

The Washington State Board of Education

Governance | Accountability | Achievement | Oversight | Career & College Readiness

Title:	<u>Presentation and Discussion on Teacher Assignment Data and Educator Workforce Development Policies and Practice</u>	
As Related To:	<input type="checkbox"/> Goal One: Effective and accountable P-13 governance. <input type="checkbox"/> Goal Two: Comprehensive statewide K-12 accountability. <input checked="" type="checkbox"/> Goal Three: Closing achievement gap.	<input type="checkbox"/> Goal Four: Strategic oversight of the K-12 system. <input type="checkbox"/> Goal Five: Career and college readiness for all students. <input checked="" type="checkbox"/> Other
Relevant To Board Roles:	<input type="checkbox"/> Policy Leadership <input checked="" type="checkbox"/> System Oversight <input type="checkbox"/> Advocacy	<input type="checkbox"/> Communication <input checked="" type="checkbox"/> Convening and Facilitating
Policy Considerations / Key Questions:	<p>Policy considerations for the SBE on this topic may include:</p> <ul style="list-style-type: none"> • What is the impact of teacher assignment on students meeting graduation requirements? • How does information on these topics inform the transition to new standards? • Should assignment and hiring practices be a district or school performance measure that could be included in an accountability system? • How could information about teacher assignment and hiring practices be used to address low performing schools and districts? • Data on numbers of teachers who teach out-of-endorsement has not been available before; what impact does this have on areas of SBE interest? What additional data of this type would be of interest to the SBE? 	
Possible Board Action:	<input checked="" type="checkbox"/> Review <input type="checkbox"/> Adopt <input type="checkbox"/> Approve <input checked="" type="checkbox"/> Other	
Materials Included in Packet:	<input checked="" type="checkbox"/> Memo <input type="checkbox"/> Graphs / Graphics <input checked="" type="checkbox"/> Third-Party Materials <input type="checkbox"/> PowerPoint	
Synopsis:	<p>The PESB will share and discuss two reports with the SBE: 1) an update on the development of Washington State's educator workforce and 2) a new report on high school mathematics teacher assignment. Data on the number of teachers who teach out-of-endorsement has not been available previously. The PESB will briefly present on teacher assignment practices, and a panel of district human resources personnel will talk about how assignment works at the district level.</p> <p>SBE will have an opportunity to ask questions and discuss areas of overlapping interest and potential collaboration.</p>	

Presentation and Discussion on Teacher Assignment Data and Educator Workforce Development Policies and Practices

Policy Consideration

The focus of the joint discussion will be on teacher assignment and educator workforce development practices and policies. The policy considerations for the Washington State Board of Education (SBE) on these topics include:

- What is the impact of teacher assignment on students meeting graduation requirements?
- How does information on these topics inform the transition to new standards?
- Should assignment and hiring practices be a district or school performance measure that could be included in an accountability system?
- How could information about teacher assignment and hiring practices be used to address low performing schools and districts?
- Data on numbers of teachers who teach out-of-endorsement has not been available before; what impact does this have on areas of SBE interest? What additional data of this type would be of interest to the SBE?

Summary

The Professional Educator Standards Board (PESB) will share and discuss two reports with the SBE: 1) a report on Washington State's educator workforce development, and 2) a new report on high school mathematics teacher assignment. Data on the number of teachers who teach out-of-endorsement has not been available previously. The PESB will briefly present on teacher assignment practices, and a panel of district human resources personnel will talk about how assignment works at the district level.

Background

PESB and the SBE annually meet jointly to discuss areas in which the individual roles and responsibilities of each board may come together collaboratively to expedite improvements to our education system and increase student learning results. The boards have informally alternated taking the lead to set an agenda for the joint discussion. This year the PESB chose to engage with SBE on the topic of educator workforce development and assignment policy with a focus on secondary math.

Action

No action required.

High School Mathematics Assignment

A preliminary report on 2011-2012 Washington math teacher assignment data

Purpose of this report

Recently, Washington's Office of the Superintendent of Public Instruction (OSPI) began collecting new teacher, student, and course data within its Comprehensive Education Data and Research System (CEDARS).¹ This new data allows Washington a much more detailed look at teacher assignment. This report examines a slice of this new data in an effort to determine whether a better method of measuring and reporting teacher assignment might exist. We also hope this report will spark a reevaluation of Washington PESB and federal policies related to teacher assignment.

Why High School Mathematics?

CEDARS include data for all courses taught in Washington and allows examination of any course or subject. Our focus is high school mathematics for many reasons, including;

- There currently exists a particular interest in "STEM" subjects, which include math.
- Because math curriculum tends to be sequential, where Algebra II follows Algebra I and precludes Calculus, it is easier to spot patterns related to the sophistication of course content.
- Washington and federal assignment policy tends to be more straightforward in high school than middle school.

Quick Takeaways

Data Takeaways

- About 10 percent of students enrolled in math courses are being taught by a teacher without a matched math credential.²
- A remedial math student is much more likely to be enrolled in a non-matched course.
- The likelihood that a student is in a non-matched math course is dependent on the district they attend (from less than 1 percent to more than 20 percent).

¹ www.k12.wa.us/CEDARS/

² This is the first time that CEDARS data has been used in this way. We need to keep in mind that there could be errors in reporting or extracting the data.

Policy Takeaways

- It is now possible to begin measuring how assignment policies impact students.
- CEDARS is a powerful new longitudinal data warehouse. System designers need user feedback to improve accuracy as well as develop criteria for what needs to be collected and analyzed in the future. The more policymakers use CEDARS, the better it will become.
- Washington’s Federal Highly Qualified Teacher Report shows that in 2010-2011³ 99 percent of secondary teachers in Washington were characterized as “Highly Qualified.” While this is a positive sign for assignment policy, it also suggests that a more powerful measurement tool is required to ensure the continuation of improvements in assignment policy.

Unanswered Questions

This report is intended to encourage an open a dialog with school districts and policy makers about teacher assignment. As such, it strives more to ask questions than provide answers. For example:

- Why do we see these dramatic differences on assignment between districts? Is it related to:
 - district characteristics?
 - student characteristics?
 - differences in how districts collect and report data?

Important concepts to better understand this report

- This report is limited to high school data. “High school” is defined as a school having a lowest grade level of 9th, 10th, 11th, or 12th grade.
- Course terms can range from six weeks to one year. This report accounts for these differences by weighting the term types (weighted counts). One student enrolled in one year-long course is equal to one student enrolled in 2 semester courses or 1 student enrolled in three trimester courses.
- Non-matched assignment means that a teacher’s endorsement credential does not match the course subject. Those with pre-endorsement credentials and those with PESB identified “Related” endorsements are considered matched.

³ 2010-2011 was the last year available at the writing of this report (www.k12.wa.us/TitleIIA/HighlyQualifiedTeachers.aspx).

Current Assignment Practices in Washington

“Properly assigned” means a teacher’s credentials match the subject content of the course that teacher is teaching. Content knowledge has always been an important consideration in deciding who should teach what, but only in the past 30 years or so has content knowledge been codified in teacher credentialing systems. A modern Washington teaching certificate includes endorsements that indicate specific subject content knowledge.⁴ A new teacher in Washington receives a teaching certificate with one or more endorsements. Current policy requires that a teacher receive an endorsement from an authorized teacher preparation program.⁵ Also, the teacher must pass the WEST-E, Washington’s subject content test.

Currently the main driver for assignment policy in schools and districts is Highly Qualified Teacher (HQT) provision, a section of the No Child Left Behind (NCLB) Act.⁶ The purpose of HQT is to reduce the number of teachers working in courses who do not have the proper content knowledge. The challenge with HQT is in its implementation.

HQT characterizes a person as unqualified rather than improperly matched to a course. It also requires that parents be told which teachers are “unqualified.” The policy’s effectiveness depends in part on the shame associated with being reported as unqualified. HQT is punitive, but also includes exceptions that allow a teacher who is not properly matched to be classified as highly qualified. Many of these exceptions, such as considering a teacher’s educational background (majors and minors), make sense. Some, such as whether a teacher has taught the course in prior years, might make less sense. HQT’s largest exception is for proportional assignment, where teachers can work for a portion of their day outside their proper assignment and still be considered highly qualified. Relying on these exceptions, districts are able to assign in a manner that allows them to report all of their teachers as highly qualified even though many students take courses taught by teachers who lack matching content knowledge. It is likely that districts improved their assignment policies at the beginning of HQT, but with current reports showing virtually 100% compliance, it might be time to consider new assessment strategies.

HQT is a federal policy, but Washington also charges the PESB with establishing rules regulating teacher assignment. Washington’s rules are important, but they are not punitive and seem to have less influence over districts’ assignment methods. Washington’s assignment policy matches endorsements to subjects (e.g. Biology endorsements are matched to Biology courses). Washington also has something called a related endorsement, where, for example, the content of Biology is related to Life Science, Nutrition, and General Mathematics courses. Washington’s current assignment policies are intended to serve as guidelines to districts, not answer every conceivable question related to endorsement and assignment. Teacher assignments that do not

⁴ Some WA teachers are working under an older type of certificate that has no endorsements. Also, although most endorsements are subject content related, a few are also related to characteristics of the students, such as English Language Learner, Bilingual, Special Education.

⁵ This includes all programs authorized in Washington as well as those authorized in other states.

⁶ NCLB is the 2001 reauthorization of the Elementary and Secondary Education Act.

comply with PESB rules are expected to obtain a waiver / approval from the local school board. Assignments of teacher who are provisional and teaching more than 40% outside their endorsement area are required to receive PESB approval for a waiver. Non-provisional teachers only need local board approval. In all cases, districts are expected to develop a plan of assistance for teachers in the out-of-endorsement assignments. Districts must report all waivers at the end of the school year to PESB.

A New Way to Measure Assignment

With OSPI’s new Comprehensive Education Data and Research System (CEDARS) it is possible to look at assignment in an entirely different way. Rather than asking districts to count the number of teachers who have a certain proportion of their schedule out-of-assignment, it is possible to use the administrative data available in CEDARS along with credential data to count teachers, courses, and students impacted by assignment practices. We can also aggregate by fields such as school, district, course type, or course name.

Assignment by course type⁷

Course Category	Weighted course N	Weighted total student	Weighted students per course	Weighted student not matched	Percent Weighted not matched
Arts	6202	120925	19.5	13733	11%
English Language Arts	14357	264709	18.44	40248	15%
Health/Physical Education	5739	140790	24.53	16183	12%
History/Social Studies	10210	212507	20.81	11208	5%
Mathematics	13642	262580	19.25	26260	10%
Science	8929	199154	22.3	17779	9%
World Languages	5561	115197	20.72	2270	2%

The table above compares assignment policies by course type for all high school courses taught in Washington in 2011-2012 and shows that a non-matched teacher is teaching about 10 percent of the students enrolled in mathematics courses in Washington.⁸ High school math assignment practices appear similar to science and arts, and different from English or world languages.

