teach, and providing opportunities to be recommended for certification remains to be seen.[33]

Section III: Where Should the State University Go From Here?

The State University's teacher preparation programs face challenges from several forces impinging at once: the drive for higher learning standards for students, growing teacher shortages in selected regions and fields, and new regulations for teacher preparation programs and teacher certification, all in an environment of vigorous and sometimes harsh debate. Education deans and faculty already have been grappling with some of these issues, especially through working groups focusing on new regulations. These are issues that would benefit from active involvement by the Provost's office, both in encouraging and rewarding campuses to take advantage of new opportunities, and in helping them deal with difficulties and risks that they face. This section discusses approaches to reform, and specific issues that the Provost's office should consider exploring with education faculty, leadership, and outside experts.

Approaches to Reform

There are benefits to a flexible approach to reform that emphasizes goals while giving teacher preparation programs flexibility in reaching them.

An important argument in favor of this approach is the current unsettled state of research on what works in teaching. While advocates on each side seem sure of themselves, many researchers are more measured, and indeed uncertain. Research is clear on one point: *good teachers matter*. Student achievement is simply better with some teachers than with others. A recent article by Steven Rivkin, Eric Hanushek, and John Kain that used a rich set of data from Texas suggests that teacher quality is more important to student achievement than class size and other measures of resources.[34]

Unfortunately, it is much harder to pin down exactly what makes some teachers better than others. For example, these same authors conclude, "Similar to past research, we find absolutely no evidence that having a master's degree improves teacher skills." This conclusion, if accepted, has important implications for a state that already has 75 percent of its teachers with a master's degree or better compared with the national average of 48 percent, and that is moving to impose more stringent master's degree requirements.[35]

"Unmeasured teacher characteristics" rather than master's degrees and experience have to be relied upon to explain why some teachers are better than others. Other studies have examined some characteristics that could not be measured in the Rivkin et al. study — for example, verbal ability, or selectivity of a teacher's undergraduate institution — but the research remains unsettled.

This last point — that we don't know enough about what makes some teachers better than others — is just as troubling as the conclusions that master's degrees and extended experience do not have measurable impacts. If we don't know enough about what makes a teacher effective, how do we prepare people for doing it; how can we test for it; and how can we reward it? This argues that we should be cautious about the regulatory approach, and should give flexibility to schools, school districts, and to teacher education programs at the same time that efforts are made to improve teacher assessment in ways that are sound and well grounded.

Both for new teachers and career changers, teacher preparation could be reformed using an approach emphasizing flexibility and results. It would reward experimentation with a major indicator of the performance of teacher education programs being assessments of students they recommend for certification, possibly as measured by teacher certification exams. Another key

element would be improving tests for teacher assessment, which the State Department of Education is committed to doing.

In many ways, the operations and current arrangements for State University teacher preparation programs lend themselves to the deregulatory/performance-based approach. The University campuses involved in teacher preparation historically have had substantial freedom. Why not give them more flexibility in this area? Give presidents, deans, and education faculties authority — within a State policy framework — to re-program spending and develop and experiment with varied teacher-certification strategies linked to the leaders of school districts they serve. In fact, this is the way most SUNY teacher education programs already operate — i.e., regionally in terms of the distribution and placement of their graduates.

There are good reasons to favor a flexible approach for the State University that emphasizes and rewards campus initiatives for teacher preparation. A major challenge is to increase and strengthen the talent pool of students, both entering students and graduates. Another is to innovate with respect to alternative routes to teaching by integrating career changers into local schools. New Jersey recruits nearly one quarter of its new teachers each year this way, according to the National Center for Education Information. Still another challenge is the need to strengthen education faculties to attract new blood and rely less on adjuncts. And still another and related challenge is the need to fill numerous acting positions for deans and chairs in these programs on a basis that would excite new hires about opportunities to shape programs innovatively.

Working toward a results-focused, decentralized, deregulatory approach for teacher preparation at the State University could have high payoffs. It would engage the campuses and school districts in discussing initiatives for teacher preparation. It would energize campus officials to focus on ways that University campuses can be leaders in this field nationally and thereby help raise the status of education schools and attract better students and strong faculty members who want to try new approaches. It would examine ways to make teacher preparation programs less rigid and more open. It would put the State University out front in a field in which it has both relative comparative advantage within New York and critical mass. It would look at ways to improve opportunities for more reliance on, and the revision of, standardized testing for every point in the teacher-preparation process — admission, graduation, post-program, and for continuing teacher training.

Issues to Explore

The following issues are especially important, and would benefit from active involvement by the Provost's office.

Expanding and strengthening the talent pool of potential teachers

New York State currently faces teacher shortages in selected fields such as mathematics, the sciences, and bilingual education. It also faces shortages in urban areas. These shortages will grow significantly in coming years. The State University currently plays a major role in supplying New York's teachers and should play a major role in filling these gaps. One of the most important issues facing the University is how to develop programs and incentives that will encourage bright students to enroll in programs for high-demand teaching fields. The University should pay special attention to approaches that might attract the most academically capable students to these fields. Another major challenge is to find ways to encourage and assist students both in school, and after they graduate, to increase the number of individuals able and willing to teach in urban areas.

Intensive and streamlined programs for career changers

One of the biggest challenges New York public education faces is finding enough qualified people to teach, as teacher shortages grow in the years ahead. The new regulations provide campuses with explicit flexibility and encouragement to design intensive streamlined programs for career changers and others with academic and professional degrees. This is a huge opportunity for the State University. It is also a huge opportunity for people who may wish to teach, as it can drastically reduce the opportunity cost of teacher preparation by allowing individuals to avoid prolonged periods without salary. The Provost's office should consider incentives and assistance to encourage campuses to develop innovative programs that will take advantage of this flexibility.

