



# Undergraduates' Views of K-12 Teaching as a Career Choice

A Report Prepared for  
The Professional Educator Standards Board

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## Introduction

In Washington state as elsewhere, there is a growing concern about the shortage of math and science teachers in elementary and secondary schools. Recent legislation and school programs that seek to improve mathematics and science education have been introduced, but little is known about how best to recruit those interested in math, science, or engineering to the K-12 teaching profession. While assumptions exist about how to make the teaching profession more attractive to these individuals, knowledge about the factors that might encourage students interested in these fields to consider teaching as a career is limited.

There is some prior research in the United States and in other countries regarding the views of undergraduate students with respect to teaching as a career. A 2005 study of science, math, and engineering undergraduates enrolled in two research universities examined the factors that influenced students' interest in K-12 teaching (Moin, Dorfield & Schunn, 2005). These researchers found that math and natural science majors were more interested in K-12 teaching and engineering majors were least interested. They also found those with mid-level academic performance and those in their junior year expressed a greater interest in K-12 teaching. Another study done in England (Kyriacou & Coulthard, 2000) explored the relationship between the factors that undergraduates deem important in a career and the extent to which teaching offers those desired factors.<sup>1</sup> The researchers found that for respondents who were interested in K-12 teaching, there was a closer match between factors desired in a career and the belief that teaching offers those factors, particularly with respect to a job that contributes to society, offers responsibility, and has mobility.<sup>2</sup> Those who expressed an interest in K-12 teaching also reported that "an increase in the quality of resources for teaching" would be a measure that would encourage them to consider becoming teachers (Kyriacou & Coulthard, 2000, p. 124). These studies suggest that additional examination of undergraduate views could be useful in helping to shape policy discussions about teacher recruitment strategies aimed at addressing undergraduates with a major field of study in mathematics, science and engineering.

In order to provide Washington educators and policymakers with information about the views of students with a focus of study in math, science or engineering and their interest in teaching, the Professional Educator Standards Board (PESB) commissioned a pilot study through a collaboration with the Center for Strengthening the Teaching Profession (CSTP) and the University of Washington (UW). The study is based on a survey of undergraduate students enrolled in math, science, computer science, or engineering courses in several Washington state institutions of higher education.

In October 2008, a research team at the University of Washington began administering the survey to undergraduates enrolled in math, science, computer science, and

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<sup>1</sup> Some of the items from this study were used in the survey of undergraduates in Washington state, with permission from Chris Kyriacou and Melissa Coulthard.

<sup>2</sup> It is important to note that this study included undergraduates from a variety of academic majors.

engineering courses in a small sample of community colleges and public and private universities in Washington state. Due to the short time frame of the study, a strategic non-representative sample was employed. Therefore, the findings represent the views of students included in the pilot study, but not necessarily all undergraduates interested in the fields of math, science and engineering in Washington state. While the sample is limited and non-representative, these analyses offer information and insights that are useful to Washington policy makers, state department officials, district administrators, professional developers, pre-service educators and others in a position to influence the recruitment, professional development and retention of K-12 math and science teachers.

### Research Questions

The population for this study is undergraduates enrolled in math, science, computer science and engineering courses in a Washington college or university. The following general research questions provided the foundation for the design of the survey items:

1. What is the level of interest in K-12 teaching among students studying math, science or engineering? What distinguishes students who are interested in teaching from those who are not?
2. To what extent does K-12 teaching offer students the factors that they regard as important in a future career?
3. How do students with a focus of study in math, science or engineering perceive the teaching profession as a career?
4. What policy measures and other influencing factors might encourage these students to consider a career in K-12 teaching?

### Methods

As previously noted, the study employed a strategic non-representative sample of math, science, computer science or engineering courses in Washington colleges and universities. The goal in the selection of colleges and universities, as well as courses to survey, was to represent a range of undergraduates studying in math, science or engineering fields as widely as possible given the time constraints of the study.

Four Washington colleges and universities are included in the analysis. The colleges and universities were selected for the study based upon their location and institution type (i.e., state public institution, community college, or private institution). The sample includes one public state university, one private university, and two community colleges located in Eastern Washington and the Central Puget Sound areas.

The survey was administered in person by one of the UW researchers in 26 undergraduate classes (some with multiple sections), with an average response rate of 91

percent.<sup>3</sup> Students with laptops or access to computers in the classroom were given the option of taking the survey online during class.<sup>4</sup>

#### *Characteristics of the survey respondents*

The respondents are roughly divided between 1<sup>st</sup> and 2<sup>nd</sup> year (freshman and sophomores) and 3<sup>rd</sup> and 4<sup>th</sup> year students (juniors and seniors). Fifty-one percent of students identify themselves as freshman or sophomores and 45 percent as juniors or seniors. A small percentage of students indicate that they are graduate students (1 percent) or part-time or other students (3 percent).

