

Boosting the Supply and Effectiveness of Washington's STEM Teachers

January 2010



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The Partnership for Learning partnered with TNTP to analyze Washington's challenges in science, technology, engineering and mathematics (STEM) education and make recommendations to advance the state's new STEM Initiative.



The Partnership for Learning (PFL) is coordinating the design of the Washington STEM Initiative, which aims to accelerate improvements in STEM instruction throughout the state and improve student achievement and opportunities in areas critical to the state's economic prosperity.

These efforts are intended to benefit every student in the state, with a particular emphasis on accelerating the achievement of low-income and minority students.



The New Teacher Project

The New Teacher Project (TNTP) works to end the injustice of educational inequality by providing excellent teachers to the students who need them most and by advancing policies and practices that ensure effective teaching in every classroom.

- National nonprofit, founded by teachers in 1997
- Trained or hired approximately 37,000 teachers
- Established 75+ programs and initiatives in 31 states and over 200 districts.



TNTP partnered with three Washington districts to gain an on-the-ground understanding of STEM teacher supply and effectiveness.

Research has shown that **teachers have a greater impact on student success than any other school factor**, which means that teachers are a critical part of any solution to Washington's STEM challenges. With this in mind, TNTP drew on its years of experience studying human capital challenges in education to identify policies and practices that are barriers to Washington's teachers performing at the highest possible level.

Previous and current TNTP policy project sites.



To conduct the analysis, TNTP partnered with three districts that have the strong leadership and determination necessary to lead the charge to improve STEM instruction: **Nooksack Valley School District, Renton School District** and **Spokane Public Schools**. TNTP's analysis included the following components:

- Input from an advisory panel composed of stakeholders from across the state.
- An analysis of relevant state laws and collective bargaining agreements.
- An analysis of human resources data from Nooksack Valley and Spokane on teacher hiring, transfer, separation and evaluation.
- Online surveys of teachers, teacher applicants, recently separated teachers, and administrators in the three partner districts.
- Interviews with state education leaders and university faculty.



Summary of Findings

- 1 Washington does not attract a sufficient quantity of STEM teacher candidates, and the quality of STEM instruction is markedly lower than in other subject areas.
- 2 Access to high-quality STEM teacher candidates and effective STEM instruction is most limited in the highest-need schools.
- 3 Formal evaluation processes do not differentiate teachers based on their ability to help students learn, nor do they give teachers the feedback they need to improve their instruction. Without robust evaluation data, districts are limited in their ability to make strategic decisions about the teacher workforce.
- 4 Certain financial incentives and career growth opportunities hold promise as strategies to encourage more of Washington's STEM undergraduates to choose teaching over the many other career opportunities available to them.
- 5 Districts could improve retention of STEM teachers by providing resources – including strong school leadership and improved working conditions – that maximize teachers' ability to impact student learning.



Summary of Recommendations

To accelerate student achievement in STEM subjects and close the STEM achievement gap, Washington needs to ensure that every student has highly effective teachers.



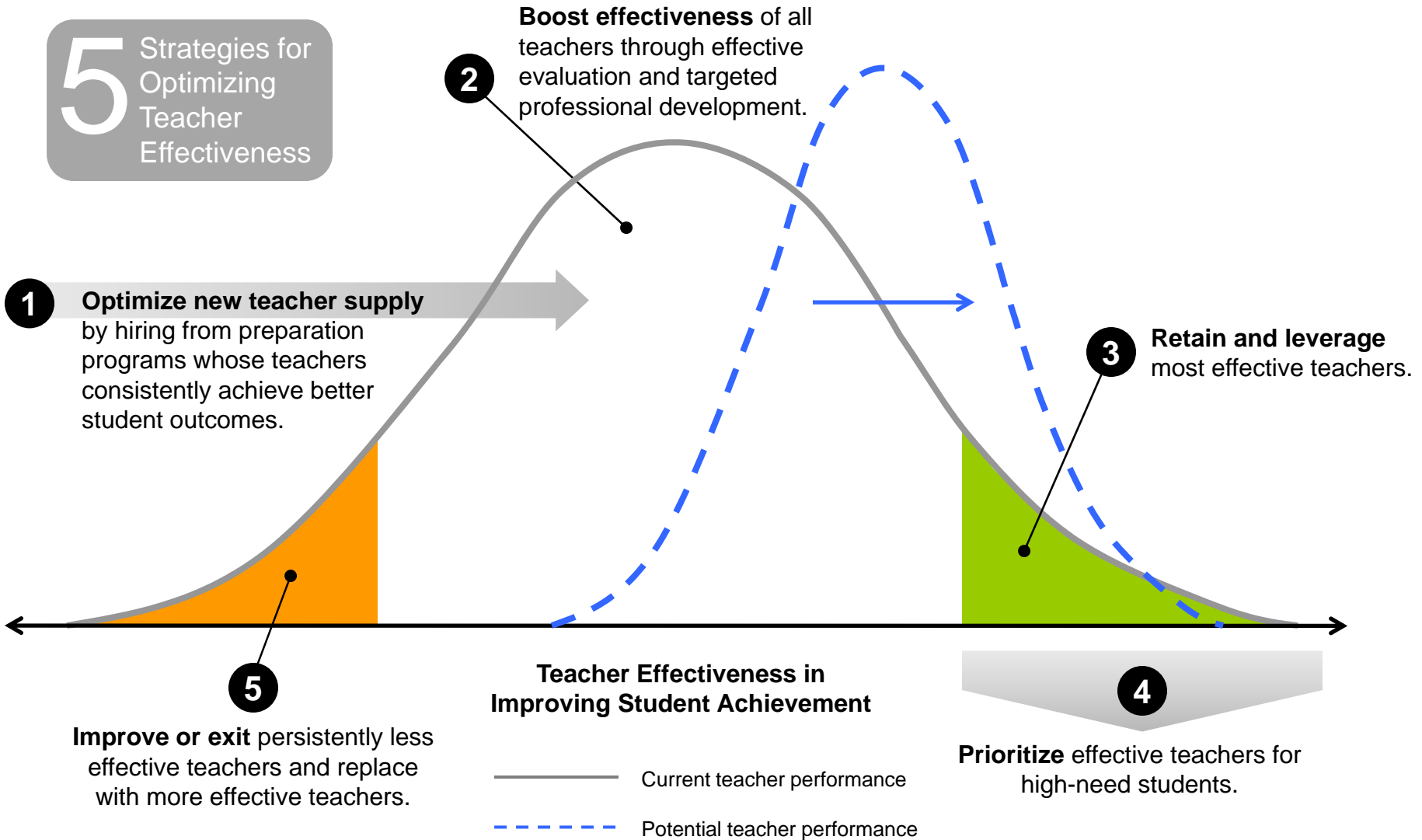
The recommendations in this report will help Washington get there, but they all rest on three requirements:

- Development of **credible models for measuring student growth** in all grades and subject areas.
- Collection and **public reporting of teacher effectiveness data** for all districts and teacher preparation providers, to ensure accountability.
- Taking advantage of the **unprecedented amounts of federal education funding** available through “Race to the Top” and other grants.



Dramatic improvements in STEM achievement cannot occur without a sustained and strategic focus on teacher effectiveness.

5 Strategies for Optimizing Teacher Effectiveness





Summary of Recommendations (cont'd)

Increase the number of STEM candidates graduating from traditional and alternative preparation programs by creating new funding incentives and targets for state universities and encouraging partnerships between districts and alternative preparation programs and the development of dual-degree track programs.

Hire from preparation programs with track records of producing effective teachers by increasing the frequency with which university programs must be re-approved and basing re-approval predominantly on evidence of graduates' effectiveness.

Boost the effectiveness of all teachers through effective evaluation processes by amending state law to require annual evaluations for all teachers based on multiple measures of teacher effectiveness – with impact on student academic growth accounting for more than 50 percent of the evaluation outcome – and by helping districts train administrators to conduct rigorous evaluations and use the results to help all their teachers improve.

Provide all teachers with targeted professional development by requiring and allocating funding for districts to align professional development with teachers' individual needs (as indicated by their evaluations), assessing the effectiveness of professional development and mentoring programs according to their impact on teacher effectiveness, and extending the provisional period from two to three years to give novice teachers more time to improve before a decision is made on non-provisional status.



Summary of Recommendations (cont'd)



Retain and reward the most effective teachers by funding programs that give recognition and bonuses to effective teachers in shortage-area subjects, and setting goals for districts to increase retention of effective STEM teachers and decrease retention of ineffective teachers who do not improve, especially in schools with high-need students.



Prioritize effective teachers for high-need students by providing additional funding to preparation programs that produce effective teachers for high-need schools, funding signing and retention bonuses for STEM teachers in high-need schools, and rewarding schools and districts with strong retention rates of effective teachers – especially STEM teachers – in high-need schools.



Improve or remove persistently less effective teachers and replace them with more effective teachers by requiring that non-provisional status be awarded only to teachers who demonstrate an ability to promote student achievement at a higher level than the average novice.



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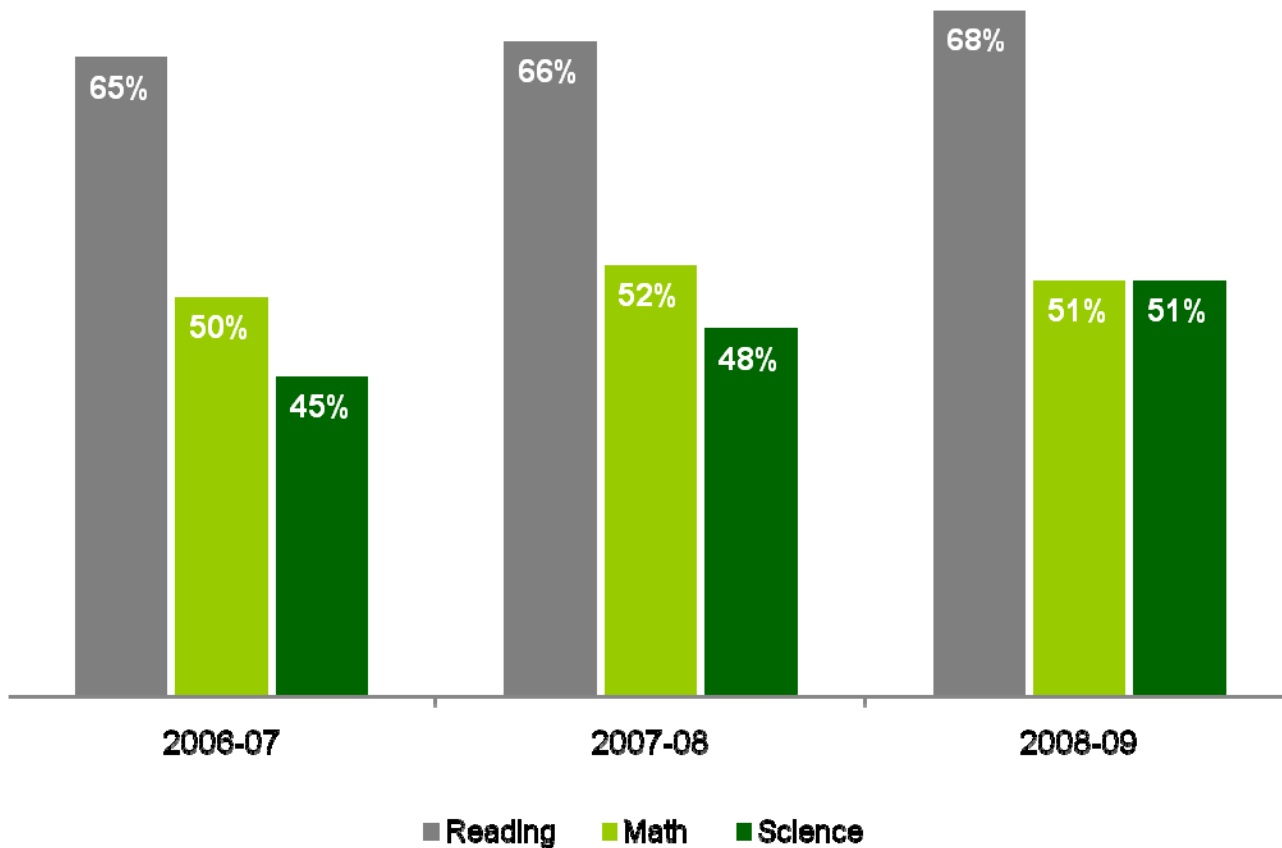
“Despite the importance of education in [STEM] subjects, we have to admit we are right now being outpaced by our competitors... Make no mistake: Our future is on the line. The nation that out-educates us today is going to out-compete us tomorrow. To continue to cede our leadership in education is to cede our position in the world.”

- President Barack Obama, January 6, 2010



In the past three years, only about half of Washington's 8th graders met state standards in math and science.

Percentage of Washington 8th Graders Meeting WASL Standards by Year and Subject



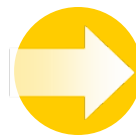
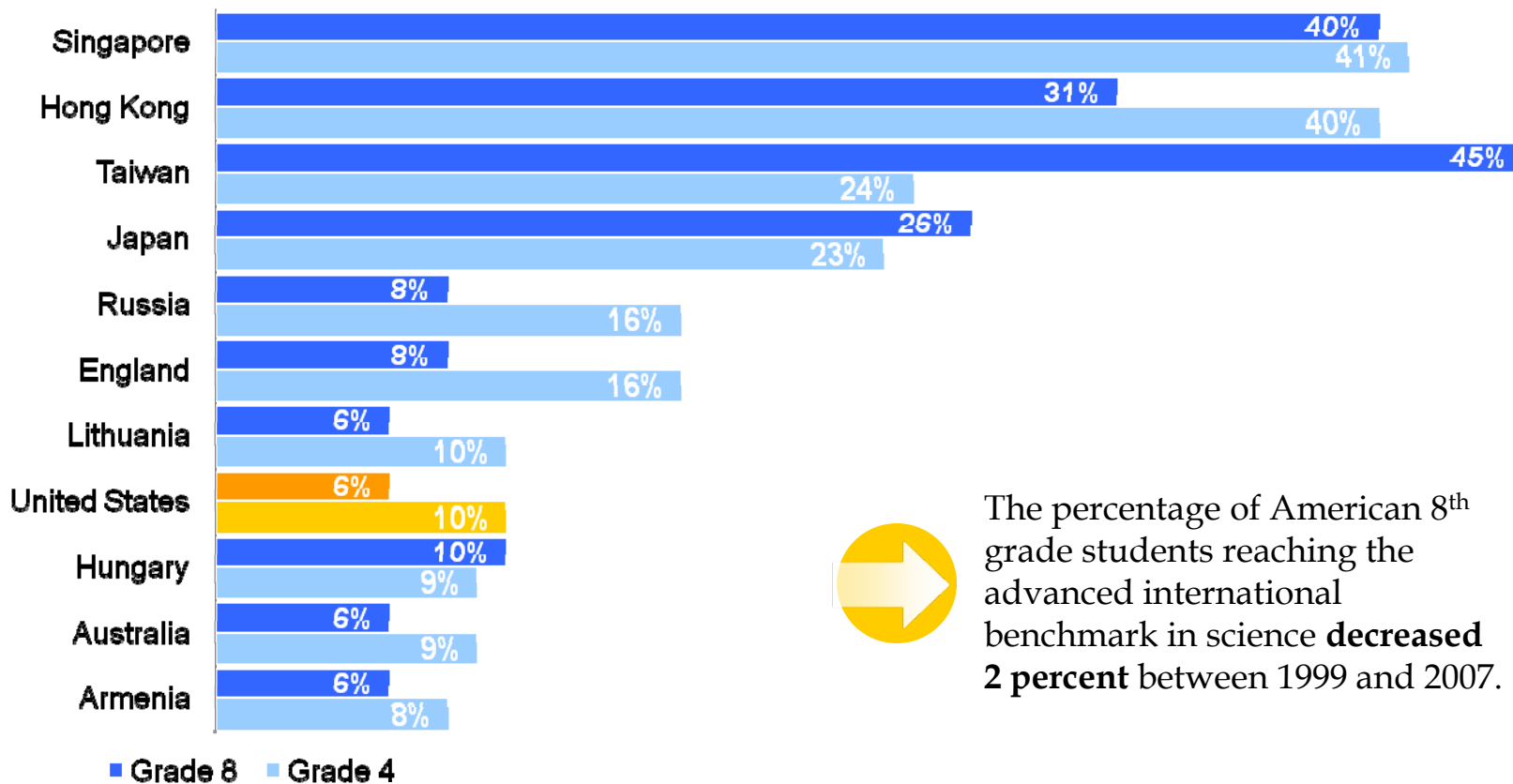
Source: OSPI Washington State Report Card.

<http://reportcard.ospi.k12.wa.us/Summary.aspx?year=2008-09&gradeLevelId=&waslCategory=&chartType=>



Washington is not alone: The U.S. has lost its international advantage in STEM education.

Percentage of Students Reaching the TIMSS Advanced International Benchmark in Mathematics, 2007

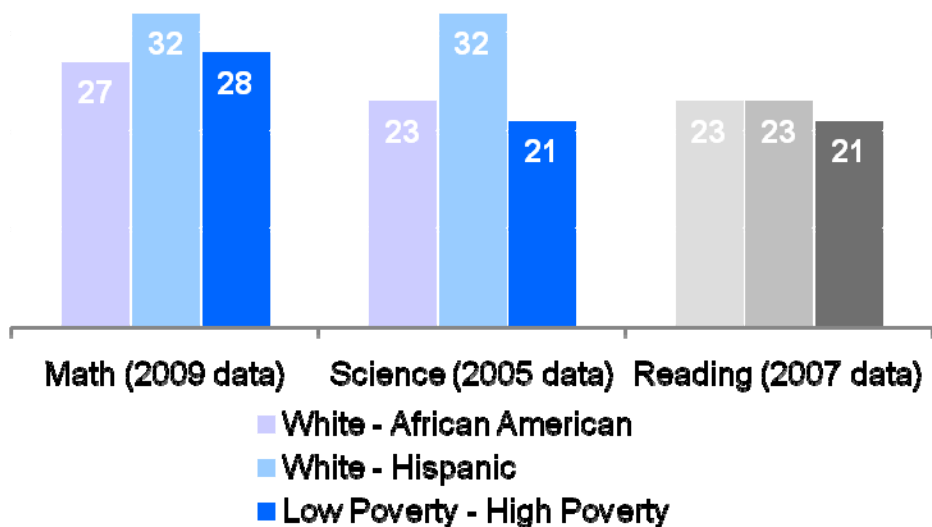


The percentage of American 8th grade students reaching the advanced international benchmark in science **decreased 2 percent** between 1999 and 2007.