Subject matter training

The new State Education Department regulations generally require undergraduate teacher preparation programs for secondary education students to provide a full major equivalent to that taken by non-education majors. Some campuses already require this of their teacher preparation students, and most others require programs that are almost the same as full majors. Nonetheless, some schools will have to begin requiring much more rigorous majors and may need to work especially closely with their arts and sciences faculty to help students adjust to the new requirements. In considering how to respond to the new regulations, campuses and the Provost's office should consider the balance between subject matter preparation and pedagogy.

Responding to regional gaps and gaps in specific certification fields

The strategy of giving flexibility to campuses does not address the two challenges mentioned earlier of high inner-city teaching needs (especially in New York City) and hard-to-fill subject matter needs. For these areas, statewide initiatives would be appropriate, providing special incentives to University teacher-preparation institutions. The research on teacher preparation conducted for the Rockefeller Institute by Gene Hall and his associates suggested that the State University establish an Urban Teacher Education Center in New York City as "a place for teacher education students from all campuses to be based to develop knowledge and skills for teaching in urban schools." This makes sense. Such an initiative could include incentives to faculty and campuses to participate. Indeed, it makes sense to adopt a similar approach for dealing with what are determined to be the major areas of special curricular needs for teacher preparation — e.g., math, science, reading.

While the State University should look for creative ways to encourage students to teach in urban areas and in fields with shortages, there are limits to the University's ability to "push" students. Students also need to be pulled, requiring policies that go beyond the reach of the State University. If teaching in urban areas and in high-need specialties is sufficiently attractive, teacher candidates will gravitate toward them. This would take money. A would-be teacher choosing between New York City or an outlying suburb faces the prospect of earning at least an additional quarter-million dollars in the suburbs in present-value terms over the course of a teaching career — before even considering pension benefits and possibly a more attractive work environment. It is hard for the State University to design an urban education program to compete with this — a full scholarship for graduates who teach in urban settings wouldn't even begin to make up the difference.

Teaching to all students

The new regulations are infused with the notion that all teachers should be prepared to teach to all students: children with disabilities, children with different cultural backgrounds, children of different ability levels, and children in urban and rural settings. Although many SUNY campuses work hard already to provide their teacher preparation students with diverse opportunities, it will be harder still under the new regulations. This can be especially difficult for campuses in rural settings. The Provost's office, as the academic center of the University, might consider ways to foster greater coordination among campuses to make it easier for them to design programs that meet the new Regents requirement.

Student teaching and field experiences

Student teaching and other field experiences are probably the most important part of teacher preparation. The State University faces a number of challenges in this area, including providing earlier and more frequent field experiences prior to student teaching, providing greater opportunities to student-teach in urban settings and other high-need areas, and integrating student teaching with on-campus coursework.

The consultants to the Rockefeller Institute on this project remarked on the high-level use of adjuncts, particularly as supervisors for mentoring the classroom experience of new teachers and providing clinical training as part of the teacher-preparation process. The new regulations will impose minimum requirements for the use of full-time faculty, possibly creating additional costs for teacher preparation programs.

Accreditation

NCATE is a fast-tracked effort to set national standards in the teaching field. One SUNY campus is NCATE accredited (Buffalo State) and others are working to be accredited. Others still want to do so. In effect, the 1998 Regents report adopts NCATE because there are as yet no alternatives. We have not explored NCATE requirements in depth yet – and these requirements are in the midst of change – but we are wary of layering additional, changing, externally imposed requirements on teacher preparation on top of those required by the State Education Department. We believe the Provost's office should explore carefully NCATE and the Regents accreditation option (and TEAC if it becomes viable) and not commit to new requirements without understanding their implications fully.

Professional development requirements

The new regulations will impose professional development requirements on teachers newly receiving professional certification. The Provost's office should explore with the campuses ways in which they can and should help meet these new needs.

Education program leadership

SUNY campuses have many vacancies in leadership posts for deans, chairs, and lead faculty members in teacher-training programs. SUNY officials should examine salary levels for these positions. Campuses may lose (or at least not attract) strong, capable candidates because of the

opportunities and salaries available to them in other fields and areas. Consultants who assisted us in the preparation of this report believe that uncompetitive salaries contribute to difficulties in filling campus leadership and new positions in teacher education. This subject merits further investigation, including a need to look at comparisons that take into account differences in experience, quality, areas of specialization, and costs of living.

Information for policy analysis and decisionmaking

In the course of our research on teacher preparation, we have been surprised at how little seemingly basic information for policy analysis was actually available. For example, due apparently to resource constraints, the State Education Department has relatively little summary information on teacher supply and demand in New York, although they do maintain voluminous data files.

Even voluminous data files often do not contain information that would be useful. For example, although the State Education Department knows the fields in which teachers are certified, and the campuses at which they were educated, it does not know their academic majors in college and it does not know their SAT scores. This makes it very difficult to do good research on teacher characteristics. For example, without this sort of information, it is hard to answer questions such as: Where do the teachers with strong academic backgrounds teach? Are they teaching in cities, or suburbs, or elsewhere? Are they teaching in rich schools or poor schools? Which kinds of teachers are paid the most, and which the least? Do the most academically able teachers leave the teaching profession the earliest? What kinds of teacher characteristics are associated with good student outcomes?[36] The State University and the State Education Department should consider combining their data on teacher candidates and on teachers, respectively, to improve their ability to research this important topic.

Policy coordination

Finally, but by no means least, greater coordination between the State University and the State Education Department could lead to better policies. For example, in the course of our conversations with SED officials, it became clear that they were frustrated by the fact that very few campuses in the private or public sectors had developed creative and flexible programs for academically qualified career changers. This is a potential area for policy coordination. The Provost's office might be able to encourage State University campuses to develop these programs, to the benefit of all concerned. The Provost's office might consider establishing regular, formal, policy-level communication with the State Education Department so that they can work together in areas of mutual interest, and resolve differences when conflicts arise.

