Washington State Institute for Public Policy

110 Fifth Avenue Southeast, Suite 214 • PO Box 40999 • Olympia, WA 98504-0999 • (360) 586-2677 • FAX (360) 586-2793 • www.wsipp.wa.gov

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Do Summer 2006 Promoting Academic Success Program Characteristics Influence WASL Retake Results?

SUMMARY

This report focuses on the relative effectiveness of different Promoting Academic Success (PAS) summer school strategies used to help students meet standard on the WASL in August 2006.

The findings are as follows:

- Overall, students who participated in a summer 2006 PAS program had marginally higher met-standard rates than non-participants.
- No single program characteristic or strategy was found to increase a student's likelihood of meeting standard.
- Moreover, no combination of PAS program characteristics was found to substantially increase a student's likelihood of meeting standard.

We conclude that no particular remedial strategy or PAS program characteristic provided during the summer of 2006 substantially increased WASL performance on the August 2006 retake.

The 2006 Washington State Legislature created the Promoting Academic Success (PAS) program to provide remediation for 10th-grade students who do not meet standard on one or more content areas of the Washington Assessment of Student Learning (WASL).[1]

The Legislature allocated $28.5 million in PAS funds for fiscal year 2007 to provide extended student learning activities and teacher professional development.[2] PAS funds were distributed to school districts to provide programs in summer 2006 and during the 2006–07 school year.[3] Funding was allocated based on the number of students in the district who did not meet standard on the 10th-grade WASL. District funding will be adjusted based on the number of students served as of August 2007; the final number of students participating in PAS will not be known until then.

The 2006 Legislature directed the Washington State Institute for Public Policy (Institute) to evaluate the effectiveness of PAS remedial programs in helping students meet standard on the WASL.[4]

A previous report examined the overall effectiveness of summer 2006 PAS programs.[5] On average, met-standard rates increased marginally for students who participated in writing and math PAS compared with non-participants (6 percentage points), whereas met-standard rates for reading PAS students did not increase relative to non-participants who retook the WASL. Overall, PAS programs in summer 2006 had a limited impact on subsequent WASL performance.

This report examines whether components of summer 2006 PAS programs influenced the relative success of participants in meeting standard on the WASL.

For example, does a low student-teacher ratio, or tutoring, or the use of classroom aides improve student WASL performance? We analyzed the influence of PAS program characteristics' data—including program type, instructional strategies, and resources used—collected by the Office of Superintendent of Public Instruction (OSPI) to see if some characteristics were more influential than others. We conclude that ***PAS program characteristics, whether considered individually or in combination, were not associated with improved performance on the WASL retake in summer 2006***.

The Institute will continue to evaluate the effectiveness of PAS during the 2006–07 school year and summer 2007 when results from the summer 2007 WASL retake and all PAS student data become available.

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[1] ESSB 6386 § 515, Chapter 372, Laws of 2006, supplemental operating budget.
[2] ESSB 6386 § 515 (1).
[3] The distribution of funds between summer school and school-year programs will not be known until September 2007.
[4] ESSB 6386, § 607 (11).
[5] R. Barnoski (2006). *Summer 2006 Promoting Academic Success program: Influence on WASL retake scores—Revised*. Olympia: Washington State Institute for Public Policy, Document No. 06-12-2202.

ASSOCIATION OF PROGRAM CHARACTERISTICS AND WASL PERFORMANCE

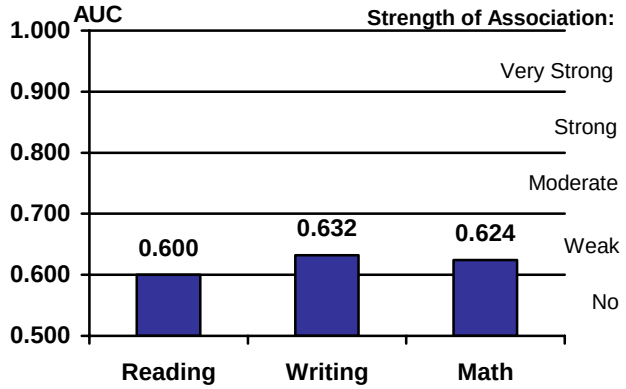
Our analyses measure the strength of the association between OSPI PAS program characteristics and met-standard rates using a statistic called the Area Under the Receiver Operating Characteristic Curve (AUC). The AUC, which ranges from 0.500 (no explanatory power) and 1.00 (full explanatory power), assesses how well program characteristics distinguish PAS students who did and did not meet standard.[6] AUCs in the 0.500s indicate that PAS characteristics are not associated with met-standard rates; 0.600s, a weak association; 0.700s, a moderate association; 0.800s and 0.900s, a strong association; and 1.00, a perfect association.