Over three-quarters of the students sampled (77 percent) indicate a major field of study in mathematics, science, computer science, engineering or a related science or health field. Fourteen percent of respondents indicate another field of study (e.g., arts, humanities, journalism, business, government, linguistics, social work), while eight percent are undecided. Over half of the respondents are male (57 percent) and identify themselves as White, non-Hispanic (56 percent) (see Table 1). Seventy-seven percent of students self-report a GPA above 3.0. Two-thirds of students (68 percent) are 21 years and under, and nearly three-quarters (74 percent) of students completed high school or secondary school (or received their GED) in Washington state.

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<sup>3</sup> This response rate excludes one class in which students were encouraged to complete the survey entirely online and outside of class time (see note 4 below). Response rates by institution varied from 85 to 100 percent of students in classes surveyed.

<sup>4</sup> One instructor requested that the survey be administered on-line outside of class time. Of the 118 students enrolled in the class, only 15 students completed the survey.

Table 1: Characteristics of All Students by Gender, Age and Race/Ethnicity (N=718)

<i>Respondents by Gender</i>	Number	Percent
Female	294	41%
Male	407	57%
Missing/decline to state	17	2%

  

<i>Respondents by Race/Ethnicity</i>	Number	Percent
White, non-Hispanic	403	56%
Black, non-Hispanic	28	4%
Hispanic, Latino/a	44	6%
Asian or Pacific Islander	162	23%
Native American	8	1%
Multiracial	23	3%
Other	7	1%
Missing/decline to state	43	6%

  

<i>Respondents by Age</i>	Number	Percent
21 and under	491	68%
22-25	145	21%
26 and older	74	10%
Missing	8	1%

## Findings

This pilot study of students enrolled in math, science, computer science and engineering courses provides a basis from which to better understand undergraduates' views of the K-12 teaching profession. This sample does not represent all students studying in math, science, computer science or engineering fields. Rather, these findings provide a starting point from which to discuss and ask further questions about how best to recruit math and science teachers in Washington state.

To better understand the target group, the analyses provided in the remainder of this report include only those students who indicated a major field of study in math, science or engineering (including computer science). Undecided students are also included since they may consider these fields in the future. This sub-sample includes 610 students. Among the math, science and engineering students in the sub-sample, 61 percent attend a public 4 year university, 10 percent attend a private 4 year university, and 29 percent attend a community college (see Table 2). The most frequently identified major fields of study include engineering or computer science (35 percent), biology (28 percent), mathematics (13 percent), and physical sciences (e.g., chemistry, physics and earth science, 10 percent), with an additional 5 percent identifying themselves in other science or health-related fields. The sub-sample of math, science and engineering students is nearly equally split between freshman and sophomores (1st and 2nd year) and juniors and seniors (3rd and 4th year).

Table 2: Characteristics of Sub-Sample of Math, Science and Engineering Students by Institution Type, Major Field of Study and Level of Schooling (N=610)

<i>Respondents by Institution Type</i>		
	Number	Percent
Public 4 year institution	372	61%
Private 4 year institution	59	10%
Community College	179	29%
<i>Respondents by Major Field of Study</i>		
	Number	Percent
Engineering or Computer Science	212	35%
Biology	170	28%
Mathematics	79	13%
Physical Sciences (e.g., Chemistry, Physics, Earth Science)	60	10%
Other science or health-related field	33	5%
Undecided	56	9%
<i>Respondents Level of Schooling</i>		
	Number	Percent
Freshman or Sophomore (1st or 2nd Yr)	301	49%
Junior or Senior (3rd or 4th Yr)	294	48%
Other (e.g., part-time)	15	2%

The findings are summarized under the following headings:

- Level of Interest in K-12 Teaching
- Important Career Factors and K-12 Teaching
- Perception of the K-12 Teaching Profession
- Policy Measures and Influencing Factors

#### *Level of Interest in K-12 Teaching*

*Survey results indicate that while half of the students are not interested in a career in K-12 teaching, a sizeable portion of students would be willing to consider it. In particular, a larger proportion of upper level students and students in certain fields express an interest in teaching as career. The majority of those interested in teaching would like to teach at the high school level. Prior working or volunteer experiences with elementary or secondary school students may have a positive impact on undergraduates' willingness to consider a career in teaching.*

The results from this pilot study indicate that among students pursuing a major field of study in math, science, computer science or engineering, 40 percent indicate they would be willing to consider a career as a K-12 teacher. Six percent of the students are seriously considering a career in teaching, and another 34 percent might be willing to consider it. Nine percent were undecided at this time.

Definitely NOT considering a career in teaching	51%
Might be willing to consider a career in teaching	34%
Seriously considering a career in teaching	6%
Undecided at this time	9%

Among those who are willing to consider teaching as a career (N = 243), 65 percent express an interest in teaching at the high school level. Over one-fifth (22 percent) would like to teach elementary students while 18 percent would consider teaching in a middle school. Twenty-two percent of those willing to consider a career in teaching remain undecided about the level or levels they would like to teach.