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Appendix: New York Teacher Preparation and Certification Requirements

This appendix describes State Education Department regulations in effect prior to September, 1999, referred to in this appendix as prior regulations. For a discussion of key changes made by the new regulations, see the section in the main report entitled, "The Regents' Reforms in New York."

The New York State Education Department (SED) regulates the qualifications of teachers in two main ways: (1) It sets minimum education and experience requirements for teacher certification, including examinations that teachers must pass,[37] and (2) It approves, or "registers," university teacher education programs that prepare many students for teaching. This appendix describes the rules in effect before the 1998 and 1999 reforms proposed by the New York State Board of Regents.

As with many other states, New York grants teaching certificates in two stages: an initial certificate (currently known as a "provisional" certificate) and a permanent or professional certificate. In New York the provisional certificate lets a teacher begin teaching for five years, renewable once, and a permanent certificate currently signifies teaching certification for life.[38] Under reforms proposed by the New York State Board of Regents, the requirements for these two certificates will be made considerably more stringent, although the precise form of the new requirements won't be known until regulations are finalized, possibly later this year.

Before describing the State Education Department's prior requirements in detail, we will point out one requirement that sets New York apart from most other states: the requirement that permanently certified teachers have a master's degree, which currently means that New York teachers generally must complete a master's degree within five years of beginning teaching. New York is the only state that effectively requires a master's degree to acquire a permanent teaching certificate, although some states require considerable post-baccalaureate study and others require a master's degree for an optional second-stage certificate. As a result of this policy, New York has far more teachers with advanced degrees than other states – 75% have a master's or other advanced degree, compared with the national average of 48%.[39] Under the Regents' proposed reforms, the master's degree requirement will be accelerated, possibly from five years after initial certification to two years.

SED Requirements for Provisional Certification

Under prior SED regulations, a New Yorker typically obtained a provisional teaching certificate by completing an approved ("registered") teacher education program, or by satisfying an alternative "transcript evaluation" conducted by the State Education Department, in either case coupled with passing scores on a Liberal Arts and Sciences Test (LAST) and a written Assessment of Teaching Skills (ATS-W).[40]

Using elementary education as an example, the State Education Department's prior regulations required the following of an approved program:

> The program will assure that the candidate has completed a baccalaureate degree with a concentration in one of the liberal arts and sciences and college-level work in English, mathematics, science, social studies, and a language other than English. The program will provide special training in the teaching of reading and

> college-supervised student teaching in both the lower (PreK-3) and upper (4-6) elementary grades.[41]

In addition to these specific requirements, the regulations also imposed general requirements:

> An approved program is one which prepares the teacher to create a productive learning environment; plan and execute instructional activities; monitor and assess student learning; address the special developmental and educational needs of students in lower and upper elementary grades; collaborate effectively with co-workers; communicate, plan, and work effectively with children's families; use community resources, programs, and services appropriately; and work effectively with students from minority cultures, students of both sexes, students from homes where English is not spoken, students with handicapping conditions, and gifted and talented students.[42]

The above rules, in conjunction with alternative transcript evaluation criteria, were interpreted as requiring a minimum of 6 credits each in English, mathematics, science, and social studies (24 credits in total), an academic "concentration" of 36 credit hours, and a one-year foreign language course, along with professional education requirements described below.[43] In addition, the program required at least 30 credit hours of study in specified professional education (at least 6 of which would be in teaching reading).[44]

The general and subject matter requirements for a program leading to certification in a secondary field were similar, except that the concentration must be in one of the liberal arts or sciences "appropriate to the area of the teaching certificate." For example, a program leading to certification in mathematics would require 36 credit hours in math, and a program leading to a secondary certificate in a specific science such as biology would require 36 credit hours in science, including 18 credit hours in biology. In exchange for more intensive subject matter requirements, secondary programs have reduced "breadth" requirements (prospective teachers need not have 6 credits each in English, mathematics, science, and social studies), reduced professional education requirements (18 credit hours rather than 30) and the reading instruction requirement is eliminated.[45]

For both elementary and secondary teaching, the program required a bachelor's degree with a "concentration" (rather than an academic major), some foreign language study, and college-supervised student teaching.[46]

A college graduate who has not taken a teacher education program also could obtain a provisional certificate, via transcript evaluation, but the requirements were considerable and did not look much different from those for an approved program. Again, using elementary education as an example, a candidate would need:

- Bachelor's degree (any field) from an accredited institution;
- 6 credits each in English, mathematics, science, and social studies (24 credits in total)
- a 30-credit concentration in professional education, including 6 hours in the teaching of reading
- 36 credit hours in one of the liberal arts and sciences
- one-year college level foreign-language study
- college-supervised student teaching; one year of paid full-time teaching experience may be substituted, on the school's recommendation.

Although SED regulations are not very specific about pedagogy and other professional education requirements, the National Association of State Directors of Teacher Education & Certification details the "teaching and schooling" training requirements it believes are effectively imposed under prior regulations upon teacher preparation programs by the State Education Department as a result of teacher certification requirements. For example, the manual says that an initial teaching certificate in elementary education requires training in the following 16 of 17 possible teaching and schooling topics, second only behind Alabama[47]:

- Social Foundations
- Philosophy of Education
- Introduction to American Education
- Other Foundations
- Alternative Ways of Organizing Schools
- Curriculum Patterns and Alternatives
- Nature of Students' Learning Process/Developmental Characteristics
- Structure of the School as an Organization
- Development of Basic Repertoire of Teaching Strategies
- Methods of Teaching Elementary School Subjects
- Methods of Teaching Reading
- Cultural Diversity
- Technology in Teaching
- Student Assessment
- Restructuring and School Improvement
- Classroom Management

The professional education requirements for secondary teaching covered essentially the same topics but in much less depth. In addition, Methods of Teaching Reading was not required. According to the NASDTEC manual, New York required only 18 credit hours in professional education for secondary education programs, rather than the 30 required for elementary education programs. Again New York stands out as imposing more pedagogy requirements than most states.