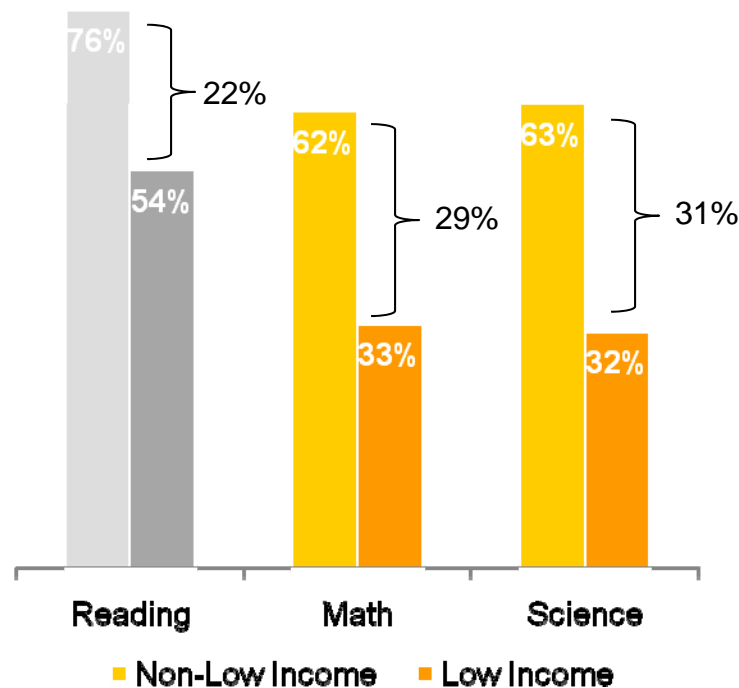
The achievement gap in Washington is large, and it is largest in STEM subjects.

Gap in NAEP Scale Scores for Washington 8th Grade Students



NAEP considers a 10-11 point gap roughly equivalent to **one full grade level** of learning.*

Percent of 8th Grade Students Proficient in WASL



Sources: Washington scaled scores, National Assessment of Educational Progress (NAEP) State Comparisons Tool.

<http://nces.ed.gov/nationsreportcard/statecomparisons/>, OSPI Washington State Report Card, 2008-2009 scores.

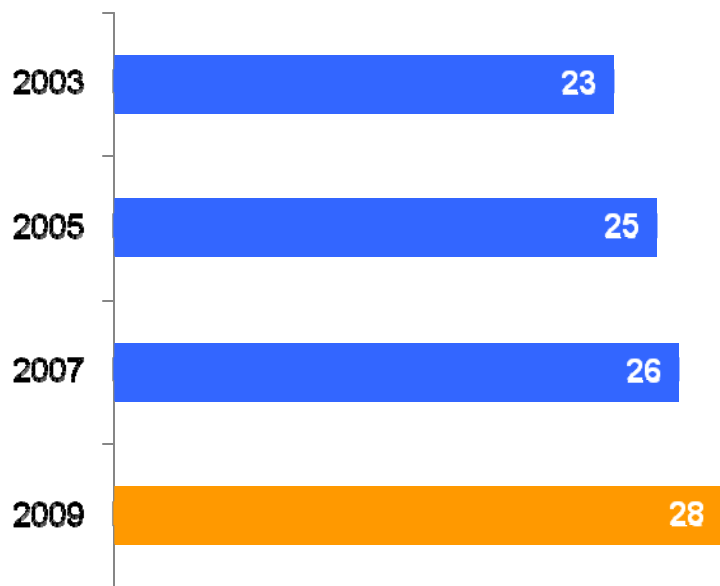
<http://reportcard.ospi.k12.wa.us/waslTrend.aspx?year=&gradeLevelId=8&waslCategory=-5&chartType=2>

*The Achievement Gap – Colorado’s Biggest Education Problem, <http://www.coloradokids.org/includes/downloads/ucationproblem.pdf>



And the achievement gap in Washington is growing.

Gap in NAEP 8th Grade Math Scores between Low-Income and Non-Low Income Washington Students



This gap was the **12th** largest in the nation in 2009.

On the NAEP, in 8th Grade Math, Washington is...

1 of 9 states

where the White - African American gap is growing

1 of 7 states

where the White - Hispanic gap is growing

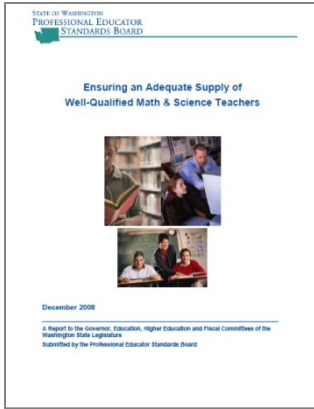
1 of 18 states

where the gap between low-poverty and high-poverty students is growing.

Sources: Washington scaled scores, National Assessment of Educational Progress (NAEP) State Comparisons Tool. Gap in scaled scores between FRPL eligible and ineligible students; <http://nces.ed.gov/nationsreportcard/statecomparisons/> http://www.edtrust.org/sites/edtrust.org/files/publications/files/NAEP2009Grade8MathGapsOverTime_0.pdf



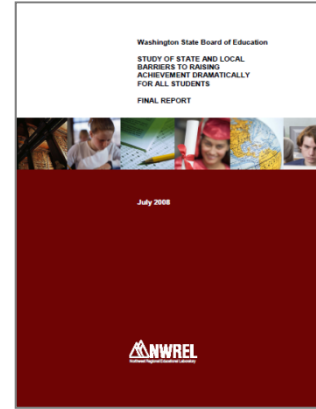
Previous reports revealed two primary issues with STEM education in Washington.



An inadequate supply of math and science teachers

2008 reports from Washington's Professional Educator Standards

Board (PESB) and the State Board of Education (SBE) estimated that the **state will need more than 460 math and 400 science teachers** (above and beyond current rates of production) to fill current shortages and to implement the three years of math credits requirement for the class of 2013 and the additional science requirements in CORE 24 for the class of 2016.



Ineffective evaluation and development of teachers

A 2008 report by the Northwest Regional Education Laboratory,

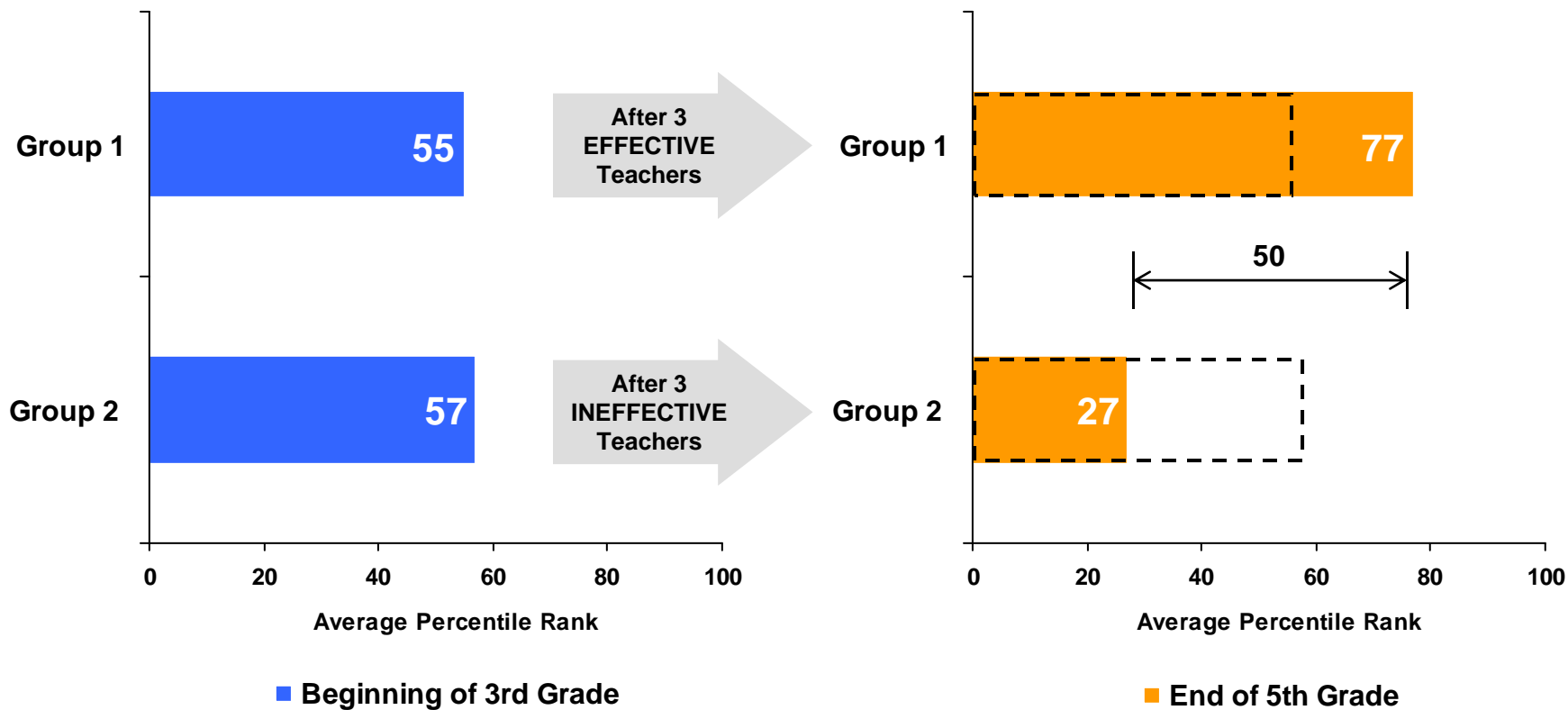
commissioned by SBE, that included educators from all regions of Washington and at all levels of decision-making, cited the lack of a **“coherent system to support entry, development and retention of quality recruits”** and the **“inability to dismiss ineffective staff”** as two of the top barriers to raising student achievement.



Research has shown that effective teachers are the solution to improving student outcomes.

Dallas students who start 3rd grade at about the same level of math achievement...

...may finish 5th grade math at dramatically different levels **depending on the quality of their teachers.**



Original analysis by the Education Trust.

Source: Heather Jordan, Robert Mendro, and Dash Weerasinghe, *The Effects of Teachers on Longitudinal Student Achievement*, 1997.



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Project Overview and Methodology

TNTP's study included the following elements:

- 1 An Advisory Panel** composed of a variety of education stakeholders from across Washington. Throughout the project, members had the opportunity to contribute feedback on project research questions, methodology, report findings and recommendations (see appendix).
- 2 Analysis of relevant policy documents**, including state laws (Revised Code of Washington (RCW) and Washington Administrative Code (WAC)) and collective bargaining agreements between partner districts and unions.
- 3 Stakeholder interviews** with state education leaders, university faculty and others.
- 4 District transaction data** for teachers, including records on hiring, transfers, excesses, layoffs, separations and evaluation.
- 5 Survey data** collected from teachers, administrators, recent applicants for teaching positions and teachers who recently separated from districts.



Surveys yielded responses from:*

1469 current teachers;

858 teacher applicants;



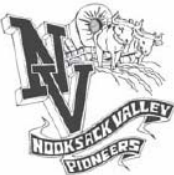
215 teachers who recently separated from districts; and

102 administrators.

*See appendix for detailed methodology, including response rates.



Background about Partner Districts (2008-09)

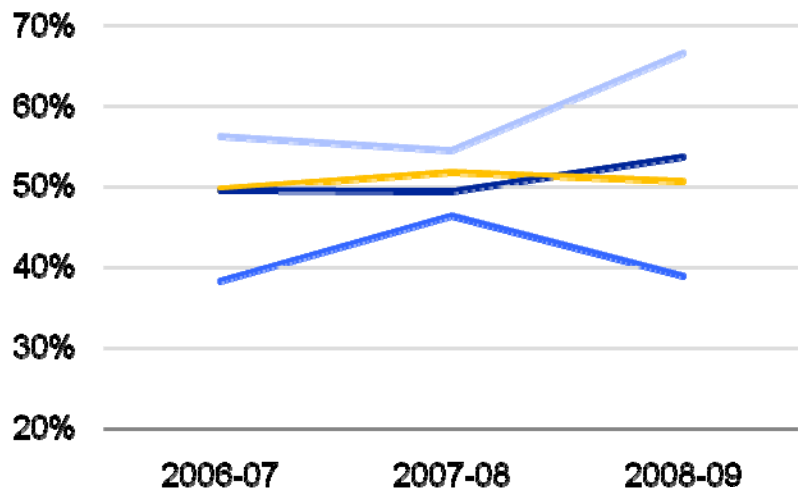
			
Students	28,844	14,021	1,737
<i>Free/Reduced Lunch</i>	54%	48%	53%
<i>Special Education</i>	15%	13%	18%
<i>Migrant</i>	0%	0%	5%
<i>Transitional Bilingual</i>	5%	15%	10%
<i>On-Time Graduation Rate</i>	60%	70%	69%
Teachers	1,789	901	110
<i>Average Years Experience</i>	13	12	12
<i>With Masters Degree</i>	72%	68%	64%
<i>Highly Qualified</i>	99%	93%	94%
Schools	51	26	5

Source: Office of the Superintendent of Public Instruction <http://reportcard.ospi.k12.wa.us/Summary.aspx>. Graduation rate from 2007-2008 school year.



Partner District Performance on 8th Grade Math and Science WASL

Percent of 8th Grade Students Meeting Standards in Math on WASL



Percent of 8th Grade Students Meeting Standards in Science on WASL



- Nooksack Valley School District
- Renton School District
- Spokane Public Schools
- Washington State



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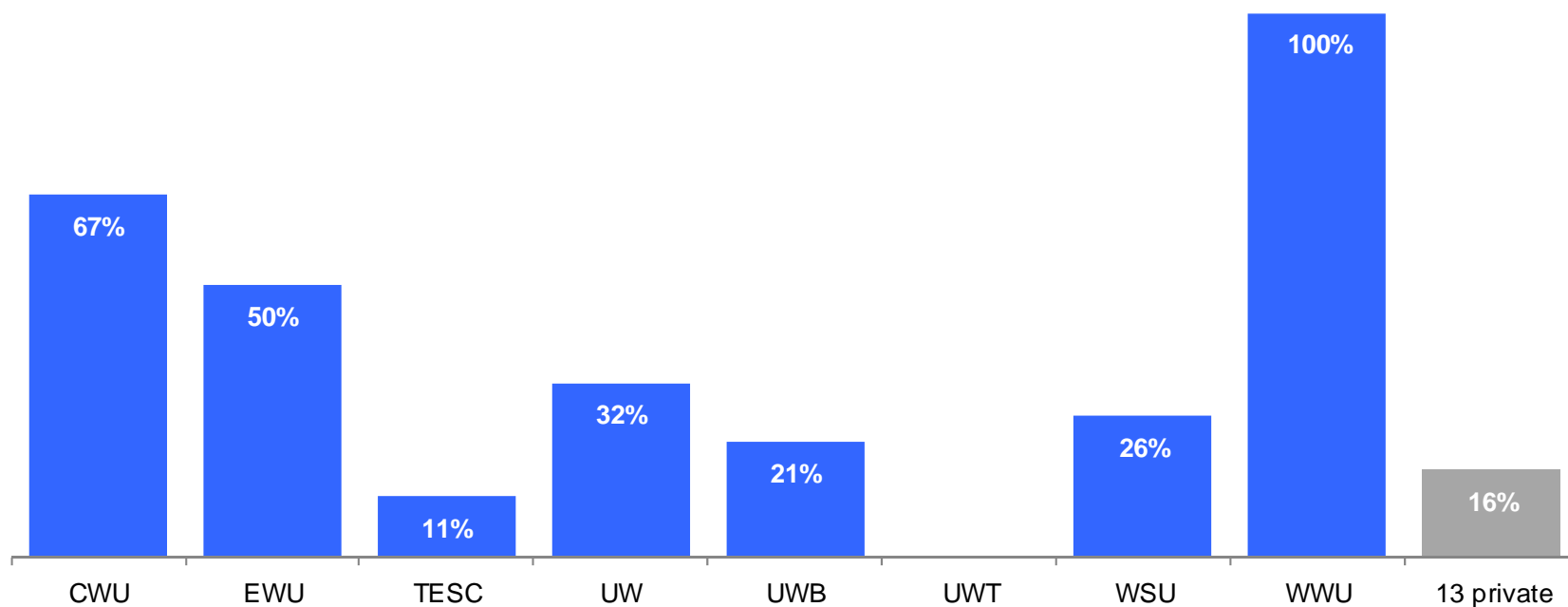
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Washington does not attract a sufficient quantity of STEM teacher candidates, and the quality of STEM instruction is markedly lower than in other subject areas.



A 2008 PESB report found that two-thirds of the available seats in math preparation programs at Washington's public universities were unfilled.

