Washington STEM Teacher Survey Summary Report
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Abstract: This policy brief summarizes the responses by early-career science, technology, engineering and math (STEM) teachers in Washington State to the Washington STEM Teacher Survey. These early-career STEM teachers were asked about their perspectives of their teacher education program (TEP) and STEM subject preparation, with a focus on their student teaching experiences. The survey also included questions about teacher compensation and the teachers' future teaching plans. We find that respondents generally view their preparation experiences more favorably than their current work environment and compensation, which suggests further research relating these survey responses to later teacher outcomes.

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In an effort to better understand the needs of early-career science technology engineering and math (STEM) teachers, researchers at the University of Washington Center for Education Data & Research (CEDR) administered an original online survey titled “The WA STEM Teacher Survey” to roughly 4,600 early career STEM teachers. As described below, the eligible teachers had less than three years of teaching experience and were either recently licensed in a STEM field or were teaching in a STEM classroom in a Washington State public school.

In the spring and early summer of 2019, we used the survey to ask eligible teachers questions about their perspectives of their teacher education program (TEP) and STEM subject specific preparation, with a focus on their student teaching experiences. The survey also included questions about teacher compensation and the teachers’ future teaching plans.

Eligible Teachers

Eligible teachers were teaching 1st-12th grade in a Washington State public school in the 2017-18 school year and had either:

1) Received a STEM teaching credential with no more than three years of teaching experience (i.e., graduating after 2014); or

2) Were observed teaching at least one math or science course during the 2017-2018 school year.

We identified STEM courses from the 2017-2018 Washington State Course Catalog. Teacher endorsement and credential information was derived from the state’s eCert system. All endorsements identified as STEM were put into science, math, and technology “bins”. This information allowed us to identify a sample of 4,594 eligible STEM teachers.

Survey Content

Many of the included survey questions were derived from three previously utilized surveys:

1) Examining Teacher Preparation: Does the Pathway Make A Difference? (Boyd et al., 2009), and;


3) Washington State Teacher Compensation Survey (Goldhaber et al., 2011)

We then added original questions to the STEM Teacher Survey about teacher compensation and future plans developed by the study’s Expert Planning Team and the Project Directors, Dan Goldhaber, Roddy Theobald, Kirk Walters, and Mark Windschitl.

The following page gives an overview of the dynamic survey flow that a teacher takes, dependent on their STEM subject and school level.
RESPONSE RATE

50.4%

Consistent with the American Association of Public Research (AAPOR), we calculated our survey response rate by dividing the number of surveys returned (2,302) by the total number of surveys sent out to eligible STEM teachers (4,587) resulting in a response rate of 50.42%.

<table>
<thead>
<tr>
<th>Survey Respondents</th>
<th>Response Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall Survey Response Rate</td>
<td>(2,302/4,566) = 50.42%</td>
</tr>
<tr>
<td>Survey Sample of Eligible Teachers</td>
<td>4,566</td>
</tr>
<tr>
<td>Total Surveys Returned</td>
<td>2,302</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Complete Surveys Responses (100% Complete)</th>
<th>(1.852/2.302) = 80.45% of all surveys returned were complete</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partial Survey Responses (&lt; 50% Complete)</td>
<td>242</td>
</tr>
<tr>
<td>Partial Survey Responses (&gt; 50% Complete)</td>
<td>2060</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>School District Representation</th>
<th>(205/237) = 86.5% of all sample districts were represented in the survey</th>
</tr>
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<tbody>
<tr>
<td>Districts in the sample</td>
<td>237</td>
</tr>
<tr>
<td>Districts Represented</td>
<td>205</td>
</tr>
</tbody>
</table>

*There are 295 school districts in the state of Washington. Fifty-eight districts did not have early career STEM teachers teaching in their district at the time of this study.*
RESPONDENTS VS. NON-RESPONDENTS

**Who took the WA STEM Teacher Survey?**

- **78.8%** of teachers that took the survey taught in a school in the Western part of the State (West of the Cascade Mountain range).
- **46.0%** of the students in the schools of teachers that took the survey received free or reduced priced meals.
- **76.5%** of teachers that took the survey received their teaching credential instate in Washington.
- **1.72 yrs** of teaching was the average experience of teachers that took the survey.