Student teaching: New York was one of only 12 states that do not require prospective teachers to have field experience prior to student teaching, such as classroom observation or student contact of some sort, although of course university-based teacher preparation programs may require this nonetheless.[48] New York also imposed relatively few requirements on the student teaching experience – it is one of only 5 states that do not require a minimum number of weeks or hours of student teaching, it is one of only 13 states that do not establish minimum requirements for the cooperating teacher with whom a student teacher works, and it is one of only 14 states that do not have specific student teacher evaluation requirements.[49]

SED Requirements for Permanent Certification

Under current State Education Department regulations which soon will be revised, a permanent teaching certificate may be granted to an individual who meets the provisional certificate requirements and who also has:

- One year of supervised internship or two years of teaching experience
- A master's degree in a field functionally related to the provisional certificate holder's field. According to an illustrative list published by the State Education Department, a functionally related degree might include:[50]
- A degree in teaching the subject area of the provisional certificate (e.g., Math Education)
- A degree in the subject area itself (e.g., Master's in Mathematics)
- A specialized master's degree in an area such as Reading, Bilingual Education, Special Education, Gifted and Talented, Educational Foundations, E.S.O.L., Computer Literacy, or General Professional Education
- Passed an appropriate Content Specialty Test (CST) and Assessment of Teaching Skills – Performance (ATS-P)

Appendix:
Teacher Supply and Demand in New York

Introduction

This appendix provides information on the supply and demand for public school teachers in New York, in an effort to address the question of whether there is or will be a shortage. Much of the information is based on conversations with staff of the New York State Education Department (SED), who provided some useful numbers and much useful background information. Unfortunately, many of the numbers obtained in this fashion are less precise and less detailed than desirable, and to date are unverifiable absent extraordinary effort, because data systems within the State Education Department apparently are unable to produce much of the information we requested.[51] Any numbers below that are not sourced to specific written documents should be considered unverifiable.

Teachers in New York

New York State has approximately 200 thousand public school teachers, teaching in over 700 school districts.[52] New York City, which is a single school district, has 72 thousand teachers and accounts for 36% of the state total. New York City has more than 23 times as many teachers as the next-largest district, the City of Buffalo.[53]

Percentage Distribution of Teaching Positions
1996-97

Common Branch	22.0%
Special Education	13.9
English Language	7.2
Mathematics	7.1
science	6.4
Social Studies	6.2
Physical Education	4.4
Reading	4.0
Kindergarten	3.6
All other	25.2
Total	100.0%

Elementary and special education account for the greatest share of teaching positions by far, with 47 thousand and 30 thousand positions, respectively. Taken together, the nine-largest teaching fields shown in the nearby table account for three-quarters of all teaching positions, with a myriad of specialized fields such as bilingual education and art/music education accounting for the remaining quarter.[54]

The public school teaching workforce has been increasing throughout the 1990's, as shown below:[55]

Public School Teachers in New York
— Recent Trends —

	Number of Teachers	*Change*	*Percent Change*
1992-93	177,891	3,921	2.3%
1993-94	182,432	4,541	2.6%
1994-95	184,148	1,716	0.9%
1995-96	190,991	6,843	3.7%
1996-97	194,957	3,966	2.1%
1997-98	199,689	4,732	2.4%
1998-99	201,000	1,311	0.7%

Teacher Demand

The numbers above simply show the net change in the number of teachers from one year to the next. This reflects the net impact of new hires as offset partly by teachers who leave the profession in New York. In very approximate terms, perhaps 9-10 percent of teachers, or about 20 thousand, leave in a given year, and 25 thousand teachers are hired, for a net increase in the range of 5 thousand (roughly consistent with the table above, although there can be substantial variation between one year and another).[56] The important point for purposes of this discussion is that New York school districts hire approximately 25 thousand teachers per year in the current economic and policy environment, and they must find them from the pool of available teachers, which is discussed later.

How many *new* teachers do New York's public schools currently hire each year, and how many will they need to hire in coming years? We can think of the need for new teachers as driven by three forces: (1) new "demand" resulting from increasing numbers of school-age children, (2) the need to replace teachers who retire, leave the state, or quit the profession, and (3) changes in policies that might lead to more or fewer teachers.[57]

Enrollment Trends

Based in part on enrollment projections of the National Center for Education Statistics, I assume that enrollment in New York school districts should increase by about 1.5 percent per year in the coming decade.[58] Enrollment in New York City is growing more quickly than in the rest of the state, and the distribution of growth might be roughly 2 percent annually in the City and 1 percent in the rest of the state on average. Under a constant policy regime, where student-teacher ratios stay constant, this would result in new hires of perhaps 3,000 teachers per year – sizable, but a relatively small share of the 25 thousand teachers hired each year.[59]

Quit Rates

"Quit rates," or turnover rates, reflect individuals who leave employment in a district due to retirement, resignation, or other reasons. They measure the percentage of teachers who leave employment in a district in any given year. Turnover rates in teaching are notoriously high compared with other professions, and reflect a number of factors:

A 1995 issue brief by the National Center for Education Statistics shed some light on the rapid movement of teachers. It found that 7.3 percent of public school teachers moved from one school to

another in 1990-91, and that the least experienced teachers had the highest rates of migration by far: 14.1 % of teachers with 3 or fewer years of experience moved to a different school, and 9.9% of teachers with 4-9 years of experience moved. By contrast, only about 3% of teachers with 20 or more years of experience moved to a different school.[60]

The most common reason given for a move was a school staffing action such as a reduction in force, layoff, school closing, reorganization, or reassignment. The next most common reason given was family or personal move, followed by "better teaching assignment." Public school teachers rarely gave better pay as a reason for moving.