Percent of Available Seats Filled in Math Preparation Programs in Washington

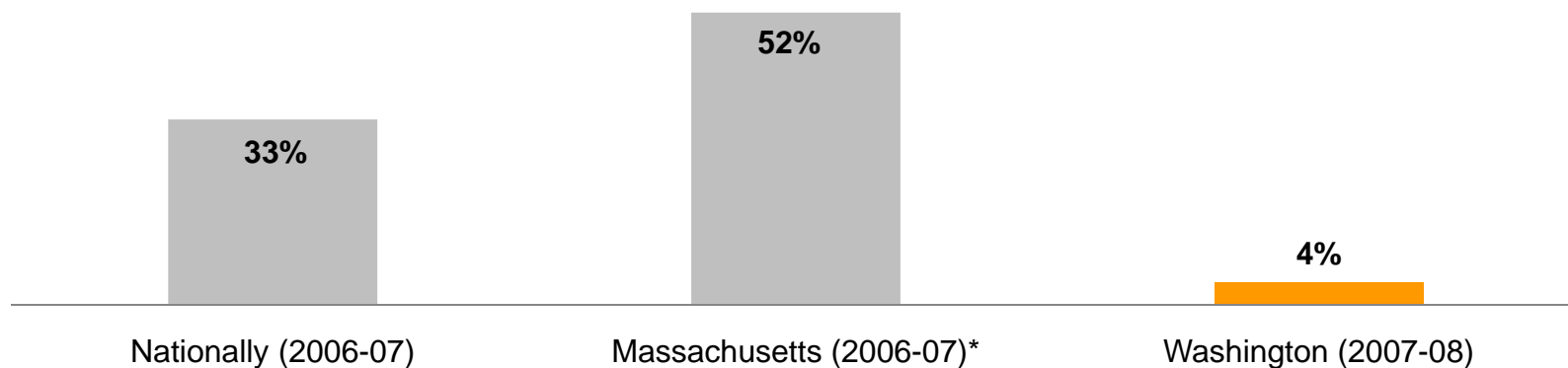


Source: "Ensuring and Adequate Supply of Well-Qualified Math & Science Teachers," Professional Educator Standards Board (2008). Data not available for UWT math prep programs in Washington. Number of endorsements exceeds the number of teachers certified, as a teacher may receive more than one endorsement on his/her certificate.



Washington does not make good use of alternative route certification programs, which could help fill this gap.

Percentage of Teachers Certified Through Alternative Route Programs



"We need universities to double down on their efforts to prepare teachers and to improve and expand effective alternative routes to certify teachers."

-Michelle Obama, *US News and World Report*, October 15, 2009

Sources: Feistritzer, C. E. (2007). *Alternative Teacher Certification: A State-by-State Analysis 2007*. National Center for Education Information. <http://www.teach-now.org/intro.cfm>, Total number of teachers certified from 2008 Title II reports at <https://title2.ed.gov>. Number of teachers certified through alternative routes from National Center for Education Information, via http://www.teach-now.org/Table1_09.pdf. National and Massachusetts data available through 2006-07 only. Washington's percentage in the same period (2006-07) equaled 2%.

* In 2009, Massachusetts had the nation's highest 8th grade math NAEP scores.



Few districts take advantage of state policy that allows them to offer paid teaching positions during alternative route training.

State Policy

Both traditional and alternative programs' clinical experience must be "sufficiently extensive and intensive for candidates to demonstrate competence in the professional roles for which they are preparing."

However, there is no clear minimum amount of field experience required before candidates can take a paid teaching position.

Existing Programs

But few districts currently provide employment during alternative route training, in part because they do not forecast workforce needs well enough or early enough to utilize alternative route candidates. As a result, many alternative route participants **complete their clinical internships without pay** for a full school year.



51% of 2008 TNTP Teaching Fellows reported that being able to work while earning their teaching certificate was the **single most attractive benefit** of joining their program.

Sources: WAC 181-78A, and review of alternative-route programs approved by the Professional Education Standards Board (PESB) for 2009-2010. Some programs allow students to exit after only a half-year internship, pending demonstration of meeting all other program requirements.



As a result, alternative route programs do not attract professionals looking for an expedited and affordable route into teaching.

Cost Comparison for Alternative Route Teacher Candidates

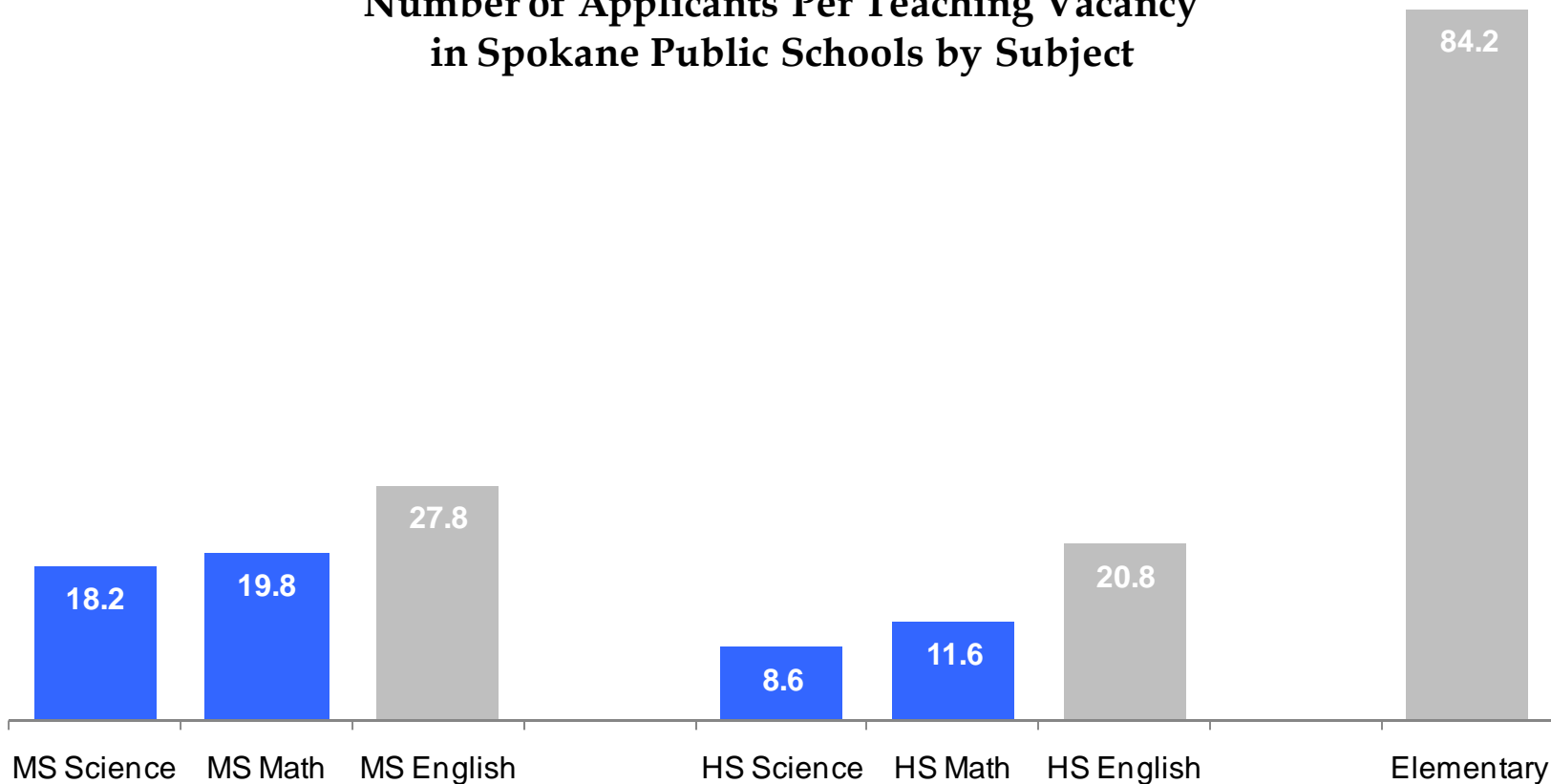
	Existing Washington Alternative Route Programs	Genuine Alternative Route Program (NYC Teaching Fellows)
Cost of Training Prior to Employment	\$12,000 City University tuition <u>-\$8,000 conditional scholarship</u> \$4,000	\$0
Stipend During Internship	\$0	\$2,500 for training of approximately 6 weeks
Salary Lost During Training Program*	\$80,000/year <u>x 1.25</u> (15 months between paychecks) = \$100,000	\$80,000/year <u>x .25</u> (3 months between paychecks) = \$20,000
Cost Toward Master's Degree (Incurred While Teaching)	\$0	\$6,660 (after subsidy from NYC DOE)
Total Cost to Candidate	\$104,000	\$24,100

*This opportunity cost would not be incurred by participants in Washington Alternative-route 4 programs. However, anecdotal evidence suggests that the pool of Alternative-route 4 candidates is very limited at this time.



In Spokane Public Schools, the pool of STEM teacher candidates is notably thinner than in other subjects, forcing the district to be less selective in hiring for these positions.

**Number of Applicants Per Teaching Vacancy
in Spokane Public Schools by Subject**



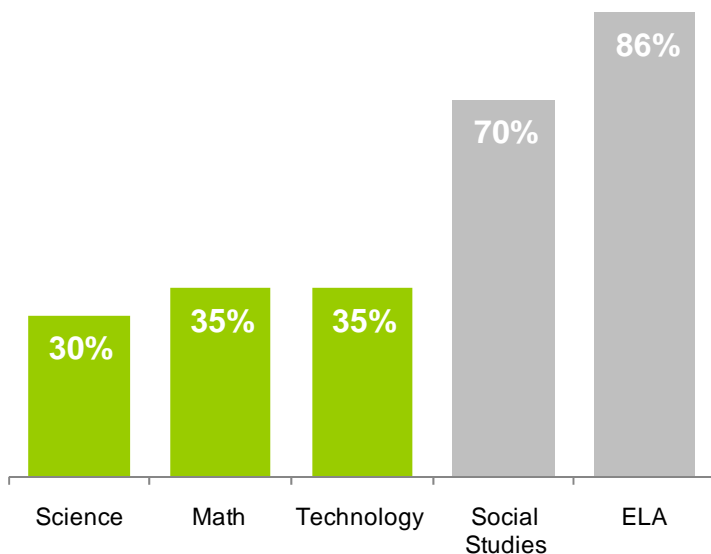
Source: Spokane HR transactional records, 2007 and 2008 application seasons. Number of vacancies analyzed: MS Science: 13; MS Math: 13; MS English: 3; HS Science: 11; HS Math: 21; HS English: 13; Elementary: 148. Vacancy application data were not available in other partner districts.



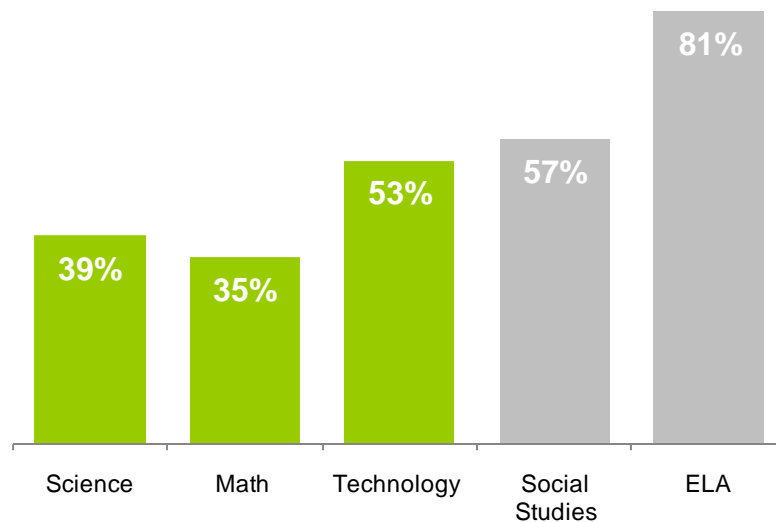
Administrators across partner districts report an inadequate supply of high-quality STEM teacher candidates.

Percent of Middle School and High School Administrators Who Are “Satisfied” or “Very Satisfied” With the Quantity and Quality of Applicants in Subject Areas

Satisfied With Quantity



Satisfied With Quality



“The applicant pool cannot support holding provisional teachers to higher standards. We accept less than we want because we know we are very unlikely to find more qualified applicants.”

- 3rd year assistant principal

Source: Administrator surveys in NVSD, RSD, and SPS.

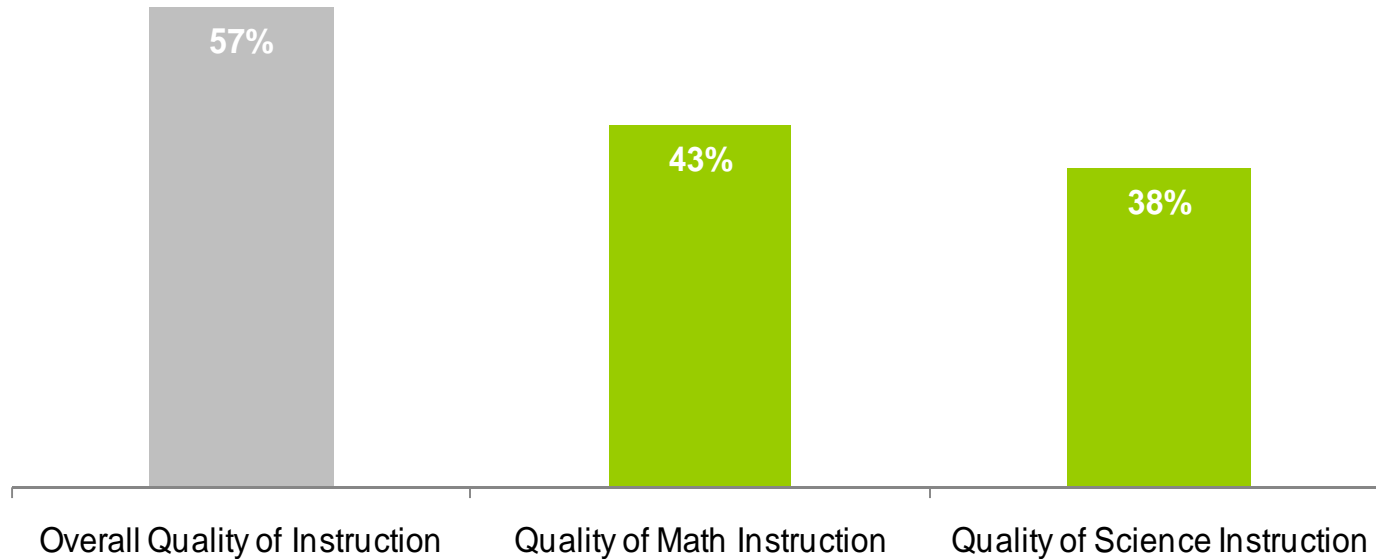
Respondent Totals, Satisfied with Quantity: Science (n=23), Math (n=23), Technology (n=17), Social Studies (n=20), ELA (n=21)

Respondent Totals, Satisfied with Quality: Science (n=23), Math (n=23), Technology (n=17), Social Studies (n=21), ELA (n=21)



Administrators also report that the quality of STEM instruction is markedly lower than in other subject areas...

Administrators in Partner Districts Who “Agree” or “Strongly Agree” That They are Satisfied with the Quality of Instruction in Their School



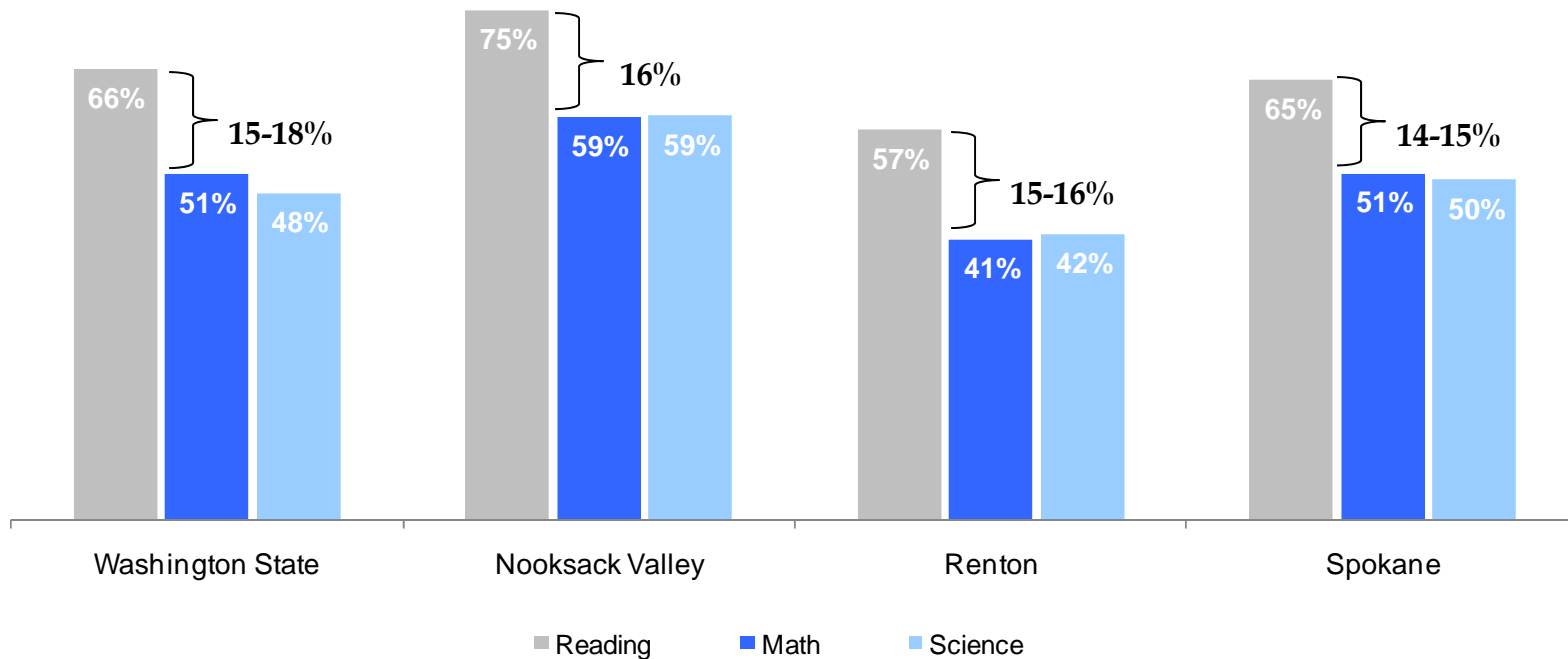
However, an equal percentage of NVSD administrators (63% of 8 total) are satisfied with the quality of math instruction and instruction overall.

