

# Review of Alaska K-12 Student Achievement & Investment

## Frequently Asked Questions

Can you use the change in reading and math National Assessment of Education Progress (NAEP) scale scores from cohort matched 4<sup>th</sup> and 8<sup>th</sup> grade test years to measure student growth?

Yes.

Beginning with the 1984 assessment, following the redesign of the NAEP by the Education Testing Service, a conscious effort was made to enable NAEP to track the educational achievement of the same cohort of students. This was done by spacing the grade levels assessed four years apart, e.g., fourth, eighth and twelve grades, and conducting the assessment in each subject at least every four years. Although it is unlikely that very many of the same students would be assessed from one sample to the subsequent sample four years later, the point of NAEP is to estimate the achievement of a larger population from a representative sample.

Another key feature of the NAEP redesign that allows the measurement of cohort growth is the use of a single scale score (from 0 to 500) for students at all grade and age levels. Comparing the progress of cohorts was one of the reasons for moving to this developmental scale. This development scale has been retained for reading and math.<sup>1</sup>

The combination of these features allows one to compare how much the cohort of 4<sup>th</sup> graders in 2013 gained on the NAEP reading or math scale by the time they were 8<sup>th</sup> graders in 2017. These gains can be compared across different demographic subgroups of students and across the states that participated in NAEP during two time periods.

Reports from the Education Testing Service that feature a more detailed discussion and further illuminate the use of NAEP scale score growth in reading and math include:

- Paul E. Barton and Richard J. Coley, Growth in School: Achievement Gains from the Fourth to the Eighth Grade, Policy Information Report, Policy Information Center, Education Testing Service, 1998
- Richard J. Coley, Growth in School Revisited: Achievement Gains from the Fourth to the Eighth Grade, Policy Information Report, Policy Information Center, Education Testing Service, 2003

For additional detail on the development and subsequent validation of NAEP reading and math scales and the use of common scales to allow comparisons across different age and grade levels, please see:

<https://nces.ed.gov/nationsreportcard/about/newnaephistory.aspx>

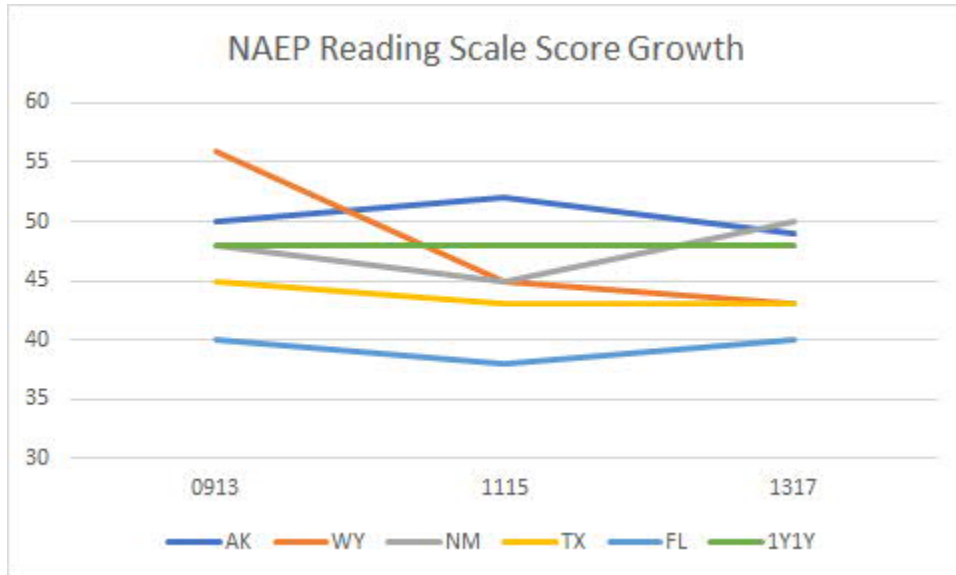
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<sup>1</sup> In contrast, the science and writing assessment scale scores have been changed to within grade 0-300 scales which effectively disable their use for being able to discern student growth estimates between cohort matched groups.

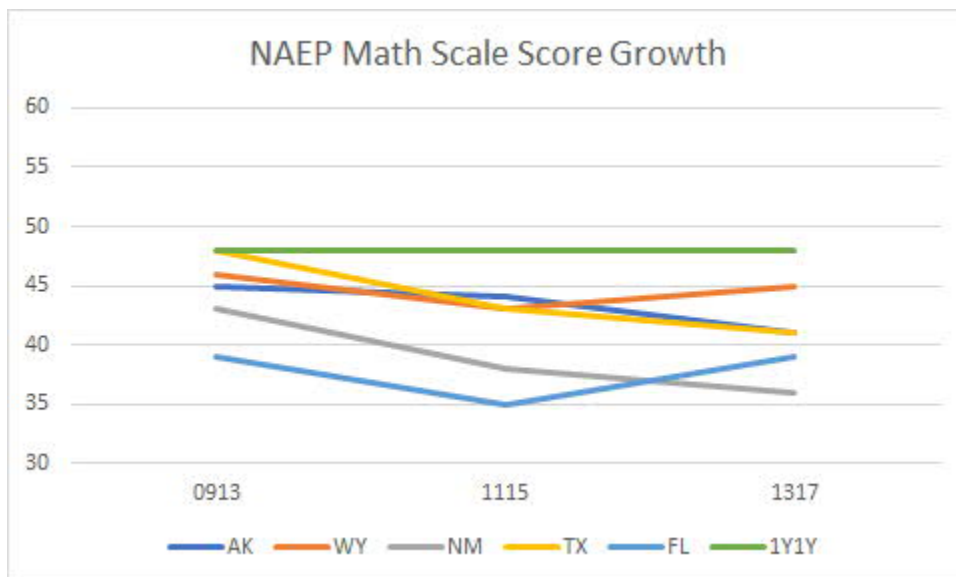
It may also be of interest to note that a rough rule of thumb often used in NAEP analysis is that one year of schooling is equivalent to 12 points on the NAEP reading and math 0-500 scales.<sup>2</sup> So the minimum required growth from the 4<sup>th</sup> to the 8<sup>th</sup> grade to aggregate four years of student progress on the NAEP reading and math assessments over four years of school is 48 scale score points.