In addition to migration, a large proportion of teachers leave the profession due to attrition. The two main reasons teachers gave for leaving the profession were retirement (30%) and family, personal, health, or pregnancy reasons (also 30%).

NCES's general conclusions about attrition were, "Very few teachers change schools or leave the profession because they are dissatisfied with their previous school or with teaching in general."

Average turnover rates in New York State appear to be about 9 or 10 percent, reflecting a rate of 14% in New York City and rates that are much lower in most other districts.[61] The State Education Department has been unable to provide any information on quit rates by teaching certification field.

Much has been written about the impending increase in quit rates due to the aging of the teaching workforce, and it is true that this will lead to increases in attrition in coming years. In New York this will compound an already-difficult situation, with the number of potential retirements increasing steadily and significantly. Thirty-five percent of New York's more than 200 thousand teachers are aged 48 or older and many will be retiring in the next decade.

Policies

State and local policies can affect demand for teachers in several ways:

- ❖ Efforts to reduce class size would increase the demand for teachers
- ❖ Efforts to end or reduce social promotion would increase demand for teachers, both for summer school classes and to teach the greater number of students who are retained in school.
- ❖ Efforts to increase availability of pre-kindergarten education also would increase teacher demand.

Any one of these policies could increase demand for teachers significantly.

Teacher Supply

The pool of potential new teachers consists of people newly authorized to teach, plus people previously authorized to teach but not currently teaching.

People newly authorized to teach

People *newly authorized to teach* come from a variety of places:

Provisional certification:

- ❖ teacher preparation programs such as those of SUNY, CUNY, and private institutions
- ❖ "alternative transcript evaluation" – evaluation by SED of transcripts of people who have taken pedagogy courses without necessarily completing a teacher preparation degree. This is NOT an "alternative route" to certification as that term is often used, in that it requires essentially the same coursework us required of people in teacher preparation programs.
- ❖ reciprocal agreements with other states

Temporary licenses:

- ❖ school districts that have searched for and cannot find a certified teacher may request a temporary license from SED, allowing the district to hire an uncertified teacher (technically, the district gets the license, not the teacher). Districts also obtain temporary licenses when they want to hire a teacher certified in one field to teach in a field for which the teacher is not certified. New York City relies heavily on temporary licenses. They are used heavily in hard-to-fill fields such as bilingual education, special education, math, and sciences. In theory, temporary licenses only last one year, with one renewal, although in practice districts sometimes use them to keep an uncertified teacher for 6 or more years. This is the closest thing New York has to an alternative route, but it is not one in the sense commonly used, since a teacher teaching under a temporary license eventually must fulfill all the regular certification requirements.

SED doesn't seem able to provide firm numbers on the relative importance of each source, but each plays a major role in supplying potential teachers:

- ❖ In a typical year, 25 thousand or so individuals are given provisional certification
- ❖ About 10-15 thousand of these go through a teacher preparation program,
- ❖ Perhaps 8-10 thousand are certified through an alternative transcript evaluation. Maybe 10-15% of the newly certified total might come from out of state, but often these people will be counted in the transcript evaluation group.
- ❖ It appears about 10 thousand or so temporary licenses are granted in a year.[62]

Who actually is hired to teach?

The pool of teacher candidates in any given year includes:

- ❖ Newly certified individuals from teacher preparation programs
- ❖ Newly certified individuals under the alternative transcript evaluation
- ❖ Newly certified individuals from out of state
- ❖ Uncertified individuals teaching under district-requested temporary license
- ❖ Previously certified individuals who never taught for one reason or another
- ❖ Former teachers who left the profession

The data on certifications and hires are striking in several respects:

- Public schools in New York currently hire perhaps 25 thousand teachers in a given year – enough to replace the nearly 20 thousand or so lost to attrition plus provide growth to support a growing student population
- The vast majority of the teachers hired in a given year have taught before – perhaps 19 thousand or so. The other 5 thousand are newly minted teacher candidates who have not taught before. SED seems unable to tell us how many of these are from alternative transcript evaluation routes, how many from teacher preparation programs, and how many teach under temporary licenses.
- There is a huge pool of previously certified individuals that for one reason or another never gets around to teaching in New York public schools. According to SED, perhaps 1/3 never teach, many go out of state, some teach in nonpublic schools, and some go on to graduate school. SED notes that in one recent year New York City invited a pool of 25 thousand individuals who previously had received provisional certification to apply for openings in the NYC schools. About 200 (i.e., 0.8%) did.

Impact of policies

Just as policies currently under debate could increase teacher demand significantly, the Regents certification proposals now being finalized and the teacher preparation program regulations recently adopted could restrict teacher supply in several significant ways:

- By phasing out temporary licenses, they will eliminate a mechanism that currently allows about 10 thousand or so of New York's teachers to continue teaching. This will have an especially large impact on New York City, and in the fields of bilingual education, English as a Second Language, art and music, science, and foreign languages.
- By phasing out the "alternative transcript evaluation" route to obtaining certification, they will eliminate a mechanism used to certify about 7 thousand individuals annually.
- By accelerating the requirement for a master's degree, barriers to entry will be greater, discouraging some students from entering teacher preparation programs.
- Some provisions in the new regulations would hold teacher preparation programs accountable for their students' scores on teacher preparation exams. Regardless of whether this is a good idea, it might lead some programs to raise standards, which in turn might restrict supply.

