DOCUMENT RESUME

ED 273 492 SE 047 194

AUTHOR Evans, Robert H.
TITLE Why Potential Science and Math Teachers Are Choosing Not to Teach--And What We Can Do about It.
PUB DATE Apr 84
NOTE 35p.; Paper presented at the Joint Meeting of National Science Teachers Association and the Association for the Education of Teachers in Science, (San Francisco, CA, March 26-29, 1986).
PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS *Career Choice; Careers; Higher Education; Mathematics Education; *Mathematics Teachers; Preservice Teacher Education; Science Education; *Science Teachers; Secondary Education; *Teacher Characteristics; *Teacher Employment; *Teacher Recruitment; Teacher Salaries
IDENTIFIERS *Science Education Research

ABSTRACT

The factors which discourage prospective teachers from pursuing teaching careers are examined in this study. College freshmen from a medium-sized engineering university in the Midwest were selected to participate in the investigation. Based on responses to a questionnaire, these students were grouped as "teaching oriented" and "non-teaching oriented." Reasons for not teaching given by the "teaching oriented" students (N=20) included, in order of priority: (1) low salary; (2) not wanting to do the typical things that teachers do each day; (3) concern for job security; (4) low maximum salaries after years of work; and (5) poor job availability. The findings of this study confirm concerns about the level of teaching salaries as a major deterrent to prospective teachers. It was also stated that increased guidance counselor encouragement might add to the number of "teacher oriented" students who would pursue teaching careers. Appendices contain the survey forms used in the study. (ML)

Why Potential Science and Math Teachers Are Choosing Not to Teach And What We Can Do About It

Robert H. Evans
Wake Forest University
Winston-Salem, North Carolina 27109

34th National Convention
National Science Teachers Association
and
1986 Annual Meeting of
Association for the Education of Teachers in Science
San Francisco, California
March 26-29, 1986

This work was originally presented at the 57th Annual Meeting of
National Association for Research in Science Teaching
New Orleans
April 27-30, 1984

INTRODUCTION

Several national reports have recently called for improvements in education, including the recruitment and retention of qualified teachers. In many communities where there is a critical shortage of math and physical science teachers, it is difficult to attract qualified students to teaching.

Factors Discouraging Students from Teaching

Of course, teacher recruitment problems are not new to the 1980's. In 1965, Hood found that restricted personal freedom, low salaries, an imbalance in supply and demand and a restricted freedom to teach, were the major concerns of students interested in becoming teachers. By the mid 1970's, Ornstein (1977) reported that the most discouraging factors effecting student decisions to teach, were: an oversupply of teachers in most fields, the difficulty of finding a job, discipline problems and difficult working conditions. By 1982, in a study of 2,478 high school seniors in ten southeastern states, Page, et al (1982) found salary as the most discouraging factor about teaching among 83 percent of the students, followed by discipline problems, job availability, and working conditions.

A look at the population in general, shows that like these "teaching oriented" students, the value put on salary may have again

become prominent in recent years. Herzog (1982) collected national data concerning occupational plans and values from 1500 male and 1500 female high school seniors between 1976 and 1980, and found that status and income as values, had increased significantly for both men and women. 1980's male seniors valued the following, in order of importance: interesting work, using skills, advancement, job security and income; while the females also valued interesting work and use of skills as most important, they said that being able to "be yourself", having job security and seeing results from your work were next in importance.

Most recently, Mangieri and Kemper (1984) studied a national sample of 4,349 "academic/college track" students, and found that for both men and women not interested in teaching, low salaries, the lack of rapid salary increases and few opportunities for professional advancement, were the reasons most frequently given for deciding not to teach. Mangieri and Kemper also found different concerns among male and female students. Males had decidedly more concern about the prestige and working conditions of the the teaching profession, while females mentioned job availability in geographic areas of their choice as more important.

Factors Influencing Students to Teach

A number of researchers have considered the positive factors which have most influenced students who have decided to become teachers. Carpenter and Foster (1979), using a principal components analysis, found that in Australia, the influence of teachers, parents, relatives and friends were the most important in turning students to teaching. Jantzen (1981) concluded that in 1979, "...the enthusiasm of a former

teacher..." ranked as the fourth most important reason for education majors choosing to teach. This level of importance was greater than it had been in similar surveys be conducted in 1951 and 1956.

In Page, Page and Shelton's 1982 study of high school seniors in ten southeastern states, the students were asked whose encouragement to teach would be the most important to them. They said that teachers, then counselors, parents, principals and lastly peers, would be most influential. One of their major conclusions was that "...the factor that best discriminates whether students will consider teaching is simply whether or not other individuals have discussed this possibility with them." Most (74%) reported that no one had ever talked to them about teaching as a profession. Of the 26% who had talked to someone about teaching, parents and teachers were the most common sources of information, but only 1% had had counselors discuss teaching with them. When Page, et al (1982) asked inservice teachers whether or not they would encourage a capable student to become a teacher, 71 % said "yes", but when that student was their daughter their encouragement dropped to 49% and when their son, to 28%.