The measures of association between met-standard rates and individual OSPI PAS program characteristics are in the 0.500s, indicating that program characteristics are not individually associated with performance on the summer 2006 WASL retake (see Technical Report).

Although individual program characteristics are unrelated to WASL performance, some combination of characteristics could potentially have a stronger association. We use multivariate statistical analyses (logistic regression) to assess the relative strength of associations between combinations of OSPI program characteristics and WASL met-standard rates.[7]

Exhibit 1 displays results from the multivariate analyses of WASL retake met-standard rates. For each subject area, we compare AUCs for the association between combined OSPI PAS program characteristics and met-standard rates by WASL subject area. For example, the AUC for WASL reading is 0.600, which is in the weak association range.

Exhibit 1
Combination of PAS Program Characteristics Have a Weak Association With Performance on the August 2006 WASL Retake*



* Program characteristics include type of program, instructional strategies, and resources used. See the Technical Report for PAS program characteristics included in these analyses.

The results demonstrate there is only a weak association between combinations of OSPI program characteristics and the three-subject-area WASL met-standard rates for PAS students.

SUMMARY

- Individual program characteristics for summer 2006 PAS are unrelated to WASL performance on the August 2006 retake.
- Analyzing PAS program characteristics in combination slightly improves the association with met-standard rates but the associations are still weak.

[6] M.E. Rice & G.T. Harris. (2005). Comparing effect sizes in follow-up studies: ROC Area, Cohen's *d*, and *r*. *Law and Human Behavior* 29(5): 615-620; J.A. Swets. (1988). Measuring the accuracy of diagnostic systems. *Science* 240: 1285-1293.

[7] This type of analysis might also control statistically for the characteristics of PAS participants, which have been shown to be related to WASL met-standard rates (See R. Barnoski and W. Cole. (2007). *Tenth-grade WASL in spring 2006: Relative strength of associations between student characteristics and met-standard rates*. Olympia: Washington State Institute for Public Policy, Document No. 07-01-2206). This would be used to avoid overestimating the contribution of OSPI PAS program characteristics to meeting standard. Our results indicate a weak association even if there is some over-estimation of this association. Had we found stronger associations, we would have statistically controlled for student characteristics.

DATA COLLECTION PROCESS

To evaluate the effectiveness of different remedial strategies offered during summer 2006, we used the following information: (1) Office of Superintendent of Public Instruction (OSPI) inventory of PAS program characteristics, (2) OSPI roster of students who participated in the summer 2006 PAS programs, and (3) students' WASL retake results.

Program Characteristics

Program Description Survey (OSPI). To collect information on PAS program characteristics, OSPI requested each school district designate a PAS coordinator.

OSPI directed PAS coordinators to complete an online survey of basic information about PAS programs in each subject area. The OSPI program description survey included the type of program provided and the materials and resources used. Each program was defined by a unique combination of school district, school, subject area, and program name. More than one teacher was sometimes associated with a unique program.

PAS Instructor Survey (Institute). In addition to the information available in the OSPI Program Description Survey, the Institute surveyed teachers to obtain more detailed information about PAS classroom instruction. The Institute developed three surveys in consultation with OSPI staff: one each for reading, writing, and math. Between 64 and 69 percent of the instructors completed a survey. As we explain later in the report, there are not enough PAS student data at this time to allow an analysis of the information from instructor surveys.