In addition, school district early retirement policies could reduce teacher supply as well.

One policy that could increase teacher supply is a new regulation that would explicitly allow teacher preparation programs to establish intensive streamlined programs for career changers and others who have academic graduate or professional degrees. Although schools might have developed such programs without this explicit provision, historically they had not, and State Education Department staff hope that the new regulation will encourage schools to develop these programs. We don't have any information on how great this impact could be.

Is There a Teacher Shortage?

Simple analysis of turnover, enrollment, and certification

One static approach to analyzing potential teacher shortages is to project year-ahead needs for teachers by region (NYC and rest of state) by major field, using some simplifying assumptions. Those assumptions are:

- Since SED cannot provide us with data on the number of teachers by field and region, we have to estimate them from data on teachers by field, assuming NYC has the same breakdown of teachers by field as the statewide average. This is obviously wrong for bilingual and special education but we have no data available to make other assumptions.
- We estimate teachers lost to turnover by field and region, by assuming a uniform 14% turnover rate in NYC and 9% in the rest of the state. Obviously some fields have more rapid turnover than others, but SED can provide no data with which to make better assumptions.
- We assume that enrollment grows by 2% in NYC and 1% in the rest of the state, and that desired pupil-teacher ratios do not change from the status quo.
- We make no attempt to estimate the impacts of any of the policies discussed above, almost all of which would increase demand or reduce supply, and so this approach almost certainly would underestimate teacher shortages.

Under these assumptions we can estimate the number of teachers demanded by field and region, and compare them to the number of new provisional certifications, provided by SED in Appendix A of the July 1998 Regents report. This yields the following summary results for a one-year-ahead forecast, showing anticipated teacher "demand," supply from new certifications, and need not met by new certifications:

	Teacher Need		*Provisional Certifications*		*Need Not Met by New Certifications*	
	NYC	*Rest of State*	*NYC*	*Rest of State*	*NYC*	*Rest of State*
Bilingual Education (extension)	190	221	736	202	—	19
Elementary Education	3,091	3,602	2,474	5,810	617	—
Special Education	1,648	1,921	787	2,713	861	—
Science	756	880	167	811	589	69
Mathematics	841	980	193	531	648	449
Languages Other Than English	400	466	106	319	294	147
Social Studies	733	854	338	1,060	395	—
ESOL	203	237	152	191	51	46
English	857	999	361	951	496	48
Physical Education	520	605	105	560	415	45
Vocational Education	481	560	36	283	445	277
Business/Distribution Education	159	185	30	233	129	—

While the table leaves much unsaid, it certainly suggests that New York City will need to go outside the normal teacher preparation process to meet its needs for teachers in special education, mathematics, elementary education, sciences, and a host of other fields. The rest of the state, by contrast, would not face significant difficulties in fields other than mathematics.

Analysis of temporary licenses

The State Education Department reached similar conclusions in the July 1998 Regents report, when it compared temporary licenses to provisional certifications by field and region. The following table, adapted from Appendix A of that report, shows temporary licenses and initial (provisional) certifications by field and region. New York City relies heavily on temporary licenses in almost all fields, and upstate relies on them for bilingual education and special education, suggesting that it is hard to fill vacancies in these areas.

Selected Temporary Licenses Issued Versus Provisional Certificates, 1996-97

	—— New York City ——		—— Rest of State ——	
	Temporary	**Provisional**	**Temporary**	**Provisional**
Bilingual Education (extension)	2,008	736	337	202
Elementary Education	1,870	2,474	14	5,810
Special Education	1,448	787	354	2,713
Sciences	961	167	22	811
Mathematics	564	193	5	531
Languages Other Than English	517	106	65	319
Social Studies	427	338	5	1,060
ESOL	358	152	13	191
English	269	361	6	951
Physical Education	190	105	8	560
Vocational Education	135	36	200	283
Business/Distribution Education	99	30	58	233
Total	8,846	5,485	1,087	13,664

Source: Regents Report, July 1998, Appendix A

The New York State School Boards Association survey

The New York State School Boards Association recently conducted a 10-question teacher supply and demand survey that they mailed to 701 district superintendents in New York. State. NYSSBA did not receive responses from New York City and three of the other Big 5 city school districts, although they did receive responses from 260 districts including "several large city schools and one Big 5 district."[63] Given this sort of response, the survey might best be thought of as describing the shortage/surplus situation in suburban and rural districts. As noted earlier, temporary licensing is used much more heavily in New York City than in the rest of the state.

The survey's key conclusions are:

In the areas covered by the survey (not NYC or most big cities), there was relatively little evidence of current shortages:

- "roughly 95 percent of districts reported that all teachers hired during the year held certification in the subject area they were assigned to teach."
- 72 percent reported no vacancies in their district
- only 28% of districts responding to a question on recruiting were actively recruiting for a position
- Only 10% of districts felt a need to use pay incentives to recruit teachers

However, there were some tight spots

- Applicant pools were smallest for senior high science positions, especially earth science, physics, and chemistry
- Applicant pools also were small for foreign language, technology, and math positions

And some areas where it was a buyer's market

- Applicant pools were large for elementary, social studies, English, special education, and physical education teachers

Conclusions

Despite the sparseness of available data, several things are clear:

- Although New York's teacher preparation programs produce more teacher candidates than are hired in any given year, many never go on to teach, and many are in fields and regions where there are not shortages.
- There is clear evidence of shortages in most fields in New York City, especially bilingual education and special education.
- Outside the City, there are relatively few shortages, and in fact there are surpluses in some fields and regions. This is especially true in English and social studies. Even these surpluses might lessen or disappear if new higher K-12 standards make it harder to find certified teachers in these fields.
- New policies would tend to exacerbate shortages – increasing teacher demand, while constricting supply.

