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ABSTRACT

The issue of the teaching profession's drawing power was addressed By examining differences between college students who said they were planning to teach and those who selected other careers. The teacher candidate population included all entering freshmen who said they planned to become teachers whether or not they planned to major in education. The study focused on students at the beginning of the freshman year, and in follow-ups, at the end of the sophomore year and the end of the senior year. Data from the Cooperative Institutional Research Program (CIRP) on entering freshmen were examined for selected years, 1974 through 1983. The variables used in the analysis included gender, race, academic characteristics, attitudes toward career choice, and financial characteristics. Findings indicated: (1) Potential teachers did not differ significantly from the general college population as measured by high school and college grade point average; (2) Teacher candidates were not as driven toward material success as other students; (3) More high-ability minority students were choosing non-teaching careers; (4) There has been no decline in the percentages of academically able women and minorities who enter teaching; and (5) Today's teachers come from lower income groups, attend lower cost schools, and tend to use grants rather than loans to pay for their education. (JD)

TOMORROW'S TEACHERS

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1.0. OVERVIEW

National policy debates on the quality of education have touched on many issues. None, however, has been as sensitive as the contention that the teaching profession does not attract and hold highly able and talented new members. Several commentators have sugested that a decline has occurred in the academic ability and proficiency of elementary and secondary school teachers.

The research presented here addresses the issue of the teaching profession's drawing power by examining differences between those in the college student population who say they plan to teach and those who have selected other careers. The teacher candidate population includes all entering freshmen who say they plan to teach at the elementary or secondary level, whether or not they plan to major in educaton. Therefore, this study has a different, and broader, data base than other research that only considers characteristics of education majors.

Since college students may reevaluate their initial career choices during their time in school, this study looks at the student population at the beginning of the freshman year, and in follow-ups, at the end of the sophomore year and at the end of the senior year. Data on entering freshmen are examined for 1974 through 1983. The follow-up analyses are based on the freshman class of 1979 and 1981. The variables used in this analysis include: sex, race, academic characteristics, attitudes toward career choice and financial characteristics.

This study finds that potential teachers do not differ significantly from the general college population, as measured by high school and college grade point averages. However, the number of college students who plan to teach has declined considerably over time. Given the variability in rigor among curriculums, it is difficult to draw firm conclusions about the academic abilities of these two groups. Furthermore, their reasons for choosing a career contrast sharply with non-teachers'. Teacher candidates do not appear to be as driven

toward material success as are other students. In fact, teaching candidates consider their college achievements and departmental reputations as important factors in their career choice. Non-teaching candidates are more likely to cite the importance of job availability and financial rewards in their career choices.

The study also provides some evidence for the belief that more high ability minority students are choosing non-teaching careers. Analysis by minority status and gender suggests that minorities are less likely to go into education now than they were ten years ago; but the rate for women has stayed at approximately the same level throughout the period. As measured by grade point average, there has been no decline in the percentages of academically able women and minorities who enter teaching.

This study concludes that today's teachers come from lower income groups, attend lower cost schools and tend to use grants rather than loans to pay for their education. Prospective teachers receive about the same share of student aid as does the rest of the college student population. The failure to use loans may reflect their lower expectations, compared to non-teaching candidates, of their earning power after college.

2.0 INTRODUCTION

Do today's education programs effectively prepare students for tomorrow's technological society? This question has sparked renewed interest in the quality of elementary and secondary education. Since successful teaching is a key to educational quality, attention has naturally focused on teacher preparation and performance.

Recent reports have faulted the teaching profession in both of these areas and have proposed remedies ranging from higher entry level requirements --such as minimum competency tests or academic majors along with or instead of education courses--to better salaries and improved career ladders to attract brighter students to teaching. For the most part, these proposals have not been based upon hard data that identify who is attracted to the profession.

This report considers this important issue. First, it provides a literature review that describes enrollment trends in the college student population that plans to teach and changes in the supply and demand for teachers. Together, these two issues have raised questions about teacher quality.

Second, it analyzes longitudinal enrollment data, comparing college students who plan to teach at the elementary or secondary level with those who do not, along several variables: gender, minority status, academic characteristics, and career expectations. Teaching candidates, a population which includes those who are education majors as well as those who have chosen other majors, changes over time. Therefore, it is important to consider the potential teacher population at intervals during the college years. The study examines data on the freshman classes of 1974, 1976, 1978, 1981 and 1983. The freshman class of 1981 is re-examined at the end of its sophomore year. The freshman class of 1979 is re-examined at the end of its senior year. Both follow-up surveys were done in 1983.

Third, the study describes how potential teachers pay for college and what their concerns are about financing their

education. The variables considered here are: parental income; concern about ability to finance education; and, average student aid awards.

The findings of these analyses are then drawn together in a concluding section. The characteristics of those students who plan on teaching careers are contrasted with those who do not plan such a career.

3.0 REVIEW OF ISSUES

This section summarizes the issues which have dominated the debate on teacher quality. The labor market for teachers has recently experienced an imbalance between demand and supply that is likely to continue for some time. Analysts are also concerned about changes in the population mix of those who choose to enter teaching. Together, these conditions have significant implications for the recruitment and quality of new teachers.

3.1 Excess Supply and Demand

Critics note that the supply of teachers has far exceeded demand in some subject areas while others, notably science and mathematics, have had a shortfall of qualified teachers. (This supply and demand equation also varies by geographic location.) They question whether the oversupply of teachers has resulted from lower standards in schools of education and whether excessive demand has meant the employment of underqualified teachers.

Between 1967 and 1971, schools of education increased the number of bachelor degrees awarded from approximately 220,000 graduates to 317,000. Beginning in the 1970s, however, elementary and secondary school enrollments and the financial resources of school systems started to decline dramatically (Feistritzer 1984a). But by 1976, there was a significant increase in the demand for mathematics and science teachers. Their salaries were rising faster than many school systems could afford. Teachers in other fields, however, faced high unemployment rates.

Despite the uneven relationship between supply and demand during this period, schools of education maintained and increased their enrollments in traditional teacher education programs. They increased recruitment activities and, in many cases, lowered admission standards. W. T. Weaver (1981) considers these changes a "tragedy of commons," a lowering of standards to the lowest common denominator. He links lowered

admissions standards, recruitment, excessive supply, declining opportunities for career advancement for teachers, and eroding teacher salaries to school systems' inability to attract high ability individuals to teaching.