This sample includes a representation of students across all years in college. When looking at responses by students' year in college, we find that nearly a fifth of students (19 percent) in their first year of college are uncertain of their future career plans, and nearly 60 percent indicate they are definitely *not* considering a career in teaching. A larger proportion of third and fourth year students (juniors and seniors) are willing to consider teaching than first and second year students (freshmen and sophomores). Nearly half (47 percent) of college juniors and seniors might consider teaching or are seriously considering teaching as a career compared with 33 percent of students in their first two years of college. Table 4 provides comparative information on characteristics of the math and science students based on their willingness to consider a career in teaching.

The data do not reflect major differences with respect to the interest in K-12 teaching by age or gender. The percentage of students 21 and under who indicate that they definitely are *not* interested in teaching (52 percent) is similar to the percent of older students expressing a similar viewpoint (47 percent) (see Table 4). A slightly larger percentage of students who identify themselves as white non-Hispanic are willing to consider teaching as a profession than students of color, but the differences are small (40 and 30 percent, respectively).<sup>5</sup>

An examination of student interest by major field of study reveals that a larger proportion of students in mathematics and science (biology, chemistry, physics and earth sciences) would be willing to consider a career in teaching than students in engineering or computer science. Fifty-six percent of students with a major field of study in mathematics and 44 percent in the sciences indicate they would be willing to consider teaching compared with only 32 percent of students studying engineering or computer science.

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<sup>5</sup> The sample sizes for each racial/ethnic group are small as are the differences between students of color and white, non-Hispanic students. Further analysis would be needed to determine any statistical difference.

When examining differences by institution type, the proportion of students at the four-year universities who indicate they are *not* interested in a career in teaching (52 percent), is similar to the 47 percent of students in the community colleges.

Table 4: Characteristics of Math & Science Majors by Three Groups: Not Interested in Teaching (N=311), Might be or Seriously Considering Teaching (N=243) and Undecided (N=56)				
	Total	Not Interested in Teaching	Willing to Consider Teaching	Undecided
<i>Respondents by Gender</i>	Number	Percent	Percent	Percent
Female	233	49%	45%	5%
Male	361	51%	37%	12%
<i>Respondents by Race/Ethnicity</i>				
White, non-Hispanic	345	55%	40%	6%
Non-White Race/Ethnicity	252	46%	30%	14%
<i>Respondents Level of Schooling</i>				
Freshman or Sophomore	301	56%	33%	10%
Junior or Senior	294	46%	47%	7%
<i>Respondents by Age</i>				
21 and under	411	52%	39%	9%
25 and older	192	47%	43%	10%
<i>Respondents by Institution Type</i>				
4 Year Institution (Public or Private)	431	52%	42%	6%
Community College	179	49%	35%	16%
<i>Respondents by Major Field of Study</i>				
Engineering or Computer Science	212	60%	32%	8%
Biology	170	51%	42%	7%
Mathematics	79	38%	56%	6%
Physical Sciences (e.g., Chemistry, Physics, Earth Science)	61	43%	49%	8%
Other science or health-related field	33	61%	30%	9%
Undecided	55	38%	36%	25%

Those students with a relative or close friend who worked in schools did not show a greater interest in teaching than those who did not. Of the 58 percent of students who identify a close friend or relative working as a teacher, students were roughly divided between those who might consider a career in teaching and those who would not (43 versus 36 percent).

More than two-thirds of the students (69 percent) surveyed indicate they have had volunteer or paid teaching or work experiences with elementary or secondary students. A higher percentage of undergraduates with teaching or work experiences with K-12 students indicate that they might be or are interested in teaching as a career. Fifty-three percent of students who have experience as a teaching assistant, 50 percent of those who have tutored and 46 percent who have served as a camp counselor indicate they would be willing or are seriously considering teaching compared with only 25 percent of

undergraduates with no teaching or work experiences with elementary or secondary school students.

### *Important Career Factors and K-12 Teaching*

*The undergraduates surveyed rate employment security, intellectual challenge, a job that will contribute to society, a job that is respected, and high earnings over the life of a career to be very important in their career decision. The majority of these students view teaching as a career that makes a contribution to society, but that it offers few other factors they identify as very important when choosing a career. In particular, respondents see a career in teaching as offering few of the financial factors that they view as very important.*

One way to understand undergraduates' career decision-making is to examine the match between what a person wants from a career and the extent to which he or she thinks a certain career offers this. The extent to which students perceive teaching as offering what they are looking for in a career may indicate a greater chance that they will make this career choice. Given a list of 16 general factors, students were asked to rate each factor's importance when choosing their career. Students were then asked to identify the extent to which they think a career in teaching would offer this.