⁷ This section looks at the more common types of courses and does not include course types such as Health Care, Law Endorsement, and Hospitality. Also, this section does not reflect Career and Technical course types, such as Agriculture, Marketing, and Industrial Arts.

⁸ Using OSPI’s CEDARS and Credentialing data and applying PESB’s course matching rules.

Assignment by School Title I Eligible Status⁹

Title I Eligible	Course type	Weighted course N	Weighted total student	Weighted student not matched	Percent weighted not matched
Yes	Not Mathematics	52103	780670	80968	10.40%
Yes	Mathematics	7502	133160	16064	12.10%
No	Not Mathematics	46307	781884	60527	7.70%
No	Mathematics	6049	128664	9848	7.70%

The purpose of Title I, a provision of the 1965 Elementary and Secondary Education Act (ESEA), is to distribute federal funding to schools and districts serving a higher percentage of lower-income families. The cutline for eligibility is 40 percent or more. Generally, students enrolled in Title I Eligible schools are more likely to be enrolled in courses taught by non-matched teachers. Also, within Title I schools, students are more likely to be enrolled in non-matched mathematics courses.

⁹ Schools with missing Title I status data are not included in this table.

Assignment by urbanicity

Urbanicity	Course type	Weighted course N	Weighted total student	Weighted student not matched	Percent weighted not matched
11-City: Large	Mathematics	364	6193	232	3.70%
12-City: Mid-size	Mathematics	1594	33326	2582	7.70%
13-City: Small	Mathematics	1937	39725	4711	11.90%
21-Suburb: Large	Mathematics	4105	81850	7085	8.70%
22-Suburb: Mid-size	Mathematics	1056	21238	2192	10.30%
23-Suburb: Small	Mathematics	246	4593	438	9.50%
31-Town: Fringe	Mathematics	369	7562	1029	13.60%
32-Town: Distant	Mathematics	887	16640	2124	12.80%
33-Town: Remote	Mathematics	634	11957	1078	9.00%
41-Rural: Fringe	Mathematics	1405	26808	2787	10.40%
42-Rural: Distant	Mathematics	658	9269	1521	16.40%
43-Rural: Remote	Mathematics	362	3187	477	15.00%
11-City: Large	Not Mathematics	2365	32306	3473	10.70%
12-City: Mid-size	Not Mathematics	10964	185987	19376	10.40%
13-City: Small	Not Mathematics	13653	232528	20314	8.70%
21-Suburb: Large	Not Mathematics	29016	491737	42666	8.70%
22-Suburb: Mid-size	Not Mathematics	8283	129361	13199	10.20%
23-Suburb: Small	Not Mathematics	1964	27362	2352	8.60%
31-Town: Fringe	Not Mathematics	3263	52041	4169	8.00%
32-Town: Distant	Not Mathematics	6756	102805	10304	10.00%
33-Town: Remote	Not Mathematics	4070	67653	5685	8.40%
41-Rural: Fringe	Not Mathematics	11096	165485	12093	7.30%
42-Rural: Distant	Not Mathematics	5357	61619	6704	10.90%
43-Rural: Remote	Not Mathematics	2267	20137	2099	10.40%

The Federal Common Core of Data uses the school's physical address to categorize its location relative to population areas. Among non-mathematics courses, there is not much variance between

urbanicity categories. However, greater variation exists within mathematics courses, where students in fringe, distant, and remote schools are more likely to be enrolled in non-matched courses.

Mathematics assignment by district

Practices such as the use of alternative schools or self-contained classrooms for profoundly handicapped students are probably driving at least some to the assignment practices in Washington. If so, we could expect some minimum threshold for the proportion of students enrolled in non-matched courses.

Districts with over 1000 students enrolled in math at the top and bottom of range

District Name	Weighted students in not matched courses	Weighted total student	Percent weighted not matched
Snoqualmie Valley School District	0	1344	0%
Bainbridge Island School District	11	1371	0.8%
Mercer Island School District	20	1300	1.54%
Quillayute Valley School District	45	2614	1.72%
Bellingham School District	63	3019	2.09%
Tahoma School District	47	1535	3.06%
University Place School District	38	1204	3.16%
Northshore School District	149	4058	3.67%
Franklin Pierce School District	81	2021	4.01%
Seattle Public Schools	232	5776	4.02%
...
Yakima School District	660	3783	17.45%
Eastmont School District	267	1511	17.67%
Wenatchee School District	383	2163	17.71%
Bethel School District	681	3596	18.94%
Sunnyside School District	229	1166	19.64%
Longview School District	374	1874	19.96%
Olympia School District	612	2917	20.98%
Prosser School District	231	1080	21%
Wapato School District	279	1081	25.81%
Grandview School District	273	1047	26%

The table above reflects the tails of the distribution of mathematics assignment by district.¹⁰ The range of less than 5 percent out-of-assignment to greater than 20 percent might suggest that individual district policies may drive much of the differences in assignment policies.

Mathematics assignment by course

Because mathematics is sequential, we would expect more out-of-assignment teaching in the beginning of the curriculum due simply to the fact that more courses are being offered.

Top ten courses measured by Weighted Not Matched

Course Name	Weighted matched	Weighted not matched	Weighted grand total
Mathematics-Other 02999	5415	4120	9535
General Math 02002	1796	3962	5758
Algebra I 02052	40187	2503	42690
General Applied Math 02151	2114	2108	4222
Business Math 02154	983	1913	2896
Geometry 02072	56912	1697	58609
Pre-Algebra 02051	2442	1311	3753
Particular Topics in Foundation Math 02003	374	983	1357
Foundation Math-Other 02049	566	938	1504
Consumer Math 02157	468	909	1377

The table above shows the earlier supposition is correct — that unmatched courses tend to occur at the beginning of the mathematics curriculum, such as General Math, Pre-Algebra, and Algebra I.¹¹

Another way to look at this information is to measure courses where students have the highest likelihood of being in a non-matched course (percent).

¹⁰ Tails of distribution refers to districts with the lowest and highest percent students in of non-matched courses.

¹¹ “Mathematics Other” is an unfortunate category that leaves out a lot of important information. It is likely this is a remedial-type course.

Unmatched, measured by percentage of students

Top ten courses with an enrollment of over 1000, measured by the highest likelihood (percent) of students being taught by a non-matched teacher

Course Name	Weighted matched	Weighted not matched	Weighted total	Percent not matched
Particular Topics in Foundation Math 02003	374	983	1357	72.4%
General Math 02002	1796	3962	5758	68.8%
Business Math 02154	983	1913	2896	66.1%
Consumer Math 02157	468	909	1377	66.0%
Occupationally Applied Math 02152	486	898	1384	64.9%
Foundation Math-Other 02049	566	938	1504	62.4%
Business Math with Algebra 02155	496	505	1001	50.4%
General Applied Math 02151	2114	2108	4222	49.9%
Mathematics-Other 02999	5415	4120	9535	43.2%
Pre-Algebra 02051	2442	1311	3753	34.9%

Many, if not most, of the ten courses for which students are most likely to be taught by a non-matched teacher could be categorized as remedial. It's premature to take a position as to whether this is good or bad policy, but it clearly begs important questions.

General Math assignment policies by district

The chart below offers a closer look at district assignment policies for General Math [02002], a course that has both a high number and high percentage of students in non-matched courses. .

Districts with more than 100 students enrolled in the course General Math 02002

District Name	Weighed not matched	Weighted total students	Percent weighted not matched
Federal Way School District	323	369	87.5%
Tacoma School District	244	357	68.3%
Yakima School District	210	340	61.8%
Auburn School District	247	337	73.3%
Mead School District	218	264	82.6%
Pasco School District	150	244	61.5%
Kennewick School District	178	218	81.7%
Renton School District	164	205	80.0%
Central Valley School District	61	202	30.2%
Edmonds School District	184	188	97.9%
Seattle Public Schools	128	163	78.5%
North Thurston Public Schools	112	156	71.8%
Stanwood-Camano School District	0	133	0.0%
Lake Washington School District	92	116	79.3%
North Franklin School District	78	116	67.2%
Tumwater School District	62	102	60.8%

Many of these districts employ a strategy of not assigning a matched teacher for General Math 02002. There might be practical assignment policy reasons to do so, such as:

- 1 They have a limited supply of math teachers and prefer to assign those they have to higher-level math courses.
- 2 General Math students tend to be better served by a teacher who has qualities other than high-school math subject content.
- 3 Similarly, districts believe secondary mathematics teachers are less effective at teaching math to remedial students than teachers with other endorsements.

Endorsements

The top ten endorsements for non-matched teachers teaching math courses.

Endorsement	Count
SPECIAL EDUCATION	1479
ELEMENTARY EDUCATION (K-8)	874
ENGLISH LANGUAGE ARTS	287
SOCIAL STUDIES	281
HISTORY	262
BUSINESS EDUCATION	223
PHYSICAL EDUCATION	185
VISUAL ARTS	139
READING	121
EARLY CHILDHOOD SPECIAL EDUCATION	117

The most common endorsement for non-matched teachers teaching mathematics in 2011-2012 was Special Education. Similar to Bilingual and English Language Learner endorsements, Special Education is not connected to particular content. Teachers with these credentials usually have at least one additional endorsement in a content specialty. The next most common endorsement is K-8, which does not match any secondary subject (note that this report is limited to schools where the lowest grade is 9th grade or above). Also of interest but not reflected in this table, 37 of the non-matched teachers have a middle-level mathematics endorsement.

Reconsidering the concept of teacher shortage

In 2011-2012, about 262,580 high-school students were enrolled in 13,642 mathematics courses.¹² Of these students about 10 percent were taught by a teacher who did not have a matched endorsement.¹³

A typical high school mathematics course enrolls about 20 students and a full-time teacher will usually teach five courses per day. That means as a state, Washington was short the equivalent of about 263 endorsed mathematics teachers. However, that is a best-case scenario. In reality, not all teachers teach one type of course exclusively, so the number of people teaching math must be higher. In fact, the number of unique people teaching mathematics course to high-school students in Washington in 2011-2012, who were not matched, was 1,055. But that's not an accurate reflection of the shortage, either. Typical matched assignment teachers instruct 4.5 math courses per day, whereas a non-matched teacher instructs 2.5 math courses¹⁴. So the shortage is somewhere between 263 and 1,055 teachers, and most likely between 400 and 500 people.

Washington may have a shortage of math endorsements, but that does not mean it has a shortage of teachers willing to teach math. Rather, it is likely that Washington has a workforce retooling issue, where 1,055 teachers are teaching secondary math for a portion of their schedule and need a Mathematics endorsement. Asking preparation programs to generate more secondary math teachers may be part of the solution, but these new teachers will need open full-time positions.