Student Data

PAS Student Participation (OSPI). PAS coordinators were directed to provide the names of students participating in each PAS program; school districts have until September 2007 to provide OSPI with the data. Both the Institute and OSPI depend on the PAS coordinators' data entry of this information. OSPI did not collect the names of the teachers associated with each student, making it impossible to link all student records with particular teachers.

To conduct its evaluation of summer 2006 PAS, the Institute merged information from the PAS program description surveys and student participation records using data received from OSPI in spring 2007.[8]

[8] Since receiving the data in spring 2007, OSPI has been advised not to provide personally identifiable student information per the Family Educational Rights and Privacy Act (FERPA). Therefore, the data for an analysis that links 2007 WASL results and PAS may not be available for inclusion in the final report, which is due December 15, 2007.

PAS Participation and WASL Retakes

Exhibit A.1 shows that, of the 37,661 10th-grade students who did not meet standard on the spring 2006 WASL, 13.9 percent—5,217 students—participated in a summer 2006 PAS program. In turn, 71.1 percent of PAS participants (3,711 students) retook the WASL in August 2006, compared with 20.2 percent of non-participants.

Exhibit A.1
Participation in Summer 2006 PAS

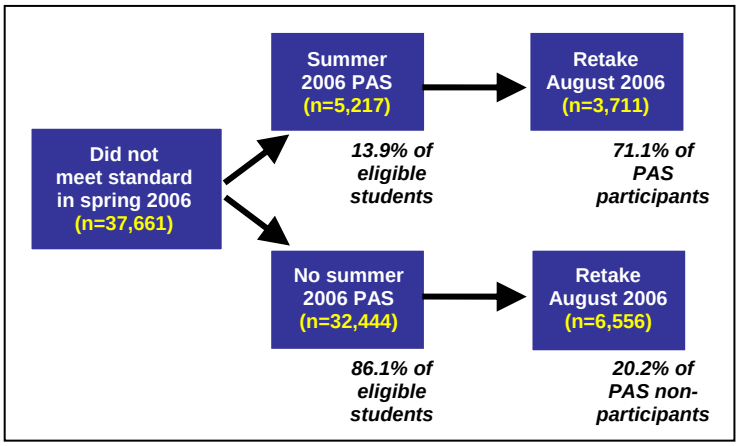


Exhibit A.2 shows the percentage of students who did not meet standard on the spring 2006 WASL and who subsequently participated in summer PAS by subject area and level of WASL performance. For example, 6.5 percent of the 2,713 students who received Level 1 reading scores on the WASL in spring 2006 participated in a summer 2006 PAS reading program.

Exhibit A.2
Percentage Participating in Summer 2006 PAS, by Level of Spring 2006 WASL Performance*

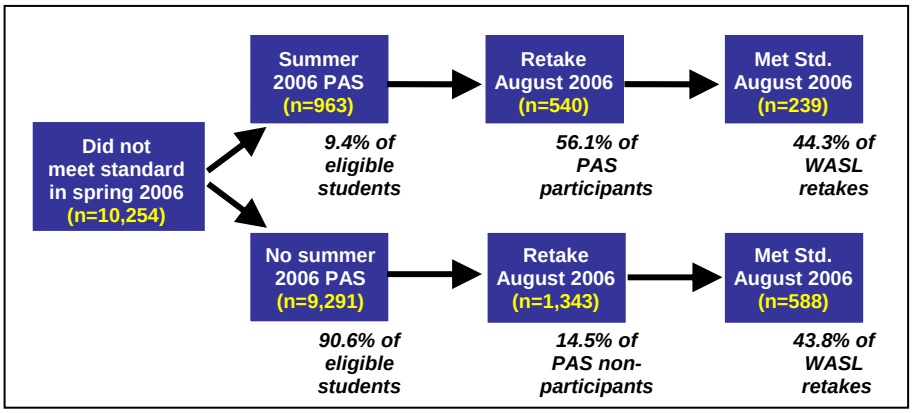
Spring 2006 WASL Level	Participated in PAS	Total Students	Percentage
Reading			
Level 1	176	2,713	6.5%
Level 2	787	7,541	10.4%
Total	963	10,254	9.4%
Writing			
Level 1	208	2,568	8.1%
Level 2	933	8,990	10.4%
Total	1,141	11,558	9.9%
Math			
Level 1	1,541	14,490	10.6%
Level 2	2,854	17,952	15.9%
Total	4,395	32,442	13.5%

*Some WASL student records are excluded because of missing statewide student identification numbers.

