



ALTERNATIVE ACCOUNTABILITY REPORT

STAR 360 GROWTH

Abstract

This report outlines the observed performance and growth patterns on Renaissance Learning's STAR 360 math and reading assessments for students attending alternative schools across the country. Though based on a limited sample size, the results continue to show that alternative education students do not always grow at the same pace as their grade level peers from non-alternative schools.

Jody L. Ernst, Ph.D.
jernst@momentum-sr.org

Introduction

Since 2008, Dr. Jody Ernst has been conducting research on the growth trends of students attending alternative schools—schools that serve disproportionality high concentrations of “high-risk”¹ students.ⁱ These studies have consistently found that alternative high school students typically grow at a slower rate than their same grade peers on state assessments of mathematics and reading.

Dr. Ernst’s research has also delved into the typical growth patterns of alternative students on nationally normed assessments. In 2009, and again in 2016, Dr. Ernst found the same pattern for alternative high school students—when compared to their same grade peers, alternative school students, on average, grow more slowly. However, when viewing growth as a function of starting point (fall scores) the alternative students growth mirror that of the norming sample. In other words, students that begin the fall with lower grade level skill tend to grow much more than students at or near grade level.ⁱⁱ

A 2015 analysis of STAR 360 math and reading growth, conducted by Renaissance Learning’s Amanda Beckler, continued to show the same basic results.ⁱⁱⁱ This report builds on Ms. Beckler’s work—looking at the growth of alternative school students as a function of grade and starting decile—and provides a summary of the overall growth trends for students in grades 7-12. The goal of this report is to provide schools with an idea of the amount of growth the typical alternative school achieves on the STAR 360 assessments—a compliment to Ms. Beckler’s report which is great for helping schools set growth targets for their students, based on where they start.

Sample

Momentum Strategy & Research (Momentum) is a Colorado based non-profit that focuses on collaboration and data collection and analysis to inform policy and practice in K-12 education. In particular, Momentum expertise lies in the identification of appropriate and relevant measures and metrics for schools and students that are not well measured by traditional academic assessments.

As part of their work Momentum has amassed a database of over 4,000 alternative schools and programs across all 50 states. These schools and programs were first found via states’ departments of education website, then were cross referenced against the National Center for Educational Statistics (NCES) list of alternative schools. As the NCES list is not 100 percent accurate in its identification of alternative schools, Momentum also works with local educational experts to confirm the identity of alternative schools that match the definition in the initial paragraph of this section.

Using the working list of alternative schools, Momentum provided the NCES school identification number to Renaissance Learning’s research team, who then cross-referenced it against their list of STAR 360 users. The search returned matches on 208 alternative schools from across the country. De-identified STAR 360 data from 2011-12 through 2014-15 were then provided for the analysis included in this report.

¹ High-risk is defined differently across states and localities, but generally refer to students that are thought to have a high probability of dropping out of the K-12 education system without a diploma. Some common themes are found across states, as well as in research, for who these students are; these include, reengaged dropouts, overage students, pregnant and/or parenting teens, adjudicated or previously adjudicated youth, expelled students, students with chronic absenteeism and the like.

Analysis

A series of descriptive analysis were conducted using both raw data provided by Renaissance Learning and metrics computed from these raw data. For this report we looked at both the Student Growth Percentile data and the students' weekly scale score change compared to their Expected Weekly Scale Score Change.

Results

Mathematics

Table 1 shows the average fall scale score for mathematics and the corresponding grade level equivalent (GLE). GLE is presented as a decimal, with the number to the left of the decimal reflecting the grade and the number to the right of the decimal reflecting the month within the respective grade. For example, the grade level equivalent for the average alternative 7th grade student (see Table 1) is 5.2. This means that the average 7th grade student from across over 200 alternative schools has math skills equivalent to the average student in the 2nd month of their 5th grade year.

Table 1. Fall Grade Level Equivalent in Math by Fall Grade Level			
Fall Placement Grade*	Average Fall Scale Score in Math	Average Fall GLE in Math	Ave Years Behind in Math
7th (n=1496)	631.7	5.2	-1.9
8th (n=2402)	668.2	5.7	-2.4
9th (n=8538)	711.4	6.2	-2.9
10th (n=9548)	753.7	6.9	-3.3
11th (n=7735)	801.9	7.6	-3.5
12th (n=7710)	828.1	7.9	-4.3

*Renaissance Learning's Placement Grades are also in decimal format, but were consolidated here for simplicity

Momentum used Renaissance Learning's "placement grade"² for and GLE for each student to compute a difference between the two numbers. The average difference is shown in Table 1 as the "Ave Years Behind in Math". On average, the higher grade that the students are in, the farther behind they are in the fall of each year.