Source: Administrator surveys in NVSD, RSD, and SPS, n=87. NVSD has partnered with local universities to increase supply of high-quality STEM teachers. Elementary administrators had the option to respond if appropriate, or check N/A.



...an assessment confirmed by persistently lower student performance in math and science, both in the partner districts and statewide.

**Percentage of 8th Graders Meeting WASL Standards
(3-year Average 2006-2009)***



* OSPI Washington State Report Card. <http://reportcard.ospi.k12.wa.us/Summary.aspx?year=2008-09&gradeLevelId=&waslCategory=&chartType=>



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Access to high-quality STEM teacher candidates and effective STEM instruction is most limited in the highest-need schools.

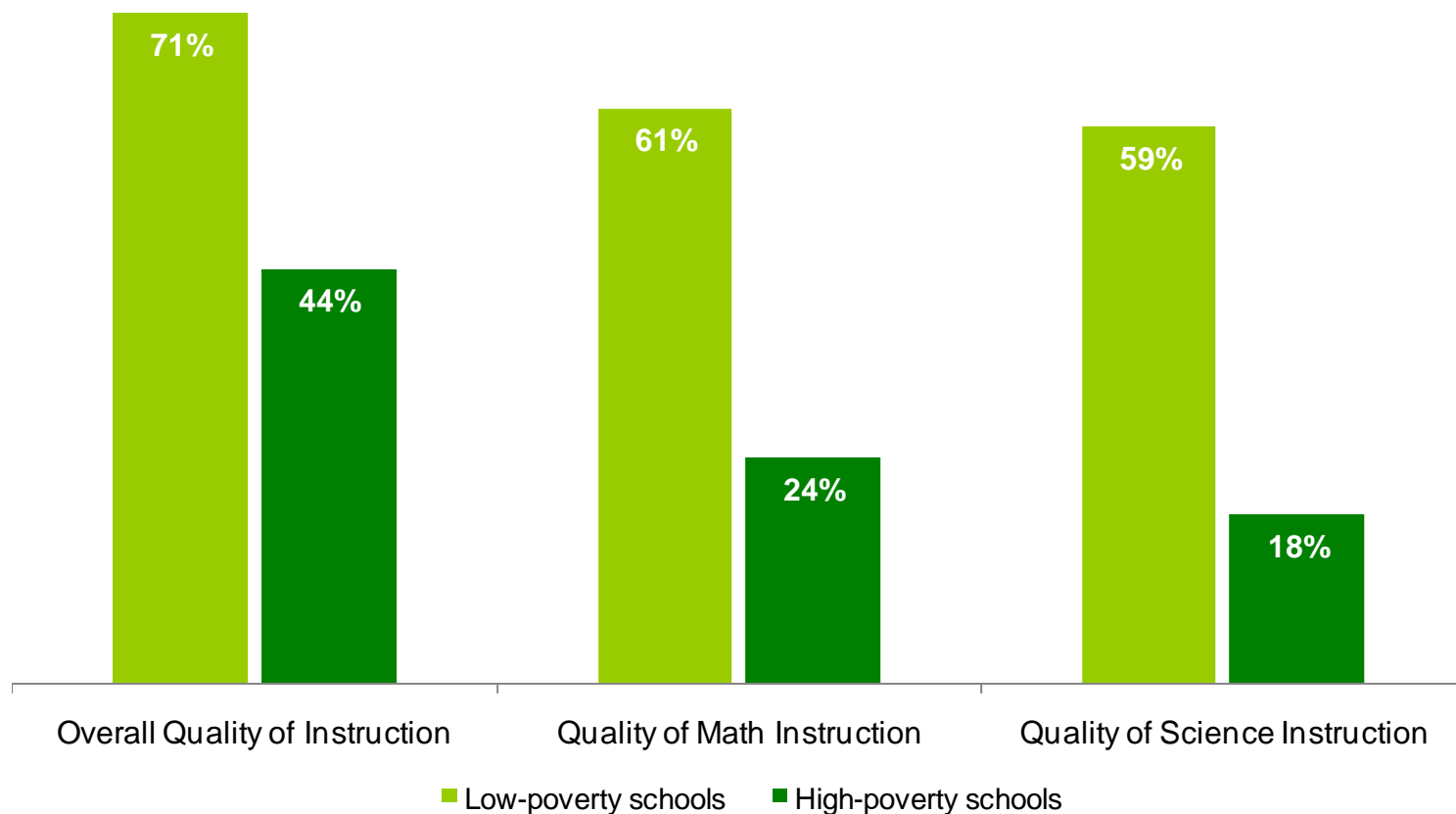
“Year after year the gap between the number of teachers we have and the number of teachers we need in [STEM subjects] is widening...and that gap is most pronounced in predominately poor and minority schools.”

- *President Barack Obama, January 6, 2010*



Administrators at high-poverty schools are less satisfied with the quality of STEM instruction than their peers at low-poverty schools.

Administrator Satisfaction With Instructional Quality by School Poverty Level

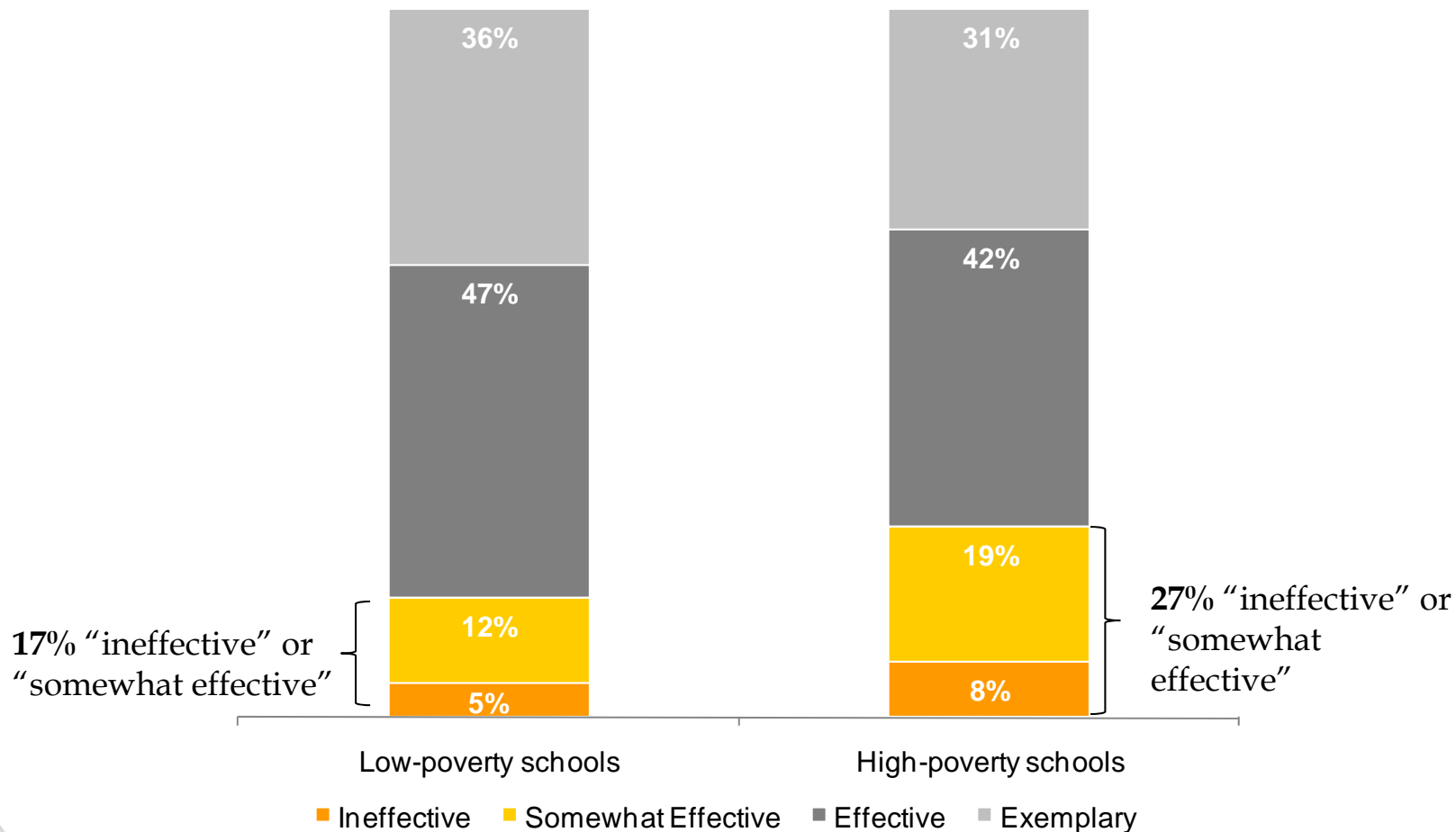


Source: Administrator surveys in NVSD, RSD, and SPS. “Low-poverty” indicates schools with 0-50% FRPL (n=41). “High-poverty” indicates schools with 51-100% FRPL (n=45).



Administrators also report that there are higher percentages of less effective teachers in high-poverty schools.

Administrator Perceptions of Teacher Performance

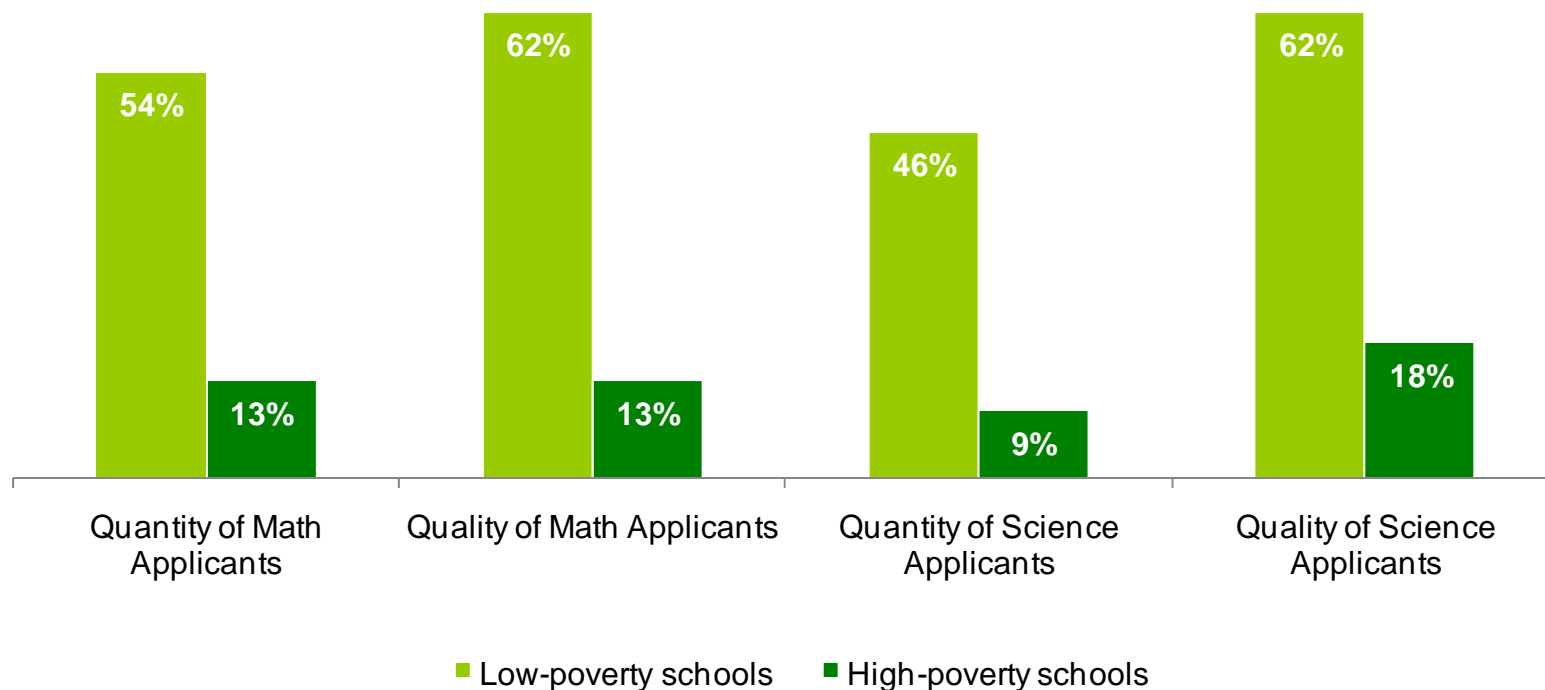


Source: Administrator surveys in NVSD, RSD, and SPS. "Low-poverty" indicates schools with 0-50% FRPL (n=38). "High-poverty" indicates schools with 51-100% FRPL (n=41).



Administrators at high-poverty schools are less satisfied with the pool of new STEM teachers available to them.

Percent of Administrators Who Are “Satisfied” or “Very Satisfied” with Quantity and Quality of STEM Applicants, by School Poverty Level



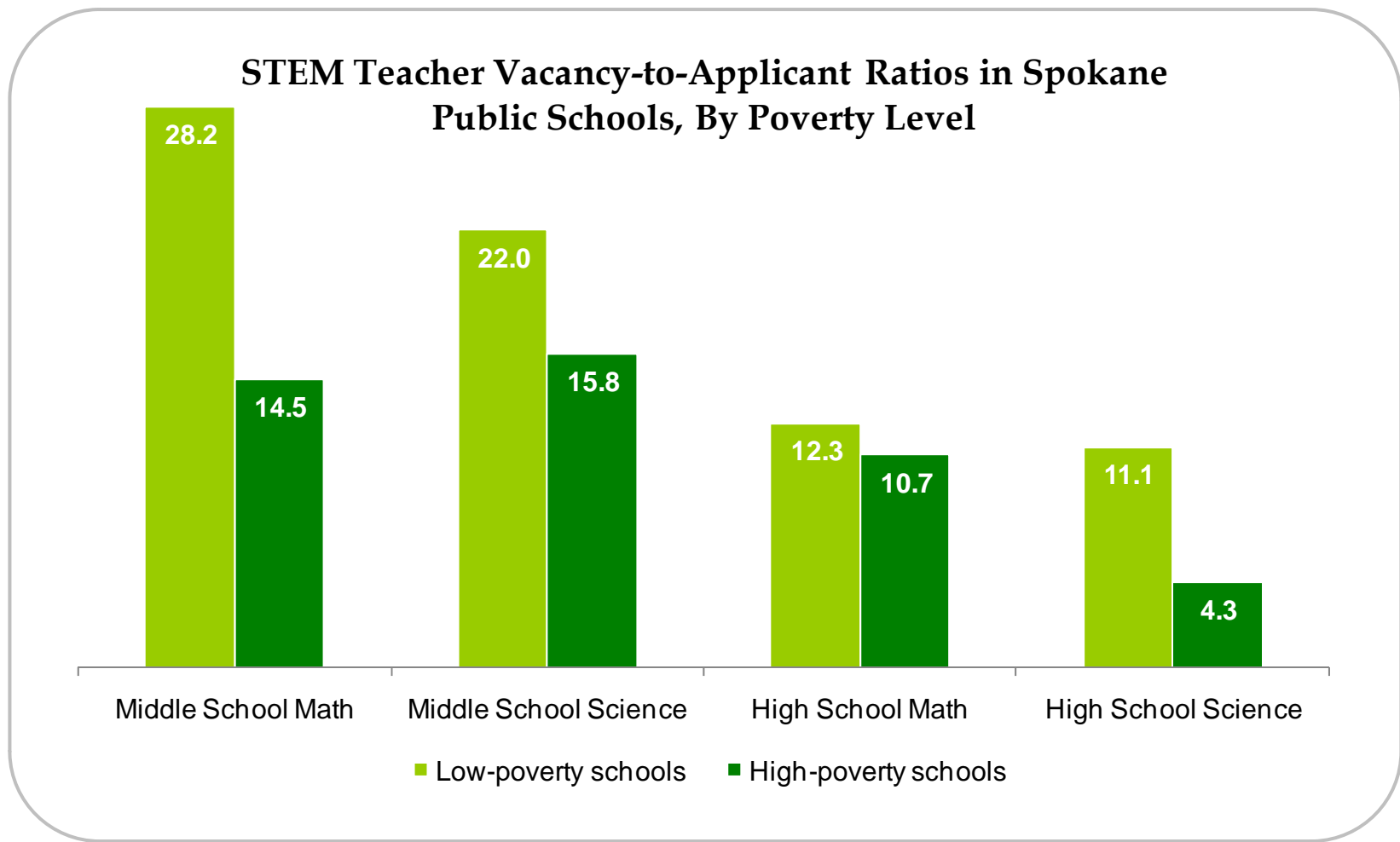
Source: Administrator surveys in NVSD, RSD, and SPS. “Low-poverty” indicates schools with 0-50% FRPL. “High-poverty” indicates schools with 51-100% FRPL. Elementary administrators had the option to respond if appropriate, or check N/A.

Respondent totals, low-poverty: Math Quantity (n=13), Math Quality (n=13), Science Quantity (n=13), Science Quality (n=13)

Respondent totals, high-poverty: Math Quantity (n=16), Math Quality (n=16), Science Quantity (n=11), Science Quality (n=11)



In Spokane Public Schools, high-poverty schools receive fewer STEM applicants per vacancy than their low-poverty counterparts.



Spokane Applicant and Vacancy Data, 2007-2008. Vacancy application data were not available in other partner districts. “Low-poverty” indicates schools with 0-50% FRPL. “High-poverty” indicates schools with 51-100% FRPL.

Number of vacancies analyzed: MS Math: 0-50% (n=5), 51-100% (n=8); MS Science: 0-50% (n=5), 51-100% (n=8); HS Math: 0-50% (n=12), 51-100% (n=9); HS Science 0-50% (n=7), 51-100% (n=4)



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Formal evaluation processes do not differentiate teachers based on their ability to help students learn, nor do they give teachers the feedback they need to improve their instruction.

Without robust evaluation data, districts are limited in their ability to make strategic decisions about the teacher workforce.