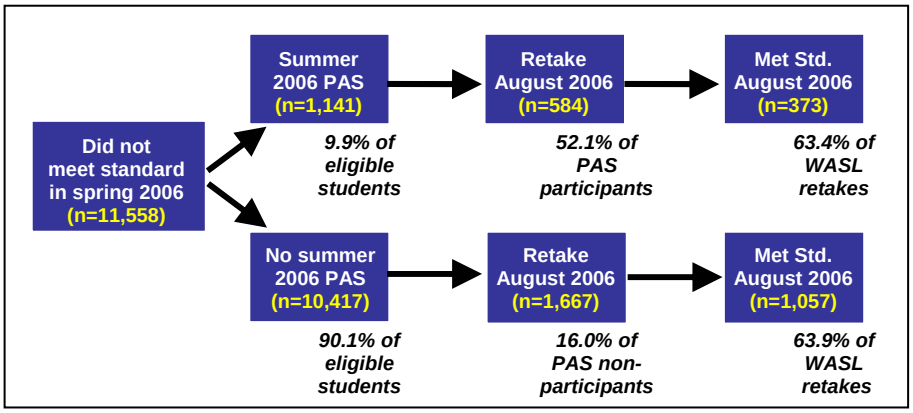
Exhibit A.3 depicts PAS participation rates, WASL retake rates, and subsequent met-standard rates by subject area for summer 2006.

Exhibit A.3
PAS Participation Rates, Retake Rates, and Met-Standard Rates by Subject Area in Summer 2006

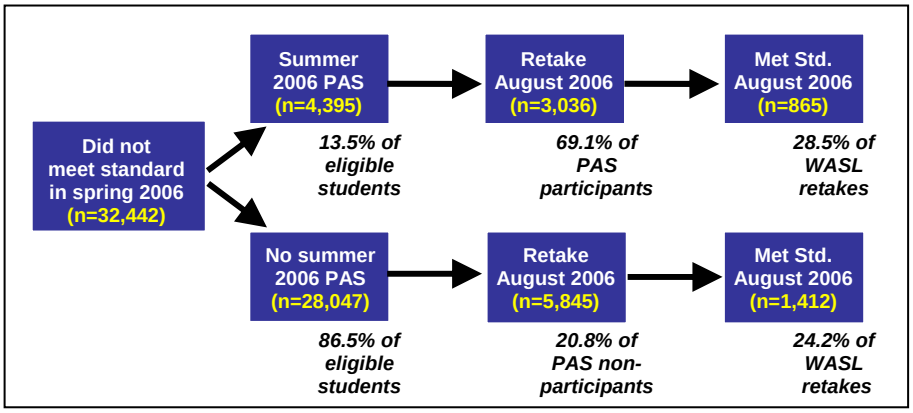
READING



WRITING



MATH



MATCHING OSPI PROGRAM CHARACTERISTICS WITH OPSI PAS STUDENT RECORDS

Exhibit A.4 displays the number of unique PAS programs that were identified by the PAS coordinators. The OSPI data identify a PAS program through a combination of the following characteristics: school district, school, subject area, and program name. For example, there are 151 unique PAS reading programs and 18 percent of these involved multiple teachers. In math, 33 percent of programs involved multiple teachers. More than one teacher can be associated with a program, and this may indicate team-teaching or separate classes for each teacher (the OSPI program characteristics are for the entire set of teachers providing the program).

Exhibit A.4 also shows the results for joining the OSPI PAS program data to the OSPI PAS student data by school district, school, subject area, and program name. For example, only 85 of the 151 PAS reading programs (56 percent) could be matched with student data. Of these 85 programs with student data, 14 percent involved multiple teachers. For math, over one-third of the students were in programs with multiple teachers. Because the OSPI student data do not include teacher identification, it is impossible to link student records to specific teachers.