METHODS

Subjects

This study identified potential science and math teachers from among college freshmen who had decided NOT to pursue a teaching career. The freshman class at a medium sized engineering university in the midwest, was sampled at the end of the winter quarter in 1983. As

a group, they were selected because of their science and math orientation and the fact that all had decided to pursue careers in engineering rather than teaching. Most (92%) of this classes' students went to public schools in the midwest, with graduating classes of from 200 to 600 pupils (74%). The mean ACT scores for this freshman class were: English 20.8, Math 26.5, Social Studies 23.1, Natural Science 27.0 and Composite 24.5. The mean SAT scores for the group were Verbal 490 and Math 594.

Of the 1648 enrolled freshmen, 110 were randomly selected for participation in this study. From this sample, 98 became full participants, six dropped out of school between the time the sample was drawn and the time they were contacted, five refused to participate and one person was not reached. (See Table I)

From these participants, "Teaching oriented" students were selected on the basis of their responses to the administered questionnaires. The criteria for "teaching oriented" were:

a. An affirmative response to the question: "Have you ever been interested in becoming a high school or junior high school teacher?"

b. Indication of two or more specific actions taken to explore their interest in teaching.

c. An "S" (Social) classification in either the first or second place of Holland's occupation summary code from his Self-Directed Search (Holland, 1977a).

d. A score of three or more on the Zener-Schnuelle Index of agreement between the letters of the student's occupation summary code and the teaching field considered by the subject.

TABLE I

RANDOM SAMPLE

	Students	Percent of Total
Total Enrolled Freshman at End of Winter Quarter 1983	1648	100
Number Randomly Drawn	110	6.7
		Percent of Sample
Full Participants in Study	98	89
Dropped Out of School at End of Winter Quarter as Sample was Drawn	6	5.5
Refused to Participate	5	4.5
Unable to Contact	1	< 1

Of the 98 participants, 20 met these criteria, and therefore were the primary subjects of this study. One participant, who had decided to become a teacher after enrolling in college, was not included in the study. (See Selection Criteria, Table II) Had these 20 chosen to become teachers, 45% would have taught science (Chemistry-5, Biology-3, Physics-1) and 35% would have chosen to teach mathematics.

Instruments

Holland's Self-Directed Search (1977a) was used to help identify students who were "teaching oriented". This instrument is based on Holland's theory that people make occupational choices based on their personality types, and the proposition that there are six types which can be used in combinations of three to define various occupational orientations (Hotchkiss, et.al.,1979) For example, one of the six personality types is "Social". People with this orientation seem to fulfill their needs for attention, in a teaching or therapeutic situation. In a 1979 critical review of the Self-Directed Search, Hotchkiss, Black, Campbell and Garcia said that "...there is a core of empirical work suggesting that the theory does work." In fact, O'Neil, et.al. (1978) report that first letter SDS prediction rates between 1970 and 1977 were between 49% and 55%, while the first two letter code rates were between 22% and 25%.

Each participant in this study completed Holland's Self-Directed Search (SDS) in a one-to-one session with the researcher and arrived at his or her occupational code, before completing a Career Survey questionnaire. This form was designed by

TABLE II

CHARACTERISTICS OF "TEACHING ORIENTED" AND "NON-TEACHING ORIENTED" SUBSAMPLES

	Percent Teaching Oriented n=20	Percent Non-Teaching Oriented n=77
Selection Criteria:		
Have you ever been interested in becoming a high school or junior high school teacher?		
yes	100	35
no	0	65
Number of different specific things done to explore interest in teaching.		
2 or more	100	8
less than 2	0	92
Placement of "S" (social) in three letter SDS summary code.		
first or second place	100	32
third or lower place	0	68
Zener-Schnuelle Index of agreement between letters of summary code and considered teaching subject.		
3 or more	100	60
less than 3	0	40
Male-Female Dispersion:		
males	80	84
females	20	16
Teaching-Parents of Sample Members:		
teaching mothers	25	6
teaching fathers	15	5
Total	40	12

the author to record student demographics and help assess teaching orientation (see Appendix A). Each student who indicated that he or she had chosen NOT to become a teacher (all but one of the 98 participants) then rank ordered their four most compelling reasons for deciding not to teach, using a list prepared from pilot studies and the work of Hood (1965), Ornstein (1979) and Page, et.al. (1982) (see Appendix B). Next, each was given four more questionnaires, one devised for each of the four reasons they chose for not teaching. These forms used various methods to assess the student's perception of the aspect of teaching of concern to them, and then asked what it would take to ameliorate that particular problem (see Appendix C for six examples of the 14 different "problem" forms). Finally a questionnaire to determine the credibility of student solutions on their four problem forms was given. They were asked if they would become teachers if their four indicated problems were resolved in the manner they suggested. (see Appendix D).