Across partner districts, almost every teacher earns the highest evaluation rating.

**Results of Teacher Evaluations in Nooksack Valley School District,
2003-04 to 2008-09**

0.0%

of teachers rated
“unsatisfactory”

vs.

100%

of teachers rated
“satisfactory”

**Results of Teacher Evaluations in Spokane Public Schools,
2005-06 to 2008-09**

0.2%

of teachers rated
“unsatisfactory” or
“requires
improvement”

vs.

99.8%

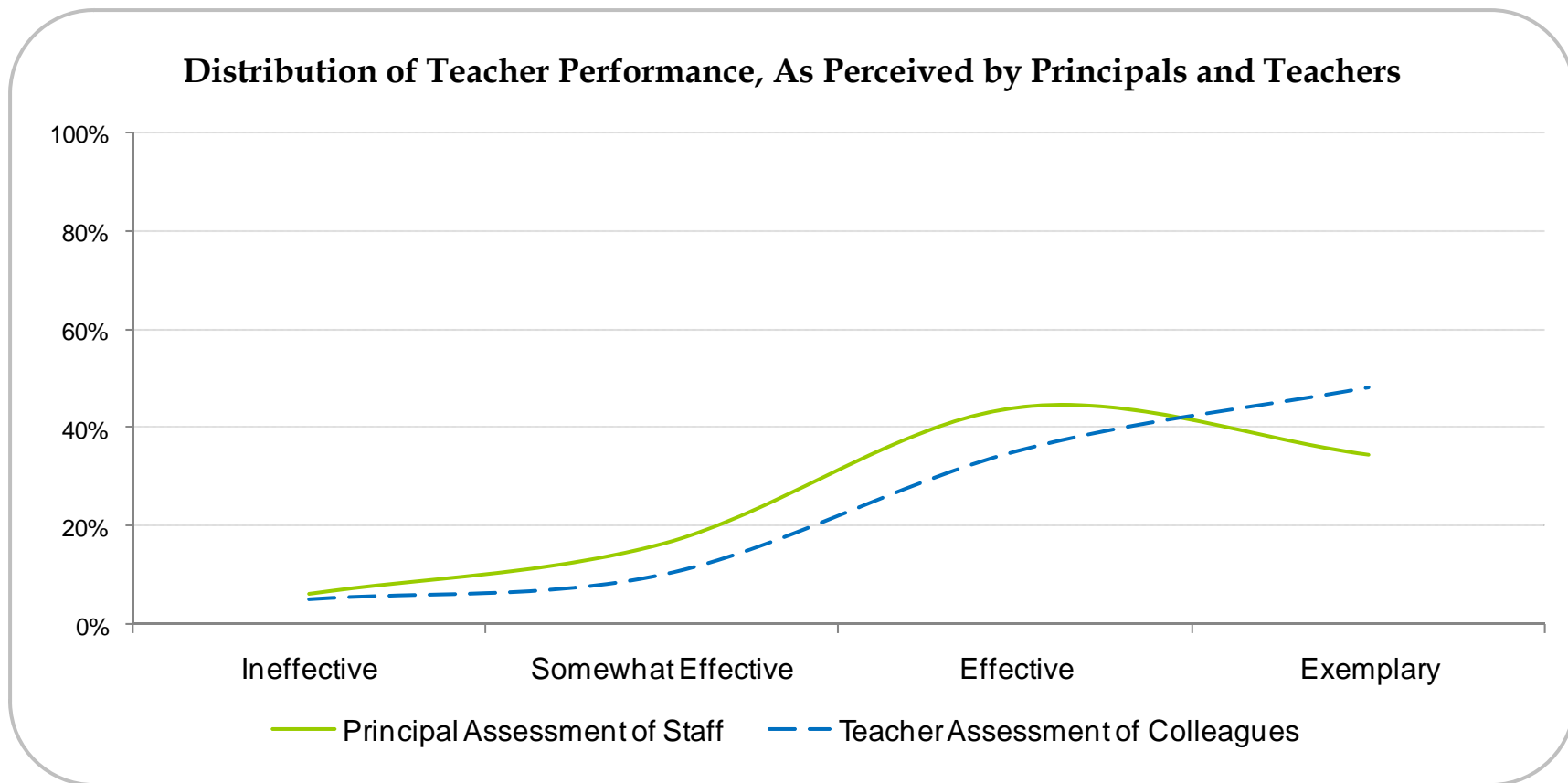
of teachers rated
“satisfactory”

Source: Review of evaluations in NVSD and SPS. NVSD (0 of 498), SPS (14 of 6,822)

RSD currently does not use summative evaluation ratings but is developing a new evaluation system for the 2010-11 school year.



However, these results do not align with administrators' and teachers' perceptions of performance.



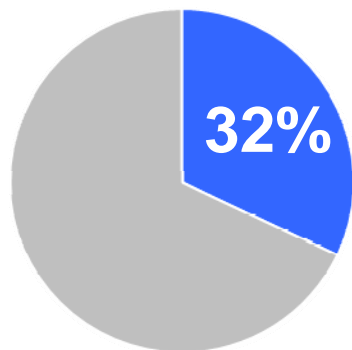
49 percent of administrators say they have “assigned a higher evaluation rating to a teacher than the teacher’s instructional performance warranted.”*

Source: Teacher and administrator surveys in NVSD, RSD, and SPS. Teacher n=866, administrator n=80.

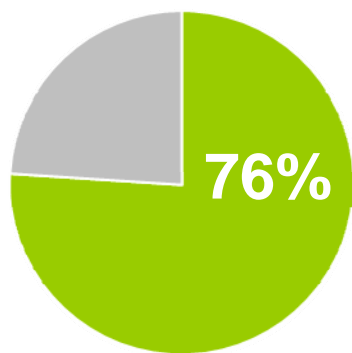
* n=87



Neither teachers nor administrators believe current evaluation systems provide an accurate picture of teacher effectiveness.



of teachers “agree” or “strongly agree” that “the evaluation process **accurately differentiates among teachers** based on their effectiveness at promoting student learning.”



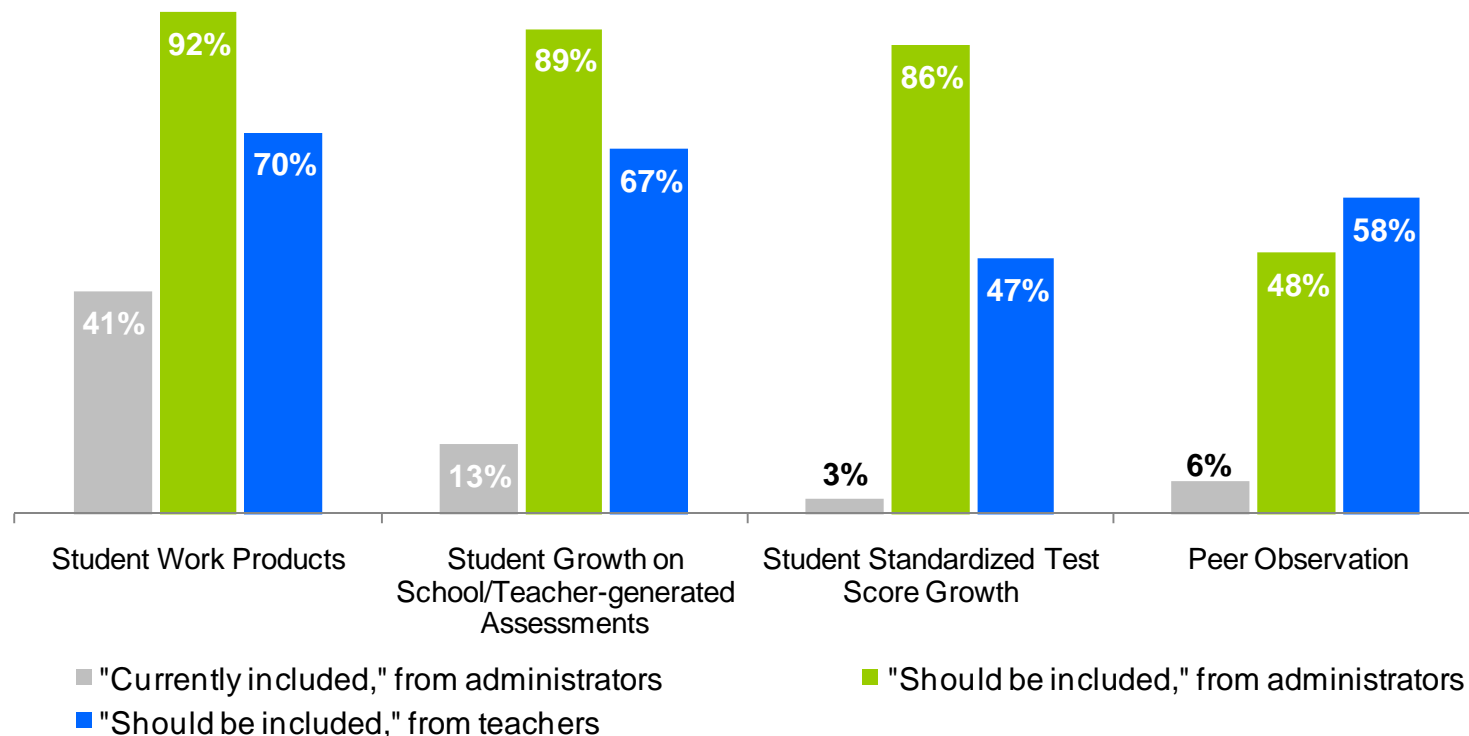
of administrators believe that “a rating scale that **provides more opportunities for differentiation** between performance levels” would be most important in helping them conduct effective evaluations.

Source: Teacher and administrator surveys in NVSD, RSD, and SPS. Teacher n=1147, administrator n=82.
All trends are consistent for STEM teachers.



There is significant support among teachers and administrators for considering academic performance in teacher evaluations.

Teacher and Administrator Perceptions of Factors that Are or Should Be "Important" or "Most Important" in Teacher Evaluations



Source: Teacher and administrator surveys in NVSD, RSD, and SPS. These trends are consistent for STEM teachers.

Totals Teacher "should be": Work products n=1168, Student assessment growth n=1162, Standardized test growth, n=1167, Peer observation n=1160

Totals Administrator "currently": Work products n=90, Student assessment growth n=90, Standardized test growth, n=90, Peer observation n=90

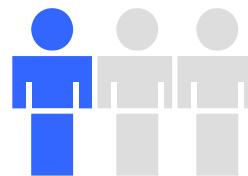
Totals Administrator "should be": Work products n=90, Student assessment growth n=89, Standardized test growth, n=90, Peer observation n=87



Teachers also report that the formal evaluation process does not clearly identify areas where they can improve their instruction.

6%

of teachers received an "area on improvement" on their last evaluation.



31 percent of those with an improvement area "did not know" what area was identified as in need of improvement.



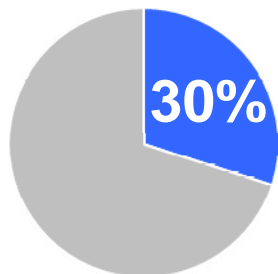
"I haven't had anyone in my room looking at my instructional practices in probably 4 years. So if this is the norm then there are a lot of teachers who are not being evaluated at all and just continued on without any feedback."

- *11-year math teacher*

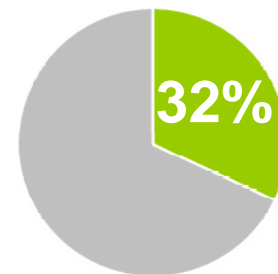
Source: Teacher surveys in NVSD, RSD, and SPS. These trends are consistent for STEM teachers.
Respondent totals, Teachers: n=1086, teachers with improvement area: n=55



Few administrators and teachers say the evaluation process provides meaningful feedback or connects to professional development...



of teachers “agree” or “strongly agree” that their **professional development** “was **tailored** according to feedback and/or development areas from my performance evaluation.”



of administrators “agree” or “strongly agree” that the “evaluation process **provides meaningful feedback** to those in need of additional development.”



"I wish feedback could be more specific rather than all glowing praise. Everyone has room to grow and I would truly appreciate more constructive criticism to help me grow as a professional and be more effective for my students."

- 4-year middle school special education & English teacher

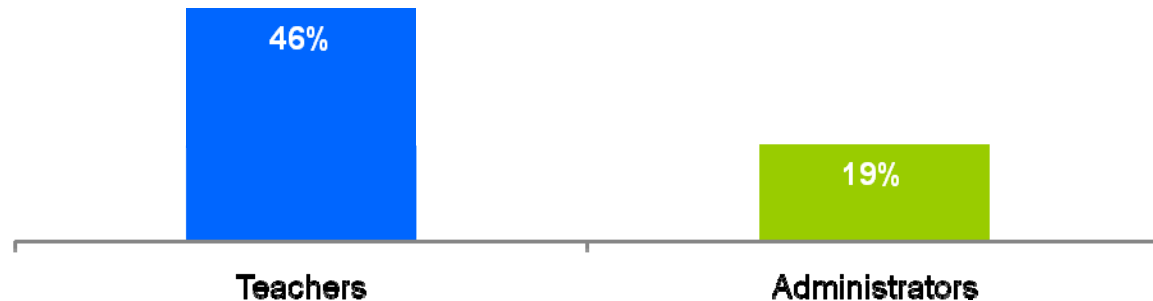
Source: Teacher and administrator surveys in NVSD, RSD, and SPS. All trends are consistent for STEM teachers.

Respondent totals, teachers: n=1023, administrators: n=90.



...and few believe it helps teachers improve their instruction—the stated purpose of the evaluation system.

Percentage of Teachers and Administrators Who “Agree” or “Strongly Agree” That “the Formal Evaluation Process Helps Teachers Improve Their Instructional Performance”



“[T]he primary focus of evaluation is to improve instruction...”

- *RSD/REA Teachers’ Contract, March 4 2008*

“The primary purpose of the evaluation procedure is to improve instruction.”

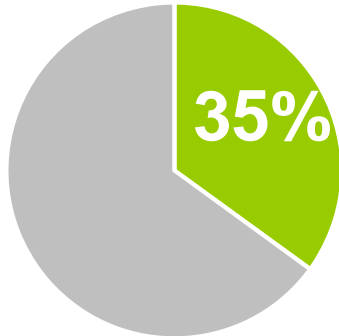
- *SPS/SEA Collective Bargaining Agreement, Sept 2006 through Aug 2009*

Source: Teacher and administrator surveys in NVSD, RSD, and SPS. All trends are consistent for STEM teachers.

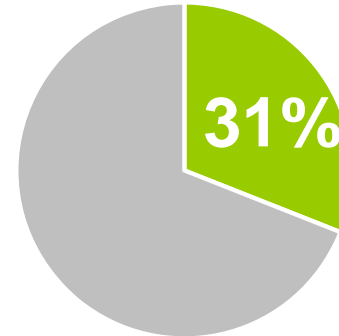
Respondent totals, teachers: n=1164, administrators: n=91.



Administrators do not believe that conferral of non-provisional status is based on a rigorous process.



of administrators say teachers are **evaluated rigorously on their ability to promote student learning** to obtain non-provisional status

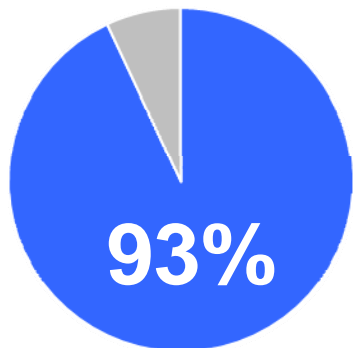


of administrators say achieving non-provisional status is a **validation of a teacher's professional skill and excellence**

Source: Administrator surveys in NVSD, RSD, and SPS. n=85



As a result, nearly all teachers believe they are likely to achieve non-provisional status.



of provisional teachers are “confident” or “very confident” that they will receive non-provisional status



Every single teacher surveyed was at least “somewhat confident” that they will receive non-provisional status.

Source: Teacher surveys in NVSD, RSD, and SPS. n=72



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Certain financial incentives and career growth opportunities hold promise as strategies to encourage more of Washington's STEM undergraduates to choose teaching over the many other career opportunities available to them.



From outside the state, Washington is viewed as an inviting business climate and is home to several industry leaders.

Washington continuously ranks near the top of Forbes' Best States for Business:

- **#5** overall in 2007
- **#3** overall in 2008
- **#2** overall in 2009

In 2009, Washington ranked...

- **#1** in growth prospects
- **#2** in the quality of its labor force
- **#3** in economic climate
- **#5** in regulatory environment

Globally-recognized, Washington-based brands include...



Microsoft[®]



amazon.com[®]



Given the demand for their skills, STEM undergraduates must weigh large salary differences when considering whether or not to enter teaching.

Top 10 Highest Earning College Degrees*

Degree	Salary
Petroleum engineering	\$83,121
Chemical engineering	\$64,902
Mining engineering	\$64,404
Computer engineering	\$61,738
Computer science	\$61,407
Electrical engineering	\$60,125
Mechanical engineering	\$58,766
Industrial engineering	\$58,358
Systems engineering	\$57,438
Engineering technology	\$56,447



Starting salary for a Washington teacher**:

\$34,327

* Summer 2009 *Salary Survey*, National Association of Colleges and Employers.

** State allocation for a first year teacher with a B.A. from 2009-10 Salary Allocation Model from OSPI website.



STEM undergraduates say financial subsidies and professional growth opportunities would encourage them to enter teaching.

Percentage of STEM Undergraduates Who Would Consider Teaching Who Say The Following “Would Definitely or Maybe Encourage Them to Consider Becoming a K-12 Teacher”

88%	Beginning pay at a salary comparable to positions in engineering or technology
85%	Having my college loans paid off, if I teach for two years after college
84%	Opportunities for advancement and leadership beyond the classroom
83%	Housing allowance or access to low interest loan toward purchase of a home
82%	An increase in the quality of materials, supplies, and technology for teaching
74%	Ability to earn more money if my students perform better
68%	A reduction in the amount of time it takes to earn a teaching credential

Source: Elfers, A.M., Plecki, M.L., St. John, E., and Wedel, R. (2008). Undergraduates View of Teaching as a Career Choice. Center for Strengthening the Teaching Profession.