As Table 5 indicates, students consider certain factors of greater importance when choosing a career. Seventy-seven percent of undergraduates consider stable employment a *very important* factor in choosing a career. However, only 43 percent of the students surveyed perceive that teaching 'definitely' offers a career likely to have job security. This finding is surprising given that historically teaching has been viewed as a relatively stable career option.

Career factor	Importance when choosing a career (%)			Extent to which teaching offers it (%)		
	Very Imp	Somewhat	Not Imp	Definitely	Might	Not at all
Stable employment (likely to have job security)	77%	20%	2%	43%	50%	5%
A job that provides intellectual challenge	67%	28%	4%	32%	52%	14%
A job that will contribute to society	59%	33%	7%	84%	13%	2%
High earnings over length of career	58%	34%	6%	7%	31%	61%
A job that is respected	58%	33%	8%	46%	46%	7%
Good promotion prospects	53%	38%	8%	7%	46%	46%
Good starting salary	53%	41%	5%	6%	35%	58%

*Note: Percentages may not add to 100% due to rounding and some missing data.*

Two-thirds of the students consider a job that provides intellectual challenge as *very important* in their career choice, but only 32 percent believe that teaching definitely

offers this. Likewise, compensation factors such as high earnings over the length of a career, good promotion prospects and a good starting salary are *very important* to over half of the students, but a large portion of the students don't believe teaching offers these factors at all.

Nearly 60 percent of the students indicate that a job that contributes to society is *very important* and 84 percent view teaching as a career choice would make such a contribution. This finding is consistent with previous survey research among Washington teachers which found that most teachers enter the profession for altruistic reasons, such as the value or significance of education in society or a desire to work with young people (Knapp, et al, 2005).

Among non-financial factors, nearly half of students perceive that teaching 'definitely' would offer a job that family and friends would support (49 percent) and a job that can be easily combined with parenthood (46 percent). Appendix A provides a complete list of the factors and students' responses.

*With a few exceptions, undergraduates' views of teaching and the extent to which it would offer certain factors are remarkably similar among students who are interested in teaching and those who are not. Those who are interested in teaching placed less importance on financial factors such as high earnings over the length of a career, good promotion prospects and a good starting salary. A larger proportion of those willing to consider teaching as a career view teaching as a job that offers intellectual challenge.*

In this study we also compare the views of those who indicate they are seriously considering or might be willing to consider a career in teaching (N = 243) with those who would not (N = 311) by analyzing their responses to the 16 career factors. Using the raw mean rating score of those who indicate that teaching would 'definitely' offer these factors, we compare responses between the two groups of students. As Table 6 shows, it is noteworthy that in many cases there is little variation between the two groups with regard to the importance of certain factors in choosing a career. However, some slight differences do exist between these two groups. Those interested in teaching place somewhat less importance on high earnings over the length of career, good promotion prospects and a good starting salary. Also those potentially interested in teaching indicate slightly more positive responses with regard to whether teaching provides intellectual challenge (38 versus 26 percent). Appendix B provides a complete list of the career factors and respondents' ratings.

Table 6: Students' ratings of the importance of factors in choosing a career and the extent to which they think a career in teaching will offer these for two groups: Not interested (N=311) and Definitely or might be interested (N=243)

Career factor	Importance when choosing a career (%)		Extent to which teaching offers it (%)	
	Not Interested	Interested	Not Interested	Interested
Stable employment (likely to have job security)	76%	79%	41%	44%
A job that provides intellectual challenge	69%	68%	26%	38%
High earnings over length of career	63%	51%	3%	8%
Good promotion prospects	59%	46%	4%	8%
A job that will contribute to society	55%	66%	83%	87%
Good starting salary	55%	47%	3%	5%
Attitude and support of family or friends toward this job	36%	39%	43%	50%
A job that can be easily combined with parenthood	28%	35%	52%	48%

### *Perception of the K-12 Teaching Profession*

*The undergraduates surveyed tend to share similar impressions of the teaching profession. The majority of students strongly agree that teachers are underpaid. The majority of respondents also agree that teaching is rewarding work, a respected profession, and that teachers work a lot of extra hours on evenings and weekends.*

To assess how undergraduates in math, science, computer science, and engineering perceive teaching as a career, students were asked to rate how strongly they agree with a number of statements about the teaching profession (see Table 7). The students in this study generally hold similar perceptions of teacher pay, workload, school environment and the respectability of the teaching profession.

A strong majority of students believe that teaching is both a respected profession in our society and rewarding work (88 percent somewhat or strongly agree with both of these statements). A slightly larger percentage of those who are willing to consider teaching as a career agree that teaching is rewarding work than students *not* interested in teaching (93 versus 83 percent). Comments from the open-ended questions on the survey support these findings. As one student wrote, “I feel teaching is a rewarding experience and offers the opportunity to help bring positive change to society.”