Procedures

Each of the 110 members of the randomly drawn sample was invited to join this study via a personalized letter followed by a phone-call from the investigator. The precise structure of the study and its association with teacher education were not revealed during the initial contacts. Individual sessions of approximately 40 minutes duration were arranged with each of the 98 participants, and the Self-Directed Search and all of the questionnaires were completed during one session. Participation was encouraged by promising information about career orientation from the SDS and by testing

students at their rooms or apartments at times selected by the participants. Missed appointments were followed up by personal visits to set another time.

The "teaching oriented" students were selected on the basis of the criteria given above, using the SDS results and the Career Survey questionnaire. The standards for "teaching oriented" were made rigorous to reduce the sample to only those students who were serious prospects for a career in teaching. The criterion includes both student indicated interest in teaching (an affirmative answer to whether they have considered teaching) and specific concrete actions taken to explore the career. In addition, to be classified as "teaching oriented", participants needed to have the "Social" SDS code in the first two of six possible slots in Holland's career assessment. This criterion was selected because 21 of the 22 teaching occupational codes listed in The Occupations Finder (Holland, 1977b), include "Social" in one of the first two slots.

The Zener-Schnuelle Index of agreement was used as a measure of how close the student's SDS occupational code was from the teaching career (chemistry, math, biology, etc.) they indicated they would have pursued. Holland indicates that high correlations between SDS codes and career aspirations are associated with high rates of entrance into those careers (Holland, 1979). The index merely rates the agreement between the measured occupational code and the aspired code on a scale of six to zero, with six being exact agreement; five indicating that the first two letters are the same and in the same order; four showing the first three letters the same, in any order, and three with the first letter in each code the same. The criterion used for "teaching oriented" was a Zener-Schnuelle Index of at least three.

The summary of ranked reasons for deciding not to teach (Table III) was constructed by assigning a value of four to each reason ranked as most important to a student, a value of three to the next most important reason and so on, giving a "one" to the least important reason chosen by each student for not teaching. These weighted choices were then added together and rank ordered from most to least commonly chosen.

Different methods of accumulating information were used for each of the problem-specific forms. The "Low Salary" and "Low Maximum Salaries After Years of Work" questionnaire results were simply reported as the mean salary amounts for each category (Tables IV and VII). For the "Don't Want to Do the Things Teachers Do Each Day" form, both problem descriptions and ameliorations were summarized by type and arranged by frequency (Table V). Since an ordinal scale was used by students to arrange the jobs on the "Not Much Job Security" questionnaire (Table VI), the median position for each profession was calculated and rank orders were determined based on these results. For Table VIII, the number of choices accumulated for each category of the "Poor Job Availability" questionnaire were reported as percentages. Similarly, the selections from the "Discouraged by family, counselors or friends" form were summarized as percentages in Table IX.

ANALYSIS

The data from this study has been accumulated for clear representation and easy inspection. It was not subjected to

statistical analysis since it is purely descriptive in form and the N of 20 is low.

Results

The criteria for selecting "teaching oriented" students resulted in a group of "non-teaching oriented" students who were markedly different on each of the four criteria from the teaching group (see Table II). The two groups differed the least in the Zener-Schnuelle Index, where 100% of the "teaching oriented" group had an agreement of three or more, and the rest of the sample had a 60% agreement between their occupation code and preferred hypothetical teaching subject.

The demographic survey showed roughly similar numbers of males and females were classified as teaching or non-teaching oriented (Table II). However, at least one of the parents of 40% of the "teaching oriented" students were in the teaching profession, while 12% of the rest of the participants had teaching parents.

