KINGSBURY
CENTER AT NWEA

The Bureau of Indian Education: 2009-2010 Baseline Data Report

February 2011

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EXECUTIVE SUMMARY

In the Fall of 2010, the Bureau of Indian Education (BIE) approached Northwest Evaluation Association (NWEA) to commission a report of system-wide performance for their first full school year of testing as part of the BIE-NWEA Project. Even with only a single year of testing data, we were able to identify some patterns and they are listed in this report. More years of data will deepen the analyses that are possible and allow for the identification of trends and change over time.

This report is not an evaluation of BIE effectiveness; it is a written summary of data from the BIE's first year of the NWEA Project. As a baseline report, it should be used as a place to gauge the starting point for the many schools managed by the Bureau, not as a reward or punishment system for schools. This report is a description of first year *performance*, not of BIE *effectiveness*. One of our recommendations included later in the report is that the BIE not only continue annual reporting but also commission a system-wide evaluation of effectiveness after at least three years of testing with NWEA.

The Findings section of this report describes the Fall 2009 starting point for students in different groups, as well as the Spring 2010 end point for this analysis. Growth was measured compared to national NWEA norms and also compared to a group of students with similar scores, similar school poverty, and similar rural location (Virtual Comparison Group or VCG). Differences were shown for Project schools, non-Project schools, different grades, and to some extent differences for ADDs, ELOs, and states. The following is a summary of the report findings.

- Fall starting scores for BIE students lagged significantly behind national norms in Math and even more so in Reading. In general, Fall to Spring growth averages were lower for BIE students than the national norm sample of students with similar scores.
- BIE students averaged across all grades had similar performance to their Virtual Comparison Groups (VCG). BIE students were generally lower than their VCG group in early grades K-7 and higher than their VCG group in later grades 8-12.
- For students in the BIE-NWEA Project, students started at lower scores and showed mixed results for growth. Project and non-Project students showed similar growth scores in Math but non-Project students showed more growth in Reading. There was variance by grade.
- Average growth for students in Oregon and Utah was greater than comparison group growth in Reading and Math. Students in Standing Rock ELO and New Mexico Navajo North ELO had higher student growth scores in Reading and Math than their comparison groups.
- Students in schools that used NWEA professional development showed more growth than comparison students in some grades. Students in schools that have been testing with NWEA for 2 years of more showed higher growth than comparison groups in early grades. Students in schools managed by the Bureau showed significantly greater growth than students in grant or contract schools when compared to both the norms and their respective Virtual Comparison Groups.

The data from this report reflects the academic performance for BIE students and the necessary challenge for BIE schools to overcome. Within the data, however, there were several areas with remarkable outcomes that can be highlighted and should be celebrated and continued. Looking at high-level averages often masks the success stories for some students and schools. Some examples of individual successes are listed in the Discussion section.

After analyzing the performance data for the 2009-2010 school year, we have the following recommendations for the Bureau of Indian Education. These recommendations are detailed in the report.

- We recommend that the Bureau continue to look closely at its student performance data on a regular basis.
- We recommend that the Bureau undertake further analysis in areas not pursued in this report.
- We recommend that the Bureau continue to monitor progress on an annual basis for several years, and then commission a program evaluation study including at least three years of student performance.
- We recommend that the Bureau use their data to ask difficult questions about student performance and school programs.
- We recommend that the Bureau celebrate and build on successes.

We hope that the data from this report helps the Bureau of Indian Education understand the current state of their student achievement. However, data is the merely the beginning of process improvement. Answering the questions raised by the data and implementing necessary changes is what brings about a true increase in student achievement.

INTRODUCTION

THE PURPOSE OF THIS REPORT

In the Fall of 2009, the Bureau of Indian Education started partnering with Northwest Evaluation Association (NWEA) to provide professional development and leadership coaching in 46 schools in seven states. The partnership focused on data derived from the use of NWEA's interim assessment, Measures of Academic Progress (MAP) to measure student progress and improve school outcomes. Due to the number of schools across states and Line Offices using the MAP assessment, the BIE asked NWEA to develop an approach to look at the system of participating BIE schools at once. "Roll-up reporting" was provided for the entire system in a way that BIE, ADD, and ELO leaders, as well as teachers and school leaders, could look at results and make appropriate choices about curriculum and instruction. Those "roll-up reports" were provided after the Spring 2010 testing season and again after the Fall 2010 term when an expanded group of 53 schools were participating in the partnership. While 53 schools are included in the professional development and leadership coaching project, 112 BIE schools across the country use NWEA MAP assessments. In Fall 2010, BIE approached NWEA to commission a report of system-wide performance for their first full school year. This report serves as the first in what we recommend to be a series of ongoing reports on the progress of BIE schools.

With only a single year of testing data, certain patterns were able to be identified and are detailed in this report. However, more years of data will deepen the analyses and allow for the identification of trends and change over time. Intervention strategies often take several years for results to be seen at a high level (although teacher-student changes can often be seen very quickly), so a multi-year evaluation is the most appropriate methodology to reflect the result of Bureau effectiveness. However, this report is not an evaluation of BIE effectiveness. Instead, it is a written summary that shows data for the BIE's first year of testing with NWEA. As a baseline report, it should be used as a place to gauge the starting point for the many schools managed by the Bureau.

It is important to note this report is a high-level summary of all schools within the BIE. Due to confidentiality, we have specifically not identified individual schools, teachers, or students, and the results shown reflect only *average* performance for the different groups identified. An average always masks the individual differences seen for particular schools, teachers, and students. Even if average performance falls in a certain range, there are students who are struggling as well as students achieving far higher than the average conveys. Education is about student learning, not system-wide averages, therefore this report is not designed to be used as a reward or punishment system for schools or administrators. There are other tools available to measure school and teacher effectiveness. This report is a description of first year *performance*, not of BIE *effectiveness*. One of our recommendations included later in the report is that the BIE continue annual reporting, but also commission a system-wide evaluation of effectiveness following the third year of testing with NWEA.

THE BUREAU OF INDIAN EDUCATION (BIE)

Through the design and execution of effective education programs, BIE contributes to the development of quality American Indian and Alaska Native communities. Approximately 4,300 full-time and seasonal BIE employees, including teachers, serve American Indian and Alaska Native students at BIE-operated schools located on or near Indian reservations.

The BIE supports education programs and manages residential facilities for Indian students at 184 BIE-funded elementary and secondary schools and dormitories, 60 of which are BIE-operated schools, and 124 of which are BIE-funded tribally-operated schools. BIE's elementary and secondary school system spans 23 states serving diverse Indian

communities. Schools range in size from eight to more than 1,100 students, representing over 240 Tribes with different cultural backgrounds and on 64 reservations.

The BIE's school system is designed to meet the Federal government's commitment to provide for the education of the American Indian/Alaskan Native children as called for in numerous treaties, court decisions, and legislation. Achieving AYP is one of the cornerstones of the Federal NCLB. In FY 2005, the BIE implemented several provisions required in NCLB that were developed through a successfully negotiated rulemaking process in 2004 with Indian tribal leaders. One of these provisions addresses AYP standards for student achievement. Consensus was reached that BIE schools would use the same AYP standards as the state within which they are located. Application of this methodology allows BIE to track student academic proficiency in each of the BIE-funded elementary and secondary schools relative to local public school performance.