Projections, however, indicate that teachers will soon be in demand. The National Center for Education Statistics (NCES) predicts that the demand for additional teachers between 1983 and 1987 will be approximately 12.1 million, an annual increase of about 2.4 million during the period. The supply of new teachers will only fill 93.2 percent of that demand. Between 1988 and 1992, total demand is projected at about 12.7 million, an annual increase of 2.5 million, while supply will meet only about 75 percent of demand (Plisko 1984). NCES bases its projections on the assumption that total enrollments will rise, given the "baby boomlet" of the late 1970s; that teacher-pupil ratios will improve only slightly and, that turnover of teachers will remain constant at an estimated six percent.

With demand in excess of supply, the teaching profession and federal and state policymakers must focus on improving recruitment efforts without sacrificing quality. Recent enrollment trends, however, indicate that interest in teaching has declined significantly, and there is concern that the more able students are seeking careers elsewhere.

3.2 Earned Degrees

Dramatic shifts have occurred among undergraduate students in their choice of academic degree, a strong indicator of career choice. Between 1970-1971 and 1981-1982, the number of bachelor's degrees increased by 14 percent, to 953,000. During this period, there were substantial increases in degrees awarded in certain areas: business and management (87 percent), engineering (19 percent), and health sciences (153 percent). In contrast, degrees awarded in education declined by 43 percent (Plisko 1984).

3.3 Gender

At least some of this shift away from teaching by students may be accounted for by changes in career choices of women and minority groups. Analysts have speculated that, with the opening of new career options for women and minorities, many of the more ambitious and able members of these populations may seek careers with more opportunity for advancement and financial reward. One recent study, for example, compared the academic abilities of college-bound high school seniors (as measured by test scores) who planned to major in education with the rest of their peers who did not. It found that academically able women were less likely to major in education in 1980 than they had been in 1972 (Peng 1982).

Further, in research conducted for The National Commission on Excellence in Education, Alexander Astin (1982) concluded that the most significant changes among college freshmen were in choice of majors and perceptions about the role of women. Astin found that women are choosing careers outside of what have traditionally been "women's majors." Since women have been the dominant population in teaching these changes are of serious concern for education. Historically, women have constituted 70 percent of the teaching force (Feistritzer 1984).

3.4 Minority Status

Teachers from minority populations are not represented in the profession in proportion to their representation in the total population or in the school population. Minorities represent approximately 17 percent of the national population and 27 percent of the total school age population, and this population is increasing at a faster rate than the majority population (Dilworth 1984). Further, the supply of minority teachers does not appear to be increasing at a rate to close this gap. NCES data show that non-Hispanic whites represented over 90 percent of all bachelor's degree recipients, those trained to teach, and those teaching full-time (Plisko 1983).

3.5 Standardized Test Scores

The shrinking pool of potential teachers is also lower in ability, as measured by standardized test scores of students planning to major in education (National College Bound Seniors 1982). In 1973, education majors' verbal SAT scores were 6.1 percent below the national average and fell to 8.2 percent below the national average by 1981 (Table A-1). In 1982, composite SAT scores of such students ranked fifteenth among nineteen intended areas of study investigated (Sykes 1983). The composite ACT score in 1982 for education majors was 17.8 compared to a mean of 18.3 for non-education majors (Table A-2).

There is some evidence to suggest, however, that academic ability is not the only determinate of career choice. Michael Murphy (1984) has suggested that there is a relationship between starting salaries, choice of major, and ability. He found that average ACT scores were almost directly related to differences in first year salaries: the higher the ACT score, the higher the post-graduate starting salary. He concluded that "if schools want teachers who are more able then school districts will have to pay this supply cost. If teachers are needed who are as able as engineers...beginning salaries will have to be increased by between four and ten thousand dollars." Table A-3 shows the correlation between ACT scores, major, and starting salaries.

However, it may be inconclusive to judge the abilities of potential teachers from data that only looks at education majors. Data from the High School and Beyond survey indicate that students who intend to become teachers but who major in a subject area other than education have higher test scores and academic achievement levels in high school than do students who major in education (Wagenaar and Takai 1984).

3.6 High School Achievement

High school grade point averages (HSGPAs) are another indicator of academic ability. ACT data for Fall 1982 entering freshmen show that HSGPAs for potential teachers tend to be lower

than that of other majors, particularly among the men. ACT reported that only 15 percent of the men intending to major in education had A averages, compared to 32 percent of the women. In contrast, those planning to major in mathematics reported a significantly higher percentage of A averages--50 percent for men and 75 percent for women (Table A-4).

Overall, these findings suggest that the more academically able students are not being attracted to teaching. Some of these students--women and minorities--may have had their expectations about career opportunities raised; others may simply be convinced that a teaching career will not offer employment opportunities and financial rewards comparable to those offered in other fields. Who, then, chooses to teach and why? The analysis in this study considers that question.

4.0 METHODOLOGY

We have used data from the Cooperative Institutional Research Program (CIRP) to provide descriptive data on the background of students who planned to enter education and of those who did not. The CIRP is the nation's largest continuing study of students in the American higher education system. Its data is used extensively by federal, state, and institutional policy analysts. Initiated in 1966, the CIRP is conducted annually by the Higher Education Research Institute in the Graduate School of Education at the University of California, Los Angeles, under joint sponsorship with the American Council on Education. Each year, the CIRP publishes The American Freshmen: National Norms, a detailed report of its freshmen survey results.

The CIRP now conducts two different surveys annually--a survey of entering freshmen, and follow-up surveys of students two years and four years after they first entered college, conducted in the summer following their sophomore and senior years. Through these two survey efforts, the CIRP provides a unique data base that allows analysis of how students change through their college years.

The freshman survey collects data on the respondents' biographic and demographic characteristics, high school background, educational and career plans, financial arrangements, and attitudes. The follow-up surveys collect information on college experiences, future plans, college financing, and changes in educational and career goals.

The population for the freshman survey and the published National Norms each year includes all first-time, full-time freshmen in institutions that have entering freshman classes and are listed in the U.S. Department of Education's Education Directory - Colleges and Universities. About 200,000 students from approximately 350 institutions provide data which can be used in making national estimates. The data obtained from participating students is weighted to be representative of the population of first-time, full-time students based on sex,

student participation rates within the institution, institutional participation rates, and relative enrollment within the stratification cells.