¹² For this report, a student enrolled for one semester is counted as .5.

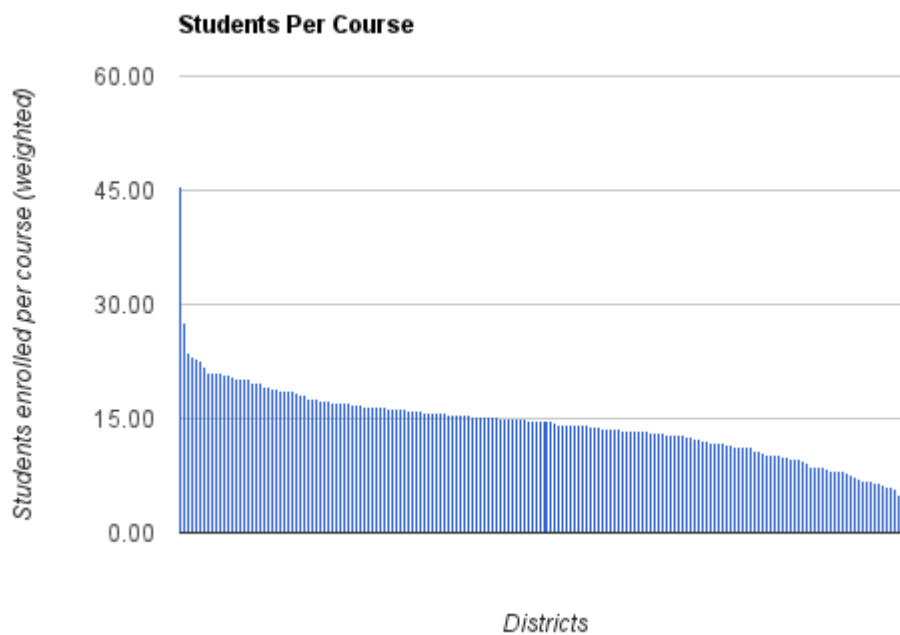
¹³ Some mathematics courses are considered matched when taught by teachers with other endorsements, such as Chemistry or Physics. Also, some teachers work under an older certificate that does not have endorsements. These are grandfathered and also considered matched.

¹⁴ No Child Left Behind and current Washington policy allow for exceptions based on a teacher working only part of the day out-of-assignment. With this, we would expect districts to assign fewer courses to a non-matched teacher.

Appendix

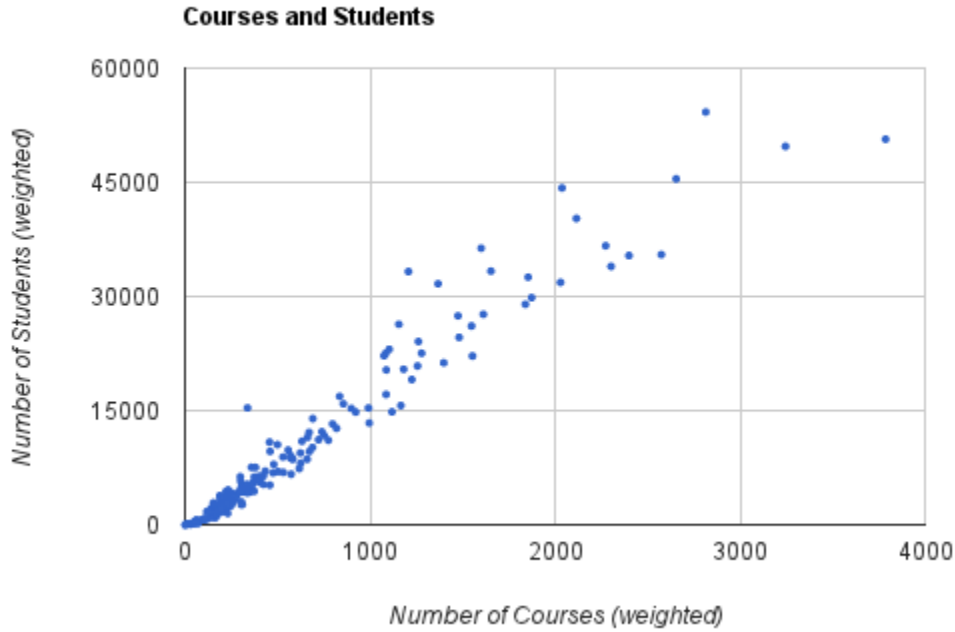
A closer look at the data

Average number of students per course (all courses) per district



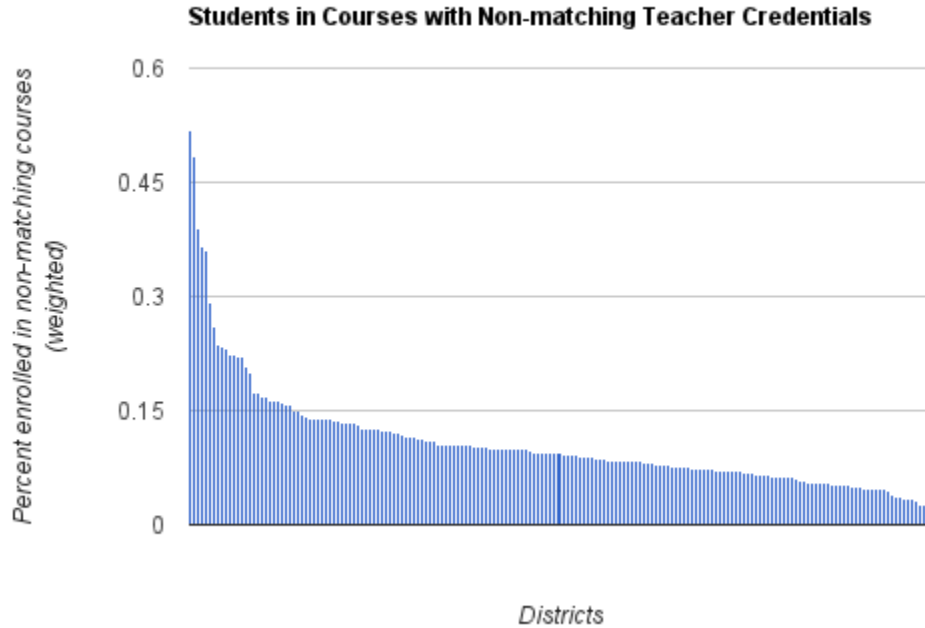
The chart above reflects the ratio of high-school students assigned to courses. Each district is a line. The typical number of students assigned to courses is about 15, but there is considerable variance between districts. It is likely that districts on the far right and left have issues with their reporting.

Plotting the number of courses numbers and number enrolled for all courses in all districts



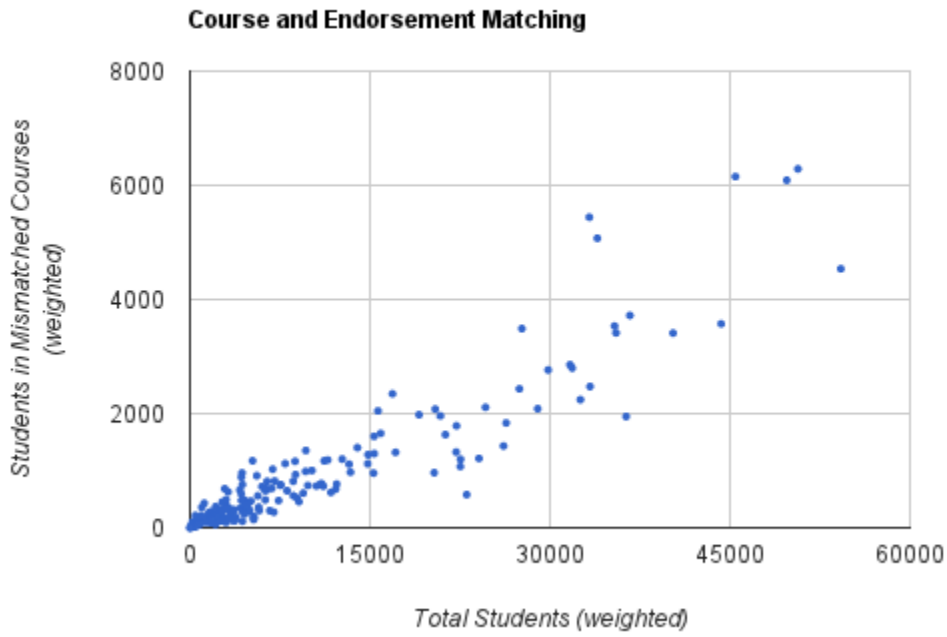
The chart above plots the weighted number of high-school students in courses against the weighted number of courses offered. Each point is a school district. The results show the expected linear relationship with a some districts above or below their peers.

Percent of students enrolled in any non-matched courses per district



The chart above reflects the percentage of the weighted number of high-school students assigned to courses where the teacher’s credentials do not match PESB’s table of rules. The typical district has about 10 percent of its students in non-matched courses. However, there is considerable variance between districts. Like the course enrollment numbers, it is likely districts on the far right and left are struggling with the exportation of correct data to OSPI. It is also important to keep in mind that this is the first time this data is being exposed, so differences could be related to something other than assignment practice, such as differences in the way districts are coding their courses.

Plotting the number of students enrolled in courses assigned to non-matched against enrollments in all courses.



The chart above reflects the weighted number of high-school students enrolled in all courses plotted against the number enrolled in courses where the teacher’s credentials do not match the course description. If all districts were employing the same endorsement strategies and policies we would expect a linear relationship. This chart suggests there are differences between districts.

About the query

The notes below are intended to describe exactly how the data was extracted for this report.

OSPI's CEDARS Data

The Comprehensive Education Data and Research System (CEDARS) is a longitudinal data system managed by OSPI to collect, store and report data related to students, courses, and teachers in order to meet state and federal reporting requirements, and to help educators and policy makers to make data driven decisions.

<https://www.k12.wa.us/CEDARS/default.aspx>

OSPI's Cert Data

OSPI's Cert Data is a record of educator credentialing transactions in Washington. The current schema has a table for

- person data (name, DOB, Certificate Number, etc.)
- certificate data (certificate name, valid dates, etc.)¹⁵
- endorsement data (qualities associated with teacher assignment, such as mathematics, instrumental music, biology, etc.)¹⁶

OSPI's Course Catalog

Rather than develop a new course catalog, OSPI adopted the Federal Catalog created for the ongoing National Assessment of Educational Progress (NAEP) twelfth grade transcript study. The NAEP catalog was designed so that people could be hired and trained to examine any high school transcript from any school in the nation and code it to one set of rules for further study. There are many courses in this catalog, including courses that are not relevant for Washington's public schools.