**Who did NOT take the WA STEM Teacher Survey?**

- **76.3%** of teachers that did NOT take the survey taught in a school in the Western part of the State (West of the Cascade Mountain range).
- **46.2%** of the students in the schools of teachers that did NOT take the survey received free or reduced priced meals.
- **76.7%** of teachers that did NOT take the survey received their teaching credential instate in Washington.
- **1.86 yrs** of teaching was the average experience of teachers that did NOT take the survey.

We compare these groups to understand how the survey respondents represent the nonrespondents, and the STEM Teacher Survey sample as a whole. For example, teachers with more teaching experience were significantly less likely to take the survey.
Who took the WA STEM Teacher Survey?

Teachers with higher WEST-B test scores were more likely to complete the survey; for example, teachers who completed the survey scored on average 2.5 points higher on the WEST-B Math test than teachers who did not respond to the survey.

**Sample (ALL) vs. Respondents vs. Non-Respondents**

WEST-B Scores (First Attempt)

![Graph showing WEST-B scores](image)

*Note: Each of these differences between respondents and non-respondents is statistically significant at the .05 level.*

Which school level do they teach at?

<table>
<thead>
<tr>
<th>School Level</th>
<th>Respondents</th>
<th>Non-Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary</td>
<td>65.3%</td>
<td>72.2%</td>
</tr>
<tr>
<td>Middle</td>
<td>16.6%</td>
<td>13.8%</td>
</tr>
<tr>
<td>High School</td>
<td>18.1%</td>
<td>14%</td>
</tr>
</tbody>
</table>

The majority of teachers that took the survey were elementary teachers.
14.0% of students were in special education

14.4% of students were transitional bilingual

3.2% of students were enrolled in 504 Plans
SURVEY RESULTS

All survey participants were asked the following questions regardless of their STEM subject or school level. They were encouraged to answer all questions but not required to.
ALIGNMENT QUESTIONS

Teachers were asked questions about the coherence between three experiences: their teacher education program, student teaching, and their current school of employment. They were asked if the vision of good subject teaching in their STEM subject in one experience was similar to the vision of good subject teaching in another experience.
RATE HOW WELL YOUR STUDENT TEACHING EXPERIENCE PREPARED YOU TO:

- Use Classroom Management & Discipline Techniques
- Use a Variety of Instructional Methods
- Teach in High Poverty Settings
- Facilitate student problem-solving in a group setting
RATE HOW WELL YOUR STUDENT TEACHING EXPERIENCE PREPARED YOU TO:

- Support English Language Learners
- Support Students with IEPs or 504 Plans
- Support Struggling Individual Students
- Accelerate the Curriculum for High-Performing Students
IN THINKING ABOUT THE SUPERVISION AND FEEDBACK THAT YOU RECEIVED DURING YOUR STUDENT TEACHING PLACEMENT,

Please rate the extent to which you agree with the following statements:

My cooperating teacher...

...was an excellent teacher and worthy teacher role model:

...allowed me to try out strategies and techniques learned in my TEP.

...instructional style and pedagogical approach was aligned with my TEP.

I was regularly observed by my cooperating teacher.

...was available to talk to me.
IN THINKING ABOUT THE SUPERVISION AND FEEDBACK THAT YOU RECEIVED DURING YOUR STUDENT TEACHING PLACEMENT,

Please rate the extent to which you agree with the following statements:

- I was regularly observed by my university supervisor.
- My university supervisor was available to talk to me.
Teachers at my current school like being here; I would describe us as a satisfied group.

I like the way things are run at my current school.

If I could get a higher paying job, I'd leave teaching as soon as possible.

I don't seem to have as much enthusiasm now as I did when I began teaching.
STATEMENTS ABOUT SCHOOL WORK ENVIRONMENT AND COMPENSATION (CONT.)

Please rate the extent to which you agree with the following statements:

- I am satisfied with my teaching salary.
- I worry about the security of my job because of the performance of my students or my school on the state and/or local tests.
- I am generally satisfied with being a teacher at my current school.
NEXT STEPS

We will compare how early-career STEM teachers in different school environments feel about their teacher preparation experiences, and the extent to which teachers' survey responses predict outcomes like student achievement and teacher retention. Stay tuned to both the Center for Education Data & Research (CEDR.us) and Teacher Education Learning Collaborative (TELC.us) websites for further updates.
REFERENCES