THE NWEA-BIE PROJECT

NWEA is a not-for-profit organization located in Portland, Oregon with offerings in computer-adaptive assessment, research, professional development, and reporting. NWEA's Measures of Academic Progress (MAP™) assessments are aligned to state standards and can predict proficiency on state exams. 112 BIE schools in 17 states use MAP assessments to inform instruction and predict proficiency on state tests.

Through a professional development contract, NWEA works closely with School Leadership Teams and Education Line Officers in 53 schools and 17 line offices within the BIE's System of Support. Between program initiation in September 2009 and January 2011, NWEA has delivered more than 175workshops, 200 face-to-face leadership coaching events, and 220 telephone coaching events to principals and Education Line Officers. "Roll-up" Reports with aggregated student achievement and growth data have been delivered to BIE at the conclusion of each testing season.

The professional development and coaching plan is designed to work seamlessly with the BIE System of Support to provide structures and build capacity for the application of MAP student achievement data to improve effectiveness in BIE schools and make a difference for children. The plan is designed to support and enhance BIE's "commitment to provide high-quality professional development opportunities" and help "ensure delivery of scientifically researched and evidence-based instructional practices."

The long-term partnership between NWEA and the Bureau provides an environment for the development of capacity building and proficiency in the use of student achievement data over an extended time. The workshops delivered at schools are "leveled" over time to indicate a progression in complexity in the acquisition and development of skills and core knowledge. Through this process, BIE personnel develop capacity to access and apply data to inform planning, implementation, and evaluation of student outcomes.

To accomplish this work, NWEA works closely with teachers, school leadership teams, Education Line Officers, and the BIE System of Support Management Team. During the past year and a half, many collaborative relationships between NWEA coaches and leaders have been established. The consistent support provided to BIE leaders has resulted in changes of practice in schools and line offices, with leaders now eager to set and monitor goals. This same staff has articulated, in many venues, the value of these robust coaching relationships.

MEASUREMENT ISSUES

Federal Adequate Yearly Progress (AYP) measures the percentage of students in each state meeting the state-defined grade-level proficiency bar. There are a number of reasons why this metric is may not be useful for measuring BIE students.

For instance, measuring student success with AYP ratings:

- Can't compare state to state—it is meant for measuring students in one state only
- Can't measure growth over time in states without a vertical scale (e.g., California)—it is meant for grade-specific measurement only in those states
- Can't measure students above or below grade level in states disallowing off-grade testing —it is meant for typical students only

One of the challenges facing the Bureau of Indian Education is a lack of comparable data for its multiple schools in multiple states. For instance, since each state has a different proficiency bar, a student who received the same score in two states could be considered passing in one and failing in another. This means that comparing AYP measures across states is likely to distort conclusions drawn from examining two or more states at the same time.

Another problem with the easily available AYP rating is it simply reports students as Pass or Fail, not measuring progress they have made because of a lack of reliability at the student level. Even in states starting to use growth as a measure of success, the tests they are using were primarily designed to measure growth at the aggregated levels (classroom, school, district, and state), not individualized growth. In addition, for students significantly above or below grade-level proficiency levels, state tests often do not measure performance as accurately as a computer adaptive instrument. Those tests often don't have the number of questions needed to accurately measure a student outside typical on-grade performance.

NWEA tests address many of these concerns because the MAP test measures individual student growth on a single scale from Kindergarten through high school in a manner comparable across states. With reporting tools designed to harvest these data, the Bureau is able to see student growth between different schools, as well as across different grades within their schools. This report uses test scores from students in BIE schools and compares their students' performance against the performance of students across the nation, providing a description of the progress of the Bureau's educational system. What follows is an explanation of how this progress was assessed, what progress was found, and how the progress compares to other types of students.

METHODOLOGY

SCHOOLS AND STUDENTS

Data available for this project included Fall 2009, Spring 2010, and Fall 2010 NWEA Reading and Math scores for students in some of the BIE schools. Some BIE schools started using the NWEA tests in 2000, and other schools have been joining in every season and year in between. In the fall of 2009, 73 of 184 BIE schools tested with NWEA, and in the fall of 2010 that number increased to 112. Testing was not uniform in all schools. Not all schools tested all grades, and some schools did not test during every term (fall, winter, spring). While some schools used NWEA professional development services to understand their data and how to use it, others haven't used these services. Because there is such variation between which schools and students were included in different pieces of the dataset, we developed a core group of student test records that would be used for this report. The core group includes students who had valid test records in either Reading or Math or both in Fall 2009 and Spring 2010, and were in the same school in both seasons. In addition, because disaggregation was necessary between the NWEA Project schools and the non-Project schools, analysis for those populations was limited to students in grades K-8. Grades 9-12 had less than 100 NWEA Project students per grade so disaggregation by this group wouldn't be possible.

Tables 1 and 2 show the number of all BIE students with valid scores in each term and subject. The column to the right of the dark blue line in each table shows the total number of students included in this report's analysis. The last column shows what percentage of Fall 2009 students were included in this report. Most students who were not included weren't included because they did not have a Spring test score, but some were not included because they were not in the same school in Spring.

Table 1: Counts of BIE students in each testing season for Math

MATH	Fall09 Data	Spring10 Data	Fall10 Data	Total Included	% of Fall09 Included
K	635	1176	1219	488	77%
1	852	1361	1624	598	70%
2	1191	1658	1863	995	84%
3	1175	1808	2041	994	85%
4	1218	1819	1972	1008	83%
5	1144	1718	1990	937	82%
6	1153	1732	1912	934	81%
7	1176	1467	1750	881	75%
8	1151	1393	1680	869	75%
9	1069	1138	1646	650	61%
10	856	1059	1306	541	63%
11	686	873	1119	458	67%
12	330	442	708	198	60%
Total	**12,636**	**17,644**	**20,830**	**9,551**	**76%**

Table 2: Counts of BIE students in each testing season for Reading

READING	Fall09 Data	Spring10 Data	Fall10 Data		Total Included	% of Fall09 Included
K	631	1176	1219		511	81%
1	831	1361	1624		625	75%
2	1228	1658	1863		1000	81%
3	1201	1808	2041		990	82%
4	1205	1819	1972		992	82%
5	1135	1718	1990		911	80%
6	1124	1732	1912		923	82%
7	1176	1467	1750		907	77%
8	1124	1393	1680		853	76%
9	1075	1138	1646		675	63%
10	863	1059	1306		594	69%
11	711	873	1119		485	68%
12	340	442	708		193	57%
Total	**12,644**	**17,644**	**20,830**		**9,659**	**76%**

NWEA TESTING

NWEA tests are administered at schools during specific testing windows in fall, winter, and spring. BIE schools can choose when to administer the test, but tests must be administered within a specific window in order to accurately measure growth between testing events. The assessments use computer adaptive testing (CAT) technology which means questions are selected for the student based on their performance on previous questions. This allows for a more precise measurement of student performance than traditional paper-and-pencil tests. Most subject tests consist of about 50 multiple choice questions. Either before the student takes the test or afterward, a school representative enters the Class Roster File for each group of students. This includes the student's identifying information as well as the school they are in. The Class Roster File also allows schools to enter teacher names and special population information (such as whether a student is an English Language Learner, or whether the student is in a specialized math program) so that schools can disaggregate their data by these categories later. The testing information as well as the identifying information is warehoused at NWEA so data can be reported back to schools and used for analysis and coaching services requested by the school.