Exhibit A.4
PAS Students Who Retook WASL in August 2006 and Matched to OSPI Program Information

	Subject Area		
	Reading	Writing	Math
Number of Unique PAS Programs	151	159	241
Percentage With Multiple Teachers	18%	17%	33%
PAS Programs With PAS Student Data			
Number of PAS Programs With PAS Student Data	85	88	120
Percentage With Multiple Teachers	14%	16%	35%

Exhibit A.5 displays the number of PAS students by subject area, the number who retook the WASL, and the number who could be matched to PAS program information. For example, 540 of the 963 students who participated in a PAS reading program retook the WASL in August 2006. However, only 369 of these students could be matched to a unique PAS reading program. The analyses in this report include only students who could be matched to OSPI program information.

In summary, Exhibits A.4 and A.5 show the incompleteness of the OSPI PAS data at this time.

Exhibit A.5
PAS Students Who Retook the WASL in August 2006 and Matched to OSPI Program Information

	Subject Area		
	Reading	Writing	Math
Number of PAS Students	963	1,141	4,395
Number of PAS Students Who Retook the WASL	540	584	3,036
Number of PAS Students Matched to OSPI Program Information	369	468	2,176

INSTITUTE DATA COLLECTION PROCESS

To collect more detailed information about the programs offered in summer 2006, the Institute developed three surveys (reading, writing, and math). We sought to administer surveys to every instructor for each type of program they taught. The Institute distributed surveys at the end of summer 2006 based on the teachers listed for each OSPI program description that was entered by district-level PAS coordinators. Between 64 and 69 percent of the surveys were completed. The Institute summarized the results of these surveys in a previous report.[9]

Exhibit A.6 displays the subset of the sample for which both teacher survey data and program description data are available. For example, of the 85 PAS reading programs with student data, 55 also had teacher survey data (65 percent). However, there are 151 reading programs, so PAS reading programs with both students and teacher survey data represent just over one-third of the PAS reading programs. In addition, these 55 programs account for 245 of the 369 students (61 percent) in the 85 programs with student data. At this point, the data are too incomplete to include the teacher survey data in our statistical analysis.

Exhibit A.6
PAS Students Who Retook the WASL in August 2006 and Were Matched to OSPI Program Information

Number of PAS Programs			
	Reading	Writing	Math
PAS Programs With PAS Student Data	85	88	120
Also With Teacher Surveys	55 (65%)	56 (64%)	87 (73%)
Number of Students			
	Reading	Writing	Math
PAS Programs With PAS Student Data	369	468	2,176
Also With Teacher Surveys	245 (66%)	279 (60%)	1,675 (77%)

[9] R. Barnoski. (2007). *Promoting Academic Success program: Summer 2006 instructor survey results*. Olympia: Washington State Institute for Public Policy, Document No. 07-02-2204.

ASSOCIATION OF INDIVIDUAL PROGRAM CHARACTERISTICS AND WASL PERFORMANCE

Our analyses consist of measuring the strength of the association between OSPI PAS program characteristics and met-standard rates using a statistic called the Area Under the Receiver Operating Characteristic Curve (AUC). The AUC, which varies between 0.500 (no explanatory power) and 1.00 (full explanatory power), assesses how well program characteristics distinguish PAS students who did and did not meet standard.[10] AUCs in the 0.500s indicate that PAS characteristics are not associated with met-standard rates; 0.600s, a weak association; 0.700s, a moderate association; 0.800s and 0.900s, a strong association; and 1.00, a perfect association.

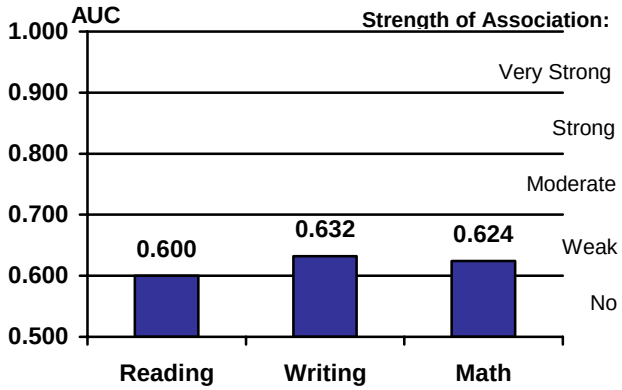
Exhibit A.8 on the following pages presents the AUCs between met-standard rates and individual OSPI PAS program characteristics. All of the AUCs are in the 0.500 range, indicating that program characteristics are not individually associated with performance on the summer 2006 WASL retake.