Table 7: Percent of students indicating agreement or disagreement with statements about the teaching profession (N = 610)

	Strongly Agree	Somewhat Agree	Somewhat or Strongly Disagree
Generally speaking, teachers are underpaid	63%	29%	7%
Teaching is rewarding work	40%	48%	10%
Teaching is a respected profession in our society	37%	51%	11%
Teachers work a lot of extra hours on evenings and weekends	29%	52%	17%
Generally speaking, people with the best grades in school don't become teachers	24%	41%	33%
Students are often unruly and a difficult to work with	18%	49%	32%
Schools are a dangerous place to work	3%	14%	82%

*Note: Percentages may not add to 100% due to rounding and some missing data.*

Students perceive the teaching profession less favorably when it comes to issues of compensation and workload. In fact, the greatest level of agreement among undergraduates is found with respect to the view that teachers are underpaid. Sixty-three percent of respondents *strongly* agree that teachers are underpaid and another 29 percent *somewhat* agree. A larger percentage of undergraduates who have *no* teaching or work experience with elementary and secondary students *strongly* agree teachers are underpaid, compared to those with experience in schools (69 versus 52 percent). Seventy-one percent of white, non-Hispanic students strongly agree that teachers are underpaid compared with 53 percent of students of color.

The theme of teacher compensation is strongly represented in the open-ended comments, where over a third of students brought up compensation as a reason not to pursue teaching as a career. One student wrote, “I believe it can be a very rewarding career, but growing up with two teachers as parents, I have seen that the salary is not enough. I believe that is one of the biggest things keeping people from pursuing it as a profession.”

Students also are in agreement that teachers work a lot of extra hours. More than four-fifths (81 percent) of students in the sample either strongly or somewhat agree that teachers work a lot of extra hours on evenings and weekends. Students are in less agreement with the statement, “Generally speaking, people with the best grades in school don’t become teachers.” Overall, nearly two-thirds of undergraduates (65 percent) somewhat or strongly agree with the statement. Among students responding to the open-ended comments, 12 percent indicated that they would not consider a career in teaching because they view the profession to be repetitive or unchallenging.

Most respondents agree that schools are not dangerous. Eighty-two percent of students disagree that schools are a dangerous place to work. However, two-thirds of respondents

(67 percent) strongly or somewhat agree that students are often unruly and difficult to work with. A smaller proportion of undergraduates who had prior teaching or work experience with K-12 students agree that students can be difficult to work with compared to those with no experience (63 versus 76 percent). Undergraduates *not* considering a career in teaching agree that students are often unruly and difficult to work with at a higher rate than those considering a career in teaching (73 percent versus 60 percent). According to a student who is *not* considering a career in teaching, “I do not want to be a teacher because of the low level of respect that most students have toward their teachers.”

*Policy Measures and Influencing Factors*

*A positive influence on the students’ decision to consider a career in teaching is the experience they had with teachers when they were in school. This factor is particularly significant for those undergraduates who indicate that they are seriously considering a career in teaching. The perceived neutral influence of media images and the attitude of college instructors toward teaching may provide greater opportunities for teacher recruitment. Students’ views of overall working conditions in schools could be a detractor from the profession.*

A solid majority (60 percent) of respondents indicate that the experiences they had with a teacher is a positive influence on their decision to become a K-12 teacher. The attitude of college instructors toward K-12 teaching as a career and media images of teachers offer neither a positive or negative influence to the majority of respondents, indicating possible opportunities for improvement in recruitment (see Table 8).

Table 8: Percent of students indicating a positive, negative or neutral influence of certain factors on their decision to become as a K-12 teacher (N = 610)			
	Positive Influence	Neutral Influence	Negative Influence
Experiences I had with teachers when I was in school	60%	34%	5%
The attitude of my college instructors toward K-12 teaching as a career	16%	76%	6%
Media images of teachers	17%	67%	14%
Overall working conditions in school	15%	50%	33%

*Note: Percentages may not add to 100% due to rounding and some missing data.*

There were small differences with regard to ethnicity and interest in teaching in terms of how experiences with teachers influence students’ decision to become a K-12 teacher. White, non-Hispanic students are more likely to indicate this is a positive influence compared to students of color (65 versus 53 percent). It is noteworthy that 72 percent of

students seriously considering a career in teaching indicate that the experience they had with teachers in school is a positive influence on their decision to become a K-12 teacher.

Positive experiences with former K-12 teachers are reflected in the open-ended comments received by students. For example, one student wrote that he/she is seriously considering a career as a teacher because, “Great teachers of my past have helped to shape who I am today.” Another student seriously considering a teaching career wrote, “I think it would be cool to be an influence in kids’ lives like my teachers were in mine.” These findings suggest that there may be opportunities for current classroom teachers to encourage promising students to consider becoming a teacher. College instructors also could play a more affirmative and constructive role in guiding talented math and science students toward career opportunities in schools.