Our next analysis looked at scale score change between each of the three administration windows; fall to winter (F-W), winter to spring (W-S), and fall to spring (F-S). For STAR 360 the scale scores range from 1 to 1900.

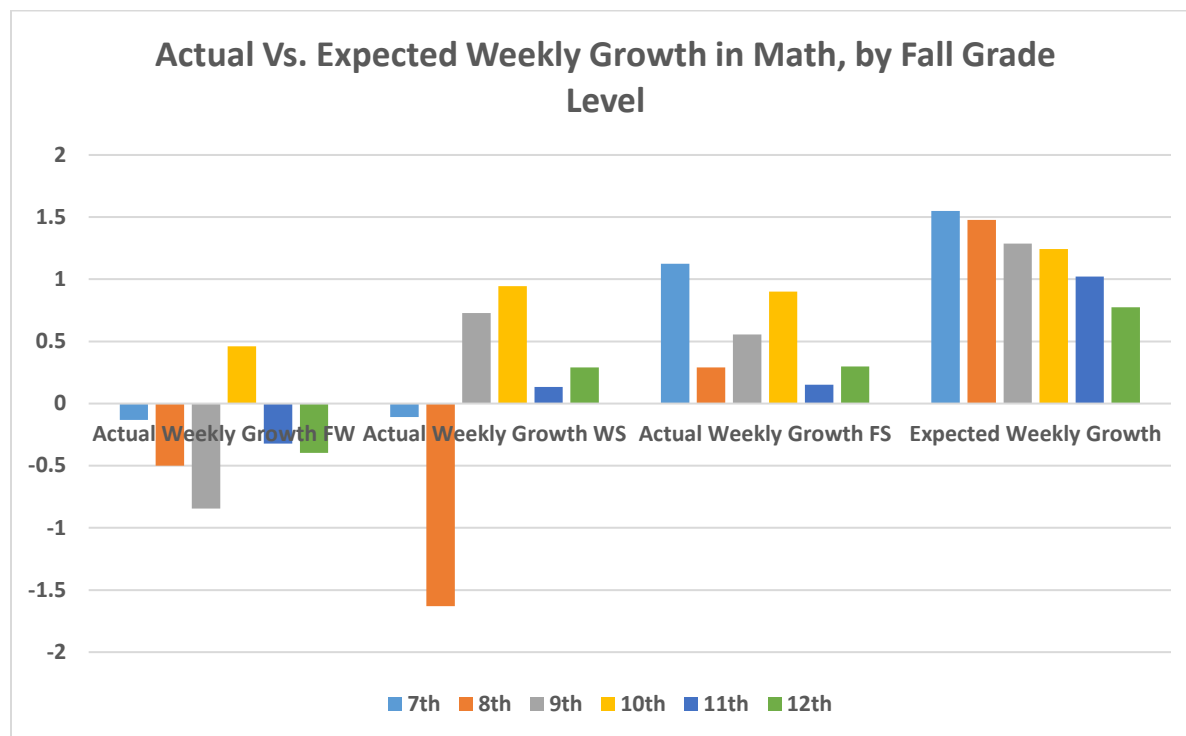
² Grade the student is placed in by the school of attendance.

As shown in Table 2, scale score gains are typically smaller between fall and winter than between winter and spring. This trend is not unusual as it is common for the number of weeks between assessments to be greater between the fall and winter tests periods than between the winter and spring test periods.

Table 2. Average Scale Score Changes, in Mathematics, by Alternative Students Fall Placement Grade						
Fall Placement Grade*	N	Average F-W Scale Score		Average W-S Scale Score		Average F-S Scale Score
		Change	N	Change	N	Change
7th	606	16.3	738	12.9	505	42.5
8th	1021	3.2	1258	2.4	757	12.7
9th	2884	2.3	3264	8.7	1907	22.7
10th	3733	18.3	4304	19.0	2206	41.5
11th	2722	-5.7	3272	7.3	1385	7.1
12th	2444	0.1	2541	10.5	1209	15.4

* Renaissance Learning's Placement Grades are also in decimal format, but were consolidated here for simplicity

To mitigate for the differences in time between assessments, Renaissance Learning computes an expected weekly gain score for every student.^{iv} The figure below shows how much, on average, alternative students in grades 7-12 grew per week, compared to how much they were expected to grow each week.