The follow-up surveys involve a small stratified sample of students who participated in the appropriate earlier survey. Respondents to these follow-up surveys are also weighted to the original population.

For purposes of this study, entering freshmen were identified as potential teachers if they either indicated that their intended major was education, or that they intended to choose teaching at the elementary or secondary level as their career. Those who plan to teach at the postsecondary level are not included in this study. The follow-up surveys do not ask students about their career choice. Therefore, students were identified as teacher candidates in the follow-up surveys if, at the time of follow-up, they indicated that their major was in education, regardless of what their freshman major might have been, or if as freshmen they had indicated an education career choice even though they were not education majors, and had not changed their major. If these "career only" freshmen had changed major, it was assumed that they were likely to also have changed their mind on career (unless they had changed to education) and that they were lost to education, and no longer teacher candidates. All other students were classified as non-teachers.

For one analysis, trends in financial aid, teacher candidates are compared to all freshmen rather than to non-teachers in order to make comparisons with available financial aid data. All freshmen include both teachers and non-teachers. Thus, the aid analysis compares the average award of teachers to the average award for all freshmen.

Cost of attendance was computed on a per student basis from data provided by the College Scholarship Service. Cost of attendance is the sum of tuition, books, room and board, transportation, and other expenses. This cost is calculated separately for dependent students living on campus, dependent students living off campus, and independent students.

5.0 FINDINGS

The findings are reported in two broad categories: demographic and academic characteristics (Tables I through VIII); and, financial characteristics (Tables IX through XII). The population that plans to teach is compared with the non-teaching population at time of freshman entry and in two- and four-year follow-up surveys.

5.1 Freshmen: Potential Teachers

Overall, the percentage of entering freshmen who identify themselves as potential teachers has declined by nearly half (12.8 percent to 6.5 percent) between 1974 and 1983 (Table I). The decline in self-identification of freshmen with teaching between 1974 and 1983 is greater for minority students than it is for white students.

The percentage of minorities choosing to teach is down from 12.6 percent in 1974 to 5.1 percent in 1983. Among white students, the decline was from 12.8 percent to 6.7 percent.

By gender, approximately half of each group decided not to choose a teaching career by the end of the period. Women entering college are three times more likely (19.7 percent in 1974) than men (6.6 percent in 1974) to plan on teaching but show the same relative rate of decline by the end of the period (9.6 percent to 3.3 percent in 1983).

5.2 Freshmen: High School Grade Point Average

Based on high school grade point average, there has been no significant change in the academic abilities of entering freshmen who plan to teach compared to their non-teaching peers between 1974 and 1983. The high school grade point average (HSGPA) of entering freshmen who plan on teaching held steady over the period while that of non-teachers and all freshmen increased. At the beginning of the period, teacher candidates' HSPGA was roughly equivalent to that of other students (Table II). The differences are slight, however.

Table I

ENROLLMENT OF ENTERING FRESHMEN BY MINORITY STATUS AND GENDER

	1974 No.	% of Total	1976 No.	% of Total	1978 No.	% of Total	1981 No.	% of Total	1983 No.	% of Total
Total										
Teacher Candidate	216,771	12.8%	181,864	10.2%	143,749	8.6%	129,528	7.5%	112,528	6.5%
Non-Teacher	1,488,086		1,598,753		1,537,706		1,599,297		1,615,459	
Minority Status										
White										
Teacher Candidate	190,797	12.8	158,316	10.4	128,065	8.7	116,374	7.7	100,338	6.7
Non-Teacher	1,308,452		1,361,113		1,345,032		1,488,606		1,386,519	
Minorities										
Teacher Candidate	25,976	12.6	23,548	9.8	15,638	7.5	13,154	6.2	12,190	5.1
Non-Teacher	179,634		237,643		192,672		198,782		228,940	
Gender										
Male										
Teacher Candidate	59,464	6.6	48,544	5.3	31,448	3.8	26,889	3.2	28,399	3.3
Non-Teacher	838,176		873,158		798,474		811,432		819,554	
Female										
Teacher Candidate	157,387	19.7	133,328	15.5	112,381	13.1	102,719	11.5	84,129	9.6
Non-Teacher	641,918		725,595		747,232		787,865		795,905	

Source: Cooperative Institutional Research Program Freshman Surveys

Note: Minorities includes all non-white students and all Hispanic students, regardless of race.

Table II

HIGH SCHOOL GRADE POINT AVERAGES OF ENTERING FRESHMEN BY MINORITY STATUS AND GENDER

	1974	1976	1978	1981	1983
Total					
Teacher Candidate	3.03	3.06	3.07	3.03	3.03
Non-Teacher	3.02	3.06	3.11	3.08	3.09
All Freshmen	3.02	3.06	3.11	3.07	3.08
Minority Status					
White					
Teacher Candidate	3.07	3.11	3.10	3.07	3.07
Non-Teacher	3.05	3.10	3.14	3.10	3.12
Minorities					
Teacher Candidate	2.75	2.75	2.79	2.70	2.73
Non-Teacher	2.79	2.84	2.88	2.89	2.91
Gender					
Male					
Teacher Candidate	2.79	2.85	2.84	2.82	2.82
Non-Teacher	2.92	2.97	3.02	2.99	3.00
Female					
Teacher Candidate	3.12	3.14	3.13	3.09	3.11
Non-Teacher	3.14	3.17	3.20	3.16	3.17

Source: Cooperative Institutional Research Program Freshman Surveys

Notes: Minorities includes all non-white students and all Hispanic students, regardless of race.

These differences hold by minority status and gender. The HSGPA for white teacher candidates at the end of the period was 3.07 compared to 3.12 for non-teachers. Among minorities, the HSGPA was 2.73 and 2.91 for teacher candidates and non-teachers, respectively. Women teacher candidates and non-teachers show less difference in HSGPAs than do men. But the gap in HSGPAs has widened over the period. By 1984, men teacher candidates showed HSGPAs of 2.82 compared to non-teachers' HSGPAs of 3.0. For women, the difference was 3.11 to 3.17.