NWEA test scores are called RIT scores because they are developed using Rasch methodology for measuring student growth. NWEA has been using this method of measuring students for over 30 years and has developed cross-grade scales for each subject tested that have remained stable during the course of this time. These scales are used for all NWEA students using the Measured Assessment of Progress (MAP) and MAP for Primary Grades (MPG). NWEA tests are aligned to the content standards of each state, but are drawn from a single pool of calibrated items. Because each state's NWEA test is a part of the same national assessment, student performance in each subject can be compared across states.

This makes NWEA tests particularly good for measuring BIE students who are located in many states and whose performance is measured based on the different standards in each of their states. Using NWEA RIT scores, the Bureau of Indian Education can compare performance and growth for all of their students across the country. NWEA tests are designed for the specific purpose of measuring student academic growth, and unlike most state assessments, they are equally valid for all students being tested. The computer-based tests adapt to each student's ability level, so students who are far above or far below grade level can be measured just as effectively as average students. A single point of RIT growth means the same amount of learning no matter what grade the student is in.

MEASURING PERFORMANCE

Testing data provided by NWEA allows for multiple ways to measure student performance. We have used four main metrics in this report: test scores, raw growth, norm-indexed growth, and virtual comparison group measurement.

Test Scores

The most basic measurement is to evaluate the student's status at a certain time by looking at their test score. NWEA tests have an advantage over most other tests used in districts and states because all test scores are measured on a single scale across all grades and all states. This scale is called a RIT (Rasch UnIT) scale, and the scores provided are called RIT scores. RIT scores range from about 100 for early learners (often Kindergarten and 1st grade) to as high as 300 for the most advanced learners (often 11th and 12th grade), with the majority of scores being between 150 and 250. The scale is cross-grade, meaning that student scores are reported on the same scale over time, rather than a separate scale at each grade. Most analyses in this report have been based on grade level because that is the most convenient way for schools and administrations to view performance. RIT scores from Fall 2009 and from Spring 2010 are reported in this study.

Raw Growth

One of the differences of NWEA tests and state accountability tests is that NWEA tests were designed to measure student growth. The difference in RIT scores between two periods (for example between Fall and Spring of a school year, or between one year and the next) is called Raw Growth and reflects the amount of domain (for instance Math or Reading) learning the student has gained between the two periods. Raw growth can be compared for groups of students to see which group gained more growth over the same period of time.

Growth Norm Index

One way to give context to a raw student growth measure is to compare the raw growth of one student to a national sample. For this report, we have compared the growth of BIE core students to a national sample of NWEA students in the same grade and subject who had the same starting RIT score. This is called a Growth Norm comparison. The NWEA Growth Norms are comprised of test events for millions of students in thousands of districts across the country. They are balanced to reflect the national demographic distribution of students, and they are revised every few years. The advantage of using a Growth Norm comparison instead of looking only at raw growth is that students at higher RIT score levels typically show lower growth than other students. Limiting the comparison to students with the same starting score produces a more apples-to-apples measurement. Subtracting the Growth Norm from a student's raw score creates what we call a Growth Index Score based on the norm. Values above zero show that a student has grown more than a typical group at that starting RIT score, and values below zero indicate that they have grown less. Growth Index scores can be compared across all grades which make it possible to see which grade levels need more interventions than others. Because state assessments are not always "vertically scaled" like NWEA tests, comparing across grades in those tests is not feasible. For more information about the problem of using state assessments to measure performance and growth across grades, please see The Proficiency Illusion (Cronin, Dahlin, Adkins, & Kingsbury 2007).

Virtual Comparison Group

Another way of understanding student growth is by comparing an individual student's raw growth to the average raw growth of a group of similar students: we call this method a Virtual Comparison Group (VCG) analysis. For every student, we create a sample of 51 students across the country who have the same starting RIT score, and in addition have the same school characteristics as the student being measured: all students in the VCG group come from schools with the same percentage of Free and Reduced Lunch students (as a measure of poverty rate) and the same geographic categorization (Urban, Suburban, Town, or Rural) as the student being compared. In this way, VCG analysis uses an even more precise comparison group to compare student growth. The advantage of this method is that it further equalizes the measurement for students who come from poor and rural schools. VCG averages include students from across the country but deliberately exclude all BIE students. More information about how norm indexed growth and VCG growth analyses are constructed is included in the Appendix.

LIMITATIONS

As with any research study, there are limits to the data that was available, which in turn limits how the study can be used. In order to measure student growth scores by school, students who were not in the same school in both seasons were not included. This makes comparisons more valid, but it means that the performance and growth of students who changed schools in the middle of the year are not included. Because mobile students often have lower scores, this introduces a slight skew in the dataset. In addition, only schools that were testing with NWEA in both Fall 2009 and Spring 2010 are included in this report. Many schools started testing with NWEA in Spring 2010 or Fall 2010, and could not be included in the growth analysis between Fall 2009 and Spring 2010. One other limitation of the dataset is that all students were measured based on their grade level in the Fall of 2009. Students who skipped to the next grade or who failed a grade are included with other students who started in the same grade, meaning that the school interventions of changing a student's grade based on need is not captured in this data.

In addition, there may be differences in how different schools administer the NWEA tests. Some schools use these tests as an integral part of their assessment program; others may not yet have fully implemented NWEA testing. This may affect the reliability and validity of results. In addition, administration of the Project may vary across BIE settings. Some schools have had more time working with NWEA, and some schools may have had more professional development courses or spent more time with school coaches. These differences in rigor of Project administration may also cause variance in the results shown in this report.

The most important limitation of this study is the lack of historical perspective. Because this is the first year of the BIE-NWEA Project, we could only use data from a single school year. Growth within a school year is very useful for classroom and school administration practices, but isn't indicative of a system-wide trend. Fall to Spring growth is a single point of growth data, and more stable results can be expected as more growth data is collected. This report should not be used to measure whether the BIE school system is effective or not. This report offers data about the baseline performance and growth achieved by schools, and is not a summative evaluation of the Project. We recommend a follow-up report in two years to measure the effectiveness of the Bureau's schools, as well as the effectiveness of the BIE NWEA Project.

FINDINGS

OVERALL DIFFERENCES

Because reliable growth measures were needed, the majority of the analysis in this report is concentrated on a core group of students who had the following characteristics:

- They were in the same school in Fall 2009 and Spring 2010.
- They had valid scores in Fall 2009 and Spring 2010 in either Reading or Math or both.

In addition, division by NWEA Project schools versus non-Project schools is limited to grades K-8 because there weren't enough students in the upper grades in Project schools to make the comparison reliable. NWEA norm comparisons are limited to grades 2-11.