Bars that drop below the zero line indicate that the average student in that grade actually score lower on the second assessment than on the first, within the respective growth periods. This so called

“negative growth” was the case for all grades, except 10th grade, for fall to winter but only for grades 7 and 8 for the winter to spring growth period. All grades showed positive change, on average, for the fall to spring growth period, though it should be noted that far fewer students have both fall and spring assessment results than the other two growth periods, and the weekly growth achieved was smaller than was expected for all grade levels.

To get a sense of the proportion of alternative students that do meet expected gains, using RL’s predictive model, we assessed the percentage of alternative students in grades 7-12 and grades 9-12 that met their expected growth. The results, shown in Table 3, indicate that a higher proportion alternative students meet their expected weekly gains between winter and spring than between either fall and winter or fall and spring. In general, however, fewer than 50 percent of alternative students meet RL’s expected weekly gains.

Table 3. Percent of Alternative Students That Met expected Weekly Growth Gains on STAR 360 Math Assessments			
Fall Placement Grades	Pct. of Students that Met Expected Gains		
	<u>Fall to Winter</u>	<u>Winter to Spring</u>	<u>Fall to Spring</u>
7-12th Grade			
Students	43.4%	48.5%	41.9%
9-12th Grade			
Students	43.2%	49.2%	42.1%

Another method RL uses to gauge the progress of student on the STAR 360 assessments is through the use of student growth percentiles, a method that has become increasingly popular with state departments of education for use in K-12 public education accountability systems. While this method was developed to capture students’ relative growth compared to students that have the same performance histories, Dr. Ernst’s research has shown that, on average, alternative students in Colorado and Arizona tend to grow at a slower pace compared to their same grade peers in non-alternative schools—even when using this relative model.

As in prior research, the analysis summarized in Table 4 show that alternative students’ average growth percentiles range from a low of 37.3 to a high of 50.2; whereas the STAR 360 norming sample averages 50 across the board. Of particular interest is the pattern across fall placement grade levels, where alternative students in lower placement grades (i.e., 7th-9th grade) tend to fall further behind their same grade peers, with respect to average growth percentiles, than alternative students in grade 10-11, with students placed in 12th grade showing growth rates that are on par with the average growth of most 12th graders.

Table 4. Average Student Growth Percentile for the Alternative Sample, by Grade						
<u>Fall Placement</u>		<u>Average F-W Growth</u>		<u>Average W-S Growth</u>		<u>Average F-S Growth</u>
<u>Grade*</u>	<u>N</u>	<u>Percentile</u>	<u>N</u>	<u>Percentile</u>	<u>N</u>	<u>Percentile</u>
7th	418	44.6	498	44.8	361	42.9
8th	729	43.5	853	43.2	527	37.3
9th	2147	44.0	2495	44.6	1469	41.8
10th	2662	46.0	3042	47.2	1615	44.4
11th	1940	47.6	2183	46.9	991	45.3
12th	1787	49.0	1675	50.2	912	50.2

As most schools may want to use this report to set goals for their students, and perhaps for the school as a whole, we also reviewed the proportion of alternative school students that score in the Low (SGP=1-34), Typical (SGP=35-60), and High (SGP=61-99) ranges. Table 5 summarizes those outcomes for students in 7th-12th grade, cumulatively, as well as for students in 9th-12th. While these results vary slightly depending on the growth period observed, the proportion of students in each growth range fall roughly into thirds, but with a bit more than a third scoring in the Low range for winter to spring and fall to spring.

Table 5. Percent of Alt Students Achieving Low, Typical, or High Growth on STAR 360 Math			
SGP Growth Rating		7-12th Grade Students	9-12th Grade Students
Fall to Winter Growth	Low	34.7%	33.8%
	Typical	35.0%	36.1%
	High	30.3%	30.1%
Winter to Spring Growth	Low	36.3%	35.5%
	Typical	32.2%	32.7%
	High	31.6%	31.8%
Fall to Spring Growth	Low	39.5%	37.9%
	Typical	32.7%	33.6%
	High	27.8%	28.5%

Reading

This section outlines the summary of our research using the STAR 360 reading assessment, using the same measures and metrics as provided in the math section above.