Low salaries ranked first among "teaching oriented" students as the most important reason they had for not considering teaching. But, they ranked low maximum salaries after years of work as fourth in importance (Table III). Not wanting to do the typical things teachers do each day was second in importance to the "teaching oriented", followed closely by a concern for job security as teachers. The availability of jobs was their fifth most important concern and discouragement of family, counselors or friends ranked sixth among reasons they had for deciding not to become teachers. The remainder of their concerns, in order of importance, were: lack of prestige compared to other professions, difficult discipline problems, poor

TABLE III

REASONS COLLEGE FRESHMEN GAVE FOR DECIDING NOT TO BECOME TEACHERS

Reasons for Not Teaching	Weighted Rank*(Percentage) Teaching Oriented n=20	Non-Teaching Oriented n=77
Low salary	1 (20)	1 (19)
Don't want to do the things teachers do each day	2 (16)	3 (13)
Not much job security	3 (14)	5 (9)
Low maximum salaries after years of work	4 (13)	5 (9)
Poor job availability	5 (11)	2 (17)
Discouraged by family, counselors, or friends	6 (10)	9 (4)
Not much prestige compared to other professions	7 (7)	5 (9)
Difficult discipline problems	8 (5)	7 (6)
Poor fringe benefits	9 (2)	(2)
Not a good lifestyle	10 (2)	(2)
Amount of time teachers have for themselves (e.g. afternoons, evenings, vacations)	(1)	(1)
Problems of working with young people	(0)	8 (5)
Poor working conditions	(0)	10 (3)
Mainly a woman's job	(0)	(0)
Other	(1)	(2)

* Most important of four reasons = 4 pts., next most important = 3 pts., etc.

fringe benefits and not a good life-style in teaching. They were not concerned about problems of working with young people nor poor working conditions, as a percentage of "non-teaching oriented" students were.

"Teaching oriented" students reported that the salary they thought was typical of beginning teachers in 1982-83 was $15,385, with their responses ranging from $10,000 to $21,000 (see Table IV). When asked what salary a beginning teacher would "...just have to earn, for..." them to consider teaching, their answers ranged from $17,000 to $27,000 and averaged $21,692.

The teaching "things" that "teaching oriented" students didn't want to do consisted mainly of monotonous methods and tasks, particularly teaching the same things over and over again (see Table V). They also showed concern for discipline problems here instead of selecting "problems of working with young people" from the original list. Their solutions for these problems included more curricular latitude for teachers and the power to discipline.

"Teaching oriented" student's rankings of the most secure jobs showed teachers to currently be tenth out of twelve possible careers (see Table VI). Only sales executive's and social worker's positions were seen to be less secure than those of teachers. More secure than teachers, from the ninth position up to the most secure were: accountants, police captains, nurses, industrial executives, lawyers, dentists, engineers, physicians and military officers. The place at which teachers would <u>just</u> have to rank for these students to consider teaching would be fourth, after military officers, physicians and engineers and with dentists.

The current maximum teacher's salary after ten years of teaching, with a B.A. degree was judged to be between $18,000 and $40,000 with a

TABLE IV

"TEACHING ORIENTED" STUDENTS'

PERCEPTIONS/SOLUTIONS: "LOW SALARIES"

Category	mean ($) n*=13/20	range ($) n=13/20
Salary thought to be typical for beginning teachers in 1982-83	15,385	10,000 - 21,000
Salary which "teaching oriented" students would "just have to earn" as beginning teachers for them to consider teaching	21,692	17,000 - 27,000
Average national salary for beginning teachers 1981-82	12,769	

*n = 13 of the 20 "teaching oriented" students selected "low salaries" as a reason for deciding not to teach.

TABLE V

"TEACHING ORIENTED" STUDENTS'

PROBLEMS/SOLUTIONS: "DON'T WANT TO DO THE THINGS TEACHERS DO EACH DAY"

Problems n*=8/20	Solutions n=8/20
Monotonous Methods	
Teach same things over and over	Allow teachers more curricular latitude
Following school board guidelines	
Repetitious weekly schedule	Flexible/modular scheduling
Busy work (required lesson plans, attendance)	Computers
Discipline Problems	
Unable to discipline unruly students	Power to discipline
Student hassles interfere with teaching	
Grading	Hire graders for teachers
No challenge or creativity	
Law suits from students and parents	Legal protection for teachers

*n = 8 of the 20 "teaching oriented" students selected "Don't want to do the things teachers do each day" as a reason for deciding not to teach.

TABLE VI

"TEACHING ORIENTED" STUDENTS' PERCEPTIONS OF
CURRENT AND NECESSARY JOB SECURITY FOR TEACHERS,
AS COMPARED TO ELEVEN OTHER OCCUPATIONS

Occupations[1]	Rank (median) Current Most to Least Secure n*=12/20	"Teacher" Level Needed to Teach n=12/20
Military Officer	1.5 (10)	
Physician	1.5 (10)	
Engineer	3 (8.5)	
Dentist	4 (7)	4 (7)
Lawyer	5.5 (6)	
Industrial Executive	5.5 (6)	
Nurse	7 (5.5)	
Police Captain	8.5 (5)	
Accountant	8.5 (5)	
Teacher	9 (3.25)	
Sales Executive	10 (2.5)	
Social Worker	11 (2)	

[1]From Laman and Reeves, 1981.