Several items in the survey speak to concerns about overall working conditions in schools. While half of students indicate that the overall working conditions of schools were a neutral influence on their decision to become a K-12 teacher, one-third report it as a negative influence. A larger proportion of juniors and seniors (42 percent) indicate that overall working conditions would be a negative influence compared to 26 percent of freshman and sophomores. One student commented that “I would consider a career in teaching if I were guaranteed the necessary resources to ensure a successful classroom environment.”

*With respect to policy measures that would encourage students to become teachers, students rate college loan forgiveness and higher beginning pay most favorably. A smaller proportion of respondents indicate that better materials and supplies, assistance with housing, and opportunities for advancement and leadership are factors that would encourage them to consider teaching.*

In order to increase the supply of well-qualified math and science teachers, a number of policy strategies are under consideration. Survey respondents were asked for their assessment as to whether a variety of policy measures would encourage them to consider K-12 teaching as a profession (see Table 9). Students in the sample would be encouraged by some measures to provide financial incentives to pursue teaching more than other types of measures. For example, college loan forgiveness and competitive salaries are viewed more favorably than low interest home loans and merit pay. Sixty-two percent of students ‘definitely’ would be encouraged to consider becoming a K-12 teacher if college loans were paid off with two years of teaching after college, and 58 percent of students indicate that beginning pay at a salary comparable to positions in engineering or technology ‘definitely’ would encourage them to consider it. Forty-five percent indicate that a housing allowance or access to low interest home loans ‘definitely’ would be an encouragement, and 39 percent viewed merit pay as an incentive to consider becoming a K-12 teacher.

Table 9: Students' ratings (in percentages) of whether the following measures would encourage them to consider becoming a K-12 teacher. (N=610)

	Definitely	Maybe	Not a Factor
Having my college loans paid off, if I teach for two years after college	62%	23%	13%
Beginning pay at a salary comparable to positions in engineering or technology	58%	30%	10%
An increase in the quality of materials, supplies and technology for teaching	47%	35%	15%
Housing allowance or access to low interest loan toward purchase of a home.	45%	38%	15%
Opportunities for advancement and leadership beyond the classroom	44%	40%	14%
Ability to earn more money if my students perform better	39%	35%	23%
A reduction in the amount of time it takes to earn a teaching credential	31%	37%	29%
A reduction in class size	30%	45%	23%

*Note: Percentages may not add to 100% due to rounding and some missing data.*

Among non-financial measures, students are most encouraged by an increase in the quality of materials, supplies, and technology for teaching. Forty-seven percent ‘definitely’ would be encouraged to consider teaching with an increase in the quality of these resources. Students also are encouraged by opportunities for advancement and leadership; 44 percent identifying opportunities for advancement and leadership beyond the classroom as a definite incentive. Other measures, such as class size reduction, and a reduction in the amount of time to earn a teaching credential received more mixed reviews among respondents in this sample.

The open-ended responses suggest that some students are unsure about the amount of schooling that is required to receive a teaching credential. A student who may be willing to consider teaching wrote that teaching required “too much school for too little pay.” A student who is *not* considering a career in teaching wrote, “The time and money spent to become a teacher is not compensated by the pay as a school teacher and lots of teachers are in debt paying off school loans.”

As would be expected, students who are seriously or willing to consider a career in teaching rate all policy measures more favorably than students who are *not* interested in teaching (see Table 10). Of particular note, students who would consider a career in teaching are more encouraged by beginning pay at a salary comparable to positions in engineering or technology than students not interested in teaching as a career (71 versus 48 percent). These students are also more encouraged by an increase in the quality of materials, supplies and technology than students *not* considering teaching (61 versus 36

percent). Reduction in the amount of time that it takes to earn a teaching credential was viewed less favorably by these groups (42 versus 24 percent).

Table 10: Students' ratings of whether policy measures <u>definitely</u> would encourage them to consider becoming a K-12 teacher for two groups: NOT interested in teaching (N=311) and Seriously or might consider teaching (N=243)		
Policy Measure	NOT Interested in Teaching (%)	Seriously/Might Consider Teaching (%)
Having my college loans paid off, if I teach for two years after college	57%	69%
Beginning pay at a salary comparable to positions in engineering or technology	48%	71%
An increase in the quality of materials, supplies and technology for teaching	36%	61%
Housing allowance or access to low interest loan toward purchase of a home.	39%	54%
Opportunities for advancement and leadership beyond the classroom	38%	52%
A reduction in the amount of time it takes to earn a teaching credential	24%	42%

## Discussion

Finding and recruiting qualified teachers to fill positions in chronic shortage areas is no small task. Teacher shortages are not new; over the last thirty years or more, there have been persistent shortages in traditional high demand areas such as mathematics and science. While some evidence suggests math and science teachers have the same rates of turnover as other teachers, unlike many other teaching fields, the system does not have a surplus of newly prepared candidates every year, as a recent study noted:

The data show that the supply of newly prepared math and science teachers is small relative to that of fields such as English. As a result, while the supply of new math and science teachers is sufficient to cover the losses of teachers due to retirement, unlike the field of English, the supply of math/science is not sufficient to cover pre-retirement losses of teachers due to dissatisfaction. (Ingersoll & Perda, 2006, p. i).