Similar to the fall scale scores and grade level equivalents found for mathematics, alternative students' fall scale scores for reading suggest that these students begin the year at least two grade levels behind. The higher the grade level alternative students are placed in during the fall, the farther behind they

appear to start—with students placed in 7th grade scoring roughly 2 grade levels behind in the fall and those placed in 12th grade scoring about 4 grade levels behind in the fall.

Table 6. Fall Grade Level Equivalent in Reading by Fall Grade Level				
<u>Fall Placement Grade*</u>	<u>N</u>	<u>Average Fall Scale Score in Reading</u>	<u>Average Fall GLE Reading</u>	<u>Ave Years Behind in Reading</u>
7th	1745	589.5	5.0	-2.1
8th	2707	640.7	5.5	-2.5
9th	9822	696.0	6.2	-3.0
10th	10276	750.2	6.8	-3.3
11th	9053	801.1	7.5	-3.6
12th	9226	845.8	8.0	-4.1

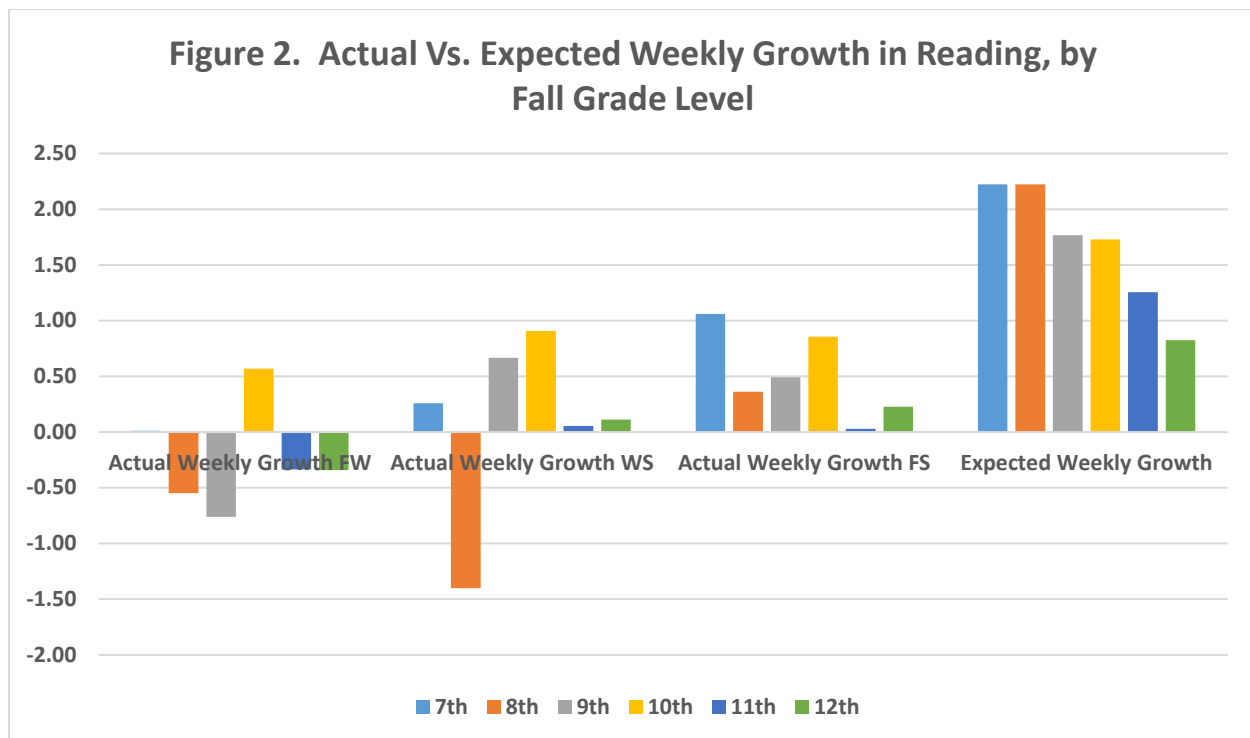
*Renaissance Learning's Placement Grades are also in decimal format, but were consolidated here for simplicity

Scale score gains within each growth period are summarized across grade levels for alternative students in Table 7. Unlike the finding for math, reading scale score gains tended to be smaller, on average, between the fall and winter assessments than between the winter and spring assessments. For alternative students placed in 11th and 12th grade, the average scale score is negative (meaning that the average alternative student scored lower in the winter than they did in the fall). However, the average scale score gains between fall and spring and between winter and spring were all in a positive direction.