Prior to Washington adopting a state course catalog, districts used their own courses and course descriptions, which were designed to relate to the State Board of Education (graduation requirements), institutions of higher education (transcripts to apply for college), as well as the district itself (capturing what was being taught to whom). As with the NAEP study, OSPI uses its Course Catalog to codify courses across disparate systems.

PESB's Assignment Matching Rules

Expectations for endorsements are continually changing. When an endorsement is changed significantly, a new endorsement code is applied. Sometimes, but not always, the name is also updated to reflect the change to the endorsement expectations.¹⁷ This means assigning a biology

¹⁵ One person can have multiple certificates.

¹⁶ One certificate can have multiple endorsements

¹⁷ Such as updating "Earth Science" to "Earth and Space Science"

endorsement to teach a specific biology course requires multiple rules. These rules usually include old and new biology type endorsements.

Field Name	Field Description
Course Code	The code identifying the course type
Course Name	The name associated with the course code
Endorsement Code	The code identifying a particular endorsement
Endorsement Name	The name associated with the endorsement
Matched Type Code	The rule explaining how this course was matched to this endorsement

Applying PESB's Assignment Matching Rules to CEDARS data

The algorithm goes through each course taught in Washington and applies the following logic to produce the best matching value;

- 1 Check to see if there is a rule in PESB's "Assignment Rule Table" for this course, if no rule, return the value "0", if yes move to the next step;
- 2 Pull the credential for the person teaching this course and check if any of the endorsement codes match the course according to PESB's "Assignment Rule Table", if yes return "1", if no move to next step;
- 3 Check if credential record has endorsements that are defined as related in PESB's "Assignment Rule Table", if yes return "2", if no move to next step.
- 4 Check if this credential record has a K-8 endorsement, if yes return "90", if no move to the next step;¹⁸
- 5 Check if credential record is the older type with no endorsements, if yes return "98", if no return "99"

Data Quality

The idea of data quality means the information returned accurately reflects what is happening within the area that is being measured. In the case for this paper, data quality means:

- We are counting all students in Washington's public high schools (none are being left out and none are being double counted)
- We are accounting for all courses being taught in Washington's public high schools
- We are accurately separating the courses that are being taught by someone with and without the proper teacher endorsement.

There are several ways where this might not be true, such as;

- Some districts are not accurately measuring their course-level enrollment
- Some districts are not accurately crosswalking their courses to the state course codes.
- PESB's crosswalk table for establishing the proper assignment rules is inaccurate
- Some districts may not be pushing the correct data up to OSPI
- OSPI might be unintentionally mishandling some or all of the data
- The extract from OSPI's data might be incorrect (saving the wrong values)

¹⁸ Helpful for middle level assignment.

- The structure of the data might be missing key elements that allow it to be measured accurately across districts.

As part of the CEDARS project, OSPI is collecting this data in a systematic way, where it is expected that the quality improves over time. The course-level data in this report has gone through a series of validity checks within OSPI and it is reasonable to begin using it for reporting and decision-making. The next step is to look at the data in a different ways using researchers and analysts.

This report considers the first year of course-level data, matches it against PESB policy, and reports back data to answer the basic questions about Washington’s assignment practices. We expect the data will be reasonably close for most districts. The information in this report will be useful, but not definitive. Again, it is important to keep in mind that the differences we see in districts might be due to district reporting errors, or perhaps errors in the logic employed when aggregating the results.

Looking for Errors

To double-check the data we pulled the list of teachers assigned math courses and marked as non-matched. Next, we joined a different copy of OSPI’s the endorsement data to these records, created a report that aggregated by endorsement, and looked to see that there were no appropriate secondary mathematics endorsements. This check found one record that might be an error.

Course Code	Course Name	Match Code	Endorsement Code	Endorsement Name
02157	Consumer Math 02157	99	3837	MATHEMATICS

Possibilities

When going back through the data, there was one instance of a math course [02157] that was matched to a person with a math endorsement [3837] and marked as not matched [99]. There are many potential reasons for this possibility, including:

- 1 The teacher received this endorsement after the extract was complete
- 2 PESB has an error on its assignment rules table and one rare course to assignment situation is not represented correctly (if there were no rules for the course it would have returned [0]).
- 3 There is a systematic problem with the extract rules
- 4 There is nothing wrong with the extract data. Rather, the information PESB is using to double-check the extract is incorrect.

Testing each situation

- 1 This is not a timing problem because the endorsement was attained by the teacher well prior to the extract.
- 2 PESB’s assignment rules table has a correct rule for this situation and it appears to have been correctly applied under all other similar situations (records with the same endorsement and course)

- 3 Perhaps an algorithm error, but incorrect extract algorithms tend to create systematic errors (not limited to one record within thousands).
- 4 Looking at data using algorithms often exposes simple errors within the data table. The most likely culprit is a technical problem, such as a person receiving an updated credential where an older endorsement record was not being properly joined.
- 5 There is also a good chance that the extract is correct and the data PESB is using to check the error is incorrect.

What to do about this error?

Although we are not yet sure what is causing this particular anomaly, the error has a negligible impact on the aggregate numbers in this report. Because of this, we are noting the error in this section but leaving the extract and report, “as is.”

Other Issues

Course Catalog

The NAEP course catalog was intended to be used by a trained individual to match many transcripts from many institutions. OSPI had technical people match (crosswalk) district data to the new OSPI codes. There could be systematic errors in the data by district. Also, building new assignment policies for this information might create an incentive for districts to mismatch their courses according to get a better assignment result.

OSPI adopted the Federal Catalog as a static document. The catalog was developed to be used across all schools and researchers. There are compromises and omissions, which is fine for ongoing open-ended research but will impede Washington’s abilities to use this for specific policy decisions such as matching teacher credentials to their assignment.

For instance:

- The catalog does not capture information about special education (profound or otherwise), this is likely an important part of deciding who is assigned to the course, which means that it is an important part of understanding the decision from a policy level.
- The catalog captures information about English language learners using only one course code.
- The catalog was designed for a high school transcript study, while they are probably too detailed at the high school level, there is very little to describe what is happening at the elementary or middle level.¹⁹
- The catalog expects training, without which most of the fine-grained differences will be lost to data quality issues, including misunderstanding and miscoding of the data on the district side.
- There are likely Washington-specific courses that are important to track.
- In the future it is likely Washington will need to track particular courses for research purposes.²⁰

¹⁹ People interested in areas such as the Arts, STEM, Bilingual, and First People’s Cultural programs will be disappointed to find information about their subjects elementary and middle school will be missing.

²⁰ Such as comparing specific curriculum, teaching styles, or other course based interventions.

Solutions

Have policy organizations use the course catalog whenever possible. Instead of Universities and the State Board talking in general topic descriptions such as “Biology,” it would be helpful if they defined rules using the specific Washington Course Codes in the table below.

Course Code	Course Name
3051	Biology 03051
3052	Biology Advanced Studies 03052
3056	AP Biology 03056
3057	IB Biology 03057
3062	Conceptual Biology 03062
3063	Particular Topics in Biology 03063
3097	Biology Independent Study 03097
3098	Biology Workplace Experience 03098
3099	Biology Other 03099
3203	Applied Biology/Chemistry 03203

Definitions

Key terms used in this report

Term	Definition
Weighted	Districts use a variety of course lengths (terms), such as quarter, semester, or entire year. This report counts students by year (a student attending a semester course is counted as .5). See the appendix for list of term types and weights
Student	For this report, a student is a person enrolled in a course. If a person is attending 4 courses, that is counted as 4 students (person * 4 = 4). Also, a student is counted as one entire year attendance (see weighted above), a person attending 4 semester courses is counted as 2 (person * 4 * .5 = 2)
High School	For this report, high school is defined as a school with a minimum grade level of 9, 10, 11, or 12 are included. Only high schools are included in the results of this report.
Non-matched or not matched	Courses where the endorsement on the credential for the person teaching does not match the subject material (see below for list of match types).

Matched Types

Match Type Code	Match Type Definition
0	PESB has yet to make a decision about proper endorsement for this course. There are courses where PESB is less likely to make assignment policy, these will probably include courses where WA has no endorsement, such as religion, journalism, philosophy, etc.
1	Matched, such as a biology course being taught by a teacher who has a biology endorsement.
2	Related match, defined by stakeholders and PESB as having content knowledge, such as Algebra I being taught by a teacher with a chemistry endorsement. Related is intended to be a reasonable match for districts that need additional flexibility.
90	Has K-8 all subject credential, this is useful when looking at middle-level courses.
98	All-Subject Credential, this is an older credential that does not have endorsements attached. Typically this credential is grandfathered for assignment policies.
99	Not matched, defined as none of the conditions from above are applicable.

Teachers have multiple endorsements. This analysis looks at the best possible match for each course. For instance, a teacher with matched (1) and related matched (2) endorsement is counted as matched (1). In this report of secondary teachers, matched includes any match type except 90 and 99.

Related Endorsements for Math Courses

Endorsement	Related Course Types ²¹
Biology	General Mathematics Pre-algebra Algebra
Chemistry	Basic Mathematics Pre-algebra Algebra Pre-calculus Calculus
Earth & Space Science	Basic Mathematics Pre-algebra Algebra
Physics	Basic Mathematics Pre-algebra Algebra Pre-calculus Calculus

²¹ Course types predate OSPI's state course catalog and were meant to be general descriptions, not exact course names or definitions.

Weights applied to the term codes

Term	Weight	Number of Records
ALLYR	1	2,628,302
SEM1	0.5	1,965,862
SEM2	0.5	2,108,378
TRI1	0.33	381,631
TRI2	0.33	375,420
TRI3	0.33	378,570
Q1	0.25	105,965
Q2	0.25	94,117
Q3	0.25	112,058
Q4	0.25	101,016
SIXWKT1	0.17	6,891
SIXWKT2	0.17	5,657
SIXWKT3	0.17	6,141
SIXWKT4	0.17	6,306
SIXWKT5	0.17	6,533
SIXWKT6	0.17	7,236
TERM1of8	0.13	3,602
TERM2of8	0.13	3,508
TERM3of8	0.13	3,697
TERM4of8	0.13	2,141
TERM5of8	0.13	2,371
TERM6of8	0.13	2,421
TERM7of8	0.13	2,522
TERM8of8	0.13	2,651
OTHER	1	85,339

Educator Workforce Regional Meetings

A Report to the Governor and Washington State Legislature on the Status of Requirements in SB 6696, 2010 Legislative Session

“Beginning with the 2010 school year and annually thereafter, each educational service district, in cooperation with the professional educator standards board, must convene representatives from school districts within that region and professional educator standards board-approved educator preparation programs to review district and regional educator workforce data, make biennial projections of certificated staff needs, and identify how recruitment and enrollment plans in educator preparation programs reflect projected need.” - E2SB 6696, 2010 Legislative Session

Background

Critical to the Professional Educator Standards Board (PESB) successfully meeting its responsibility of maintaining a high quality system of educator preparation and certification is ensuring we are producing an educator workforce responsive to school and district needs. This requires a clear picture of their needs today and well into the future in order to inform and influence the pipeline of future educators with recruitment and enrollment strategies. In recent years, PESB data have demonstrated the need to strengthen the connection between supply and demand, requiring a more strategic approach rooted in better projections of district hiring needs and practices. In addition, a growing body of research points to the advantages of tighter connections between educator preparation programs and school districts as highly beneficial not only to development of a district's future workforce, but to their current school and student learning improvement efforts as well.¹

The PESB convened a planning and oversight committee for this project consisting of representatives from Educational Service Districts (ESDs), the Higher Education Coordinating Board (HECB), Washington Association of School Administrators (WASA), Washington School Personnel Administrators Association (WSPA), and the Office of Financial Management's Education Research and Data Center (ERDC). In addition, the committee engaged the expertise of University of Washington's Center for Study of Teaching and Policy for their focus on developing human capital in schools and districts and the reallocation of staffing and other resource to support learning improvement.