Results from this pilot study indicate that there is a potential pool of undergraduates currently studying in math, science and engineering fields who might be interested in K-12 teaching as a career. The potential exists to increase the supply of math and science teachers from among the ranks of students currently enrolled in our state's colleges and

universities. Given variation in the perspectives of undergraduates at different stages of their college experience, it might be worthwhile to target recruitment efforts toward particular groups of students, such as those beyond their first year in college, and those in certain fields, such as mathematics and the natural sciences.

The undergraduates surveyed hold some unexpected perspectives on teaching as a career choice. In particular, the view that teaching is not necessarily a stable career by these students is somewhat surprising. It may be instructive to remember that the survey was administered during a time of national economic crisis. Among 16 career factors, the factor related to employment security was rated as *very important* by the largest percentage of students (77 percent).

Another surprising finding is the perception by math and science students that K-12 teaching lacks intellectual challenge. While two-thirds of students rate a job that offers intellectual challenge as *very important*, only 32 percent indicate that a career in K-12 teaching definitely offers this. A student who might be willing to consider a career as a teacher wrote, "I want to continue to learn more difficult aspects of science rather than stay at a certain level to match my students." Another wrote, "It doesn't seem like it would be challenging to teach the same material every year."

Captured in the open-ended comments is a desire on the part of math and science students to participate in research, and a concern that teaching would not offer this opportunity. For example, a student who is currently *not* considering a career in teaching wrote, "I want to do math research and K-12 teachers do not have the time/opportunity/flexibility to do so." A student who might be willing to consider a career in teaching wrote, "I would like to combine research and teaching at the K-12 level. [If I became a teacher] I'd be removed from the research field and that's a big drawback." A substantial number of students wrote that they are interested in teaching at the college level in large part because of the research component. It might be interesting to explore whether math, science and engineering students would be more attracted to the K-12 teaching profession if they were offered the option of participating in scholarly research.

When taking into consideration the financial factors that students value in a career, some interesting relationships emerge. As we might expect, those who rate financial factors as *very important* in choosing their career are more interested in policy measures that offer financial incentives to teach. For example, students who rate a good starting salary as *very important* are more encouraged by beginning pay at a salary comparable to positions in engineering or technology than students who rate a good starting salary as *somewhat important* (65 percent versus 52 percent). The open-ended responses to this survey also suggest that financial incentives may encourage students who take into account the economic benefits of a career to consider teaching. As one student wrote, "I don't think that I can choose to become a teacher as a career choice because there are little economic benefits for becoming a teacher. Personally, I don't feel like teachers are paid enough for the dedication they put forth into their career."

A slightly higher percentage of men than women would be encouraged by potential policy measures offering beginning pay at a salary comparable to positions in engineering or technology (62 percent versus 54 percent). However, men are no more encouraged by

the loan forgiveness measure than women. Additionally, fifty-six percent of students of color indicated that they ‘definitely’ would be encouraged to consider teaching with a housing allowance or access to low interest loans compared to 41 percent of white, non-Hispanic students.

There is some indecision among students with regard to whether a reduction in the amount of time it takes to earn a teaching credential would encourage them to consider a career in teaching. Men, those seriously or willing to consider teaching, students of color, those who value good starting salaries and high earnings over the course of their career are slightly more interested in this policy measure. For example, when considering differences by gender, 35 percent of men would definitely be encouraged to consider teaching if there were a reduction in time to earn a teaching credential compared to 28 percent of women who responded similarly. Forty-two percent of those considering a career in teaching indicate that a reduction in time to certification would be an encouragement, compared to 24 percent of students who are definitely *not* considering a career in teaching. A slightly higher proportion of students of color indicate that this measure ‘definitely’ would encourage them to consider a career in teaching compared with white, non-Hispanic students (37 versus 28 percent).

Nearly half of students (44 percent) indicate that opportunities for advancement and leadership beyond the classroom would definitely encourage them to consider teaching. More than half of students who are considering teaching rate advancement and leadership opportunities as definitely a factor that would encourage them to consider teaching compared to 38 percent who are *not* considering a career in teaching. Fifty-one percent of students of color responded that they are definitely encouraged by this measure compared to 41 percent of white, non-Hispanic students. Not surprisingly, students who rate good promotion prospects as *very important* are definitely encouraged by this measure compared to those who rate it as *somewhat important* (53 percent versus 37 percent). In the open-ended comments, one student wrote that there are “no ladders to climb.”

Finally, information gleaned from conversations with students when the survey was administered indicate that students do not seem to know how to go about becoming a teacher or misunderstand the amount of time involved in obtaining a credential. Several students expressed an interest in becoming a teacher and inquired about the process. Additionally, open-ended comments from students included questions about how they can access this information.