Although individual program characteristics are unrelated to WASL performance, some combination of characteristics could potentially have a stronger association. We use multivariate statistical analyses (logistic regression) to assess the relative strength of associations between combinations of OSPI program characteristics and WASL met-standard rates.

To be as inclusive as possible, any characteristic that is statistically significant at the .25 probability level is included in the combination. Normally .05 is used as the criterion for inclusion, but we chose to include characteristics that may be marginally significant.

Exhibit A.7 displays the results from these multivariate analyses. The AUCs between the combinations of marginally significant OSPI PAS program characteristics and meeting standard in reading, writing, and math are .600, .632, and .624, respectively. All of these AUCs are in the weak AUC association range. That is, there is no combination of OSPI PAS program characteristics that is even moderately associated with higher met-standard rates for the summer 2006 PAS programs.

Exhibit A.7
Combination of PAS Program Characteristics Have a Weak Association With Performance on the August 2006 WASL Retake



Program characteristics include type of program, instructional strategies, and resources used. See Exhibit A.7 for the list of PAS program characteristics.

This type of analysis might also control statistically for the characteristics of PAS participants that have been shown to be related to WASL met-standard rates.[11] This would be done to avoid overestimating the contribution of OSPI PAS program characteristics to meeting standard. Our results indicate a weak association even if there is some over-estimation of this association. Therefore, there is no reason to control for student demographics in the multivariate analyses.

[10] Rice & Harris, 2005; Swets, 1988.

[11] Barnoski & Cole, 2007, Document No. 07-01-2206.

***Exhibit A.8* – READING**

Individual Characteristics of PAS Students Who Retook the *Reading* WASL in August 2006 and Who Were Matched to OSPI Program Information

Program characteristics	Strength (AUC)*	Percentage of Students	Percentage Met Standard
Total		100%	42%
Number of Teachers	0.504		
One		70%	42%
Two or More		30%	42%
Number of Aides	0.550*		
None		73%	45%
One		10%	42%
Two or More		17%	29%
Type of Program			
One-on-One Tutoring	0.501	2%	44%
General Academic Skills	0.541	29%	49%
Activity Based Learning	0.504	2%	33%
Intense Specific Skills	0.515	50%	40%
Academic Counseling	0.513	3%	64%
Self-Paced Internet	na	0	na
Other Self Paced	na	0	na
Credit Retrieval	na	0	na
Other	0.522	12%	33%
Materials			
Internet	0.506	2%	57%
OSPI Modules	0.538*	82%	44%
No OSPI Modules	0.533	18%	32%
WASL Practice Tests	0.507	29%	36%
Normal School Resources	0.516	1%	75%
WASL OSPI Resources	0.508	10%	50%
Teacher Materials	0.513	26%	43%
Other Materials	0.509	23%	39%
Special Resources	0.514	1%	0%
WASL Vendor Resources	0.506	5%	28%
Total Hours of Instruction	0.541		
Less than 20		5%	40%
20 to 29		15%	34%
30 to 39		16%	63%
40 to 49		24%	51%
50 to 99		22%	37%
100+		18%	52%
Students per PAS Program	0.540		
1 to 2		14%	44%
3 to 5		28%	46%
6 to 10		25%	41%
11 to 15		10%	46%
Over 15		21%	33%
Students per Teacher	0.522	48%	43%
Under 6		37%	44%
6 to 10		14%	33%
Over 10		48%	43%

* Statistically significant at the .25 level.

Note: Combined reading student demographics have an AUC of .574, which is statistically significant at the .25 level.