¹ Barry, B.; Montgomery, D., Curtis, R., Hernandez, M., Wurtzel, J., & Snyder, J. (2008). *Creating and Sustaining Urban Teacher Residencies: A New Way to Recruit, Prepare and Retain Effective Teachers in High-Needs Districts*. Carrboro, NC: Center for Teaching Quality.

Goldhaber, D., & Liddle S. (2011). *The Gateway to the Profession: Assessing Teacher Preparation Programs Based on Student Achievement*. Bothell, WA: Center for Education Data and Research, University of Washington Bothell.

Humphrey, D., Wechsler, M., Hough, H. (2008). Characteristics of Effective Alternative Certification Programs. *Teachers College Record*. Vol. 110, No. 4. New York, NY: Teachers College, Columbia University.

Darling-Hammond, L., Sykes, G. (2003). Wanted: A National Teacher Supply Policy for Education: The Right Way to Meet the “Highly Qualified Teacher” Challenge. *Education Policy Analysis Archives*. Vol. 11, No. 33. Retrieved 12/27/11 from <http://epaa.asu.edu/epaa/v11n33/>.

The oversight committee prepared a strategy for convening districts regionally to examine and confirm challenges districts encounter in hiring and determine next steps in meeting the requirements of SB 6696. The PESB assumed responsibility for developing content for, and facilitation of, the regional meetings, while ESDs assumed responsibility for inviting and convening school districts in their region.

Regional Meetings

Beginning in May of 2011, each ESD selected a date to host the first of the legislatively-mandated annual meetings of their districts at the ESD. Appendix A contains a sample invitation letter and agenda for the 2-4 hour workshops, each an opportunity to learn more about recruitment and hiring processes, challenges and potential solutions. Scheduling meetings posed considerable difficulty; ESDs indicated hesitancy in pressing on district attendance given the current economic challenges faced by school districts. Even with considerable effort, turnout at regional meetings was extremely low in most regions and was the first indication that the project would not result in the desired outcome of the legislation. Appendix B contains the list of districts in attendance at each regional meeting.

Attendance by representatives from educator preparation programs at the regional meetings was significant, indicating a strong interest in creating partnerships with districts to address the production of educators that are best prepared to meet district demand.

Despite low district turnout, the facilitated discussions did yield important results. Districts shared, and PESB and preparation programs in attendance gained insights about, typical hiring practices and barriers to early recruitment and hiring. It was apparent that most districts still conduct late hiring², lack reliable projections of their need, have uncertainty about the potential pool and /or sources of their future employees, and have minimal focus on workforce development. The literature on workforce development notes that careful approaches to hiring reduce training costs, increases retention, and improves productivity³. This is supported in the literature for most industries; the literature on education workforce development is less robust, but also points to the need to plan long-term, select workers that “fit” in the scheme of the hiring authority, and reflect that values and skills that contribute to the goals of the hiring authority.

Because of low district turnout at the regional meetings, PESB determined that a state-wide survey of districts would be required to confirm the information provided by those that attended. The PESB also determined that, even though not required, this report to the Legislature would be prepared and that the projects first year deliverable of district hiring projections be delayed. Although the PESB was not charged with collection of district or regional reports on workforce projections, we recognized that district compliance would be minimal. Therefore, the PESB determined that it would submit a report

² For purpose of this report, late hiring is defined as candidate selection that occurs within 30-days of the beginning of a school year

³ The Center for Comprehensive School Reform and Improvement (2005). *Things to remember during the teacher hiring season*. Washington, DC: Author.

Liu, E. (2005). *Hiring, job satisfaction, and the fit between new teachers and their schools*. Cambridge, MA: The Project on the Next Generation of Teachers, Harvard University Graduate School of Education.

Liue, E. & Johnson, S.M. (2006). New teachers' experiences of hiring: Late, rushed, and information-poor. *Educational Administration Quarterly*, 42(3), 324-360.

Plecki, M; Alejano,C; Knapp, M; & Lochmiller, C. (2006). *Allocating Resrouces and Creating Incentives to Improve Teaching and Learning*. Seattle, WA: Center for the Study of Teaching and Policy.

Wellins, R.S. & Schweyer, A. (nd) *Talent management in motion – Keeping up with an evolving workforce*. Washington, DC: Human Capital Institute / Development Dimensions International.

outlining findings from the first-year regional dialogues and follow-up survey, with implications for legislative and PESB response and the future of this legislative charge.

Survey

The survey to districts was developed in a web environment for ease of completion and automated submission. The survey consisted of two parts. In the first part, respondents were asked 16 questions that confirmed the findings of the regional meetings on the status of hiring practices at the district level. The statements were crafted from the information discussed in the regional meetings, asking survey respondents to confirm what was heard. Most survey statements were confirmed. Respondents were also given the opportunity to comment on the statement, in particular if their response was to disagree with the statement.

In the second part of the survey, districts were provided the option of projecting hires for the upcoming school year by teacher endorsement area. The PESB only asked about teacher hiring; not administrator, Educational Staff Associate, or classified staff. Since it had been determined that projections of staff (teacher) need were not commonly done and created significant challenges, the PESB decided to make the projections optional. SB 6696 calls for these projections to be reported through Educational Service Districts, but district compliance is expected to be low.

Survey Results

District response rate to the survey was low; less than 30% provided response. Coupled with non-duplicated count of 50 districts in attendance, the meetings and survey provided input from just over 40% of districts. However, the survey did provide response and commentary that confirmed the information shared at the regional meetings. Key findings include:

1. Although early hiring is best practice, the current system includes financial risks that create a disincentive for early hiring.
2. Districts would benefit from greater state-level assistance in estimating enrollment and employment trends.
3. Districts would like strong partnerships with teacher preparation programs, but relatively few have pursued this or view it as among their priorities;
4. Districts would like to see more qualified candidates per opening, especially in the fields of STEM, Special Education, English Language Learners, and health-related Educational Staff Associates roles, such as Speech-Language Pathologists and School Psychologists.
5. The “highly-qualified” requirements of the Federal No Child Left Behind Act are a primary driver in screening teaching applicants.
6. Districts agree that there is room for improvement in their workforce development strategies, but are uncertain as to specific steps and resources.

These findings are discussed in greater detail below, followed by implications and recommendations for state policymakers. Overall, the combined results of the district meetings (51 districts) and the responses to the survey (69 districts) paint a picture of a system that meets the demands of the workforce needs in a varied, inconsistent manner and often lacks a comprehensive strategy.

Hiring Challenges

Hiring is an annual challenge for most districts. This is true even in small districts with low turnover and current statewide reductions in hiring due to economic conditions, and it is driven by uncertainty

that most districts feel unable to address. Highest on the list of uncertainty is enrollment. Enrollment drives apportionment, which in turn funds positions. So in a medium to small district in particular, uncertainty results in high risk to hire. It should be noted that small school provisions are made in the operating budget each year setting a base of instructional staff for small schools with graduated increases until a threshold is reached. Schools of over 300 students are treated the same in the apportionment model. Those allotments can change in each fiscal year by legislation.

Since teacher contracts are binding requirements for expenditure, there is a disincentive to hire early for fear of letting more contracts than can be supported in enrollment. Some districts contract for consultant time to construct projections based on available local data to arrive at some comfort level with hiring, but even with reduced risk and some certainty about a minimum level of workforce need, most districts still finalize contracts for new hires in August or September when they “see the whites of their eyes.”

The survey confirmed what was heard in regional meetings; that although 85% would prefer to hire earlier, the current budget allocations tied to enrollment figures that are unavailable/unpredictable until school opens is problematic. Two survey questions addressing the relationship between enrollment, fiscal risk and hiring were all strongly supported in responses. The questions were varied in the description of the funding challenge; one framed the challenge as financial risk, the other described late hiring as a result of enrollment uncertainty.

We lose quality candidates because of how late we need to hire due to layoff/recall and funding uncertainties.
- District representative

Responses to both survey statements strongly concur that enrollment/funding was a barrier to early hiring. Comments at the regional gatherings and 79% of district survey responses confirmed the tendency of districts to view early hiring as risky. Few statements

spoke of viable means for risk mitigation, however, rather accepting it as the reality of the system. As expressed in one superintendent’s written comment, “. . . but there’s nothing we can do about it.” We found little district reference or discussion of past patterns of hiring as a consideration in assuming risk. The PESB found numerous examples of districts with long-standing stable patterns of hiring in certain endorsement areas that were still unwilling to hire prior to annual enrollment and funding certainty.

The other uncertainty districts face is aligning the “master schedule” of courses offered to the incoming class of students that requires assignment of specifically qualified and endorsed teachers. While most districts reported significantly more applicants per position than are needed, federal “highly qualified” (HQ) requirements, and state requirements for endorsement and assignment requires district human resource staff spend considerable time and energy screening large pools for those with qualifications that match positions the district anticipates will be required, even while recognizing that the size and configuration of the newly enrolled student body may change. Most districts reported that they first sort applicants by HQ requirements and endorsement, then forward eligible candidates to principals for consideration. Time consuming and costly, the process may unintentionally screen out teachers that might be a better fit, but without the credentials that are being immediately sought within the late, and time-constrained hiring process.

By August, districts are scrambling to finalize a master schedule, confirm actual enrollment and bring new teachers on board; what a representative from the state superintendents association refers to as “the tyranny of the immediate”. Teacher candidates are not always available by the time the district makes contact with them, either because they’ve signed on with another district or they had to take other employment. Preparation programs reported their perception that when hiring is pushed until late summer, quality candidates that completed their preparation program in the spring, anxious about employment security, have taken positions out-of-state with districts willing to sign an early contract.