For more information about the selection of core students, please see the Methodology section. The following tables show the counts of BIE students in NWEA Project and non-Project schools for each subject and grade, as well as the average RIT score from Fall 2009 which serves as the baseline from which we measured growth. The average Fall RIT for students' Virtual Comparison Groups (VCG) is shown next to the Project schools' and non-Project schools' average RIT scores; note that the comparison groups for Project and non-Project schools are different. The national NWEA normative score (Norm) for Fall is also shown. BIE average and VCG averages for Fall RIT should be very close since the comparison groups were chosen in part based on this score.

Table 3: Fall Math RIT scores for Project, non-Project, VCG, and Norm groups

MATH	Number of Students		Fall RIT Score		Fall RIT Score		Fall RIT Score
	Project	Non-project	Project	VCG	Non-project	VCG	Norm
K	226	262	131.5	133.2	132.9	134.8	
1	329	269	153.7	153.7	152.8	154.6	
2	383	612	170.6	170.5	172.4	172.4	179.5
3	343	651	180.9	181.6	183.4	183.4	182.1
4	379	629	189.8	190.1	193.8	193.8	203.0
5	333	604	197.7	197.8	201.6	201.8	211.7
6	360	574	204.1	204.7	208.0	208.1	218.3
7	299	582	208.8	208.7	213.2	213.7	224.1
8	273	596	214.1	213.9	218.4	218.4	229.3
9	61	589					231.6
10	67	474					235.2
11	63	395					237.1
12	44	154					
Total	**3160**	**6391**					

Table 4: Fall Reading RIT scores for Project, non-Project, VCG, and Norm groups

READING	Number of Students		Fall RIT Score		Fall RIT Score		Fall RIT Score
	Project	Non-project	Project	VCG	Non-project	VCG	Norm
K	243	268	132.8	134.9	134.0	134.6	
1	340	285	151.7	151.7	150.0	152.9	
2	384	616	164.9	165.4	168.3	168.3	179.7
3	349	641	174.8	176.0	179.6	179.6	191.6
4	376	616	183.7	183.8	189.1	189.0	200.1
5	336	575	189.5	189.6	195.8	195.8	206.7
6	357	566	195.8	196.2	200.3	200.3	211.6
7	302	605	199.4	199.6	205.2	205.3	215.4
8	267	586	202.2	202.7	209.0	209.1	219.0
9	58	617					220.9
10	68	526					223.9
11	64	421					225.2
12	44	149					
Total	**3188**	**6471**					

As is evident in the tables above, the average starting RIT score for Project students was slightly below the average starting RIT score for non-Project students in all subjects and all grades except 1st. This is likely due to the fact that BIE chose schools for the NWEA Project based on low AYP performance. The average starting RIT score for all BIE students (Project and non-Project) and their VCG group was almost the same average score since each comparison group was chosen based on the student's starting RIT score, as well as their school poverty rate and their geography. For more information about the Virtual Comparison Group (VCG) comparison, see the Methodology. Both BIE students and their VCGs were significantly below the national average.

The performance of these different groups of students has been measured with several metrics. Fall 2009 RIT is the baseline for this report. Spring 2010 RIT is the endpoint for this analysis. Raw growth is the difference between their Fall RIT and their Spring RIT. Norm-indexed growth measures their growth against a national standard. VCG analysis measures their growth against a group of similar students.

The following charts show the average performance on Spring 2010 RIT scores for Reading and Math for NWEA Project students, non-Project students and the NWEA norm students. A table of values for each group follows the two charts.