*n=12 out of 20 "teaching oriented" students selected "poor job security" as a reason for deciding not to teach.

mean of $24,700 by "teaching oriented" students who selected this as a reason for not teaching (see Table VII). By comparison, the average national salary for all teachers, regardless of rank or years of service for 1982-83 was $20,531 and the same type of average for teachers from the state of Michigan (where the majority of these students went to school) was $23,965. The maximum salary for a B.A. and ten years of work which teachers would "...just have to make..." for the "teaching oriented" students to consider teaching, ranged from $22,000 to $46,000 with an average of $32,600.

The majority of "teaching oriented" students who were concerned about poor job availability, said that this would not be a problem for them if there were enough jobs for "most new teaching candidates", in "the subject [they] want to teach" and "in a school within reasonable commuting distance of where [they] want to live" (see Table VIII). Their preferences for job locations were in small towns, small cities or suburbs over large cities or rural areas.

Discouragement to become a teacher came to the six out of 20 "teaching oriented" students, who selected "discouragement" as a reason for deciding not to teach, mainly from friends (67%), siblings (50%), and other relatives (50%) (see Table IX). They received the most encouragement from teachers (50%). In all, most family members, counselors or friends (44%) neither encouraged nor discouraged these students, but of the 66% who did, 35% discouraged them and 20% encouraged them to pursue teaching as a career. They also said that encouragement from their fathers (33%) and guidance counselors (25%) would have been most important to them in deciding to teach. None reported such paternal encouragement while 17% said their guidance counselors had encouraged them to teach.

TABLE VII

"TEACHING ORIENTED" STUDENTS'

PERCEPTIONS/SOLUTIONS: "LOW MAXIMUM SALARIES AFTER YEARS OF WORK"

Category	mean ($) n*=10/20	range ($) n=10/20
Salary thought to be typical after 10 years of teaching with a B.A. degree, 1982-83	24,700	18,000 - 40,000
Salary which "teaching oriented" students would "just have to make" after 10 years and with a B.A. degree, for them to consider teaching	32,600	22,800 - 46,000
Average national salary for all teachers, regardless of degrees or years of service as of 1982-83	20,531	14,285[1] - 33,953[2]
Average Michigan salary for all teachers, regardless of degrees or years of service as of 1982-83	23,965	

*n = 10 of the 20 "teaching oriented" students selected "Low maximum salaries after years of work" as a reason for deciding not to teach.

[1]Mississippi

[2]Alaska

TABLE VIII

"TEACHING ORIENTED" STUDENTS' AMELIORATIONS:

"POOR JOB AVAILABILITY"

Given Problem[1]	Percent Choosing Each Amelioration n*=13/20
Quantity of teaching jobs	Job availability not a problem if jobs for:
	0 every new teaching candidate
	69 most new teaching candidates
	23 some new teaching candidates
	8 a few new teaching candidates
	0 only a very few new candidates
Quantity of jobs in subject area	Job availability not a problem if could teach:
	54 the subject I want to teach
	31 most of the subjects I want to teach
	8 some of the subjects I want to teach
	8 at least one of the subjects I want to teach
	0 whatever subjects needed to be taught
Jobs open near desired location	Job availability not a problem if get one:
	23 in a school near where I want to live
	62 in a school within reasonable commuting distance of where I want to live
	8 in a school no more than 200 miles from where I want to live
	0 in a school no more than 500 miles from where I want to live
	8 somewhere in the United States
Jobs open in desired community-type	Job availability not a problem if get one in a:
	6 rural area
	35 small town
	24 suburb
	29 small city
	6 large city

[1]Determined from pilot study

*n = 13 of the 20 "teaching oriented" students selected "Poor job availability" as a reason for deciding not to teach.

TABLE IX

"TEACHING ORIENTED" STUDENTS REPORT:

"DISCOURAGED BY FAMILY, COUNSELORS OR FRIENDS"

Person	Percent Pursuing Teaching Career Advice			Percent Saying Encouragement to Teach Would Have Been Important From This Person
	Encouraged	Discouraged n*=6/20	Neither	
Mother	33	33	33	8
Father		50	50	33
Teacher(s)	50		50	17
Sister(s)	33	50	17	
Brother(s)		50	50	8
Guidance Counselor(s)	33	17	50	25
Grandparent(s)	17		83	
Other Relatives		50	50	
Friends	17	67	17	8
TOTAL	20	35	44	

*n = 6 of the 20 "teaching oriented" students selected "Discouraged by family, counselors or friends" as a reason for deciding not to teach.

On the instrument designed to determine whether or not the student's ameliorations of their four main problems with teaching would be sufficient for them to then choose the teaching profession, 75% of the "teaching oriented" students said that they definitely or possibly would, while the rest still had other reservations.