#### 4<sup>th</sup> to 8<sup>th</sup> Grade Cohort Match Growth (2009-2013; 2011-2015; 2013-2017)

Reading Growth [AK vs Selected States & 1 year of growth for 1 year of schooling benchmark]



Math Growth [AK vs. Selected States & 1 year of growth for 1 year of schooling benchmark]



<sup>2</sup> Paul W. Holland, "How Big is Big When it Comes to Gaps in Scores", Appendix B of the Report of the Ad Hoc Committee on Confirming Test Results, National Assessment Governing Board, March 1, 2002. Please note that NAEP does not attempt to translate its scores into grade equivalents.

## Correlations between poverty, other factors with student achievement & success in life

What is the basis for offering that roughly ½ of the variation in test scores is frequently attributable to poverty?

Mr. Foster has conducted multiple multi-factor regression analyses of aggregate school and school grade level Alaska state standards-based student assessments percentage proficient vs.

- free and reduced lunch or economically disadvantaged school percentage,
- English language learners percentage, and
- mobility percentage over the course of the year

across Alaska and Anchorage schools and school grade levels data reported from the most recent six years of AMP panel data and the most recent two years of PEAKS data.

In aggregate, poverty – as measured by free and reduced lunch or economically disadvantaged percentage by school, frequently accounts for roughly half of the variation in student test scores from those Alaska and Anchorage test score regressions.

Several simple regressions were offered in the chart pack presentation to illustrate the variation in test scores vs. economically disadvantaged and to illuminate that the correlation coefficients vary by test topic, school district, region, school and grade level data slices.

For an illustrative sample of the national literature on the relationship between poverty and school performance, which suggests that poverty is a prominent factor associated with school level aggregations of student achievement across the U.S., please see:

- Northwest Education Association (MAP test non-profit sponsoring organization), Andy Hegedus, “Evaluating the Relationships between Poverty and School Performance” literature review and analysis (2018):
  - <https://www.nwea.org/content/uploads/2018/10/Evaluating-the-Relationships-Between-Poverty-and-School-Performance.pdf>
  - Please note that Mr. Hegedus’s conclusion #2 on page 13 includes a summary statement that: “...half of a school’s achievement can be accounted for by the percentage of low-income students...”
- Sean Reardon “The Widening Income Achievement Gap” (2013):
  - <http://www.ascd.org/publications/educational-leadership/may13/vol70/num08/The-Widening-Income-Achievement-Gap.aspx>
- Miami-Dade School District, Office of Assessment, Christie Blazer, Director, “The Effect of Poverty on Student Achievement”, literature review and discussion (2009):
  - <https://files.eric.ed.gov/fulltext/ED544709.pdf>

Please note, as mentioned in the presentation to the Joint meeting of the House/Senate Education Committees, the dispersion of \*individual student achievement data within schools\* typically exceeds the dispersion of aggregated school and school grade level student assessments between schools.

### Does poverty cause lower test scores?

Student achievement on standards based tests frequently reflect a host of challenges associated with poverty. Poverty is shorthand for low household income and limited social and household support resources.

### What other factors besides poverty influence student achievement?

For one noteworthy ambitious effort to catalog the wide range of factors which influence student achievement, please see John C. Hattie's Visible Learning web site infographics, including:

<https://visible-learning.org/wp-content/uploads/2018/03/VLPLUS-252-Influences-Hattie-ranking-DEC-2017.pdf>

and

<https://visible-learning.org/hattie-ranking-influences-effect-sizes-learning-achievement/>

### What school related factors contribute to student success in life?

Several recent studies have begun to assemble large robust longitudinal data sets that are exploring what factors, including effective teachers, small class sizes, teacher impacts on motivation, persistence, self-restraint contribute to student graduation rates and student success in life.

See for example,

<https://opportunityinsights.org/>

<https://www.educationnext.org/full-measure-of-a-teacher-using-value-added-assess-effects-student-behavior/>

### What factors should we consider when we assess policy options aimed at improving student success in life?

We should seek local subject matter expert opinion about "what sustains student success?" as well as "how do we turn around persistent challenges?" and validate local expert judgement against local and national data and case studies.

Then we can begin to distill and aggregate the collection of local expert judgement to assess what state, local and federal policy level initiatives are most likely to enable local communities and their schools to improve their children's opportunities for success in life.

### Does teacher content knowledge and competency of reading instruction matter?

Yes.