Figure 1: Spring Math RIT Scores

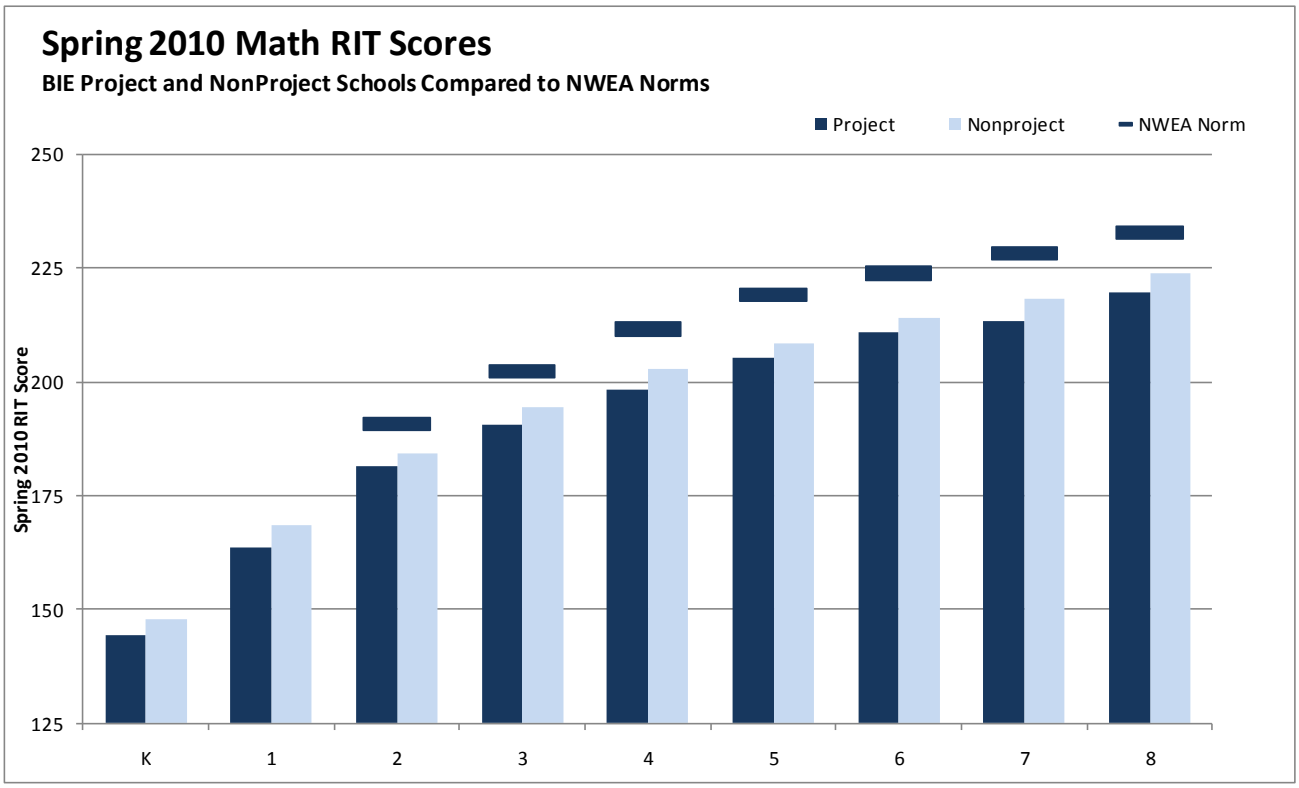

Figure 2: Spring Reading RIT Scores

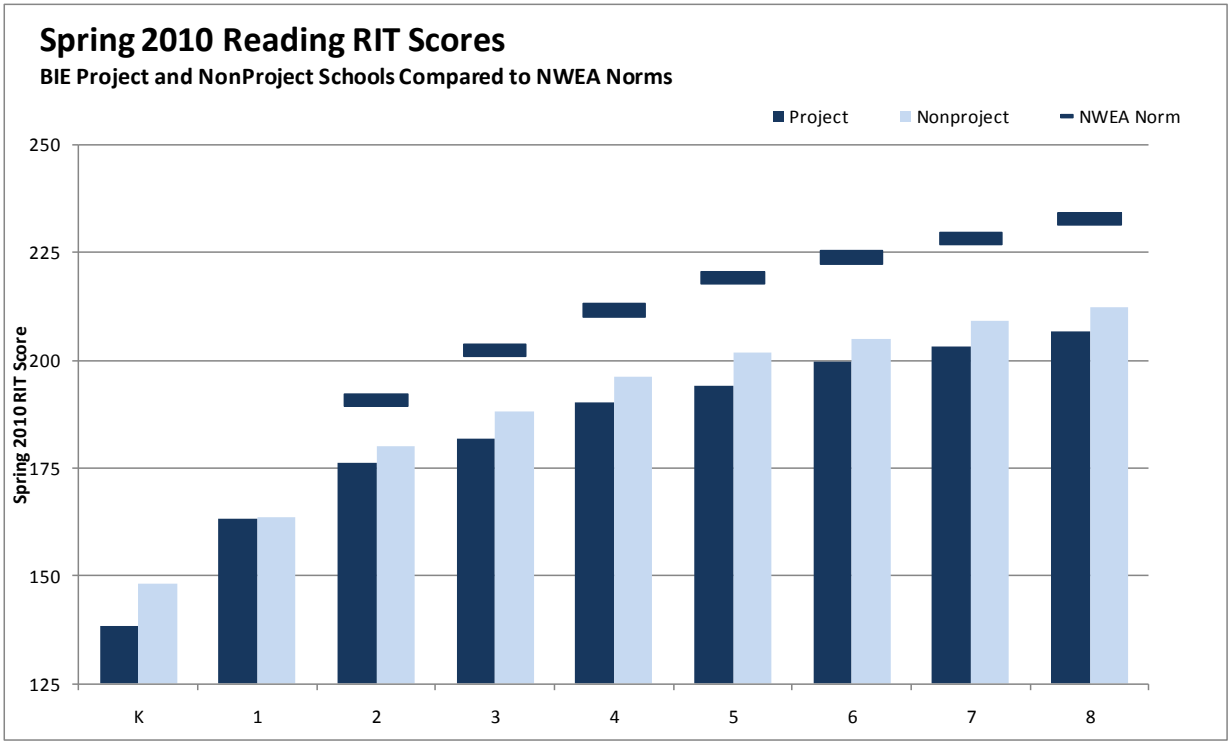

Table 5: Spring RIT scores for Project, non-Project, all BIE, and Norm groups

	Math					Reading				
	Grade	Project	Non-Project	All BIE	Norm	Grade	Project	Non-Project	All BIE	Norm
Spring 2010 RIT	K	144.1	148.0	146.2		K	138.3	148.3	143.6	
	1	163.6	168.5	165.8		1	163.3	163.7	163.5	
	2	181.3	184.3	183.1	190.8	2	176.2	180.1	178.6	189.6
	3	190.6	194.4	193.1	202.4	3	181.7	188.1	185.9	199.0
	4	198.2	202.9	201.1	211.6	4	190.2	196.0	193.8	205.8
	5	205.3	208.5	207.4	219.2	5	194.2	201.6	198.9	211.1
	6	210.9	214.2	212.9	223.8	6	199.6	205.0	203.0	214.8
	7	213.4	218.3	216.7	228.3	7	203.3	209.1	207.2	217.9
	8	219.6	224.0	222.6	232.7	8	206.7	212.1	210.4	221.2

The charts and table above show that Spring scores of non-Project students are still above Project student scores. BIE scores for both groups are 7-14 points behind national norms. Differences varied substantially by grade and subject: Project students lagged behind non-Project students by 10 points in Kindergarten Reading but only 3 points in 5th grade Math.

The next set of charts shows the differences in raw growth between the different groups of students.