High school grade point averages of entering freshmen were also examined by field of study, and within each field, by teacher candidate and non-teacher (Table III). In keeping with the findings from Table II, non-teachers reported higher GPAs than teacher candidates in all fields with one significant exception. The GPAs of teacher candidates in science and technology show a increase between 1981 and 1983, up from 3.02 to 3.25. Non-teachers in that category had a GPA of 3.14.

5.3 Freshmen: Remedial Educational Help

Given their differences in HSGPAs, it is not surprising to find that 1982 entering freshmen who plan to teach were more likely to have had remedial help in high school compared to non-teachers, 12.6 percent to 10.9 percent. They also anticipated needing remedial help in college more than their non-teaching counterparts--37 percent to 33.1 percent (Table IV).

5.4 Follow up: Consistency in Plans

Do students stick with their plans to teach or to pursue other careers? If not, when are they most likely to change their minds? The 1983 follow-up surveys of 1981 and 1979 freshmen indicate that more changes in plans to teach or to pursue other careers occur between the beginning of the freshman year and the end of the sophomore year than between sophomore year and the end of the senior year (Table V). The follow-up surveys of both classes show that education gains more recruits over the course of the undergraduate education than it loses to other majors.

Table III

HIGH SCHOOL GRADE POINT AVERAGES OF ENTERING FRESHMEN
BY SELECTED INTENDED FIELDS OF STUDY

Intended Field of Study	1974	1976	1978	1981	1983
Science & Technology					
Teacher Candidate	3.00	3.03	3.04	3.02	3.25
Non-Teacher	3.01	3.07	3.12	3.09	3.14
Arts & Humanities					
Teacher Candidate	3.14	3.17	3.22	3.18	3.17
Non-Teacher	3.09	3.12	3.17	3.12	3.16
Business Administration					
Teacher Candidate	2.91	3.15	3.09	3.14	2.94
Non-Teacher	2.94	3.00	3.05	3.02	3.02
Education					
Teacher Candidate	3.02	3.05	3.06	3.02	3.02
Non-Teacher	----	----	----	----	----

Source: Cooperative Institutional Research Program
Freshman Surveys

Table IV

REMEDIAL HELP NEEDED BY 1982 ENTERING FRESHMEN*

(Percentage)

	Teacher Candidate	Non-Teacher
High School		
Had Remedial Help in High School	12.6%	10.9%
College (Predicted)		
Will Need Remedial Help in College	37.0%	33.1%

Source: Cooperative Institutional Research Program Freshman Surveys

Note: Remedial help information not available in other years.

Table V

1983 FOLLOW-UP SURVEYS: PERSISTENCE IN BECOMING A TEACHER
BY MINORITY STATUS AND GENDER
(Percentage)

	TWO-YEAR FOLLOW-UP: 1981 FRESHMEN					FOUR-YEAR FOLLOW-UP: 1979 FRESHMAN				
	Teacher Candidate		Non-Teacher		Total	Teacher Candidate		Non-Teacher		Total
	Still a Candidate	Became a Candidate	No Longer a Candidate	Never was a Candidate		Still a Candidate	Became a Candidate	No Longer a Candidate	Never was a Candidate	
	%	%	%	%	%	%	%	%	%	%
Total Freshmen	4.1	3.9	3.1	88.9	100.0	5.6	3.6	3.1	87.7	100.0
Minority Status										
White	3.6	3.9	3.1	89.4	87.7	5.6	3.6	3.0	87.8	87.6
Minorities	7.5	3.9	3.1	85.5	12.3	5.8	3.9	3.5	86.8	12.4
Gender										
Male	8.7	1.9	1.4	96.0	48.5	1.8	1.6	1.4	95.2	48.7
Female	7.2	5.7	4.8	82.3	51.5	9.2	5.6	4.6	80.6	51.3

Source: Cooperative Institutional Research Program Follow-up Surveys

Note: Minorities includes all non-white students and all Hispanic students, regardless of race.

By the end of the sophomore year (1981 freshmen), for every 100 students, slightly over three have left education. At the same time, nearly four are recruited to teaching. By minority status, there is little difference in the students recruited to or lost to education. By sex, women are more likely to be consistent in their choice than are men. The 1983 survey of 1979 freshmen shows that only a very small percentage of students change their plans between the sophomore and senior years.

5.5 Follow up: College Grades

By their senior year, teacher candidates closed the gap in grades between themselves and non-teachers that they exhibited as entering freshmen based on their high school grade point averages (Table VI). At the end of the sophomore year, 1981 freshmen who were teacher candidates reported a College Grade Point Average (CGPA) of 2.88 compared to 2.87 CGPA for non-teachers. By the senior year, 1979 entering freshmen who were teacher candidates reported a 3.08 CGPA compared to 2.95 for non-teachers.

White sophomores had CGPAs only slightly higher than non-teachers (2.94 to 2.90). Minorities show the reverse: teacher candidates have CGPAs of 2.60 compared to 2.68 for non-teachers. In the senior year, white teacher candidates have widened the gap between themselves and non-teachers while minority groups have closed the gap in CGPAs. Women show higher CGPAs than men overall. In their sophomore year, women non-teachers report slightly higher CGPAs than do teacher candidates. By the senior year, women teachers have surpassed non-teachers in CGPAs.

5.6 Follow up: Reasons for Choosing a Major

There are distinct differences among college students in their reasons for choosing a major, and these differences may have significant implications for policy decisions on what kind of teacher incentives should be provided. Non-teachers focus more on career opportunities than do teacher candidates. Teacher candidates consider their college experiences more important.

Table VI

1983 FOLLOW-UP SURVEYS: COLLEGE GRADE POINT AVERAGES BY MINORITY STATUS AND GENDER

	TWO-YEAR FOLLOW-UP: 1981 FRESHMEN		FOUR-YEAR FOLLOW UP: 1979 FRESHMEN	
	Teacher Candidate	Non-Teacher	Teacher Candidate	Non-Teacher
Total Freshmen	2.88	2.87	3.08	2.95
Minority Status				
White	2.94	2.90	3.13	2.98
Minorities	2.60	2.68	2.73	2.76
Gender				
Male	2.82	2.82	2.92	2.86
Female	2.89	2.93	3.11	3.04

Source: Cooperative Institutional Research Program Follow-up Surveys

Note: Minorities includes all non-white students and all Hispanic students, regardless of race.