District comments regarding the relationship between late hiring and the quality of the applicant pool were mixed, with some acknowledging they “lose quality candidates because of how late we hire” and others perceiving the quality of the pool unaffected by late hiring and that earlier “doesn’t necessarily mean the cream of the crop”. Studies of districts both in Washington State and nationally affirm a relationship between late hiring and teacher quality, and that districts that hire late tend to hire a greater proportion of the applicant pool, indicating selectivity decreases.⁴

Districts told us they struggle to avoid, but not uncommonly do begin the school year with unfilled positions. One district reported starting the current school year with 29 positions open, and filled them with substitute teachers for the first month of class. The opposite, undesirable scenario for districts is having teachers on contract with enrollment too low to support the expense. While this occurs less often because districts would rather underestimate, the PESB heard from one district where a major employer shut down and the student population dropped precipitously. Even in the current fiscal environment with dramatic reductions in statewide hiring, an unpredicted spike in enrollment this year resulted in one large district hiring over 100 additional first-year teachers close to the start of the school year, which created a major challenge and unanticipated expense in terms of mentoring and induction.

The PESB did hear from a small number of districts that routinely engage in proactive and early hiring. Some school districts reported they hire teachers for the upcoming school year no later than April. Their recruitment activities are extensive and screening is concerned more with teacher/district match than with specific qualifications, confident that matching qualifications to the course requirements can occur as the school year approaches. Human resource staff are given more authority in determining hiring because the recruitment process employs principals at the beginning and candidates are well vetted and known by principals, giving them confidence that hiring decisions can be made by HR. The ability to hire early or promise contingency contracts has increased the ability of some districts to bring preferred teachers into their systems, and they report they believe this has led to increased retention.

Difficulty Forecasting

Although the feedback from districts in the survey tended to defend their local forecasting efforts, only 41% responded that they do not have a difficult time forecasting hiring need, only a few districts provided projections of their anticipated hires. PESB data and various reports suggest that districts could benefit from forecasting tools to assist them in their efforts⁵.

Forecasting is a mega-analytics challenge. Large data sets across multiple variables provide useful information on demographic and economic variability. Districts lack the capacity and technical expertise to make sense of these large data points. Slight shifts in demographics or economic indicators can have significant impact on teacher hiring. A small district may have some relief in the small school base funding provided in the operating budget, but schools larger than 300 students all experience those same challenges. A middle sized school district can manage a change in enrollment of 20 or 30 students, district-wide, without significant workforce implications, but an enrollment shift of

⁴ Jones, N., Maier, A., & Grogan, E. (2011) *The extent of late hiring and its relationship with teacher turnover: evidence from Michigan*. Evanston, IL: Society for Research on Educational Effectiveness.

The New Teacher Project. (2008) *The Impact of State and Local Human Capital Policies on Chicago Public Schools*. New York: Author.

The New Teacher Project. (2010). *Boosting the Supply and Effectiveness of Washington’s STEM Teachers*. New York: Author.

⁵ Levin, J., & Quinn, M. (2003). *Missed opportunities: How we keep high quality teachers out of urban classrooms*. New York: The New Teacher Project.

Darling-Hammond, L. & Sykes, G. (2003). Wanted: A National Teacher Supply Policy for Education: The Right Way to Meet the “Highly Qualified Teacher” Challenge. *Education Policy Analysis Archives*. Vol. 11, No. 33.

100 students or more may mean workforce changes that are not only numerically significant (five new teachers) but across elementary, middle-school and high school class structures, mean significant re-alignment of existing workforce and new workforce need. To compress the decision making process in the human services department to less than 30 days with an expectation of a reasonable outcome is to tax a system that is already functionally at the whim of financing variability.

Lack of Clarity About and Capacity to Improve Workforce Development Practices

Removing funding and policy barriers and providing reliable forecasting tools can only yield improvement in workforce development if accompanied by changes in practice. At the regional meetings, districts discussed the statewide variability in the human resource staffing and expertise districts are able to employ or access. Larger districts may employ individuals with significant human resource experience, credentialing, and expertise, while in smaller districts this may fall within the myriad of responsibilities of the Superintendent, who may rely on clerical support for job postings, compliance paperwork, and other responsibilities typical of a human resource division. When asked if they would be interested in “resources and consultation on improved data-drive human resource strategies in support of school and student learning improvement”, 79% indicated interest, but several commented it was a notion with which they were unfamiliar but wanted to know more.

In a number of other large states where range of district size yields varying capacity, regional collaboration in recruitment and screening applicants for hiring has had positive results⁶. 66% of

Washington districts surveyed indicated that they do not pool resources by engaging in cross-district recruitment or hiring, primarily because of time and competing priorities. At the regional meetings districts joked amicably about competing with

Never heard of this practice.

Haven't done this yet, but might be a good idea.

I am not clear on what "data-driven human resource strategies" are.

Not sure what this will entail and mean.

We would be interested in learning more about this concept.

- Comments from district representatives when asked if they had considered cross-district collaborative recruitment and hiring, or data-driven HR strategies.

one another for the same pool of applicants. Examples of collaboration among districts tended to center on a given district sharing information on candidates they are no longer considering for employment.

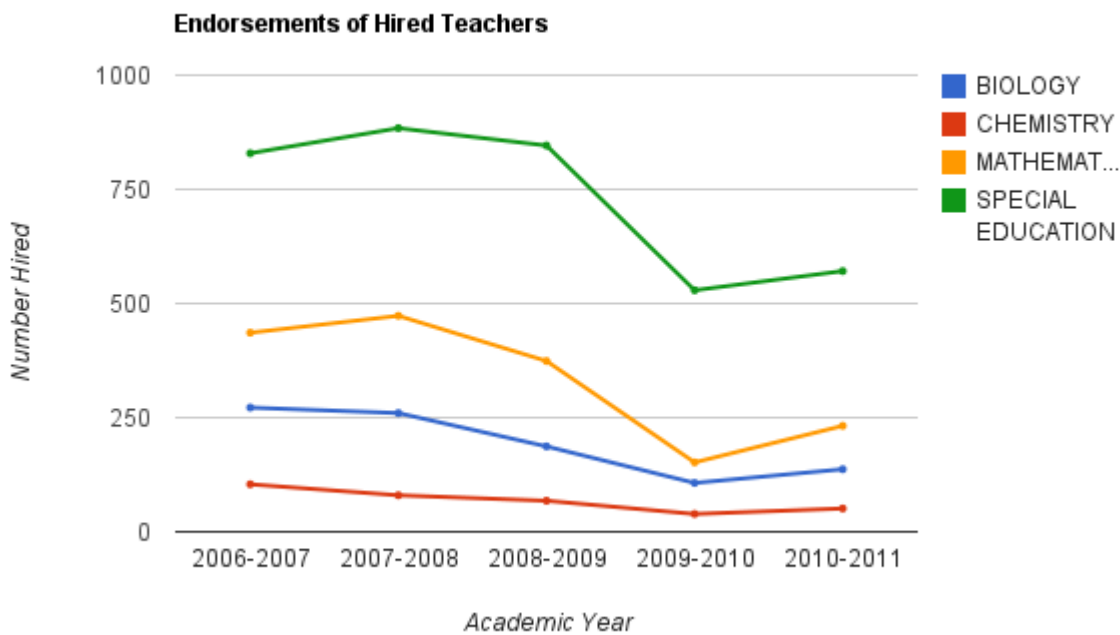
Desire for Strong Applicant Pool in Specific Credentials

Most districts commented and reported on the survey that they overall had plenty of applicants per position, particularly in the current economic climate. At the same time, 82% reported they continue to have difficulty finding enough qualified candidates in particular areas. Comments suggest districts perceive this as a lack of available candidates, but this again also likely a factor of tight hiring timelines, limited recruiting and need for tighter connections with preparation programs as suppliers, not just overall production.

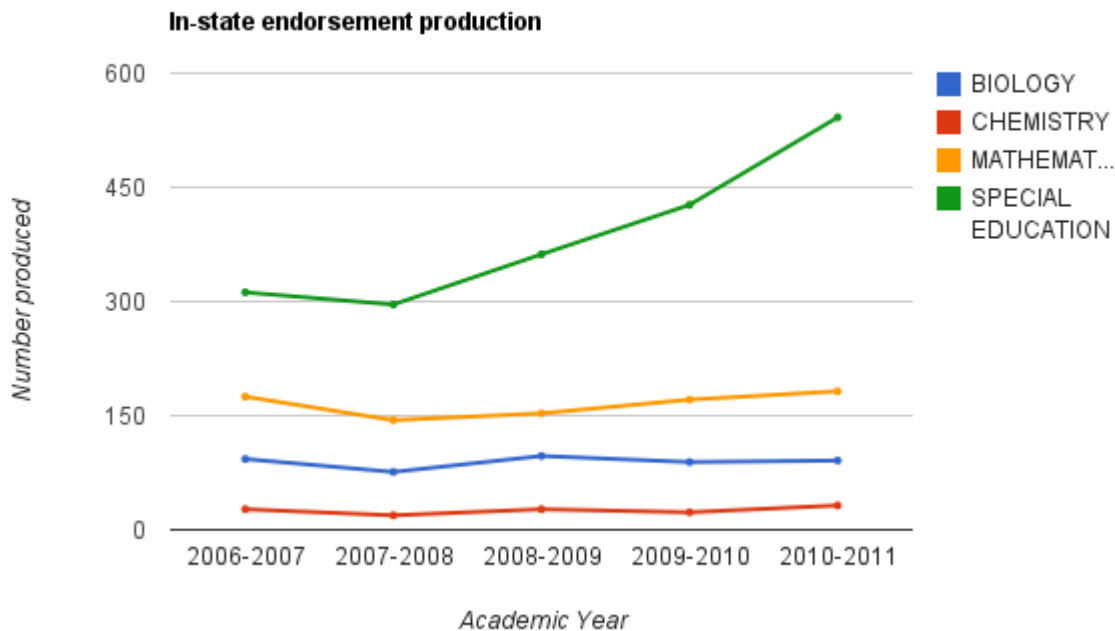
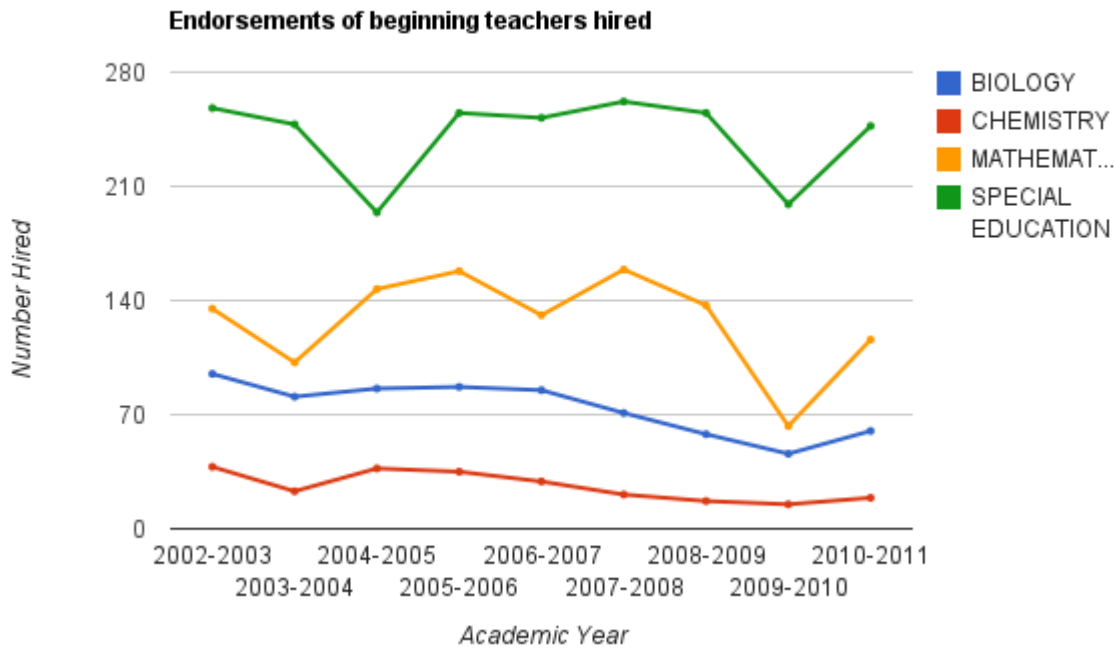
⁶ The Center for the Future of Teaching and Learning. (2002). *A Kern County Initiative for Recruiting, Preparing and Retaining Highly Qualified and Effective Teachers*. Santa Cruz, CA: Author.
Kansas Educational Employment Board - <http://www.kansasteachingjobs.com/>