### Implications for Policy

This examination of undergraduates’ views of teaching provides insights into how Washington might best position itself to make progress towards ensuring that all students have access to well-qualified math and science teachers. In this section, we share some observations and ideas for consideration by policymakers.

- *A potential exists to recruit from undergraduates currently studying in math and science fields.* A sizeable portion of students may be interested in a career in teaching, particularly those who are beyond their initial years in college. Washington has several colleges and universities with strong mathematics, science, engineering, and computer science departments with numerous, bright students who might consider K-12 teaching.
- *Recruitment efforts should emphasize job stability and opportunity to contribute to society.* Among undergraduates surveyed, a large percentage do not view teaching as a stable career option. The majority rate a job that will contribute to society to be very important in a career and believe that teaching does offer this.
- *Financial factors matter.* When examining policy measures aimed at increasing the supply of math and science teachers, college loan forgiveness and higher beginning salaries were the most favored by math and science students.
- *Conditions of the profession are also important.* Students' views of overall working conditions in schools could be a detractor from the profession. These views include a perceived lack of intellectual challenge, limited opportunities for leadership and professional advancement, and the need for higher quality materials and technology in the classroom. Opportunities to participate in research might encourage some students to consider teaching.
- *Opportunities for positive influence.* Currently, media images and the attitudes of college professors are viewed neutrally, but they have the potential to encourage students to consider a career in teaching. Undergraduates' experiences with their elementary and secondary teachers often positively influence their decision to consider teaching as a profession.
- *Increase opportunities for tutoring or engagement with K-12 students.* Students with these types of experiences are more likely to consider teaching.
- *Improved access to information.* Students indicate they lack information about the process for becoming a teacher. Multiple approaches should be used to provide accurate information such as media campaigns, websites, recruitment materials and career counseling centers.

In closing, we draw on a comment made by a student interested in becoming a teacher who wrote, "I remember 3<sup>rd</sup> grade better than 4<sup>th</sup> grade...having a teacher that took that extra effort to make sure I was where I needed to be helps me go back and revisit my experience. Long story short, teachers have the greatest impact on our society. Why wouldn't I want to be a part of that?"

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## Appendices

Appendix A: Students' ratings of the importance of factors in choosing a career and the extent to which they think a career in teaching will offer these (N=610)						
Career factor	Importance when choosing a career (%)			Extent to which teaching offers it (%)		
	Very Imp	Somewhat	Not Imp	Definitely	Might	Not at all
Stable employment (likely to have job security)	77%	20%	2%	43%	50%	5%
A job that provides intellectual challenge	67%	28%	4%	32%	52%	14%
A job that will contribute to society	59%	33%	7%	84%	13%	2%
High earnings over length of career	58%	34%	6%	7%	31%	61%
A job that is respected	58%	33%	8%	46%	46%	7%
Good promotion prospects	53%	38%	8%	7%	46%	46%
Good starting salary	53%	41%	5%	6%	35%	58%
Co-workers that are easy to get along with	51%	41%	7%	21%	71%	7%
Job mobility - easy to get a job anywhere	42%	50%	7%	36%	53%	10%
Easy to find a job	40%	53%	5%	43%	51%	5%
Attitude and support of family or friends toward this job	38%	44%	17%	46%	45%	7%
A job that offers a flexible schedule	37%	52%	10%	13%	44%	41%
A job that can be easily combined with parenthood	31%	38%	30%	50%	42%	6%
Job includes opportunities to travel	22%	44%	33%	6%	36%	56%
A job with a low level of stress	21%	56%	22%	11%	44%	44%
Working with children	11%	30%	58%	87%	9%	3%

*Note: Percentages may not add to 100% due to rounding and some missing data.*

Appendix B: Students' ratings of the importance of factors in choosing a career and the extent to which they think a career in teaching will offer these for two groups: Not interested (N=311) and Definitely or might be interested (N=243)

Career factor	Importance when choosing a career (%)		Extent to which teaching offers it (%)	
	Not Interested	Interested	Not Interested	Interested
Stable employment (likely to have job security)	76%	79%	41%	44%
A job that provides intellectual challenge	69%	68%	26%	38%
High earnings over length of career	63%	51%	3%	8%
Good promotion prospects	59%	46%	4%	8%
A job that is respected	59%	56%	44%	47%
A job that will contribute to society	55%	66%	83%	87%
Good starting salary	55%	47%	3%	5%
Co-workers that are easy to get along with	49%	53%	22%	17%
Job mobility - easy to get a job anywhere	42%	38%	35%	35%
Attitude and support of family or friends toward this job	36%	39%	43%	50%
A job that offers a flexible schedule	39%	33%	12%	13%
Easy to find a job	37%	42%	43%	43%
A job that can be easily combined with parenthood	28%	35%	52%	48%
Job includes opportunities to travel	23%	21%	4%	7%
A job with a low level of stress	21%	19%	11%	8%
Working with children	5%	18%	88%	86%