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State Education Department Regulations, NYCRR Parts 50, 52, and 80.

Tchr_nbr.txt, electronic data file with number of teachers by district, provided by Ron Danforth of the New York State Department of Education, August 1999.

Teacher Education Policy in the States, American Association of Colleges for Teacher Education, December 1994, Washington, DC.

Mission review question responses from campuses.

Undergraduate and graduate course catalogs

Interviews

Telephone interviews conducted in May and June 1999:

Albany:
James Fleming, Dean, School of Education
Jerusalem Riviera-Wilson, Director, Academy of Initial Teacher Preparation

Brockport:
Dr. Morris Beers
Chairperson

Cortland:
Mary C. Ware, Ph.D.
Professor of Education
Elementary Education

New Paltz:
Bethanne Grant
Education Advisor

Potsdam:
Laura Tharrett
Teacher Education Advising Coordinator

Other interviews on teacher preparation:
Joe Frey, SED
Charles Mackey, SED
Ray Domenico, Plattsburgh
NASDTEC
Ronald Danforth, SED
Edith Hunsberger, SED
Martha Musser, SED

Endnotes

1 Two other major routes to the classroom in New York are "transcript evaluations," often used by individuals who completed pedagogy requirements at one or more schools, but never matriculated in a teacher preparation program, and "temporary licenses," intended in limited situations to allow uncertified individuals to teach while completing certification requirements. Conversations with SED officials suggest that SUNY also plays a major role in preparing individuals who are certified on the basis of a transcript evaluation. We have no information on the extent to which SUNY students teach under temporary licenses, but this is a predominately New York City phenomenon, and we suspect that SUNY does not play a major role here – and in any event, many students teaching under this authority probably have not taken college programs in teacher preparation.NOTES

2 Some critics attack specific methods of teaching– for example, they may attack "whole language" reading instruction methods, in favor of "phonics," but other critics and supporters appear to be eclectic and pragmatic.

3 Levine, Arthur, "Dueling Goals for Education," *The New York Times*, April 7, 1999, A-21.

4 Gerwin, Carol, "Scenes from an Ed School," *CommonWealth*, Winter 1999, p. 39-40.

5 The Regents has established a 28-person Professional Standards and Practice Board to "monitor the knowledge base of teachers . . . including the examination of teachers' portfolios." The Board consists of 21 educators practicing in New York State, 6 public representatives, including parents, school board members, and community business representatives, and one teacher education student, non-voting.

6 1), subparagraph (viii).

7 The new regulations distinguish three kinds of classroom experience, which in more casual discussions sometimes are all contemplated by the term "field experience": (1) "field experiences," which are planned by program faculty and involve direct observation, participation in teaching, or teaching itself, engaged in prior to practica or student teaching, (2) "practica," supervised by the college and a certified teacher, in which the student "practices the skills being learned in the teacher education program through direct experiences with individual students, or with groups of students," and (3) "student teaching," also supervised by the college and a certified teacher, in which the student "gradually assumes increased responsibility for instruction, classroom management, and other related duties for a class of students in the area of the certificate taught."

8 Unless otherwise noted, these examples are taken from NYCRR section 52.21(b)(2)(ii)(c)(2).

9 In some circumstances, programs may be able to obtain temporary waivers exempting them from some of these requirements.

10 Although one possible interpretation of the "opportunity to" language is that this is permissive – that programs need only provide potential teachers with an opportunity to partake in this sort of experience, State Education Department staff intend and interpret this language as mandating this kind of field experience for all potential teachers. Conversation between Donald Boyd and Doris Garner of the State Education Department, 10/28/99.

11 See NYCRR Section 52.21(b)(2)(i).

12 Of course they cannot obtain permanent certification until they also fulfill the associated teaching experience requirement.

13 Based on respective Potsdam and Albany interviews.

14 These numbers are based on scores of a large minority — more than 40% — of degree recipients.

15 Based also on regulations that SED establishes for students choosing the "alternative transcript evaluation" route, which campuses often use as a guide for their teacher preparation programs. I base this statement on an 8/3/99 conversation with Charles Mackey in the State Education Department.

16 Oswego School of Education Conceptual Framework brochure

17 Response to mission review questions.

18 Both Cortland and New Paltz mentioned this in interviews. Consider adding discussion on allowable majors.

19 According to Oswego's 1998-99 Undergraduate Catalog, p.27, concentrations sometimes are the same as an academic minor. As discussed in this section, however, sometimes a concentration includes many courses not allowed in an academic minor.

20 These courses would not count toward a mathematics minor, either.

21 Mathematics for the Elementary Teacher A (MAT 106), Advanced Mathematics for the Elementary Teacher (MAT 306), and Geometry and Probability for Elementary Teachers (MAT 307).

22 This discussion is based on a comparison of the mathematics major requirements for education students given at pages 50 and 57 of the New Paltz 1997-99 Undergraduate Studies catalog with requirements for non-education mathematics majors given in pages 153-154. Note also that according to page 46 of the catalog, "Education students at New Paltz will graduate with a baccalaureate degree in education, preparation in professional education, a teaching certificate, and an academic major." It does not appear, therefore, that they receive a baccalaureate in their "major" field (but need to ask someone to be sure).

23 If they took the higher-level computer science elective and another high-level computer science course recommended to education students.

24 Source: Table dated June 15, 1999, handed out by Dan King, Dean of Arts and Sciences, Buffalo State College, June STATE UNIVERSITY Trustees subcommittee on academic standards. Need to verify against course catalog.