Before looking to instate production of beginning teachers as a solution for shortages, we need to consider two important trends. First, over the past few years fewer experienced teachers are leaving their position, which means Washington districts have been hiring fewer new teachers. Second, of the new teachers districts hire, only a fraction of those hires are beginning teachers. Take for example, Biology, Chemistry, Mathematics and Special Education, subjects usually considered to be shortage areas.

Below, when we look at endorsements hired, we see districts hiring fewer Biology, Chemistry, Mathematics, and Special Education teachers. If we expect this trend of lower hiring to return to pre-2009-10 averages we would expect districts to hire about 800 teachers with Special Education credentials, 400 with Mathematics, 250 with Biology, and about 75 people with teaching credentials for Chemistry.



When considering new hiring it is important to remember that only a portion of new teachers hired are actually beginning teachers. Most are experienced teachers transferring from other districts or other states. Below, we see the number of teachers hired who who are considered “Beginning” (less than .5 years of experience and has not previously worked in a Washington school district). We would expect in a typical year that districts would hire about 250 *beginning* teachers with Special Education credentials, 140 with Mathematics, 75 with Biology, and about 40 *beginning* teachers with teaching credentials for Chemistry. This is the pool of beginning teachers is fed by Washington teacher preparation programs as well as beginning teachers prepared by programs outside of Washington.



Especially considering the latest downtrends, Washington’s in-state production of beginning teachers is adequate to provide for Washington’s hiring needs of beginning teachers. Below we can see WA teacher preparation programs responding to the demand to increase production, especially in the fields of Special Education and Mathematics, but we don’t necessarily see more for these newly minted teachers finding employment. In fact, there are enough new Special Education credentials to meet the demand of all districts hiring, including experience and new teachers.

We are not ready to recommend WA teacher preparation programs to decrease production, but we are not hopeful that increasing in-state production of newly minted teachers will improve the district identified shortage issue, where they are unable to find a qualified teacher to fill an open position. However it does beg the question, why are some districts unable to find qualified people? More importantly, are there hiring and human resource practices that would alleviate this issue without attempting to flood the market with new unemployed teachers?

71% of districts surveyed indicated interest in stronger, sustained partnerships with educator preparation programs as an integral part of the development of their future and current workforce, with 56% acknowledging the need for regular conversation with preparation programs related to district needs. District comments at the regional forums and in the survey varied in terms of how they define partnership; whether as largely a recipient of preparation program production or a collaborator in key decisions related to enrollment and program design. Others commented seeing great advantage to strong partnerships, but feel time limitations and competing priorities prevent further pursuit. “We are too busy dealing with everyday emergencies to plan too far ahead”. Research indicates that with early and effective recruitment, even “at-risk” and under-performing districts and schools can generate a large applicant pool⁷.

Implications

What PESB discovered in these regional meetings and subsequent survey is that while most district focus on developing the workforce once teachers are hired, projecting future workforce needs and development of longer-term, strategic recruitment and hiring practices, including strong partnerships with preparation programs, is a practice new to most Washington districts.

Risk aversion is the most significant determinate. Enrollment projection is imprecise unless districts commit resources to consultant services. No Child Left Behind (NCLB) and state endorsement/assignment policies further complicate a difficult hiring environment, but given their important contribution to effective delivery of instruction, the risk aversion issue overrides any need to address highly qualified or assignment policy. Contrary to workforce development studies across many industries, including education, districts attribute policy and financial barriers, as well as lack of time and resources, as cause for pursuing improvements to their workforce development practices.

RECOMMENDATIONS FOR STATE POLICYMAKERS

Provide Districts Forecasting Tools

The state currently engages in economic forecasting for budgeting purposes. Discussions with the Office of Financial Management suggest that a simple online tool might be developed that could provide districts with the ability to reduce the margin of risk and creating a willingness to look at earlier hiring approaches. With school districts as their business user, this might be an appropriate role for the Education Research and Data Center (ERDC). Consistent with district comments, of particular utility would be tools they could access without cost, created in open-architecture models that permit local level “tweaking” to account for local knowledge that would influence results. In this way, even

⁷ Liue, E. & Johnson, S.M. (2006). New teachers’ experiences of hiring: Late, rushed, and information-poor. *Educational Administration Quarterly*, 42(3), 324-360.

Levin, J., & Quinn, M. (2003). *Missed opportunities: How we keep high quality teachers out of urban classrooms*. New York: The New Teacher Project.

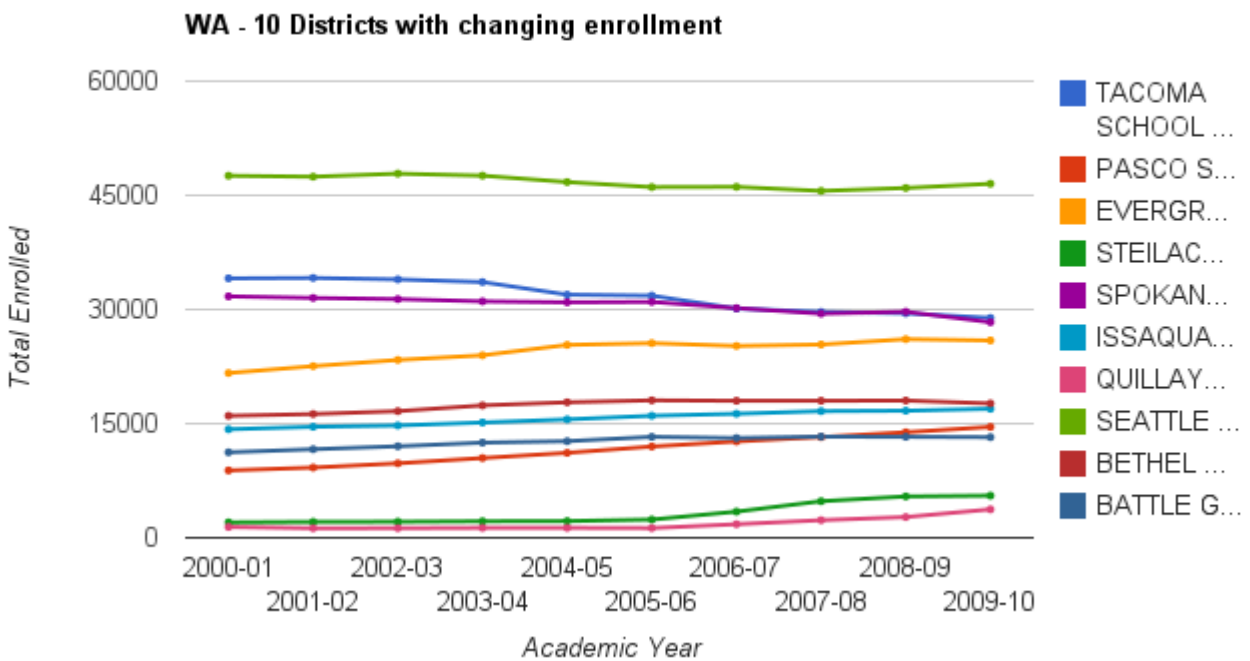
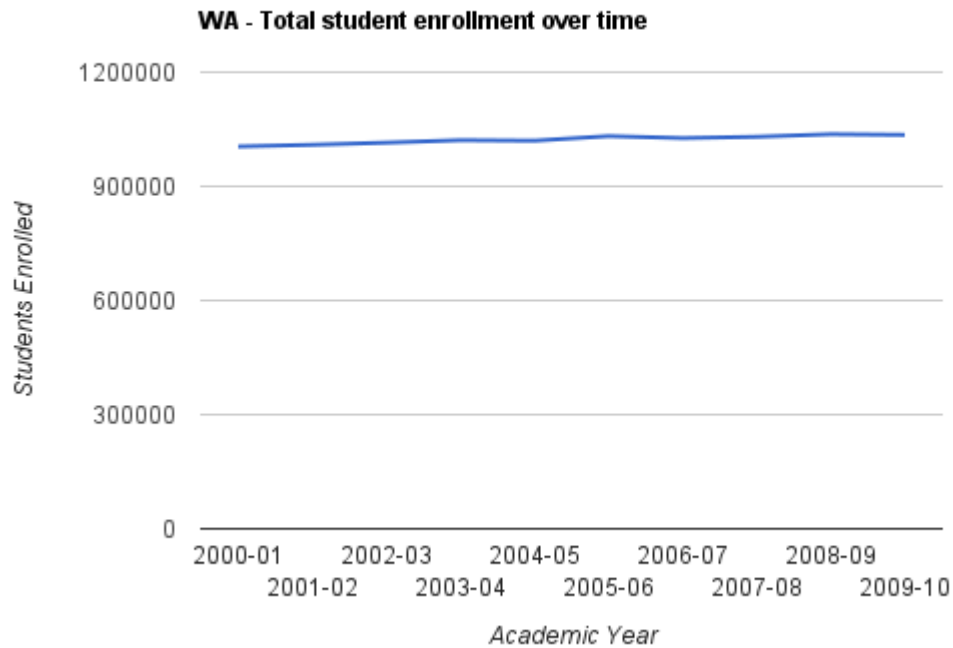
Campbell, C., DeArmond, M., & Schumwinger, A. (2004). *From bystander to ally: Transforming the district human resources department*. Seattle, WA: Center on Reinventing Public Education, University of Washington.

small districts that commented that their demographics were too small to be helped by state-level data work, could use tools that were flexible enough to respond to local input on key indicators such as small business closure, new business growth or unanticipated demographic influences that a state-level forecast model might miss.