Figure 3: Math Fall to Spring Raw Growth

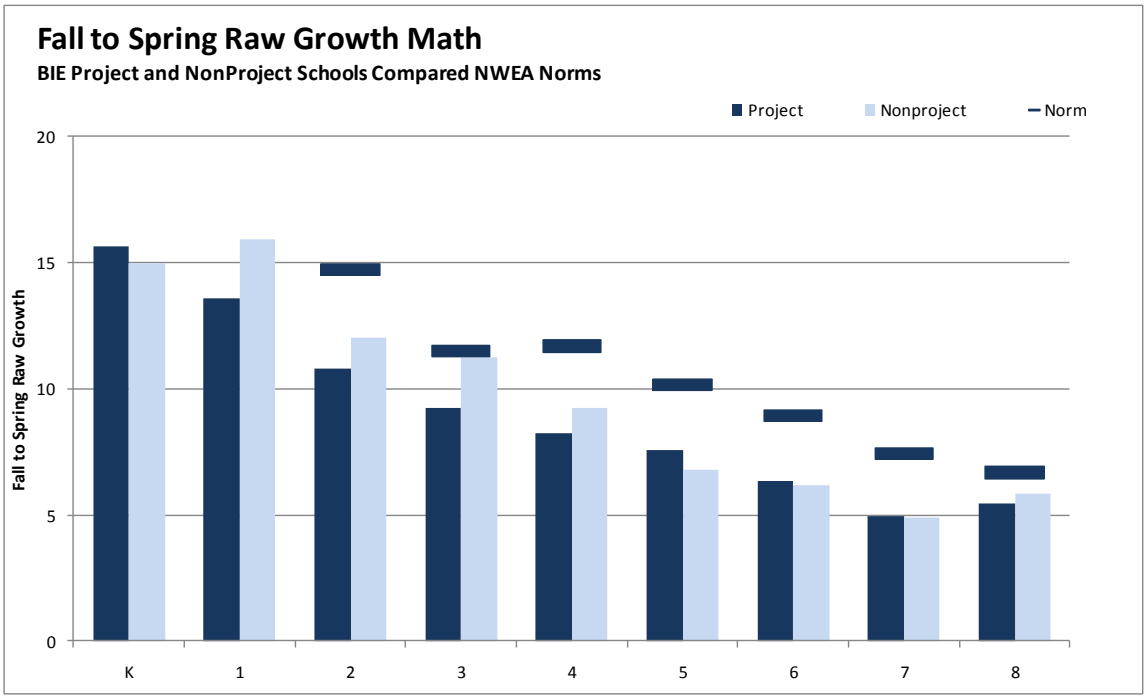

Figure 4: Reading Fall to Spring Raw Growth

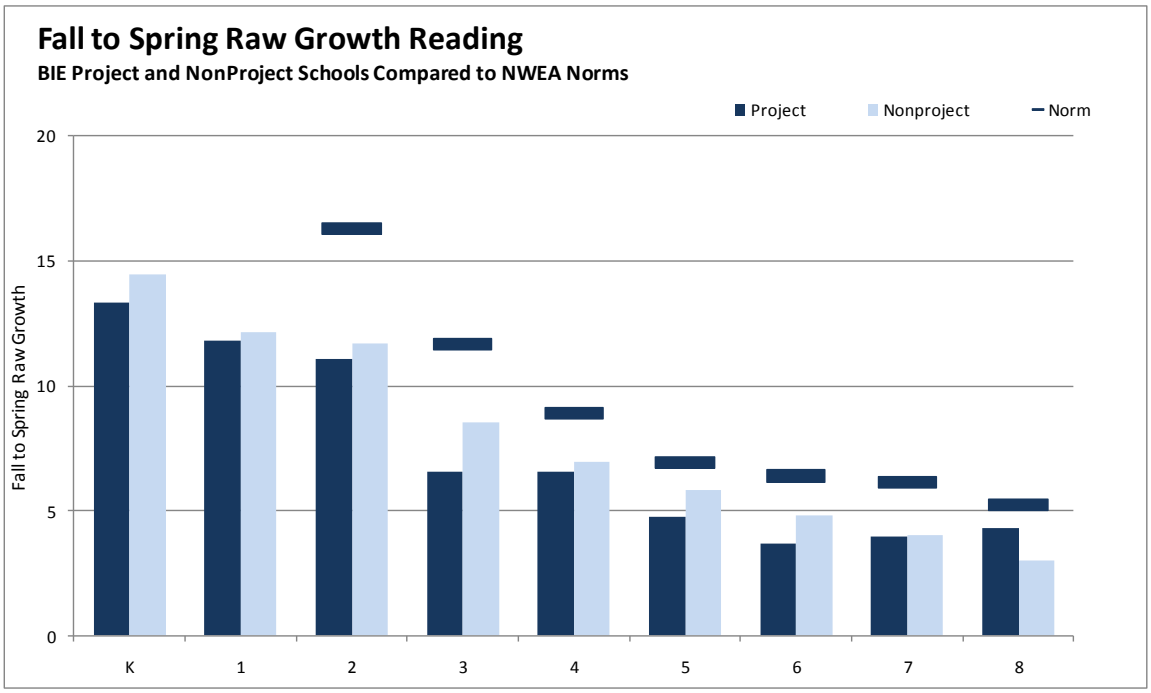

Table 6: Fall to Spring Raw Growth for Project, non-Project, all BIE, and Norm groups

	Math					Reading				
	Grade	Project	Nonproject	All BIE	Norm	Grade	Project	Nonproject	All BIE	Norm
Fall - Spring Raw Growth	K	15.7	15.0	15.3		K	13.3	14.5	13.9	
	1	13.6	15.9	14.5		1	11.8	12.1	12.0	
	2	10.8	12.1	11.6	13.2	2	11.1	11.7	11.4	12.5
	3	9.2	11.2	10.5	10.7	3	6.6	8.6	7.9	8.8
	4	8.3	9.2	8.9	8.9	4	6.5	6.9	6.8	6.6
	5	7.6	6.8	7.1	7.3	5	4.8	5.8	5.4	5.1
	6	6.3	6.2	6.2	6.4	6	3.7	4.8	4.4	4.3
	7	5.0	4.9	4.9	6.0	7	3.9	4.0	4.0	3.9
	8	5.5	5.8	5.7	4.8	8	4.3	3.0	3.4	3.2

Differences in raw growth were mixed between Project and non-Project students. These values can be seen in the tables above. Project students were mostly lower in Math except grades K, 5, and 8 where Project students outperformed non-Project students. In Reading, Project students had smaller raw growth than non-Project students in all grades except 8th where Project students had more raw growth than non-Project student and even more raw growth than NWEA norms. Note that the pattern of decreasing raw growth in higher grades is consistent with the national results.

Comparing RIT scores and raw growth for Project BIE students, non-Project BIE students, and NWEA national norms is one way to look at performance, but measuring student growth on an normalized scale is a better method for determining how well schools are doing, particularly for schools that have traditionally had scored so far below national averages.

The growth index score shows whether the student grew more than the average of NWEA students who started with the same RIT score in the fall term (positive values), or whether the student's growth was below those national norms

(negative value). A value of 0 means the student's growth was equal to the average growth of NWEA students who started at the same score. The advantage of this comparison over looking at raw growth is that students at different RIT score levels have predictably different growth scores (lower grades show more raw growth than upper grades). The norm growth index score equalizes growth across all grades by comparing raw growth to the NWEA norms at each grade level. Using this measurement results in a more apples-to-apples effect.