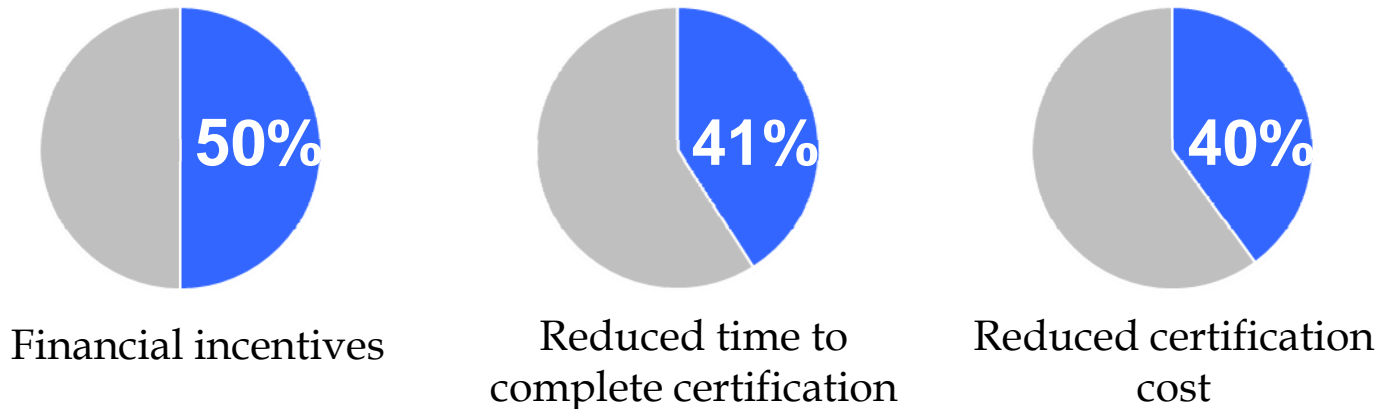


Reduced certification costs and requirements could also increase the number of high-quality STEM-endorsed teachers.

40% of Renton School District and Spokane Public Schools teachers who left the districts were dissatisfied with the “**cost to achieve certification.**”*

Factors That Would Make Teachers More Likely to Complete STEM Certification

Responses from Teachers in Partner Districts Who Considered STEM Certification But Did Not Earn It**



*Includes “Very dissatisfied,” “Dissatisfied,” and “Somewhat dissatisfied.” Teacher leaver surveys in RSD and SPS only. n=119

** Teacher surveys in NVSD, RSD, and SPS. n=210



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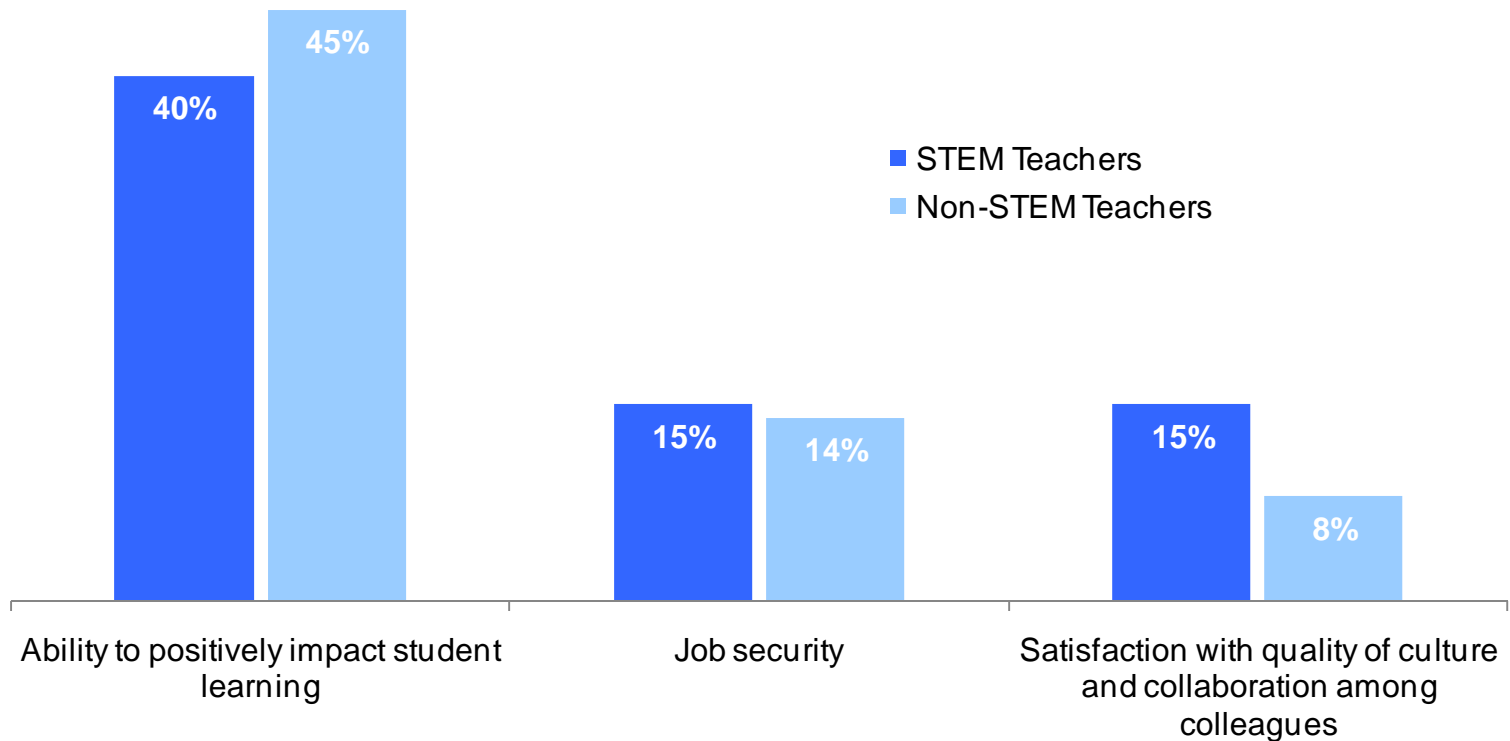
Appendix

Districts could improve retention of STEM teachers by providing resources – including strong school leadership and improved working conditions – that maximize teachers' ability to impact student learning.



Teachers report that the ability to impact student learning is the predominant factor motivating them to continue teaching.

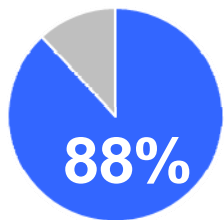
“Most Important” Factor Persuading Teachers to Continue Teaching for Four or More Years or Until Retirement



Source: Teacher surveys in NVSD, RSD, and SPS.
Respondent totals, STEM teachers: n=149, Non-STEM teachers: n=791.

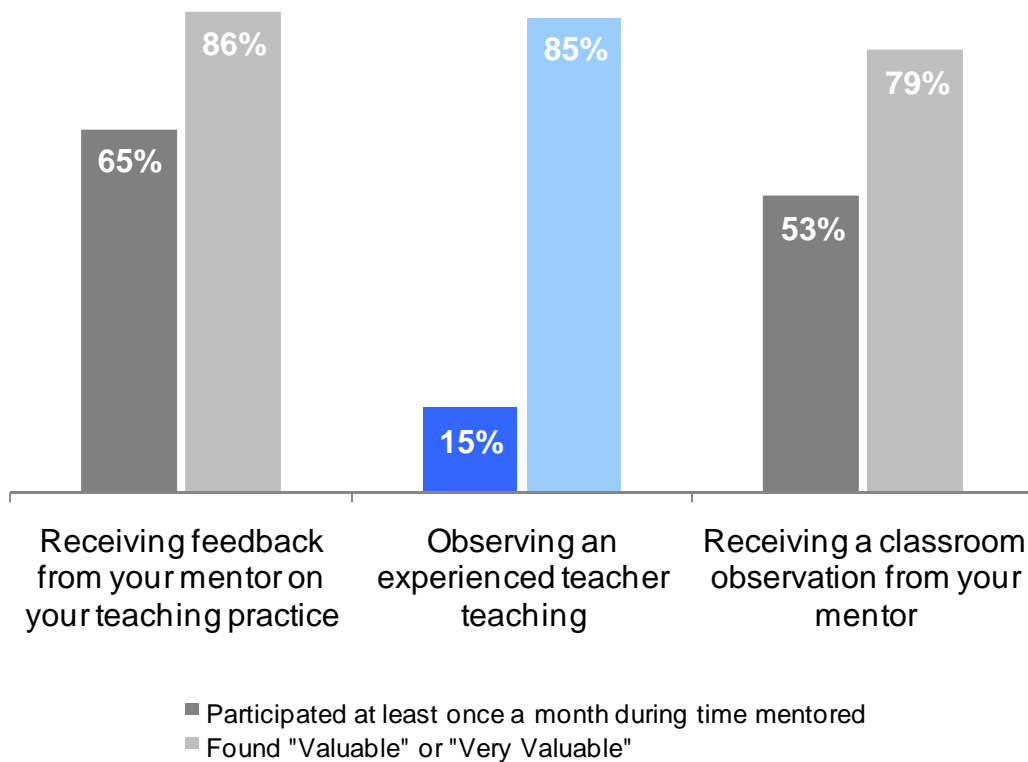


Teachers are largely satisfied with the mentoring they receive but say they could benefit from more opportunities to observe experienced colleagues.



88% of STEM teachers and 67% of non-STEM teachers across partner districts were satisfied or very satisfied with their mentoring experience.

Experience and Satisfaction with Aspects of the Mentoring Process



Source: Teacher surveys in NVSD, RSD, and SPS

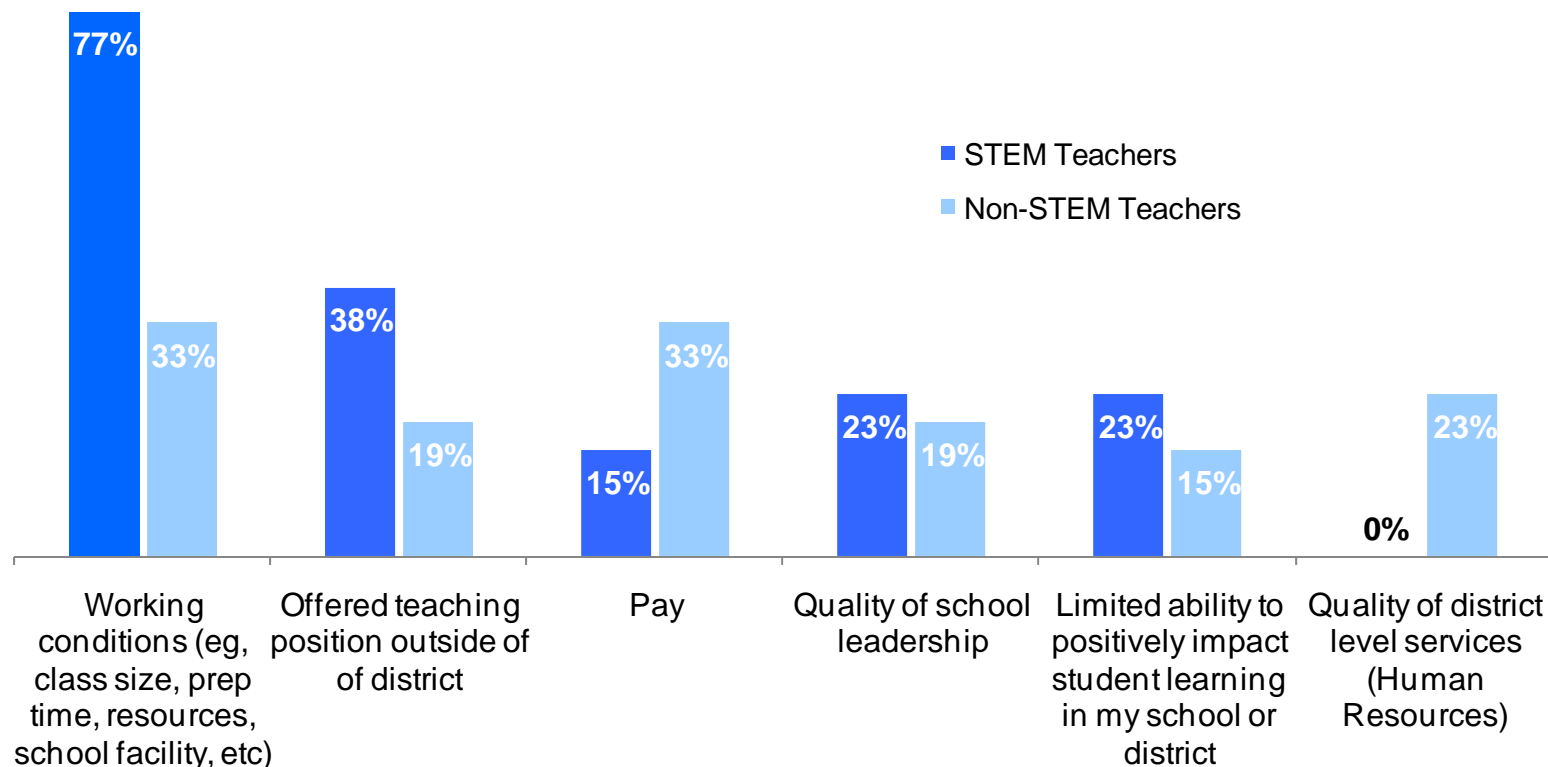
Respondent totals, participated at least once a month: "Receiving feedback" n=150, "Observing a teacher" n=149, "Receiving observation" n=148

Respondent totals, found "valuable" or "very valuable": "Receiving feedback" n=133, "Observing a teacher" n=131, "Receiving observation" n=131



Poor working conditions can encourage STEM teachers to leave their positions.

Percent of Teachers Listing the Following as One of the “Most Significant Factors” in Their Decision to Leave the District in the Next Three Years

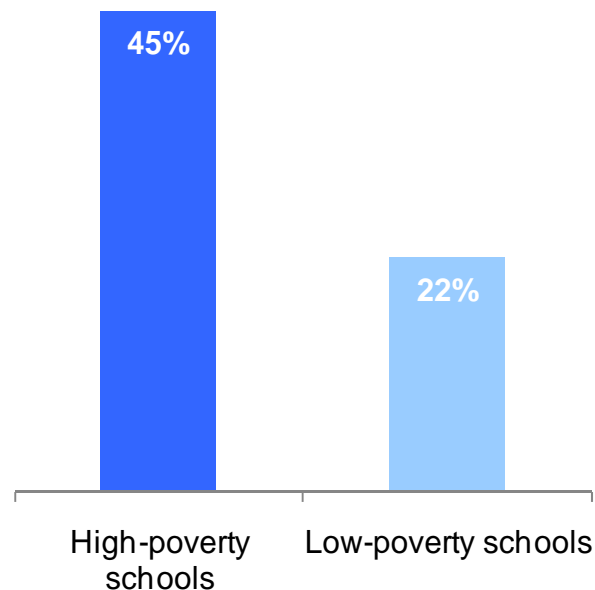


Source: Teacher surveys in NVSD, RSD, and SPS.
Respondent totals, STEM teachers: n=13, Non-STEM teachers: n=48.

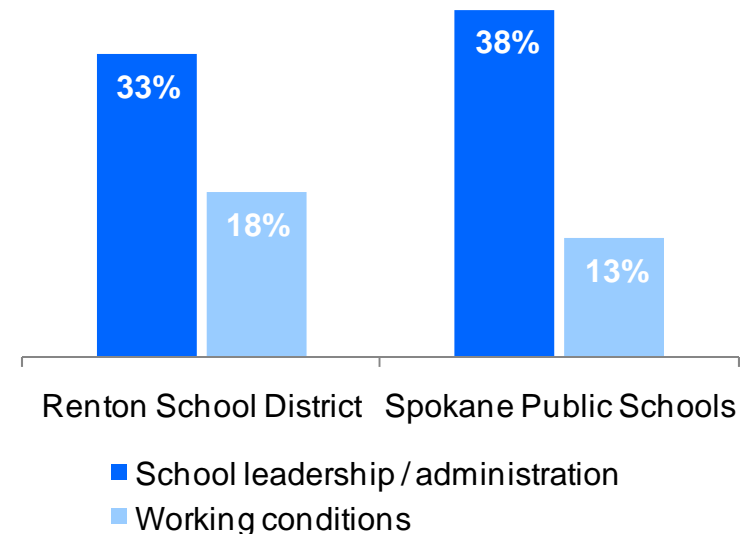


School leadership also plays a critical role in maximizing teacher retention, particularly at high-poverty schools.

Percent of Teachers Surveyed by CSTP Who Have Considered Leaving the Profession Due to a Lack of Leadership*



Percent of RSD and SPS Teachers Citing the Following as the Most Important Factor in Deciding to Leave the District (Top Two Responses)**



* Knapp, M.S., Elfers, A.M., Plecki, M.L., Loeb, H., and Zahir, A. (2005). Teachers Count: Support for Teachers' Work in the Context of State Reform. Center for Strengthening the Teaching Profession. "High-poverty": 51-100% FRPL; "Low-poverty": < 20% FRPL

**Teacher leaver surveys in RSD and SPS. SPS n=24, RSD n=39.



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We recommend that Washington implement a STEM strategy focused on achieving two goals.



Dramatically accelerate student achievement in STEM subjects and ensure all students are prepared for college and careers.