Improve Funding Predictability and Minimize Risk

Policy to change the allocation approach that penalizes districts that over-commit teacher contracts could help immensely. The legislature in the past has considered policy that would base allocations on rolling averages or fixed rate increases that are predictable. Given the size of the state-wide risk pool (a million K-12 students) it is conceivable that the state could design a model that would hold harmless those districts that over-extend while supporting districts' best estimates. Policy could design adjusted allocations, correcting over-payments over time. The risk pool size might well mitigate any significant increased costs, since the student population state-wide grows at a small and highly predictable rate, and all students are entitled and thus funded.

The PESB is not recommending that allotments disconnect from actual student enrollment. However, PESB is proposing that the state look at the entire student population as a "risk pool" and approach the problem of district uncertainty from the perspective of a managed service model. One million students attend public education programs. The growth/change in this service population is relatively stable in terms of predictable growth. Within the state, there is significantly greater variability at the districts (disaggregated) level. However, the "winners" and "losers" in population variability are minor impacts to the overall "risk pool" of students needing public education. The state should devise policy that targeted the state-level anticipated growth of the K-12 population and a distribution formula that provided a projected and stable base and adjusted that allotment over time so that no individual district faced penalty for over or under projecting staffing needs. In this manner, districts could proceed with a cogent, well designed approach to workforce development with confidence that over-staffing or under-staffing would be addressed financially without penalty. Adjustments with a risk pool of one million are minimal and reasonable for our state. The Figure below demonstrates that state-wide population enrollment is steady and reasonably predictable. The second Figure shows that some communities within the state experience quite different population trends that the state as a whole. The PESB believes that this opportunity for mitigating local risk in hiring should be closely examined.



Data provided by National Center for Education Statistics - Common Core of Data (CCD)
 See interactive charts at <http://data.pesb.wa.gov/regionalworkforce>

Provide Workforce Development Resources and Support

Research across industries suggests that attention to workforce development, while a commitment of time and resources, pays significant long-term dividends. In education, a recent report from University of Washington stated, “The ability of school leaders to take advantage of what local talent pools offer, or even to assemble those pools in the first place, reflects in large measure how the district has arranged its human resource function”⁸. The challenge is particularly great for rural and remote districts, whose recruiting and hiring challenges may be further complicated by the need for multi-endorsed teachers and/or partial FTEs as well as inadequate access to preparation programs with whom to partner to meet their needs.

With district capacity and access to human resource professionals greatly varied, Washington may benefit from pursuit of regional recruiting and hiring collaborative models, which exist in several other states. Kern County and several other rural regions in California have for over a decade operated highly successful regional collaborative to build their collective capacity and realize economies of scale. The initiative has included maintaining clear and accurate understanding of their projected workforce needs; design and implementation of recruiting and hiring strategies that meet their collective needs, rather than competing with one another; and leveraged collective dialogue and planning with preparation programs resulting in “grow your own” preparation programs located in the region.

Development of a statewide online system for recruitment may also provide more equitable access for districts. The State of Kansas was recently recognized for development of an online system for application and recruitment; one that applies virtual tools to aid applicants and districts, bridges the gap of accessibility for remote districts, and supports HR professionals and other district personnel across the state with technical assistance. The system has been effective in helping districts to fill shortages and to streamline the application process. They also believe the system has supported greater coordination between remote districts and preparation programs.

Incentivize District Participation in Partnerships

Recent University of Washington research focusing on Washington State preparation programs suggests a relationship between proximity of student teaching / residency school or district with location of first teaching job and teaching effectiveness as measured by student learning gains⁹. Residency-model preparation programs that represent strong partnerships between preparation programs and districts provide direct opportunities for districts to shape their future employees and their current school and student learning improvement efforts. Western Washington University’s Science, Mathematics and Technology Education (SMATE) program has demonstrated gains in student learning attributed to their strong field-based partnership well. At Nooksack Elementary school, for example, 5th grade science scores on the Washington Assessment of Student Learning (WASL) rose from 36% passing to 90% passing in two years of the program. Beyond the positive implications for student learning and teacher effectiveness, a recent report on Urban Teacher Residencies may have broader implications for other field-based preparation models as well. As is the case in other states, many of the prospective teachers in our higher education preparation programs, in whom we invest public dollars, do not go on to become teachers. 2005-06 placement rates for Washington’s approved preparation programs was 57%. Advocates for strong partnerships

⁸ Plecki, M.; Knapp, M; Castaneda, R.; Haliverson, T.; LaSota, R; & Lochmiller, C. (200?). *How Leaders Invest Staffing Resources for Learning Improvement*. Seattle, WA: Center for the Study of Teaching and Policy.

⁹ Goldhaber, D., & Liddle S. (2011). *The Gateway to the Profession: Assessing Teacher Preparation Programs Based on Student Achievement*. Bothell, WA: Center for Education Data and Research, University of Washington Bothell.

between school districts and preparation programs, like Urban Teacher Residencies, argue that higher placement and retention rates make them both better tailored to local need and a better state-level investment. They suggest another potential funding mechanism for state policymakers is to consider directing enrollment slots to established partnerships, rather than putting the full burden of funding for planning, recruitment, program design and operation with institutions.

PESB Efforts and Next Steps

Preparation programs are interested in preventing the loss of quality candidates, in dialogue on partnerships, and to being responsive to P-12 needs. It is in their interest to advise candidates as to what districts are looking for and to prepare them in the skills to be successful. Without projections on both the endorsement needs and dialogue on the specific qualities of educators a district or region needs, the current dynamics of over-production in some areas, shortages in others, and late hiring are likely to continue. Making changes to preparation program enrollment, faculty configuration, curriculum and program design can take a couple years or more. The need for long-range planning that is responsive to district needs conflicts with the predominant year-by-year, risk-averse focus of Washington districts waiting for budget and enrollment to lock in. While the short-term focus around hiring projections may feel logical at the local level in a time of strained budgets, the costs over time are significant.

Although the PESB dialogue and survey focused primarily on the teaching workforce, districts repeatedly expressed particular challenges in finding school psychologists and health service providers (occupational therapists, physical therapist, speech-language pathologists, and school nurses), and are often forced to pay high contractual rates to meet the needs of children with special needs. The PESB has undertaken an analysis to understand the production, shortages, and assignment issues, with an anticipated report to the Board in May of 2012.

In addition, the PESB is examining several mechanisms to address the issues we heard around the “highly qualified” (HQ) federal requirements reported in the regional dialogue and in the survey as fraught with confusion and challenges to hiring, assignment, and effective advising of candidates. This issue could potentially be resolved with development of a statewide recruiting system as described above. The PESB will advance an initiative to focus higher education preparation programs on the need that districts have to ascertain and confirm the HQ status of new teacher candidates, separate from and in addition to state certification and endorsement credentials. Preparation programs participating in the regional meetings agreed that analysis of candidate coursework and test results should allow them to provide districts with verification assurance of new teacher qualifications related to HQ requirements, thus removing that step for districts in the recruitment of new teacher candidates.

With hiring in dramatic decline, districts are challenged with more strategic development of their existing teacher workforce; often needing educators to be qualified for a broader range of subject area assignments. In the 2007 the PESB created and the Legislature funded the Educator Retooling program; providing funding support for certified teachers to add “shortage area” endorsements, including Bilingual Education, English Language Learner, Mathematics, Middle Level Math, Middle Level Science, Chemistry, Biology, Physics, Earth and Space Science, or Special Education. Until FY ‘11, up to \$3,000 per year in loan forgiveness was available to teachers to pay for tuition for coursework, WEST-E exams and supervision for the pedagogy assessment or other observation instruments if required by the candidate’s university or college program. Approximately 800 teachers from 175 school districts in Washington have added or are in the process of adding shortage area endorsements to their certificates with support of the Educator Retooling Program. The PESB continues to work with districts and preparation programs to consider retooling in the context of equipping their existing staff to meet a broader range of assignment needs, rather than just filling vacancies. In addition, the Retooling program has taken on another purpose by strengthening

content area knowledge of veteran teachers to address student achievement. Several school districts and endorsement programs have formed partnerships to offer new subject area endorsements for large numbers of teachers. These “endorsement academies” employ a professional learning community model to build capacity in content knowledge as a school improvement strategy. Districts like Renton have employed this model to retool a critical number of their elementary teachers to gain middle-level math endorsements. Kent school district has retooled a significant number of elementary educators to gain ELL endorsements.

The PESB has learned of a number of other efforts at the district and regional level. In one remote area a small district in anticipation of an upcoming retirement is working directly with a teacher preparation program to “grow their own” multiple-endorsed candidate with ties to their community. We also learned of a few cases of districts coordinating with neighboring districts or the ESD to fill a position. In one region of the state, four higher education institutions and a growing number of districts meet regularly on issues of preparation, induction, training, and assessment of interns, new teachers, and mentors. There are examples of districts that involve the partner preparation programs at higher education institutions in several stages of hiring and in dialogue on the educators they want in the future. There are others examples where the vision of a building leader and a higher education colleague have led to notable results in coordinated workforce preparation and professional development (<http://www.youtube.com/user/WAPESB>; <http://www.pesb.wa.gov/regional-workforce/a/partnerships>). The comprehensive, strategic, and partnered approaches we’ve observed suggest that workforce development is a goal that is both possible and fruitful in spite of the challenges of policy, budgets, and risk.

The PESB has been actively engaging IHEs and districts in regional dialogue in diversifying the educator workforce and on effective partnering. Again, the variability of practice is perhaps the most significant learning from the regional dialogue and survey. It is encouraging to hear that even when a district representative asks, “what would a partnership look like?”, our survey and interviews confirm that there is interest.

The PESB will convene the oversight group during the spring of 2012 and determine next steps. Among options to be considered will be working with those districts with strong workforce development approaches, as identified in this first round of meetings, and prepare guidance and materials for other districts to consider. PESB will also consult the oversight group on strategies for assisting districts.

Conclusion

With the exception of a handful of districts that submitted best-guess estimates through the survey, PESB believes that too few districts are prepared or willing to advance improvements in workforce development at the current time. PESB further believes that these improvements are critical in addressing an educator workforce that delivers on the promise of public education. The board looks forward to working with the Legislature to further this important initiative.