Figure 5: Fall to Spring Math growth index scores

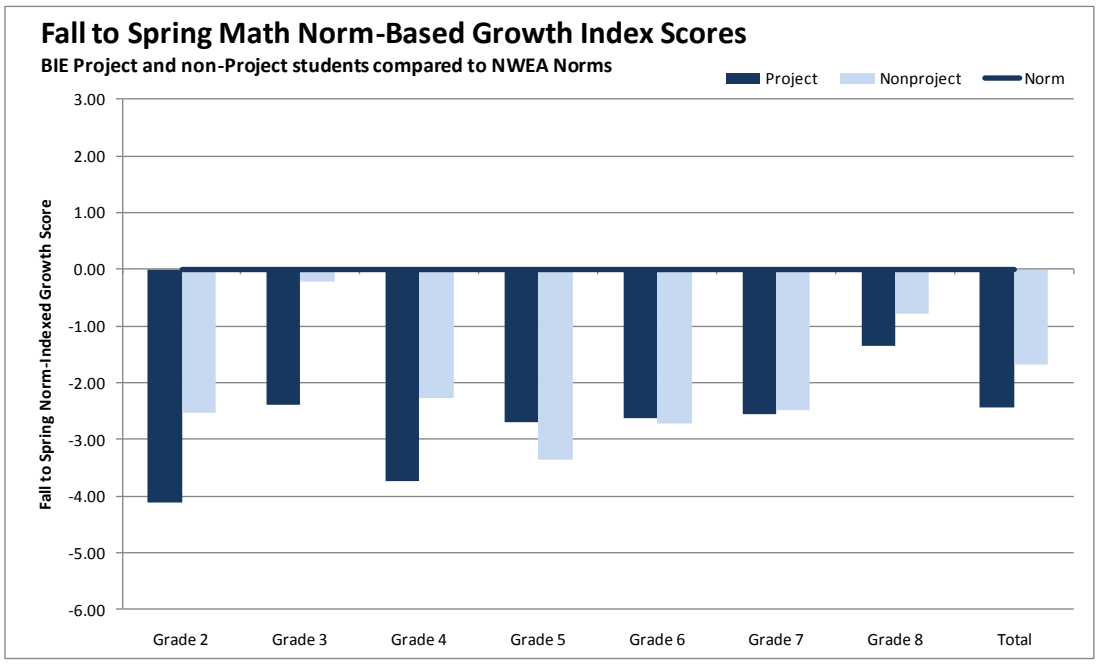

Figure 6: Fall to Spring Reading growth index scores

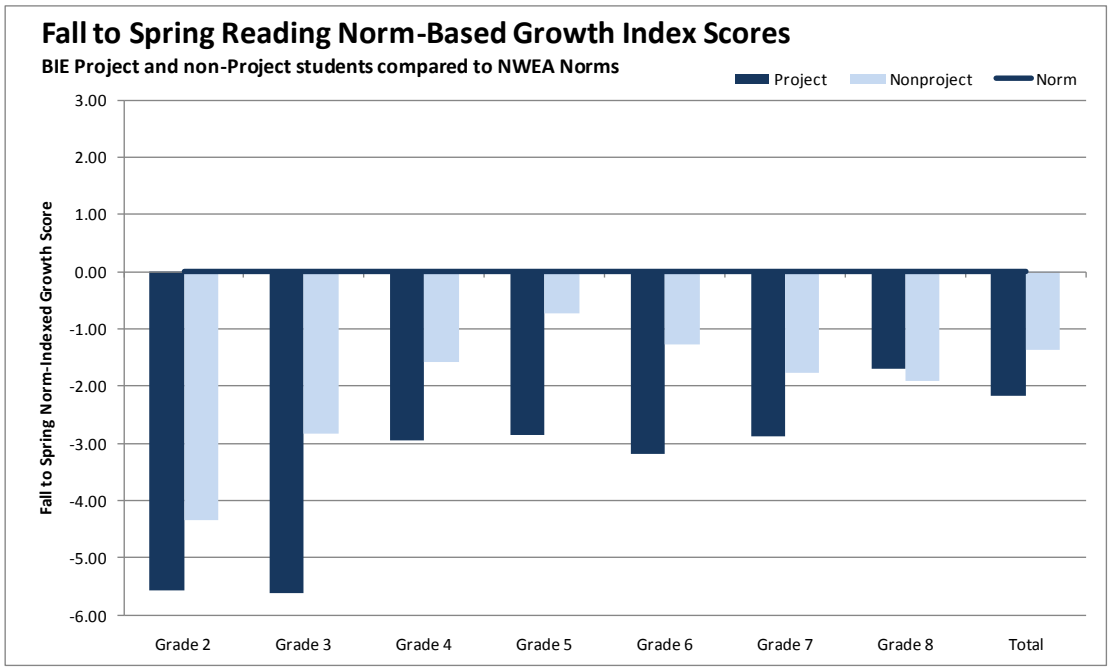

Table 7: Fall to Spring Norm-Based Growth Index Scores

	Math					Reading				
	Grade	Project	Non-Project	All BIE	Norm	Grade	Project	Non-Project	All BIE	Norm
Fall - Spring Norm Growth	K					K				
	1					1				
	2	-4.12	-2.53	-3.16	0.00	2	-5.58	-4.33	-4.83	0.00
	3	-2.38	-0.21	-0.97	0.00	3	-5.63	-2.83	-3.81	0.00
	4	-3.73	-2.27	-2.83	0.00	4	-2.95	-1.57	-2.11	0.00
	5	-2.70	-3.36	-3.12	0.00	5	-2.86	-0.73	-1.51	0.00
	6	-2.64	-2.73	-2.70	0.00	6	-3.19	-1.28	-2.02	0.00
	7	-2.57	-2.50	-2.52	0.00	7	-2.89	-1.77	-2.15	0.00
	8	-1.36	-0.79	-0.97	0.00	8	-1.71	-1.91	-1.85	0.00
	Total	**-2.45**	**-1.69**	**-1.98**	**0.00**	**Total**	**-2.18**	**-1.37**	**-1.68**	**0.00**

Table 6 shows that the growth index scores of BIE schools were, on average, well below the NWEA norming group in all grades. This means that BIE students showed less improvement than the students within the NWEA norming group who started with the same score. For instance, for 2nd grade Math tests, the BIE Project school average was 4.12 points less growth than other NWEA students with the same starting score. The BIE non-Project school average was 2.53 points less growth, and the virtual comparison group had 2.90 points less.

The following table shows the same information, but highlights in green where statistical tests of significance indicate that non-Project students were outperforming Project students on the Norm Growth Index.

Table 8: Difference between Project Students and Non-Project Students

	MATH				READING			
	Count of Students		Norm Growth Index		Count of Students		Norm Growth Index	
Grade	Project	Non-Project	Project	Non-Project	Project	Non-Project	Project	Non-Project
2	373	567	-4.12	-2.53	372	569	-5.58	-4.33
3	331	619	-2.38	-.21	334	622	-5.63	-2.83
4	375	606	-3.73	-2.27	369	583	-2.95	-1.57
5	331	597	-2.70	-3.36	333	572	-2.86	-.73
6	352	561	-2.64	-2.73	349	552	-3.19	-1.28
7	289	566	-2.57	-2.50	296	570	-2.89	-1.77
8	271	573	-1.36	-.79	255	571	-1.71	-1.91
Total Grades 2-8	2322	4089	-2.87	-2.04	2308	4039	-3.64	-2.07
Total Grades 2-11	2504	5469	-2.80	-2.28	2496	5508	-3.50	-1.82

In most grades Project students showed lower norm-indexed growth than non-Project students, and in most grades the difference was statistically significant. The total for all grades 2-8 showed that non-Project students had Norm-Based Growth Index scores statistical higher than Project students. The exceptions were 5th and 6th grade Math and 8th grade

Reading where Project students scored better than non-Project students, although this difference was not statistically significant.

VIRTUAL COMPARISON GROUP ANALYSIS

Virtual Comparison Group (VCG) growth is another way of measuring growth performance for a school or group of schools. The VCG score is made up of the average scores for each BIE student's group of comparison students with the same starting RIT score, the same school poverty rate, and the same geography. The advantage of this method is that it further equalizes the measurement for a particular group of students. For each BIE student, a comparison group of 51 students who had the same starting RIT score, the same level of school poverty, and the same geographical type (urban versus rural) was created. For more information about how these two comparison analyses are created, please see the Methodology section of this report and the Appendix.

The tables below show the average starting test score for BIE students (both Project and non-Project). Next to it shows raw growth for the BIE group, the VCG group, and the national normative group. The Norm Growth Index shows how far above or below the national norms the BIE group is. The VCG Growth Index shows how far above or below the VCG group average the BIE group is. The last set of columns also shows Norm Growth Index and VCG Growth Index for the Project schools only. The count of these students has been listed in previous tables and is in the Appendix.