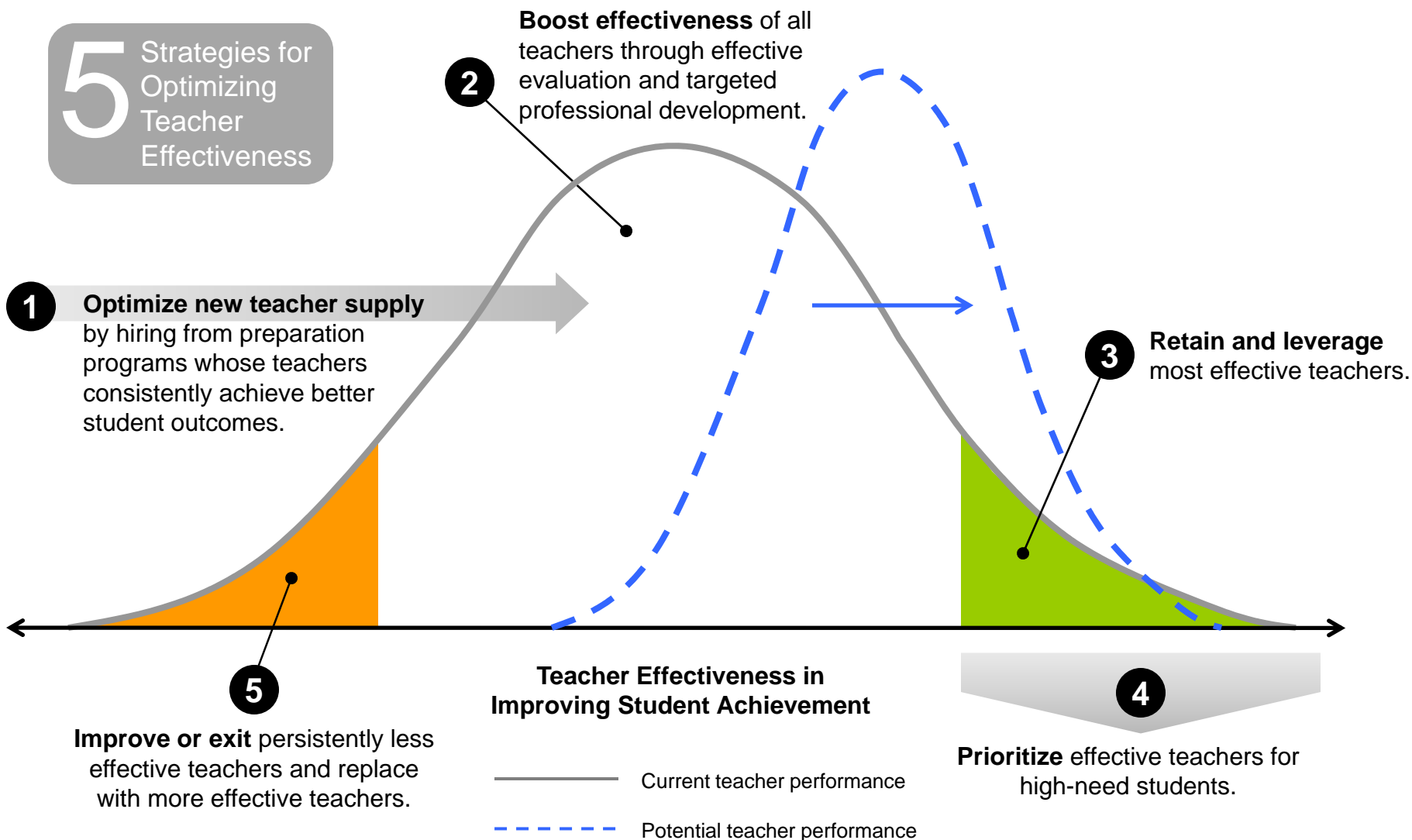


Close the math and science achievement gap in Washington State.



Dramatic improvements in STEM achievement cannot occur without a focus on teacher effectiveness centered around five key strategies.

5 Strategies for Optimizing Teacher Effectiveness





All five strategies require the collection and public reporting of credible and valid data on teacher effectiveness.



Develop credible models for measuring student growth in all grades and subject areas. The state should:

- Ensure the new statewide standardized assessment provides the ability to validly measure student growth.
- Design growth or value-added models, using large-scale assessment data, for teachers in tested grades and subjects, with appropriate control variables to isolate teacher impact accurately. Such models should be used as the predominant factor among multiple measures to determine a teacher's effectiveness.
- Fund a statewide system for evaluating teachers' impact on student learning in non-tested grades and subjects by building off of current state assessment models (CBAs and CBPAs), and develop new models (e.g., approved district- or school-generated assessments, assessments of student work using standard rubrics, teacher portfolios, end-of-course grades based on state standards).



Ensure accountability for reforms by collecting and publicly reporting teacher effectiveness data for each district and teacher preparation provider. (See slides 71-72 in appendix for sample reports.)



Washington will also need to take advantage of federal funding available for bold, innovative strategies to improve STEM education.

Washington has the opportunity to leverage the following new and expanded funding sources for the infrastructure and development needed to address its STEM education challenges:

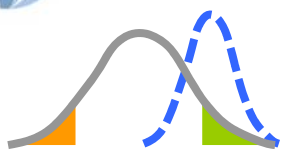
- **Race to the Top (\$4.35B):** competitive grant for states, with most weight given to planned reforms that improve and retain effective teachers and principals, especially in schools with high-need students
- **Investing in Innovation Fund (i3) (\$650M):** competitive grant for districts that “close achievement gaps” and “improve teacher and school leader effectiveness”
- **Teacher Incentive Fund (\$200M through ARRA with an additional \$487M proposed):** district grant that “supports efforts to develop and implement performance-based teacher and principal compensation in high-need schools”
- **Title I School Improvement:** ongoing state and district funding targeted to improve lowest performing schools



We know that talent matters tremendously in classrooms and in school leadership. **We need more teachers in the STEM subjects.** And we need them to be great teachers...

It's not enough that STEM graduates envision only becoming physicists, chemists, or engineers. We must bring more of them – especially more of the best of them – into our classrooms as teachers.”

*- U.S. Education
Secretary Arne Duncan,
October 23, 2009*



Strategy 1a: Optimize new teacher supply by increasing the number of STEM candidates graduating from traditional and alternative preparation programs.

- Use funding incentives and consequences to **require state universities to produce education graduates** endorsed in subject areas based on state need.
- Fund the ongoing development and implementation of **OSPI's Comprehensive Education Data and Research System (CEDARS)** and prioritize using the system to improve forecasting of teacher supply needs.
- Provide start-up funding to **encourage partnerships between districts and alternative preparation programs** that produce teachers who work as full-time teachers after a rigorous pre-service training.
- Provide start-up funding to **encourage the development of dual-degree track programs** that produce teachers who receive certification concurrently with undergraduate degrees in STEM fields.
- Provide additional funding and support for **alternative route programs in rural districts** that provide local coursework (through satellite campuses or e-learning).
- Ask districts and university providers to **commit to supplying and hiring a certain number of STEM candidates**. Hold them accountable for meeting these commitments – for example, by limiting the number of non-STEM endorsed candidates they are permitted.

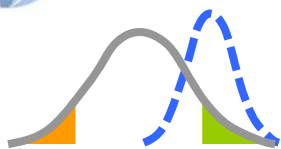
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Strategy 1a, continued: Optimize new teacher supply by increasing the number of STEM candidates graduating from traditional and alternative preparation programs.

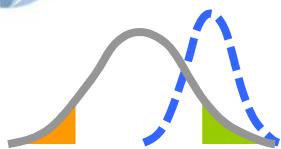
- Create or expand **stipends to undergraduate STEM majors** or STEM industry candidates to dramatically reduce the cost of certification.
- Provide **clear information about available alternative routes** (Routes 1-4) and the requirements of alternative preparation programs to potential candidates.
- Provide **clear information about the qualifications of alternative-route teachers** to districts.
- Provide funding for districts to **create or expand district retooling and immersion programs**.
- **Make STEM teacher education an institutional priority** at state universities, develop university faculty “champions” to lead efforts to boost STEM teacher production and reallocate resources to support the expansion of existing programs.
- Develop a **statewide marketing campaign** for STEM subject areas, targeted to STEM undergraduates and career changers. Campaigns should create exposure for new stipends and university commitments to STEM.

See appendix for case studies of STEM residency and alternative route programs.



Strategy 1b: Optimize new teacher supply by hiring from preparation programs that produce effective teachers.

- **Develop capacity** within STEM departments to deliver content-specific pedagogical training to STEM teacher candidates in schools of education.
- **Streamline the university program re-approval process** by relying predominantly on evidence of graduates' effectiveness. Require demonstration of program effectiveness more frequently than the current 5 and 7-year re-approval requirements.
- **Close or limit accreditation** of university programs that do not meet goals for graduate effectiveness.



Strategy 2a: Boost the effectiveness of all teachers through effective evaluation.

- Amend state law to **require teacher evaluations to include at least four summative rating categories**. Ratings of teacher effectiveness should be based on multiple measures of effectiveness using both formative and summative data with impact on student academic growth accounting for more than 50 percent of the evaluation outcome.
- **Require all teachers to be evaluated annually** through a uniform evaluation process.
- Fund the development of a statewide protocol to **assess the correlation of summative teacher ratings with student outcomes**, and fund districts to conduct required annual data reviews to ensure the accuracy of the teacher-student link.
- Fund the ongoing development and implementation of OSPI's **Comprehensive Education Data and Research System (CEDARS)** and prioritize the development of its capacity to link student outcomes to teachers and certification information, including preparation program.
- **Publicly report** the school and district level correlations between student achievement and teacher and administrator ratings

Continued on next slide



Strategy 2a, continued: Boost the effectiveness of all teachers through effective evaluation.

- Fund districts to design and implement:
 - **Training for administrators** on effective uses of quality formative and summative teacher evaluation tools, including at-elbow support as necessary.
 - **Norming mechanisms**, such as peer evaluators who, at a minimum, assess performance of teachers rated in the top and bottom categories to audit principal judgments at randomly-selected schools.
 - **Clear expectations** of strong instructional performance, as well as the development time necessary to disseminate expectations and calibrate teacher understanding of these expectations.
 - A **principal evaluation process** that measures principals' ability to meaningfully differentiate the effectiveness of their teachers, provide personalized professional development and career growth opportunities and retain top performers.
 - A **360-degree review process**, whereby administrator evaluations include feedback from teachers about working conditions and quality of leadership. Report and publish this data annually.

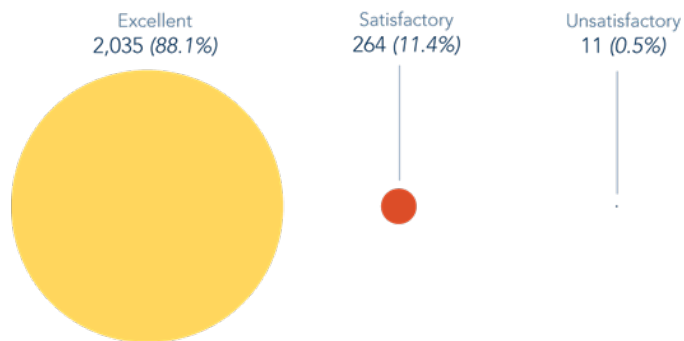


TNTP's research has found that the use of multiple evaluation ratings is, by itself, not enough to ensure credible differentiation of teacher performance.

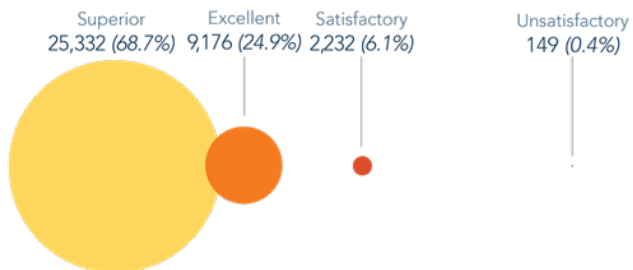
AKRON PUBLIC SCHOOLS SY 05-06 to 07-08



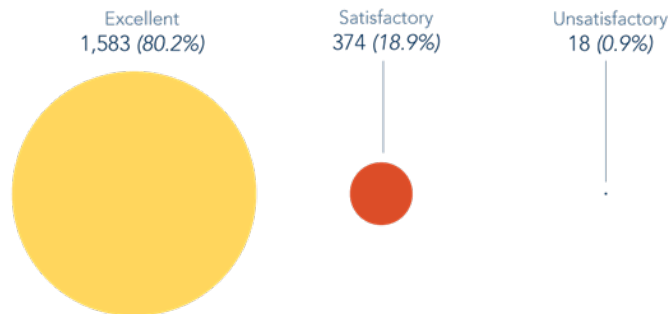
DISTRICT U-46 (ELGIN) SY 03-04 to 06-07



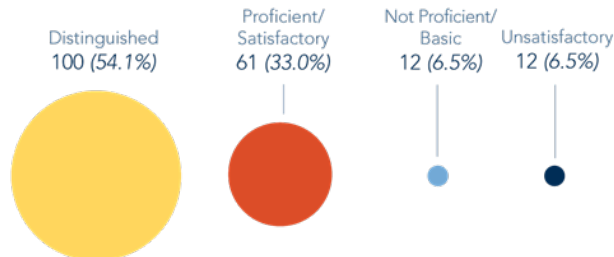
CHICAGO PUBLIC SCHOOLS SY 03-04 to 07-08



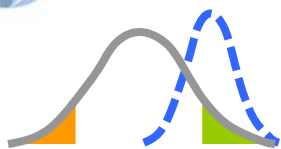
ROCKFORD PUBLIC SCHOOLS SY 03-04 to 06-07



CINCINNATI PUBLIC SCHOOLS SY 03-04 to 07-08*

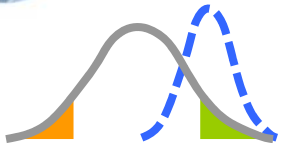


Source: Weisberg et al., *The Widget Effect: Our National Failure to Acknowledge and Act on Differences in Teacher Effectiveness*, The New Teacher Project 2009.



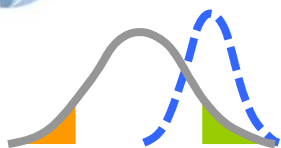
Strategy 2b: Boost the effectiveness of all teachers through targeted professional development.

- Provide novice teachers the opportunity to develop and improve.
 - Amend state law to **increase the teacher provisional status period** from two years to three years to allow teachers more time to demonstrate effectiveness.
 - Require the supervising administrator to **actively grant, extend (by one year) or deny non-provisional status** based on performance evaluation data.
- Amend state law to require and provide funding for districts to **align professional development with teacher evaluation data**. Development opportunities should be tailored to the individual development needs of all teachers, as identified through a meaningful evaluation process.
- Provide districts with **best practices on professional development** (both techniques and provider information). Provide technical assistance as necessary.
- **Assess district investment in professional development** and mentoring programs by measuring it against improvements in teacher effectiveness. Fund only successful programs.



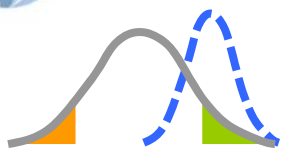
Strategy 3: Retain and leverage the most effective teachers.

- Provide state funding for **differential compensation** for effective teachers who demonstrate student growth for high-need students and in STEM subject areas.
- Collect and **disseminate district data** on retention and attrition of teachers by summative rating category.
- **Set goals for and rank districts** based upon their success increasing the retention of effective STEM teachers and decreasing retention of ineffective teachers who do not improve, especially in schools with high-need students.



Strategy 4: Prioritize effective teachers for high-need students.

- Provide **financial support** through tuition assistance and scholarship funds to preparation programs that produce effective teachers in shortage-area subjects (e.g. STEM) and in schools with high-need students.
- Create and expand the funding of **signing bonuses** for STEM teachers in schools with high-need students. Require teachers to maintain an effective or highly-effective rating in order to keep the entire portion of the bonus.
- Fund **retention bonuses** for STEM teachers who commit to teach in schools with high-need students for at least three years. Require teachers to maintain an effective or highly effective rating in order to receive the retention bonus.
- Provide **financial rewards for schools and districts** with high retention of effective teachers in schools with high-need students, with additional rewards for retention of STEM teachers.



Strategy 5: Improve or exit persistently less effective teachers and replace with more effective teachers.

- Require that non-provisional status be awarded only to teachers who demonstrate **effective performance** at a higher level than the average novice.
- Modify state law to **use peer or external observer evaluations to validate administrator assessments** of ineffective performance and streamline the due process system for dismissal.
- Collect and **disseminate district data** on retention and attrition of teachers by summative rating category.



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Sample District Report: District rankings based on differentiation of teachers by level of effectiveness (using multiple rating categories and student academic growth data).

Reporting requirements: Require each district to report teacher evaluation summative ratings and teacher experience levels by district, by school level (e.g., high school), by school poverty status and by individual school.

Year 1: Collect baseline data, design new teacher evaluation system and plan for implementation;

Year 2: Districts demonstrate teacher evaluation rating ratios that show meaningful differentiation of teacher performance;

Year 3: Districts increase the percentage of effective teachers and detail the strategies used to drive this increase.

LEA Comparison Data				
District Name District A District Ranking 1			District Name District C District Ranking 200	
% of Teachers, by summative outcome rating				
Evaluation Outcomes: Overall	% Ineffective	% Developing	% Effective	% Highly Effective
Year 3 Results	13%	34%	37%	17%
Year 2 Results	14%	36%	35%	16%
(Year 1) Baseline Results	2%	8%	45%	45%
Change over time (Year 2 to Year 3)	-1%	-1%	2%	1%
Student Outcome Data				
Grade-level outcomes, by level of proficiency	% of students below standard	% of students meeting proficiency	% of students above proficiency	
Overall (Year 3 Results)	13%	70%	17%	
Year 2 Results	19%	68%	13%	
(Year 1) Baseline Results	25%	65%	10%	
Change over time (Year 2 to Year 3)	-6%	2%	4%	
% of students on track for on-time graduation	85%			
Change in teacher effectiveness outcomes compared to change in student outcomes				
	% Ineffective	% Developing	% Effective	% Highly Effective
	% of students below standard	% of students meeting proficiency	% of students above proficiency	
Teacher Performance: Change from year 2 to year 3	-1%	-1%	2%	1%
Student Performance: Change from year 2 to year 3	-6%	2%	4%	
% of Teachers, by summative outcome rating				
Evaluation Outcomes: Overall	% Ineffective	% Developing	% Effective	% Highly Effective
Year 3 Results	3%	7%	36%	54%
Year 2 Results	2%	6%	37%	55%
(Year 1) Baseline Results	1%	5%	34%	60%
Change over time (Year 2 to Year 3)	1%	1%	-1%	-1%
Student Outcome Data				
Grade-level outcomes, by level of proficiency	% of students below standard	% of students meeting proficiency	% of students above proficiency	
Overall	30%	60%	10%	
Year 2 Results	30%	60%	10%	
(Year 1) Baseline Results	30%	60%	10%	
Change over time (Year 2 to Year 3)	0%	0%	0%	
% of students on track for on-time graduation	55%			
Change in teacher effectiveness outcomes compared to change in student outcomes				
	% Ineffective	% Developing	% Effective	% Highly Effective
	% of students below standard	% of students meeting proficiency	% of students above proficiency	
Teacher Performance: Change from year 2 to year 3	1%	1%	-1%	-1%
Student Performance: Change from year 2 to year 3	0%	0%	0%	

A key lever for states to achieve reform is to create public access to clear and transparent information. Greater outcomes will result from mandating the public reporting of teacher effectiveness data rather than mandating specific strategies that each district must employ.