DISCUSSION

The high percentage of participants (89%) from this study's randomly drawn sample, increases confidence in its representation of the population of midwestern science and math students who have chosen engineering over teaching. The "teaching oriented" sample of 20, met rigorous standards for inclusion in this group and showed by their word, deed and SDS analysis that they could be considered "potential" teachers. Further confidence in their orientation to teaching is gained from their agreement (75%) to each if their four main concerns were ameliorated.

One of the interesting characteristics of the "teaching oriented" sample, reported in Table II, is the 40% who had either one or two teaching parents, as compared to only 12% with this parentage among the rest of the participants. In light of the selection criteria for "teaching oriented", it is not unexpected that children of teachers have considered teaching seriously enough to take at least several actions to explore the career. However, their teaching oriented SDS occupation codes may indicate a special orientation to teaching among

children in "teaching families". Unfortunately, if this source of future teachers exits, it is being reduced, according to Page, Page and Shelton's (1982) findings about the lack of encouragement which inservice teachers are giving to their children.

As might be expected, these results show that problems with salaries are important deterrents to teaching for many "teaching oriented" students. This orientation coincides with results from wider surveys done by Herzog (1982) and Mangieri and Kemp (1984), which indicate a national swing towards concern over occupational income among students. This study gives those working towards teaching salary increases, some idea of the salary levels (both starting and after ten-years) which would attract talented science and math students to teaching.

In response to students who choose not to teach because of the monotonous routines and discipline problems with which teachers must contend, the study challenges us to either work to free teaching from some of these handicaps or communicate more effectively to our future teachers about the compensating rewards of teaching. "Teaching oriented" students were not particularly concerned about the working conditions of the classroom and school.

Since the sample for this study was primarily made up of students from Michigan, "teaching oriented" students concerned about job security may have been reacting to the large number of experienced teachers who had in recent years, lost their jobs due to economic conditions and population shifts in that state. Also, because Michigan's strong professional education association advocates the hiring of jobless, experienced teachers before new teachers are allowed to enter the work force, these students may have assumed that

new teaching jobs were unavailable. Certainly in physical science and mathematics, this is not the case, and these concerns about job availability, can easily be alleviated by better communication to potential future teachers. "Teaching oriented" students from other states may not have selected "job security" and "job availability" as reasons for not teaching, depending on local conditions and information available about teaching openings.

This study revealed peer-group and paternal discouragement of teaching among potential teachers. It may be that the same low salaries and perception of unfavorable teaching job characteristics, which are discouraging "teaching oriented" students to teach, also are causing peers and fathers to discourage students from teaching careers. In the case of fathers, this discouragement may be particularly important since, as reported by Carpenter and Foster (1979) and Page, et al (1982), parental opinions are important in career decisions. According to the results of this study, increased guidance counselor encouragement of "teaching oriented" students to pursue their goals might help more of these students become teachers. If, as found by Page, et al (1982), only 1% of high school students have guidance counselors who discuss teaching with them, such guidance counselor encouragement might increase the number of "teaching oriented" students who pursue teaching careers.

Obviously, because of the ready availability of first hand information about teaching, all of the problems of the teaching profession effect the recruitment of new people into teaching. This study confirms concerns about the level of teaching salaries as a major deterrent to prospective teachers, and suggests acceptable levels. It also raises the more fundamental concern, of a perceived

monotony of subject content, daily schedules and clerical tasks along with a lack of academic autonomy. The importance of the influence of teaching families, peers and guidance counselors on the decision to teach is raised.

BIBLIOGRAPHY

Carpenter, P.G. & Foster, W.J. Deciding to teach, The Australian Journal of Education, 1979,23(2), 121-131.

Herzog, A. R. High school senior's occupational plans and values: trends in sex differences 1976 through 1980, Sociology of Education, 1982, 55, 1-13.

Holland, J.L. The Self-Directed Search. Palo Alto: Consulting Psychologists Press, 1977a.

Holland, J.L. The Occupations Finder. Palo Alto: Consulting Psychologists Press, 1977b.

Holland, J.L. The Self-Directed Search Professional Manual. Palo Alto: Consulting Psychologists Press, 1979.

Hood, C.E. Why 266 university students selected teaching as a career, Clearing House, 1965, p. 288.

Hotchkiss, L., Black, M.S., Campbell, R.E., & Garcia, G. Theories of occupational choice: a critical assessment of selected viewpoints. Columbus, Ohio: Ohio State University, The National Center for Research in Vocational Education, January 1979.

Jantzen, J.M. Why college students choose to teach: a longitudinal study, Journal of Teacher Education, 1981,32 (2), 45-48.

Mangieri, J.N. & Kemper, R.E., Factors related to high school students' interest in teaching as a profession. Texas Christian University, January 1984.

