WYOMING SCHOOL ACCOUNTABILITY

PROPOSED 2013-14 HIGH SCHOOL EQUITY INDICACTOR STUDY

By Michael Flicek, Ed.D.
Education Accountability Consultant

December 3, 2013

Issue 30 of the *WDE Assessment Updates* informed schools in Wyoming that the high school equity indicator for 2013-14 would include a consolidated subgroup. Current year (i.e., 2013-14) grade 11 students were in grade 10 last year (i.e., 2012-13) when they were required to take the PLAN test. Membership in the consolidated subgroup for high school will be based upon 2012-13 PLAN test performance on the subject area tests of mathematics and reading. Students with scaled scores below 17 on the mathematics subject area test and/or below 16 on the reading subject area tests will be placed in the consolidated subgroup for their respective high schools.

By having a consolidated subgroup based upon reading and math performance in the prior year, the high school equity indicator will more closely resemble the equity indicator for grades 4-8. Beyond that, however, evidence about the extent that school equity scores used in high school was related to school equity scores used in grades 4-8 would be helpful for understanding the coherence in the measurement of equity across the grade 4-8 accountability model and the high school accountability model.

In order to test the relationship of the high school equity indicator with the grades 4-8 equity indicator it was necessary to use the PAWS test results for grades 4-8. There was no way to apply the grades 4-8 indicator at the high school level since there is no measurement of growth at high school. However, it was possible to apply both the 4-8 equity methodology and the high school methodology for measuring equity to all schools with grades 4-8.

High School Equity Score

The equity score for high schools will be a *mean* student *standardized score* for the consolidated subgroup. This score will be a representation of the current year gap in reading and math achievement of the consolidated subgroup versus statewide performance for all grade 11 students from a baseline year. A comparison against a current year state average would result in a moving target that schools could only know after the fact. The comparison against a baseline year provides a stable target that is known in advance.

This approach was piloted with grade 4-8 PAWS results.

The student standardized score was computed as follows.

Step 1. State average scaled scores and standard deviations were computed for each grade in reading and math for a baseline year (i.e., in this study the baseline year was 2012).

Step 2. For each student in the consolidated subgroup, a standardized score was computed that described the extent that the student's scaled score differs from the baseline year state mean scaled score expressed as a standard deviation unit (i.e., based upon the baseline year standard deviation). Student standardized scores were computed for both reading and math

for all consolidated subgroup students. Student standardized score computation is illustrated in Table 1.

Table 1. Illustration of Student Standardized Score Computation for One Grade-By-Content Area on the PAWS.

Grade 5				
Student A Scaled Score	Baseline Year State Mean Scaled Score	Baseline Year State Standard Deviation	Student Standardized Score Computation	Student Standardized Score
667	694	54	$\frac{(667 - 694)}{54}$	- .50

The student standardized score in Table 1 indicates the student performed 50% of a standard deviation below the baseline year state average.

Step 3. Student standardized scores can be averaged across grades and content areas so it was possible to compute one overall mean standardized score for the consolidated subgroup at each school. This average score is identical to an effect size[1] comparing a consolidated subgroups performance at a school with that of the statewide average PAWS performance from the baseline year. The average standardized score for the consolidated subgroup at the school was the schools' equity score for this study. If a school's equity score was -.25, for example, that would indicate the average score for the consolidated subgroup at the school was 25% of a standard deviation below the baseline year state mean for all students.

Grades 3-8 Equity Scores (*Percent of Students Meeting AGP)*

When a student's student growth percentile (SGP) equals or exceeds her adequate growth percentile (AGP) the student is considered to be on track to become proficient within three years or by the end of grade 8, whichever comes first. The grade 3-8 equity score for a school is the percentage of students in the consolidated subgroup with SGPs that equal or exceed their AGPs.

Findings

For all schools serving grades 4-8, both of the equity scores described above were computed. Pearson correlation coefficients were then computed in order to compare these two school equity scores. The minimum *n* rule used for all reported analyses was at least 10 students were required for a school to get a score. In addition, correlation coefficients were also computed that compared both of the school equity scores with school achievement scores (i.e., current year percent proficient), prior year percent proficient and school growth scores (i.e., median SGPs).

---

[1] Because each grade and content area tested has a unique mean and standard deviation, effect sizes would first need to be computed for the consolidated subgroup in each grade and content area at a school. These effect sizes could then be averaged after weighting for the number of students in the consolidated subgroup in each grade-by-content area at the school. This weighted mean effect size from the school would be identical to the mean of the student level *z* scores. The formula for effect size is identical to the formula for *z* score except the consolidated subgroup mean scale score would be substituted for the student scale score.

Finally, correlation coefficients were computed for comparing the school achievement scores, prior year percent proficient and the school growth scores. The results are presented in Table 2.

Table 2. Pearson Correlation Coefficient Comparing School Accounability Scores Plus Prior Year Achievement.

	High School Equity Score		Current Year Percent Proficient		Prior Year Percent Proficient		Median SGP	
	r	n of Schools	r	n of Schools	r	n of Schools	r	n of Schools
Equity (% Meeting AGP)	0.80	181	0.60	181	0.33	181	0.60	181
High School Equity Score			0.62	181	0.43	181	0.53	181
Current Year Percent Proficient					0.84	239	0.44	239
Prior Year Percent Proficient							0.20	239

Note. Minimum n of 10 students for all conditions.

Conclusion

The findings reveal a strong positive relationship (r = .80) among the two different school equity scores based upon the mean student standardized scores versus the percent meeting AGP scores. The magnitude of this relationship provides evidence for convergent validity for different methods (i.e., *Percent Meeting AGP* and the *High School Equity Score*) measuring the same indicator (i.e., equity). Furthermore, the relationship of both equity scores with measures on the indicators for growth and achievement were lower, more moderate which provides evidence of discriminant validity for both equity indicators. These findings suggest that using mean student standardized scores for consolidated subgroups at high schools will produce equity scores that are comparable to the percent meeting AGP equity scores being used for schools with grades 3-8.