Sample Preparation Program Report: Teacher preparation program ratings based on teacher performance data.

Preparation Provider Report

Provider Name	Provider A
Provider Ranking	1

Provider Name	Provider B
Provider Ranking	2

Percentage of teachers hired, teaching as classroom teacher of	100%
---	------

Percentage of teachers hired, teaching as classroom teacher of record	98%
--	-----

Graduates' District Evaluation Data				
Evaluation Outcomes:	% Ineffective	% Developing	% Effective	% Highly Effective
Provider A	6%	16%	39%	39%
State Average	15%	32%	33%	20%

Graduates' District Evaluation Data				
Evaluation Outcomes: Overall	% Ineffective	% Developing	% Effective	% Highly Effective
Provider A	8%	19%	34%	40%
State Average	15%	32%	33%	20%

Graduates' District Evaluation Data, by Years of Experience				
Evaluation Outcomes:	% Ineffective	% Developing	% Effective	% Highly Effective
1 year of experience	10%	22%	35%	33%
2 years of experience	7%	18%	39%	36%
3-5 years of experience	4%	13%	41%	38%
6+ years of experience	3%	10%	42%	43%

Graduates' District Evaluation Data, by Years of Experience				
Evaluation Outcomes:	% Ineffective	% Developing	% Effective	% Highly Effective
Provider A	10%	22%	35%	33%
State Average	15%	32%	33%	20%

% of Graduates, by Tenure Outcome			
	Denied	Extended	Approved
Provider A	5%	10%	85%
State Average	15%	25%	60%

Provider Name	Provider C
Provider Ranking	45
Percentage of teachers hired, teaching as classroom teacher of	60%

Graduates' District Evaluation Data				
Evaluation Outcomes:	% Ineffective	% Developing	% Effective	% Highly Effective
Provider A	26%	45%	20%	10%
State Average	15%	32%	33%	20%

Graduates' District Evaluation Data, by Years of Experience				
Evaluation Outcomes:	% Ineffective	% Developing	% Effective	% Highly Effective
1 year of experience	28%	47%	18%	7%
2 years of experience	27%	46%	19%	8%
3-5 years of experience	25%	44%	20%	11%
6+ years of experience	22%	43%	22%	13%

% of Graduates, by Tenure Outcome			
	Denied	Extended	Approved
Provider C	20%	25%	55%
State Average	15%	25%	60%

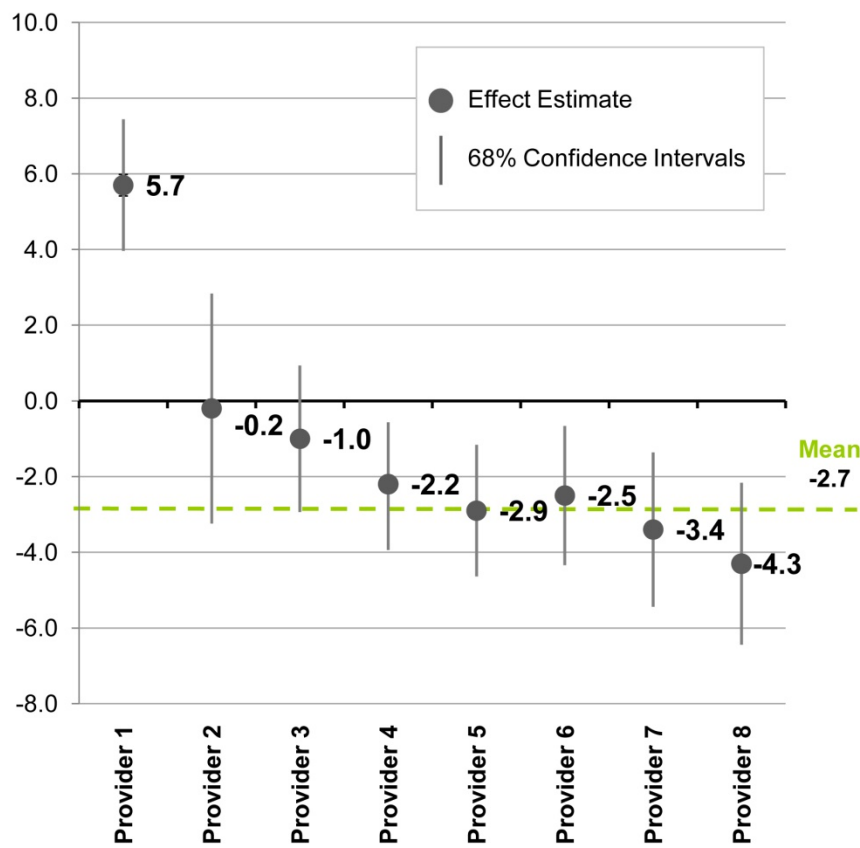


Teacher Preparation: Analyzing the effectiveness of preparation providers according to impact on student growth.

Louisiana offers a model for accountable teacher preparation:

- Efforts to open the teacher education market to a range of providers, set high standards for all, and hold programs accountable for results are paying off.
- By assessing and reporting the results of the effectiveness of their teacher preparation providers through linking programs to student achievement data, Louisiana has paved the way for states, districts and potential education students to make informed decisions.
- This approach demonstrates that alternative certification programs can meet the needs of high-poverty schools without compromising quality.

Teacher Effect Estimates on Student Achievement in Mathematics, by Preparation Provider (Louisiana, August 2009)



"Value Added Assessment of Teacher Preparation in Louisiana: 2005-2006 to 2007-2008" (Year 4 - 2009). Louisiana State University.



Case Studies: Residency and alternative certification programs

Colorado Teacher Residency Program

- Certificate plus master's program that consists of a year long mentored teaching residency and coursework prior to candidates becoming the full-time teacher of record.
- Participants complete additional coursework in second year (while teaching full-time and receiving coaching support) to fulfill master's degree requirements.
- Participants receive a fellowship that pays for the cost of their teacher certification and master's degree, plus a \$10,000 living stipend in the first year.
- Candidates commit to five years of teaching in a high-need school in the program's partner districts (including residency year).

TNTP Teaching Fellows Program

- Alternate route teacher training and certification program providing an expedited route to the classroom, offered in 21 cities across the country.
- Candidates are screened through rigorous selection criteria and participate in an intensive pre-service summer training institute.
- Participants earn subsidized master's degree and certification through additional coursework while working in a full-time classroom teaching assignment.
- Math immersion program option is offered, where candidates with previous math coursework participate in a two-week intensive math refresher and must pass a math content exam.

Source: Boettcher Teachers Program, <http://www.boettcherteachers.org/about-the-program.aspx>



Case Study: UTeach – University of Texas at Austin (UT) STEM Teacher Preparation

UTeach – University of Texas at Austin

- Developed in 1997 as a partnership between the Colleges of Natural Sciences and Education at the University of Texas, offering undergraduate, postbaccalaureate, and masters programs for various math and science certifications (grades 4 – 12).
- Offers compact degree plans that allow most students to graduate with both a degree in their chosen (non-teaching) major and teacher certification in four years.
- Offers multiple entry points, allowing students to opt-in to teacher preparation at almost any point during (or after) their college career.
- Actively recruits science and mathematics majors to take the two initial one-hour UTeach courses free of charge.
- Courses are taught by faculty who are actively engaged in research in mathematics and science and in the teaching and learning of mathematics and science.
- Guidance and inspiration are provided by faculty and highly experienced public school teachers who serve as master teachers in the program.
- Students participate in paid internships, working 10 to 20 hours per week with an area non-profit organization that provides educational services to the community.

Source: UTeach, <http://www.uteach.utexas.edu>; <http://www.uteach-institute.org/about/index.cfm>.



Case Study: Western Washington University (WWU) STEM Teacher Preparation

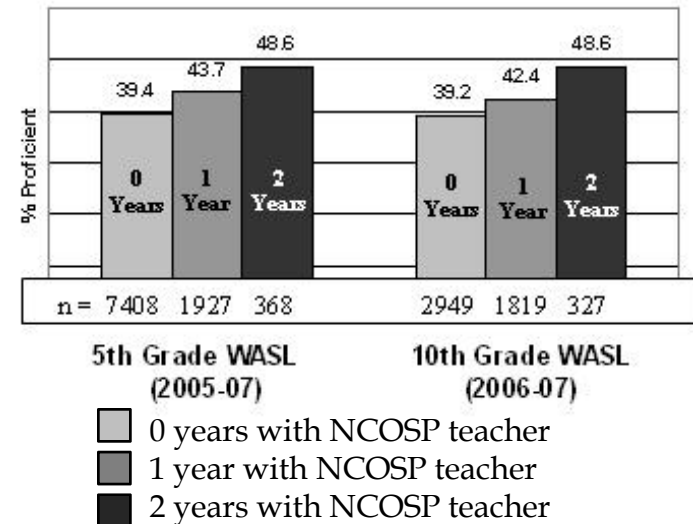
Science, Mathematics and Technology Education Program

- Led by George D. “Pinky” Nelson, Director.
- Produces approximately 50 STEM teachers per year, evenly split between math and all sciences.
- Offers undergraduate, post-baccalaureate, and master’s options.
- Currently operating at full capacity and seeking to add additional seats.
- Leads North Cascades and Olympic Science Partnership (NCOSP).
 - National Science Foundation funded project involving WWU, 28 school districts, two education service districts, four community colleges, Washington State LASER, the Naval Undersea Museum and Washington State MESA.
 - Involves close interaction of the partners to reform science education in grades 3-10 through professional development, implementation of new curriculum, and development and support of learning communities in the schools.

Promising Practices

- University leadership creating an institutional priority to meet district need.
- Support for a faculty champion of STEM teacher education, tenure for program faculty and associated resources.
- Emphasis on content-specific pedagogy.
- Faculty from science departments, many with traditional teaching certification.
- Strong reputation for quality preparation.

NCOSP Initial Results



Sources: <http://www.smate.wwu.edu/smate/faculty.html>; <http://www.ncosp.wwu.edu/>; Interviews with faculty and other stakeholders.



Key Definitions

STEM teacher

- Teacher of subjects related to science, technology, engineering or math. Individuals identified in teacher surveys as STEM teachers are those who indicate that they hold an endorsement in a STEM area in addition to teaching a STEM subject. Please see slide 82 for full listing of subject areas, endorsement areas and academic majors considered to be STEM-related.

Response rate

- Number of total responses to a survey divided by the total number of individuals to whom surveys were issued. TNTP sends electronic survey invitations to all individuals on district-generated lists, and a response is recorded once an individual begins a survey by answering the first question.

High-poverty school

- Determined by percentage of students eligible for free or reduced-price lunch (FRPL) as reported in the OSPI Washington State Report Card or in self-reported survey data. When exact figures are available or in self-reported survey data, “high-poverty school” refers to schools with greater than 50 percent of their student body eligible for free or reduced-price lunch.



Survey Response Rates

		Spokane	Renton	Nooksack Valley
Teacher Survey	Number Surveyed	1595	811	110
	Responses	972	407	88
	Response Rate	61%	50%	89%
Administrator Survey	Number Surveyed	72	41	8
	Responses	64	30	8
	Response Rate	89%	73%	100%
Teacher Applicant Survey	Number Surveyed	1502	1841	122
	Responses	457	355	46
	Response Rate	30%	19%	38%
Teacher Leaver Survey	Number Surveyed	414	202	N/A
	Responses	75	140	N/A
	Response Rate	18%	69%	N/A

Unless otherwise stated, when data in this report is noted as being from “all three districts” or “across partner districts,” responses from Spokane, Renton, and Nooksack Valley are first added together before a total percentage is calculated.

All n’s in footnotes represent total respondents to each question (denominator).



Extant Data Collection by District*

E Collected Electronically **M** Manually Collected **U** Unavailable

Data Category	Nooksack Valley	Spokane	Renton
Applicants	M	E	U
Hiring/vacancy	M	E	U
Teacher rosters	E	E	U
Teacher and administrator email addresses	E	E	E
Evaluation and remediation	M	E	U
School and district profiles**	E	E	E
Transfer and reassignment	E	E	U
Separations	M	E	U

* TNTP has been unable to collect extant data in Renton School District.

**Collected from Office of Superintendent of Public Instruction (OSPI) databases



Profile of Teacher Survey Respondents

		Nooksack Valley	Renton	Spokane
Grade Level	Elementary	51%	53%	49%
	Middle	26%	21%	28%
	High*	28%	29%	32%
Subject Area	Elementary	33%	38%	36%
	Math	28%	21%	26%
	Science	24%	18%	22%
Seniority	0-5 years	23%	44%	26%
	6-10 years	28%	25%	23%
	11-20 years	34%	23%	31%
	21 or more years	15%	9%	20%
School Poverty	0 - 25% FRL	0%	7%	10%
	26 - 50% FRL	26%	43%	32%
	51 - 75% FRL	66%	33%	25%
	76% - 100% FRL	8%	17%	33%

* Because survey respondents may indicate more than one grade level, grade level percentages may not add to 100 percent.



Surveys Launch Timeline and Response Rates by District

	Survey	Launch Date	Close Date	# Surveyed	# Responses	Response Rate
Nooksack Valley	Applicant	7/20	8/5	122	46	38%
	Leaver	N/A	N/A	N/A	N/A	N/A
	Teacher	9/17	10/5	110	88	89%
	Administrator	9/10	9/25	8	8	100%
Renton	Applicant	7/23	8/17	1841	355	19%
	Leaver	7/23	8/17	202	140	69%
	Teacher	9/18	10/5	811	407	50%
	Administrator	9/22	10/5	41	30	73%
Spokane	Applicant	7/20	8/17	1502	457	30%
	Leaver	7/27	8/17	414	75	18%
	Teacher	8/31	9/14	1595	972	61%
	Administrator	8/31	9/14	72	64	89%



STEM Subject Areas and Endorsements

STEM Subjects*

Science (Biology, Chemistry, Physics, Earth Science, etc)

Mathematics

Technology (Computer Science, Engineering, Industrial Technology)

STEM Endorsements*

Biology

Chemistry

Earth and Space Science

Environmental and Sustainability Education

Mathematics

Middle Level Mathematics

Middle Level Science

Physics

Science

Technology Education

STEM Majors*

Accounting

Architecture

Astronomy

Biochemistry

Biology

Chemistry

Computer Science

Economics

Engineering

Environmental Science

Finance

Geology

Health Science

Information Systems

Mathematics

Medicine

Nursing

Physics

Sports Medicine

Statistics

Spokane Applicant Subjects**

MATH RESOURCE ROOM

MATH 9-12

MATH 7-8

MATH - SUBSTART OR CONTRACTED TCHR

MATH

TITLE I - MATH

MATH (ALTERNATIVE)

PROBLEM SOLVING MATH

SPOKANE VIRTUAL LEARNING - MATH (AP STATISTICS)

ELEM - MATH TEACHER/INSTR COACH

MIDDLE SCHOOL MATHEMATICS

MATHEMATICS

MATH APPLICATIONS/COMPUTER PROGRAMMING

SPOKANE VIRTUAL LEARNING - SCIENCE

SCIENCE - SUBSTART OR CONTRACTED TCHR

SCIENCE 7 - 8

SCIENCE 7-8

SCIENCE 9-12

8TH GRADE SCIENCE

SCIENCE TEACHER

SCIENCE

SPOKANE VIRTUAL LEARNING - DIGITAL PHOTOGRAPHY

SPOKANE VIRTUAL LEARNING - DIGITAL WEB DESIGN

COMPUTERS (CTE)

* STEM categories used in applicant, leaver, teacher, and administrator surveys.

** STEM categories used in Spokane applicant and vacancy data.



Washington STEM Advisory Panel Members

Name	District/Organization
Mari Anderson	McKinstry
Paul Apostle	Renton School District
Jane Broom	Microsoft
Alan Burke	Office of Superintendent of Public Instruction
Shannon Champion	Stand for Children
Dan Goldhaber	Center for Reinventing Public Education; University of Washington
Edie Harding	State Board of Education
Jeanne Harmon	Center for Strengthening the Teaching Profession
Judy Hartmann	Office of the Governor Chris Gregoire
Mary Alice Heuschel	Renton School District
Mark Johnson	Nooksack Valley School District
Bruce Kelly	Kent School District
Don Kennedy	Seattle Public Schools
Gary Kipp	Association of Washington School Principals

Name	District/Organization
Chris Korsmo	League of Education Voters
Jim Meadows	Washington Education Association
Penny Pfiester	Washington Education Association
Tom Robinson	Lake Chelan School District, National Board Certified Teacher
Paul Rosier	Washington Association of School Administrators
Phyllis Silling	Renton Education Association
Cindy Stockwell	Nooksack Valley School District
Nancy Stowell	Spokane Public Schools
Staci Vesneske	Spokane Public Schools
Jeff Vincent	State Board of Education; Laird Norton
Stamatis Vokos	Seattle Pacific University, Physics and College of Education
Jennifer Wallace	Professional Educator Standards Board
Patricia Wasley	Washington Association of Colleges of Teacher Education; College of Education, UW