In the follow-up surveys, teachers and non-teachers agree on only one reason for choosing a major (Table VII). All students rank "interesting" as the most important reason for choosing a major. After that, they diverge. For sophomore and senior non-teachers (1981 and 1979 freshmen, respectively), "job availability" ranks second in importance; for teachers, "earned good grades in field of study" is second in both follow-up studies. Similarly, non-teachers consider "financial prospects" third in importance while teachers rank "reputation of department" third.

Table VIII, Reasons Considered Least Important in Choosing a Major, shows findings consistent with the results of Table VII. Both groups consider college and family advice as playing a relatively minor role in choosing a major.

5.7 Freshmen: Parental Income

The data on entering freshmen indicates that teacher candidates come from lower income families than do non-teachers. Table IX, on parental income, has not been adjusted for inflation and shows all students coming from higher income categories in 1983 than they did in 1974. Of concern here is that lower income categories, in all years, contain a greater proportion of teacher candidates than they do the proportion of non-teachers. For example, in 1974, 37.0 percent of teacher candidates came from families with income under $10,000, while only 32.7 percent of non-teachers did so. By 1983, more than half (57.2 percent) of non-teachers came from families with income over $30,000, while less than half (46.1 percent) of the teacher candidates did so.

Examination of the differences in the proportions within each of the income categories suggests that the teacher candidates came from relatively lower income families in 1983 than they did in 1974, when non-teacher family income is held constant. This is evident from within the income category data.

For example, in 1974, the difference between the proportions of teacher candidates and non-teachers coming from families with

Table VII

1983 FOLLOW-UP SURVEYS: REASONS CONSIDERED MOST IMPORTANT IN CHOOSING A MAJOR
(Percentage)

	TWO-YEAR FOLLOW-UP: 1981 FRESHMEN		FOUR-YEAR FOLLOW-UP: 1979 FRESHMEN	
	Teacher Candidate	Non-Teacher	Teacher Candidate	Non-Teacher
Reason for Choosing Major	%	%	%	%
1. Job Availability	15.8	49.8	19.7	43.8
2. Interesting	91.7	85.1	94.8	86.4
3. Reputation of Department	24.7	21.1	27.8	22.3
4. Family	2.5	7.8	9.7	6.9
5. College Advice	2.5	4.5	4.5	5.2
6. Financial Prospects	4.3	48.8	5.8	32.7
7. Preparing for Graduate School	14.6	22.4	15.8	21.4
8. Earned Good Grades in Field of Study	48.6	34.2	34.5	29.9

Source: Cooperative Institutional Research Program Follow-up Surveys

Table VIII

1983 FOLLOW-UP SURVEYS: REASONS CONSIDERED LEAST IMPORTANT IN CHOOSING A MAJOR
(Percentage)

	TWO-YEAR FOLLOW-UP: 1981 FRESHMEN		FOUR-YEAR FOLLOW-UP: 1979 FRESHMEN	
	Teacher Candidate	Non-Teacher	Teacher Candidate	Non-Teacher
Reason for Choosing Major	%	%	%	%
1. Job Availability	29.7	11.8	26.9	17.5
2. Interesting	8.2	8.3	8.1	8.5
3. Reputation of Department	31.4	27.5	28.5	29.2
4. Family	68.6	64.4	69.5	68.8
5. College Advice	64.3	67.8	69.7	69.1
6. Financial Prospects	62.3	16.2	66.8	24.3
7. Preparing for Graduate School	43.1	48.6	43.2	43.2
8. Earned Good Grades in Field of Study	15.6	18.7	17.1	22.9

Source: Cooperative Institutional Research Program Follow-up Surveys

Table IX

PARENTAL INCOME OF ENTERING FRESHMEN
(Percentage)

Income Category	1974 %	1976 %	1978 %	1981 %	1983 %
$ 0 - 9,999					
Teacher Candidate	37.0	34.9	26.0	26.5	18.5
Non-Teacher	32.7	30.5	22.5	23.3	7.7
$10,000 - 29,999					
Teacher Candidate	55.0	53.9	50.0	46.0	43.4
Non-Teacher	55.9	54.2	47.6	42.2	35.1
$30,000 - over					
Teacher Candidate	7.9	11.1	23.9	27.5	46.1
Non-Teacher	11.4	15.2	29.9	34.5	57.2

Source: Cooperative Institutional Research Program
Freshman Surveys

Note: No correction for inflation

To read, 37% of the teacher candidates in 1974 came from families having an income of less than $10,000.

$30,000 or greater income was only 3.5 percent. By 1983, this difference was 11.1 percent. The difference grew steadily over the period.

5.8 Freshman: Concern about Paying for College

In their freshman year, potential teachers are more concerned than are other students about paying for college. This difference holds steady throughout the period (Table X).

5.9 Freshman and Follow up: Student Aid

There are differences in how teacher candidates and non-teacher candidates finance their education. In the freshman year, non-teachers are more likely than are teacher candidates to rely on loans to pay their expenses. They take larger loans and also get slightly more financial support from their families. Teachers and non-teachers rely on grants to the same degree. (Table XI).

The follow-up surveys show that teacher candidates are more likely to come from lower income families than does the total student population (Table XII). The 1981 freshman teacher candidates had 74.31 percent of their college costs covered by family contribution, compared to 69.81 percent for non-teachers. The 1979 freshman teacher candidates reported in their senior year that 55.78 percent of their costs were covered by the family contribution, compared to 58.62 percent for non-teachers. In both follow-up surveys, teacher candidates' grants covered a greater proportion of the cost of education than did non-teachers' grants. Further, the percentage of cost covered by loans was nearly double for non-teachers compared to teacher candidates at the end of the sophomore year (1981 freshmen). However, seniors (1979 freshmen) showed little difference between teacher candidates and non-teachers in the percentage of cost covered by loans. Teacher candidates appear to assume the debts later in their studies than do non-teachers. The follow-up data also show that teacher candidates are more likely to attend lower cost schools than is the total student population.

Table X

FRESHMAN CONCERN ABOUT ABILITY TO FINANCE COLLEGE EDUCATION
(Percentage)

	1974	1976	1978	1981	1983
	%	%	%	%	%
No Concern					
Teacher Candidate	34.2	30.8	29.7	28.3	28.8
Non-Teacher	39.6	35.7	35.1	32.8	34.4
Some Concern					
Teacher Candidate	49.8	52.7	53.6	53.6	53.9
Non-Teacher	46.1	48.4	50.3	51.4	50.8
Major Concern					
Teacher Candidate	15.9	17.3	16.7	18.2	18.1
Non-Teacher	14.4	15.9	14.6	15.8	14.8

Source: Cooperative Institutional Research Program
Freshman Surveys

Note: To read, 34.2% of the teacher candidates in 1974 had no concern about financing their college education.