Table 7. Average Scale Score Changes, in Reading, by Alternative Students' Fall Placement Grade						
<u>Fall Placement Grade*</u>	<u>N</u>	<u>Average F-W Scale Score Change</u>	<u>N</u>	<u>Average W-S Scale Score Change</u>	<u>N</u>	<u>Average F-S Scale Score Change</u>
7th	718	15.3	790	16.4	582	40.4
8th	1111	1.2	1262	5.2	790	14.7
9th	3021	3.0	3362	7.9	1994	20.0
10th	3767	19.0	4293	17.3	2238	38.5
11th	3000	-5.1	3481	5.9	1519	3.6
12th	2819	-0.9	2651	7.9	1264	12.8

*Renaissance Learning's Placement Grades are also in decimal format, but were consolidated here for simplicity

According to our data, the gains achieved by students enrolled in AECs were not equal to the gains expected in RL's predictive models. See Figure 2.



Similar to the findings for math, fewer than 50% of alternative students met the weekly growth expected, based on the RL predictive model. As shown in Table 8, the highest proportion of 7-12th grade or 9-12th grade students to meet expected weekly gains did so in the winter to spring growth period.

Table 8. Percent of Alternative Students That Met expected Weekly Growth Gains on STAR 360 Reading Assessments			
	Pct. of Students that Met Expected Gains		
	<u>Fall to Winter</u>	<u>Winter to Spring</u>	<u>Fall to Spring</u>
7-12th Grade Students	41.3%	46.3%	38.9%
9-12th Grade Students	41.7%	47.3%	39.8%

The findings for student growth percentiles in reading also parallel the findings for math. Specifically, the average alternative school students' mean growth percentile falls below 50, with the exception of 12th grade students (Table 9), and slightly more than a third of the students in each growth period achieve Low growth (growth below the 35th percentile), as opposed to Typical or High levels of growth (Table 10).

Table 9. Average Student Growth Percentile for the Alternative Sample, by Grade						
<u>Fall Placement</u>	<u>Average F-W</u>		<u>Average W-S</u>		<u>Average F-S</u>	
	<u>Grade*</u>	<u>N</u>	<u>Growth</u>	<u>Percentile</u>	<u>N</u>	<u>Growth</u>
			<u>Percentile</u>			<u>Percentile</u>
	7th	500	43.8	531	45.4	412
	8th	811	41.7	862	43.9	554
	9th	2290	44.3	2499	44.8	1474
	10th	2731	46.0	3035	47.2	1626
	11th	2160	47.5	2347	47.0	1099
	12th	2101	49.3	1757	50.0	960

*Renaissance Learning's Placement Grades are also in decimal format, but were consolidated here for simplicity

Table 10. Percent of Alt Students Achieving Low, Typical, or High Growth on STAR 360 Reading			
Growth Interval	SGP Growth Rating	7-12th Grade Students	9-12th Grade Students
Fall to Winter Growth	Low	36.1%	35.1%
	Typical	32.3%	33.0%
	High	31.7%	31.9%
Winter to Spring Growth	Low	37.2%	36.6%
	Typical	29.8%	30.1%
	High	33.1%	33.4%
Fall to Spring Growth	Low	41.0%	39.6%
	Typical	29.5%	29.9%
	High	29.5%	30.5%

Conclusions

The results from our analysis of students from 208 alternative schools across the country continue to support prior findings that alternative students tend to grow at a slower rate than non-alternative students in the same grade level.

Students attending alternative schools begin the year between two and four grade levels behind their placement grade level—with older students tending to be more behind than younger students.

Though these results are based on over 20,000 students, the results here should be treated as informational only. No attribution as to the effectiveness of alternative schools can be derived from these analysis and that was not the intent of this research. Rather, the results suggest that further research into the effectiveness of measures that were normed on traditional student populations is needed before they are used for accountability purposes with schools serving disproportionately high

proportions of high-risk students. In the meantime, these results may guide stakeholders as to the typical performance of such students and the schools that serve them.

ⁱ Ernst, J.L. (2009) Are Alternative growth Goals Warranted for Colorado Alternative Students. Available upon request.

ⁱⁱ Ernst, J. L. (2010) The Use of NWEA as an Assessment for Alternative Schools in Colorado. Prepared for the Colorado Department of Education. Available upon request.

ⁱⁱⁱ Beckler, A. & Ernst, J. L. (2015). STAR Reading and STAR Math growth among Students Attending Alternative Schools across the US. Available upon request.

^{iv} *Ibid.*