25 Based on Brockport Undergraduate Studies Catalog, 1997-99, pages 254-258.

26 Based on 8/3/99 meeting with Charles Mackey of SED and a reading of the definition of "major" in the adopted regulations.

27 Based on 8/3/99 meeting with Charles Mackey of SED.

28 NOTE: Oswego had a course, Sed 432 Interdisciplinary Methods, that I classified as a philosophy/history course based on the course description, rather than as a methods course. It might easily be called a methods course.

29 Based on 8/3/99 conversation with Charles Mackey of SED. Not yet verified in the regs.

30 General rule given by Charles Mackey of SED in 8/3/99 interview.

31 NCES Digest of Education Statistics.

32 This discussion based on 8/3/99 conversation with Charles Mackey of SED.

33 Charles Mackey, 8/3/99

34 Rivkin, Steven G., Eric A. Hanushek, and John F. Kain, Teachers, Schools, and Academic Achievement, July 1998, obtained from the Worldwide Web page of Eric A. Hanushek.

35 These researchers also conclude that experience beyond the first few years matters relatively little. Teachers seem to increase in effectiveness in their first few years, but there is little evidence that improvements continue beyond that. (This, too, has important implications for a state that rewards experience far more than do other states on average, although it is not an issue for teacher education programs.)

36 As important as this question is, better data on teachers is not sufficient to allow good answers. The State Education Department's data on student outcomes is limited, and would constrain researchers' abilities to answer this question.

37 Not all teachers are certified. School districts frequently hire uncertified teachers for specific vacancies under temporary licenses granted by SED (sometimes called "emergency" licenses).

38 27 states require a second-stage certificate and most other states offer one. (NASDTEC-D1)

39 NCES Digest of Education Statistics

40 (a) A teacher-education-program graduate who has not yet begun to teach technically will be granted a Certificate of Qualification, but that is converted to a Provisional Certificate when the graduate is hired. (b) Another form of certification is available for applicants trained in another state and seeking certification in New York, if that state is party to an interstate agreement with New York. (c) Note that the alternative transcript evaluation is not the same as the general notion of "alternative routes to certification" advocated by many critics of current teacher education programs. The transcript evaluation approach requires considerable training, as we will discuss. To the extent that New York allows routes to teaching that are similar to "alternative routes to certification," they would fall under the category of uncertified teachers with temporary licenses, sometimes known as emergency licenses.

41 SED Regulations, section 80.15(a)(1)(i). We ignore certain other minor requirements, such as a state-imposed requirement for health and drug abuse awareness training. [get more precise description]

42 SED Regulations, section 80.15(a)(1)(i).

43 NASDTEC, Table B-10. Obtained by NASDTEC from Charles Mackey; not evident in the regulations.

44 NASDTEC, A-100. Obtained by NASDTEC from Charles Mackey; again, not evident in the regulations.

45 The detailed credit hour requirements come from NASDTEC A-100 and A-101. More-general rules are from SED regs, 80.16(a)(1)(i). Obtained by NASDTEC from Charles Mackey.

46 NOTE: NASTDEC Manual, B-4 and B-10, appears to say a major is required, but that is not always correct.

47 NASDTEC Manual, B-5. These requirements cannot be found in SED regulations, but NASDTEC says that they are based on responses to their survey by Dr. Charles Mackey

in SED, Coordinator of the Office of Teaching (Telephone conversation between Betsy Tessler and NASDTEC officials, late July 1999.) Several topics might be covered in a single course. The only topic that New York does not require, according to NASDTEC, is Study of Self (Teacher) as Learner.

48 NASDTEC, B-7.

49 NASDTEC, B-8 and B-9.

50 State Education Department Memorandum relating to Functionally Related Master's Degrees, www.nysed.gov/tcert/ot41.htm

51 The State Education Department has offered to make certain administrative data files from the Basic Education Data System available to the Rockefeller Institute of Government and these files could shed additional light on the questions explored below. The data files are quite large, however – more than 600 thousand records per year – and we are not currently able to expend the effort needed to extract information from these files.

52 *Education Statistics for New York State*, Table 5, and *Public School Professional Personnel Report*, 1996-97, State Education Department, September 1997, Table 6.

53 Based on data file underlying 1999 "Chapter 655 report," for 1997-98, as provided electronically by Ron Danforth of the State Department of Education in the file "Tchr_nbr.txt."

54 PSPPR, Table 1. Based on positions, not teachers, and so it measures a slightly different concept than the numbers used previously.

55 This table is based on *Education Statistics for New York*, Table 5, which shows more "classroom teachers" than "total teachers" shown in the more detailed Table 8 of the Public School Professional Personnel Report. The difference is probably definitional, although neither document contains the information needed to be sure. In any event, growth rates are substantially the same in the two data sources.

56 Based on conversations with Charles Mackey and Joe Frey.

57 In this paper our notion of teacher "demand" is much cruder than the economist's notion of demand, which is unobservable. We are ignoring, for example latent demand relating to unmet desires.

58 NCES projections.

59 It is not quite accurate to call this a constant policy regime. Under current policies, as the "baby boom echo" moves into higher grades, where student-teacher ratios tend to be lower, student-teacher ratios should fall, placing upward pressure on teacher demand.

60 NCES IB-2-95

61 The turnover rate for the state as a whole is lower than the turnover rate for the average district, of course, because district rates reflect people who leave one district in New York and go to another, while the statewide rate would reflect out of state migration but not intrastate migration.

62 Numbers for temporary licenses and alternative transcripts are based on conversations with Charles Mackey and on the New York chapter of Feistritzer.

63 The survey report does not identify which large districts responded. The Big 5 districts are New York City, Buffalo, Rochester, Yonkers, and Syracuse.