Table XI

ANALYSIS OF STUDENT FINANCIAL AID: FRESHMAN YEAR

	1974	1976	1978	1981	1983
Family Contribution					
Teacher Candidates					
Average Award	$2057	$2314	$2555	$3056	$3883
% of Cost	81.92%	80.69%	77.02%	72.72%	73.24%
All Freshmen					
Average Awards	$2139	$2340	$2552	$3224	$4342
% of Cost	84.01%	82.31%	78.61%	73.19%	76.63%
Grant					
Teacher Candidates					
Average Award	$ 417	$ 533	$ 599	$ 652	$ 831
% of Cost	15.58%	17.54%	17.00%	14.98%	16.88%
All Freshmen					
Average Awards	$ 422	$ 540	$ 570	$ 643	$ 737
% of Cost	15.71%	18.21%	16.58%	14.33%	13.16%
Loan					
Teacher Candidates					
Average Award	$ 181	$ 207	$ 318	$ 680	$ 608
% of Cost	6.69%	6.51%	9.40%	15.23%	12.35%
All Freshmen					
Average Awards	$ 179	$ 212	$ 318	$ 733	$ 619
% of Cost	6.38%	6.74%	9.66%	15.78%	11.56%

Source: Cooperative Institutional Research Program
Freshman Surveys

Table XII

1983 FOLLOW-UP SURVEYS: SELF REPORTED AVERAGE STUDENT AID AWARDS

Type of Aid	TWO-YEAR FOLLOW-UP: 1981 FRESHMEN		FOUR-YEAR FOLLOW-UP: 1979 FRESHMEN	
	Teacher Candidate	Non-Teacher	Teacher Candidate	Non-Teacher
Family Contribution				
Average Award	$ 3564	$ 3683	$ 2591	$ 3008
% of Cost	74.31%	69.81%	55.70%	58.62%
Grant				
Average Award	$ 798	$ 668	$ 912	$ 843
% of Cost	16.64%	12.94%	19.60%	16.43%
Loan				
Average Award	$ 434	$ 890	$ 1149	$ 1280
% of Cost	9.05%	17.24%	24.70%	24.95%
Average Cost of Attendance	$ 4796	$ 5161	$ 4652	$ 5131
Cumulative Amount Borrowed	$ 1191	$ 1696	$ 2427	$ 2818

Source: Cooperative Institutional Research Program Follow-up Surveys

6.0 CONCLUSIONS

There is considerable fear that the quality of teacher candidates has slipped over the decade as changed conditions for the teaching profession have encouraged more talented college students to seek other professions. As one approach to rectifying this problem, legislators and policymakers have proposed plans that would provide financial assistance to teacher candidates. According to its proponents, this strategy would help attract individuals to education who otherwise would not plan to teach.

This study investigates the concern that many have about teacher quality. The results of this study confirm some informed guesses, may allay some fears, and provide new information about how teacher recruits finance their education.

Our results indicate that there has been a decline in the number of freshmen interested in education as a profession. The decline has been greater for minorities relative to non-minorities. Women continue to make up three-fourths of those who identify themselves as potential teachers in their freshmen year.

On the issue of quality, our results are mixed. Teacher candidates have a reported average grade in high school that is only slightly lower than those of non-teachers. This relative difference has existed since 1978. And, for women, our findings do not indicate that fewer talented women are going into education. In 1983, as in 1974, women still make up about the same proportion of the candidates and have approximately the same grade point average relative to non-teachers.

However, the argument that increased opportunities for women and minorities has caused the more talented of that group to leave teaching is given partial support. The findings for minorities indicate that the gap between teacher candidates' high school grades and those of non-candidates has increased over the last 10 years. This fact, coupled with the lower probability of

minorities going into education, suggests that there has been a loss of some of the more talented minorities from the education profession.

These findings do not mean the end of the debate about academic quality of teacher candidates. The results of this study do not compare directly with those results which indicate large and increasing differences in ability between teachers and non-teachers. High school grades are not the same measure as test scores. There are variations in high school curricula and in rigor of grading which make direct comparisons of grades and standardized tests difficult.

Another difference between this study and others is that in this study potential teachers included all those who indicated that they planned to become elementary or secondary school teachers. A number of the other studies examine only those who major in education, which is a more limited population. Our results indicate that the education major population is more likely to have a lower grade point average.

Our longitudinal analysis of the grades of teacher candidates and the rest of the undergraduates at the end of the sophomore and senior years confirms that there is little difference on the average between the college grades obtained by teacher candidates and non-candidates. In fact, by the time they are seniors the teacher candidates exceed the grade point average of non-candidates. The only group for whom these results do not hold is the minority group whose grades lag those of minorities in other majors. This finding is consistent with the premise that there is an increasing likelihood that more talented minorities are leaving education.

These results are not conclusive about academic quality. There is no way to determine what the level of difficulty of the curriculum was for the two groups. The most reasonable assumption is that the sophomore grades reflect achievement based on a generally comparable curriculum that is required of all undergraduates. The improvement of the senior teacher candidates majors may reflect the purported lack of rigor in education

courses compared to other majors. In any case, the results do not indicate a meaningful difference in the academic achievement of potential teachers compared to non-teachers.

On financial issues, there are several characteristics which differentiate the two groups. Potential teachers come from a lower family income background, have more concern about financing their education, and attend lower cost schools than do non-candidates. The share of financing for education coming from family sources, grants and loans is roughly the same among the freshmen regardless of career plans.

Data for sophomores show some striking differences. Potential teachers receive less from family sources, more from grants and less from loans. This same pattern holds for the senior cohort. This is consistent with the fact that teacher candidates have lower family income and attend lower cost schools than do non-teachers.

In light of these results on financing, it is interesting to note that teacher candidates are not as likely as non-candidates to identify job availability and potential income as important reasons for choosing their major. Potential teachers are more likely to identify the reputation of the department and the receipt of good grades as their reason for choosing their major.