O'Neil, J.M., Magoon, T.M. & Tracey, T.J. Status of Holland's investigative personality types and their consistency levels seven years later, Journal of Counseling Psychology, 1978, 25(6), 530-535.

Ornstein, A.C. Introduction to the foundation of education. Chicago: Rand McNally, 1977, p.11.

Page, J.S., Page, F.M. & Shelton, A.W. The teaching profession as a career opportunity: perceptions of high school seniors, pre-service teachers, and in-service teachers. Paper presented at the annual conference of the American Educational Research Association, New York, N.Y., March 22, 1982.

Wood, K.E. What movtivates students to teach?, Journal of teacher education, 1978, 29 (6), 48-50.

APPENDIX A

Career Survey

1. Sex F M
2. How many full terms have you been at MTU? 1 2 3 4 5 6
3. Town and state you lived in when you graduated from high school _____.
4. What kind of high school did you graduate from?
   Public Parochial Private
5. Parent's Occupations at the time you graduated from high school:
   Father_____ Mother_____
6. What is your current major at MTU? (Select the number next to your major from the list at the bottom of this page, and write it here) ____
7. When did you decide on THIS major?
   _____ before coming to Tech
   _____ first term at Tech
   _____ second term at Tech
   _____ third term at Tech
   _____ fourth term at Tech
8. What are the chances that you may change your major before graduation?
   _____ very unlikely
   _____ unlikely
   _____ likely
   _____ very likely
9. If you were to change your major, what would your new major probably be? (Select the number next to this new major from the list at the bottom of this page, and write it here.) ____
10. Have you ever been interested in becoming a high school or junior high school teacher? yes no
11. If you said "yes" to the last question, circle all of the following things that you've done about your interest in teaching. (You may want to circle none, some or all of these activities.)
    A. Considered the pros and cons of teaching.
    B. Read about teaching to find out if it's right for me.
    C. Talked to friends about my becoming a teacher.
    D. Talked to one or more adults about my becoming a teacher.
    E. Written to a college about their teaching program.
    F. Applied to a college because of their teaching program.
12. Have you decided to become a high school or junior high teacher?
    yes no
13. If you had (or have) chosen to teach junior or senior high school, what subjects, in order of preference, would you want to teach?

    1st choice _____ 2nd choice _____

Michigan Tech Majors

1. Economics
2. Business Administration
3. Chemistry
4. Chemical Engineering
5. Civil Engineering
6. Electrical Engineering
7. Engineering (undeclared)
8. Applied Geophysics
9. Geological Engineering
10. Geology
11. Mechanical Engineering
12. Engineering Mechanics
13. Mining Engineering
14. Metallurgical Engineering
15. Forestry
16. Forest Land Surveying
17. Wood & Fiber Utilization
18. Biological Sciences
19. Medical Technology
20. General Studies
21. Liberal Arts
22. Scientific & Technical Comm.
23. Computer Science
24. Mathematics
25. Applied Physics
26. Physics
27. Social Sciences
28. Civil Engineering Technology
29. Electrical Engineering Techology
30. Electro-Mechanical Engr. Technology
31. Forestry Technology
32. Mechanical Design Engr. Technology

APPENDIX B

We are interested in the reasons you have decided not to become a high school or junior high school teacher.

Please select from the following list of possible reasons, the FOUR that you feel were probably most important to you in deciding not to teach.
Put a "1" before the most important reason,
a "2" before the next, and so on to "4"

_____ Discouraged by family, counselors or friends

_____ Poor job availability

_____ Mainly a woman's job

_____ Problems of working with young people

_____ Not much prestige compared to other professions

_____ Not much job security

_____ Poor working conditions

_____ Not a good life-style

_____ Low salary

_____ Poor fringe benefits

_____ Difficult discipline problems

_____ Low maximum salaries after years of work

_____ Don't want to do the things teachers do each day

_____ Amount of time teachers have for themselves (e.g. afternoons, evenings, vacations)

_____ Other (specify) _____

APPENDIX C (i)

Low Salary

You listed "Low salary" as one reason you have for deciding not to become a teacher. Look at the following list of starting salaries and circle the salary you think average teacher's start at TODAY. Label it NOW.

$ 30,000/school year
29,000/school year
28,000/school year
27,000/school year
26,000/school year
25,000/school year
24,000/school year
23,000/school year
22,000/school year
21,000/school year
20,000/school year
19,000/school year
18,000/school year
17,000/school year
16,000/school year
15,000/school year
14,000/school year
13,000/school year
12,000/school year
11,000/school year
10,000/school year
9,000/school year
8,000/school year
7,000/school year
6,000/school year

Then, assuming that there were no other reasons why you were not interested in teaching, circle the salary beginning teacher's would just have to earn, for you to consider teaching. Please be reasonable and honest.