***Exhibit A.8*– WRITING**

Individual Characteristics of PAS Students Who Retook the *Writing* WASL in August 2006 and Who Were Matched to OSPI Program Information

Program characteristics	Strength (AUC)*	Percentage of Students	Percentage Met Standard
Total		100%	64%
Number of Teachers	0.540*		
One		69%	66%
Two or More		31%	60%
Number of Aides	0.564*		
None		68%	68%
One		10%	65%
Two or More		21%	52%
Type of Program			
One-on-One Tutoring	0.504	2%	75%
General Academic Skills	0.548*	30%	57%
Activity Based Learning	0.505	1%	83%
Intense Specific Skills	0.570*	47%	71%
Academic Counseling	na		
Self-Paced Internet	na		
Other Self Paced		5%	68%
Credit Retrieval		0%	0%
Other	0.529	13%	54%
Materials			
Internet	0.501	1%	60%
OSPI Modules	0.516	80%	65%
No OSPI Modules	0.520	20%	61%
WASL Practice Tests	0.504	20%	69%
Normal School Resources	0.524	1%	33%
WASL OSPI Resources	0.522	18%	71%
Teacher Materials	0.518	36%	67%
Other Materials	0.506	16%	59%
Special Resources	0.503	1%	40%
WASL Vendor Resources	0.501	0%	0%
Total Hours of Instruction	0.550		
Less than 20		16%	67%
20 to 29		11%	56%
30 to 39		13%	56%
40 to 49		26%	64%
50 to 99		27%	68%
100+		7%	77%
Students per PAS Program	0.500		
1 to 5		32%	60%
6 to 10		27%	71%
11 to 15		14%	71%
20		4%	80%
25		5%	76%
38		8%	53%
44		9%	50%
Students per Teacher	0.568*		
Under 6		46%	59%
6 to 10		31%	65%
Over 10		23%	74%

* Statistically significant at the .25 level.

Note: Combined writing student demographics have an AUC of .663, which is statistically significant at the .25 level.

***Exhibit A.8* – MATH**

Individual Characteristics of PAS Students Who Retook the *Math* WASL in August 2006 and Who Were Matched to OSPI Program Information

Program characteristics	Strength (AUC)*	Percentage of Students	Percentage Met Standard
Total		100%	28%
Number of Teachers	0.500		
One		35%	26%
Two		26%	31%
Three		14%	25%
Four or More		26%	29%
Number of Aides	0.512*		
None		75%	28%
One		8%	35%
Two or more		17%	23%
Type of Program			
One-on-One Tutoring	0.504*	1%	64%
General Academic Skills	0.508	34%	27%
Activity Based Learning	0.507	3%	19%
Intense Specific Skills	0.532	50%	30%
Academic Counseling	0.501	3%	26%
Self-Paced Internet	0.500	0%	33%
Other Self Paced	na	0	
Credit Retrieval	0.501	1%	22%
Other	0.520*	8%	18%
Materials			
Internet	0.504*	6%	20%
OSPI Modules	0.513*	88%	29%
No OSPI Modules	0.533*	37%	30%
WASL Practice Tests	0.517	9%	29%
Normal School Resources	0.504	11%	25%
WASL OSPI Resources	0.509	26%	32%
Teacher Materials	0.530*	18%	20%
Other Materials	0.534*	4%	21%
Special Resources	0.506	4%	24%
WASL Vendor Resources	0.504	6%	20%
Total Hours of Instruction	0.524		
Less than 20		9%	35%
20 to 29		7%	16%
30 to 39		11%	24%
40 to 49		12%	32%
50 to 99		41%	26%
100+		19%	32%
Students per PAS Program	0.500		
1 to 5		4%	29%
6 to 10		10%	26%
11 to 15		14%	24%
16 to 20		8%	25%
21 to 25		8%	35%
26 to 30		6%	28%
31 to 35		8%	30%
Over 35		42%	28%
Students per Teacher	0.508		
Under 6		8%	26%
6 to 10		29%	27%
11 to 15		32%	29%
16 to 20		11%	22%
Over 20		19%	29%

* Statistically significant at the .25 level.
Note: Combined math student demographics have an AUC of .610, which is statistically significant at the .25 level.

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For further information, contact Robert Barnoski at
(360) 586-2744 or barney@wsipp.wa.gov

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