These study results suggest that the nation is not facing a major crisis of quality among potential teachers. The historical trends do not indicate that there is a significantly less able group planning to be educators today than was the case ten years ago. Among minorities there is evidence that the more able are not planning to enter the education professions.

These results, which are descriptive, do not cast much light on whether increased aid to potential teachers would attract more or better students into the education profession. It is clear that education students do not expect to make as much money as their peers and they do not have as much in the way of family resources as non-candidates. They are also less likely to turn to loans, a finding consistent with their expectation that their career choice will not be lucrative, and

therefore they are less willing to assume a large loan burden. Consequently, if federal policy continues to emphasize the use of loans to finance postsecondary education, those planning to become educators could face even greater financial hardship.

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APPENDIX

Table A-1

Scholastic Aptitude T t Scores
1973 to 198.

Intended area of study	1973 Verbal mean	1973 Math mean	1975 Verbal mean	1975 Math mean	1977 Verbal mean	1977 Math mean	1979 Verbal mean	1979 Math mean	1981 Verbal mean	1981 Math mean
National	445	481	434	472	429	478	427	467	426	466
Arts and humanities	-	-	-	-	444	468	436	452	434	453
Architecture/environmental design	438	515	438	507	425	505	418	495	414	489
Art	448	451	435	445	412	425	404	421	403	421
English/literature	508	481	488	465	504	478	505	478	507	482
Foreign language	491	498	481	486	481	483	475	476	474	477
Music	465	487	448	464	445	463	437	456	435	454
Philosophy and religion	479	508	469	484	467	487	465	482	463	481
Theater arts	-	-	-	-	447	438	437	433	439	436
Biological sciences and related areas	-	-	-	-	438	479	435	472	433	472
Agriculture	427	471	423	459	418	457	408	443	404	448
Biological sciences	493	533	481	525	475	515	472	507	471	504
Forestry/conservation	-	-	-	-	426	467	420	456	418	452
Health and medical	-	-	-	-	433	474	438	469	428	469
Nursing and health	419	464	418	444	-	-	-	-	-	-
Business, commerce, and communication	-	-	-	-	412	454	408	448	406	446
Business and commerce	489	463	485	461	402	453	408	447	398	446
Communications	476	483	458	461	459	468	448	449	443	446
Physical sciences and related areas	-	-	-	-	454	549	448	535	443	527
Computer science/systems analysis	-	-	-	-	422	505	419	498	416	492
Engineering	468	548	458	541	448	546	445	536	446	534
Mathematics	481	595	463	588	464	588	459	588	456	572
Physical sciences	585	578	581	565	508	572	498	561	498	558
Social sciences and related areas	-	-	-	-	432	453	429	449	429	449
Education	418	449	485	434	408	426	392	428	391	418
Ethnic studies	-	-	-	-	381	396	372	386	381	395
Geography	-	-	-	-	421	473	438	481	422	474
History and cultures	-	-	-	-	478	474	478	471	482	472
Home economics	413	441	489	442	399	428	389	417	383	411
Library science	-	-	-	-	478	453	476	448	464	431
Military science	-	-	-	-	435	489	434	481	433	474
Psychology	-	-	-	-	444	455	435	447	433	447
Social sciences	476	498	465	476	456	474	455	472	456	474
Miscellaneous	-	-	-	-	431	473	428	458	428	459
Other	-	-	-	-	422	458	396	438	395	431
Trade and vocational	488	458	378	485	357	488	353	394	358	391
Undecided	-	-	-	-	448	491	441	488	448	488
Other/undecided	446	489	438	477	-	-	-	-	-	-

Source: Sykes, Gary. "Teacher Preparations and the Teacher Workforce: Problems and Prospects for the 80s," American Education, March, 1983. p.24

Table A-2

American College Testing (ACT) Scores and Intended Areas of Study of College Bound Seniors

Fall, 1982 Freshmen Students

Intended Area of Study	English			Mathematics			Social Sciences			Natural Sciences			Composite		
	M	W	T	M	W	T	M	W	T	M	W	T	M	W	T
Agriculture	16.2	18.5	16.7	16.7	15.8	16.5	17.8	17.4	17.8	21.8	21.8	21.6	18.2	18.3	18.2
Architecture	17.5	19.5	18.3	20.1	18.8	19.2	18.1	17.8	18.8	23.4	21.8	21.8	19.6	19.2	19.4
Biological Science	19.6	21.1	20.4	21.6	20.8	20.8	21.6	21.8	21.1	26.8	24.5	25.3	22.4	21.8	21.1
Business and Commerce	17.3	18.7	18.1	18.6	16.4	17.3	18.8	16.8	17.8	21.8	19.6	20.3	19.1	17.9	18.4
Communications	18.7	20.5	19.8	17.2	16.2	16.6	19.3	19.1	19.1	21.6	21.8	21.2	19.3	19.4	19.3
Computer and Information Science	18.3	18.8	18.5	21.3	18.1	19.8	19.6	16.8	18.1	23.8	20.1	22.1	20.9	18.6	19.8
Education	16.1	18.8	18.3	15.9	15.8	15.8	16.6	18.9	18.8	19.8	19.8	19.8	17.2	17.9	17.8
Engineering	18.6	21.8	19.8	22.4	22.5	22.4	20.2	20.4	20.1	24.7	23.9	24.5	21.6	22.1	21.7
Fine and Applied Arts	17.4	18.8	18.2	16.2	14.8	15.4	17.7	16.8	17.2	21.2	19.8	20.3	18.3	17.7	17.9
Foreign Language	21.2	21.3	21.2	20.5	17.5	18.1	22.1	20.8	20.4	24.1	21.8	22.2	22.1	20.3	20.7
Health Professions	19.2	18.8	18.9	21.3	16.8	17.9	20.7	17.2	18.1	24.8	21.8	21.9	21.6	18.6	19.3
Home Economics	13.9	16.9	16.8	12.8	13.5	13.5	14.8	14.6	14.6	18.3	18.4	18.4	14.9	16.8	15.9
Mathematics	19.9	21.7	20.7	26.5	25.2	25.9	22.8	20.3	21.2	25.1	24.1	24.6	23.5	22.9	23.2
Physical Science	21.8	22.1	21.2	24.5	22.5	23.9	23.8	21.5	23.2	27.8	25.4	27.1	24.4	23.8	24.8
Community Science	15.9	17.5	16.9	14.9	14.3	14.6	16.8	16.2	16.5	20.2	18.7	19.3	17.1	16.8	16.9
Social Sciences	19.3	20.5	20.8	19.7	17.8	18.5	22.8	20.8	20.8	23.6	21.7	22.4	21.3	20.1	20.6
Trade, Industrial and technical Fields	15.1	18.8	15.4	15.7	16.7	15.8	15.7	16.8	15.8	20.2	19.7	20.2	16.8	17.7	16.9
General Studies	17.3	19.8	18.9	17.5	17.8	17.2	18.3	18.3	18.3	21.6	20.9	21.2	18.8	19.1	19.8
Undecided About Major	16.5	18.8	17.3	16.7	15.2	15.9	17.1	16.2	16.6	20.9	19.5	20.1	17.9	17.3	17.6