Please make certain that you have labeled the first salary you circle, "NOW".

Don't Want to Do the Things Teachers Do Each Day

You list "Don't want to do the things teachers do each day" as one reason you have for deciding not to become a teacher. Please complete the left-hand column below first, then the right-hand column.

In the spaces below, please list the specific "things" that teachers do <u>each day</u>, that you don't want to do.	After completing the left-hand column, do this column. For some of the "things" you have listed to the left, there may be ways to change or improve them. In this column, where possible, explain how the "thing" could be changed so that it would no longer affect your decision to become a teacher.
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

Not Much Job Security

You listed "Not much job security" as one of the reasons you have for deciding not to become a teacher. Look at the following list of 11 professionals and then write them in the spaces below in order from what you consider to be the most secure jobs to the least secure jobs. Then follow the directions below.

Nurse	Accountant	Dentist
Lawyer	Physician	Engineer
Police Captain	Industrial Executive	Sales Executive
Military Officer	Social Worker	

Most Secure

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Least Secure _____

NOW, insert "teachers" into this list where you think they presently rank, by drawing a line through the list where you'd put teachers and writing "teacher" after the line.

Finally, draw another line through the list to show just where teachers would have to rank for you to consider teaching (all other issues aside).

Low Maximum Salaries After Years of Work

You listed "low maximum salaries after years of work" as one reason you have for deciding not to become a teacher. Look at the following list of maximum teacher's salaries after 10 years of teaching with a B.A. degree. Circle the salary you think represents the maximum salary such a teacher earns today and label it NOW.

$60,000/school year
58,000/school year
56,000/school year
54,000/school year
52,000/school year
50,000/school year
48,000/school year
46,000/school year
44,000/school year
42,000/school year
40,000/school year
38,000/school year
36,000/school year
34,000/school year
32,000/school year
30,000/school year
28,000/school year
26,000/school year
24,000/school year
22,000/school year
20,000/school year
18,000/school year
16,000/school year
14,000/school year
12,000/school year

Then, assuming that there were no other reasons why you were not interested in teaching, circle the maximum salary a teacher with a B.A. and 10 years of experience would just have to make, for you to consider teaching. Please be reasonable and honest.

Poor Job Availability

You listed "Poor Job Availability" as one reason you have for deciding not to become a teacher. Below are three lists of various job availability conditions. Assuming that there were no other reasons for your not teaching, circle the circumstance in each of the four lists which would eliminate job availability as a primary reason for your deciding not to teach.

A. Job availability would not be a problem for me if there were enough teaching jobs available for: (circle one)

a. every new teaching candidate
b. most new teaching candidates
c. some new teaching candidates
d. a few new teaching candidates
e. only a very few new teaching candidates

B. Job availability would not be a problem for me if there were enough teaching jobs available so that I could teach: (circle one)

a. the subject I want to teach
b. most of the subjects I want to teach
c. some of the subjects I want to teach
d. at least one of the subjects I want to teach
e. whatever subjects needed to be taught

C. Job availability would not be a problem for me if there were enough teaching jobs so that I could get one: (circle one)

a. in a school near where I want to live
b. in a school within reasonable commuting distance of where I want to live
c. in a school no more than 200 miles from where I want to live
d. in a school no more than 500 miles from where I want to live
e. somewhere in the United States

D. Job availability would not be a problem for me if there were enough teaching jobs so that I could get one in a: (circle as many as apply)

a. rural area
b. small town
c. suburb
d. small city
e. large city

Discouraged by family, counselors or friends

You listed "Discouraged by family, counselors or friends" as one reason you have for deciding not to become a teacher. Below is a list of people who may have given you advice about teaching. Check to the right of each person whether they encouraged, discouraged or did not give you advice on teaching as a career.

	Encouraged Me	Discouraged Me	Did Neither
Mother			
Father			
Teacher(s)			
Sister(s)			
Brother(s)			
Guidance Counselor(s)			
Grandparents(s)			
Other Relatives			
Friend(s)			
Other_____			

To the left of the list, put a "1" next to the person whose ENCOURAGEMENT to consider teaching might have made you seriously consider doing so. Then a "2" next to the person whose ENCOURAGEMENT would have been next in importance to you.

APPENDIX D

Finally, take one last look at these four problem areas you've described, and at the solutions you've suggested would reduce these problems for you.

(Please look over your four questionnaires)

Now, if each of these problems could be solved as you have indicated, including salaries and prestige rankings where you put them, would you decide to become a senior high or junior high teacher?

Yes No

If no, please explain.

Thank you for your time and effort in this study.