** M = Men, W = Women and T = Total

Source: Sawyer, Richard. College Student Profiles: Norms for the ACT Assessment (1983 - 84 Edition). Iowa City, Iowa: The American College Testing Program, 1983.

Table A-4

Self Reported High School Grade Percentages

Intended Area of Study	H.S. Grade	English			Mathematics			Social Studies			National Sciences			Average		
		M	W	T	M	W	T	M	W	T	M	W	T	M	W	T
Agriculture	(A)	16	27	19	17	22	18	38	38	38	23	21	22	28	25	21
	(B)	48	51	49	36	38	34	44	39	43	37	42	39	55	53	54
Architecture	(A)	22	36	28	18	25	21	33	35	34	21	25	22	28	31	24
	(B)	45	48	47	42	40	41	41	43	42	38	37	38	60	56	58
Biological Science	(A)	31	54	44	25	33	29	42	56	50	44	52	48	38	57	48
	(B)	47	35	41	35	38	36	38	31	35	35	33	34	48	35	41
Business and Commerce	(A)	21	36	30	28	26	24	32	37	35	16	25	22	21	33	28
	(B)	45	46	46	34	37	36	41	40	40	38	37	38	51	52	52
Communication	(A)	26	48	39	13	19	17	35	48	43	18	29	24	28	37	38
	(B)	45	40	42	31	37	35	38	36	37	34	35	34	52	50	50
Computer and Information Science	(A)	26	48	33	32	38	35	38	44	42	38	33	31	33	43	38
	(B)	45	42	44	36	35	35	38	33	35	36	35	36	48	44	46
Education	(A)	19	39	35	13	22	28	29	38	37	16	24	22	15	32	28
	(B)	44	44	44	34	36	36	41	38	40	34	38	38	57	53	54
Engineering	(A)	38	53	34	36	53	38	43	62	46	37	51	39	39	16	42
	(B)	44	38	43	36	32	36	36	26	35	36	32	35	46	34	44
Foreign Languages	(A)	34	54	50	17	25	33	41	41	41	17	33	38	18	36	33
	(B)	24	33	31	41	31	33	41	40	40	38	33	34	57	50	51
Health Professions	(A)	37	48	48	31	27	28	48	43	44	48	33	35	48	37	38
	(B)	43	43	43	36	35	35	36	36	36	39	37	37	47	48	48
Mathematics	(A)	35	62	47	63	68	65	53	65	58	38	64	50	50	75	61
	(B)	46	33	40	30	26	28	31	24	28	35	21	29	44	21	34
Physical Science	(A)	37	54	41	36	42	38	53	61	55	49	51	49	47	54	49
	(B)	43	34	41	37	31	35	33	27	32	37	30	35	42	39	41
Social Sciences	(A)	31	46	40	28	23	22	51	49	50	24	28	27	29	38	34
	(B)	46	40	43	34	36	35	35	34	34	30	37	38	53	48	50
General Studies	(A)	18	39	31	17	26	22	38	38	36	17	24	21	17	34	28
	(B)	47	48	43	39	38	38	41	39	40	37	35	36	57	47	50
Undecided	(A)	18	36	28	18	23	21	27	37	33	17	25	21	18	31	25
	(B)	43	43	43	33	35	34	40	36	38	34	36	35	51	50	50

** M = Men, W = Women and T = Total

Source: Sawyer, Richard. College Student Profiles: Norms for the ACT Assessment (1983 - 84 Edition). Iowa City, Iowa: The American College Testing Program, 1983.

Table A-3

AVERAGE ACT SCORES FOR INTENDED COLLEGE MAJOR AND STARTING SALARIES FOR RELATED OCCUPATIONS

Intended College Major	Average ACT 1982-83 Test[1]	Average 1982 Starting Salary[2]
Agriculture	16.9	$16,543.
Architecture	18.0	16,000.[3]
Biological Sciences	21.8	19,627.
Engineering	21.2	25,030.
Dentistry	19.5	22,000.
Medicine	22.7	25,000.
Nursing	15.8	14,000.
Veterinary Medicine	20.3	21,000.
Mathematics	22.8	19,620.
Physical Sciences	22.6	21,657.
Social Work	15.1	16,500.
Social Sciences	19.9	14,605.
Business and Commerce	17.4	17,743.
Education	16.8	15,500.[4]
Health Professions	18.3	16,351.
Computer Science	18.6	22,917.
Home Economics	15.6	15,000.[5]
Unweighted mean	19.0	$18,818.
Standard Deviation	2.5	3,483.
REGRESSION DATA		
Unstandardized Regression Coefficient		999.1
Y intercept		-37.82
Correlation Coefficient		.714

1. Mean ACT scores for a 10 percent national sample of those taking the test in 1982-83. Data supplied by the American College Testing Company.
2. Unless otherwise noted average salaries taken from the CPC Salary Survey, The College Placement Council, Formal Report No. 1, January 1983.
3. Utah's Career Guide, 4th Edition, September 1983. Published by the Utah Occupational Information Coordinating Committee. Data used are national averages. This source also used for: Dentistry, Nursing, Veterinary Medicine, and Social Work.
4. Average annual salary for beginning teacher with a bachelor's degree annualized by adding 10 weeks at $200 per week.
5. Source: Guidance Information System, Time Share Corporation, September 1983.

Source: Murphy, Michael. Estimating the Supply Costs of Ability for Teachers. Salt Lake City, Utah: University of Utah. Paper prepared for the Annual Meeting of the American Education Finance Association, Orlando, FL, March 1984.