Table 9: Raw growth for BIE, VCG, and Norms; Norm growth index and VCG growth index for all BIE and for BIE Project

MATH	Count of Students	BIE Student Fall RIT	BIE Raw Growth	VCG Raw Growth	Norm Raw Growth	BIE Norm Growth Index	VCG Growth Index	BIE Project Norm Growth Index	VCG Growth Index
K	488	132	15.3	16.3			-1.08		-0.15
1	598	153	14.5	15.7			-1.07		-1.46
2	995	172	11.6	11.8	13.2	-3.16	-0.25	-4.12	-0.53
3	994	183	10.5	11.4	10.7	-0.97	-0.86	-2.38	-1.73
4	1008	192	8.9	8.9	8.9	-2.83	-0.08	-3.73	-0.66
5	937	200	7.1	8.0	7.3	-3.12	-0.95	-2.70	-0.50
6	934	206	6.2	7.2	6.4	-2.70	-0.97	-2.64	-0.63
7	881	212	4.9	5.1	6.0	-2.52	-0.23	-2.57	0.34
8	869	217	5.7	4.4	4.8	-0.97	1.36	-1.36	1.11
9	650	221	3.4	2.7	3.0	-2.73	0.74		
10	541	225	1.8	1.7	2.7	-3.04	0.12		
11	458	227	1.9	1.5		-2.81	0.40		
12	198	231	1.7	1.3			0.38		
Total	**9551**					**-2.44**	**-0.24**	**-2.80**	**-0.41**

Table 10: Raw growth for BIE, VCG, and Norms; Norm growth index and VCG growth index for all BIE and BIE Project

READING	Count of Students	BIE Student Fall RIT	BIE Raw Growth	VCG Raw Growth	Norm Raw Growth	BIE Norm Growth Index	VCG Growth Index	BIE Project Norm Growth Index	VCG Growth Index
K	511	133	13.9	15.7			-1.78		-1.86
1	625	151	12.0	14.4			-2.43		-2.31
2	1000	167	11.4	12.8	12.5	-4.83	-1.34	-5.58	-1.21
3	990	178	7.9	9.5	8.8	-3.81	-1.60	-5.63	-3.12
4	992	187	6.8	7.4	6.6	-2.11	-0.65	-2.95	-1.46
5	911	193	5.4	6.1	5.1	-1.51	-0.72	-2.86	-2.15
6	923	199	4.4	5.4	4.3	-2.02	-1.00	-3.19	-2.03
7	907	203	4.0	3.7	3.9	-2.15	0.29	-2.89	-0.19
8	853	207	3.4	3.4	3.2	-1.85	-0.02	-1.71	0.02
9	675	211	2.8	1.5	1.9	-0.47	1.26		
10	594	215	1.5	0.3	1.4	-1.28	1.19		
11	485	216	0.7	0.0		-2.06	0.66		
12	193	218	-0.1	-0.3			0.24		
Total	**9659**					**-2.34**	**-0.55**	**-3.50**	**-1.53**

Note: VCG Fall RIT is not shown because it is almost identical to BIE students' Fall RIT since the comparison group was chosen in part based on their Fall RIT. Because the two groups had the same starting RIT, the difference between their raw growth scores is equivalent to the difference between their Spring RITs.

The differences in the table above show that BIE students lag behind VCG students in most early grades K-7 and exceeded VCG growth in upper grades 8-12.In early grades, BIE students lagged behind their comparison groups more in Reading than Math. In upper grades, however, BIE students outperformed their VCGs in Math and even more so in Reading. For instance, in 9th and 10th grade Reading, BIE students averaged over one point of growth more than their VCGs.

Because national norms are not available for Kindergarten and 1st grade, we can't tell how students in these grades compare when their growth is normalized based on NWEA norms. In the total for all grades, BIE students had over two points less growth than the norms, but a half point or less difference between BIE and VCG. Again, Project students showed less growth in Reading than non-Project students.

In addition to looking at the differences between the BIE core students and the VCG students, it is also important to look at whether those differences are statistically significant. Statistical significance is a measure of whether the difference between two groups of students is different from random chance. A confidence level of p=.05 was used.

The table below shows the difference in Raw Growth between BIE students and VCG students. The dark green highlighting shows areas where BIE core students were statistically significantly higher than the VCG group, and light red highlighting shows areas where BIE core students were statistically significantly lower than the VCG group.

Table 11: Difference between BIE students and their VCG group

VCG students have the same starting score, poverty level, and geography

	Math				Reading		
	BIE Raw Growth	VCG Raw Growth	Raw Growth Difference		BIE Raw Growth	VCG Raw Growth	Raw Growth Difference
K	15.3	16.3	-1.1	K	13.9	15.7	-1.8
1	14.5	15.7	-1.2	1	12.0	14.4	-2.4
2	11.6	11.8	-0.3	2	11.4	12.8	-1.4
3	10.5	11.4	-0.9	3	7.9	9.5	-1.6
4	8.9	8.9	-0.1	4	6.8	7.4	-0.7
5	7.1	8.0	-0.9	5	5.4	6.1	-0.7
6	6.2	7.2	-1.0	6	4.4	5.4	-1.0
7	4.9	5.1	-0.2	7	4.0	3.7	0.3
8	5.7	4.4	1.4	8	3.4	3.4	0.0
9	3.4	2.7	0.8	9	2.8	1.5	1.3
10	1.8	1.7	0.1	10	1.5	0.3	1.2
11	1.9	1.5	0.4	11	0.7	0.0	0.7
12	1.7	1.3	0.4	12	-0.1	-0.3	0.2

highlighting shows statistical significance

As can be seen in the table above, BIE students did not have as much raw growth as their VCG groups in grades K-6, although two grade level differences in Math were not statistically significant. In the upper grades, BIE students showed better raw growth than their VCG groups; this difference was statistically significant for Math in grades 8 and 9, and for Reading in grades 9 and 10. The following table shows that the same general pattern applies to Project students, although grades 9-12 cannot be shown due to insufficient sample size.

Table 12: Difference between BIE Project students and their VCG group

VCG students have the same starting score, poverty level, and geography

	Math				Reading		
	BIE Raw Growth	VCG Raw Growth	Raw Growth Difference		BIE Raw Growth	VCG Raw Growth	Raw Growth Difference
K	15.7	15.8	-0.1	K	13.3	15.2	-1.9
1	13.6	15.2	-1.6	1	11.8	14.1	-2.3
2	10.8	11.4	-0.5	2	11.1	12.4	-1.3
3	9.2	11.0	-1.7	3	6.6	9.7	-3.1
4	8.3	8.9	-0.7	4	6.5	8.0	-1.5
5	7.6	8.1	-0.5	5	4.8	6.9	-2.1
6	6.3	6.9	-0.6	6	3.7	5.7	-2.0
7	5.0	4.5	0.5	7	3.9	4.1	-0.2
8	5.5	4.4	1.1	8	4.3	4.3	0.0

highlighting shows statistical significance

DIFFERENCE FOR TYPES OF SCHOOLS

Difference for Professional Development

A number of the schools in the BIE have utilized the services of the NWEA professional development team to teach, train, and coach teachers and school leaders in using MAP data to make informed decisions for students. The NWEA professional development services received ranged in nature: some schools may have had several full days of whole-school workshops or work with school leadership teams, while other schools may have been engaged on a more limited basis. Although there is a large degree of difference in the professional development services received, we wanted to explore whether this service in aggregate showed an effect.

The following tables show the calculated difference between students from schools that had any Professional Development time with NWEA (PD) and schools that didn't (No PD). In addition, tests were run to see if there was any statistically significant difference between the two groups. Areas where students from PD schools scored statistically significantly ($p < .05$) higher on any metric are highlighted in green. Areas where students from PD schools scored statistically significantly lower than students from schools without NWEA PD are highlighted in pink. Fall RIT score, Spring RIT, Norm Index Score, and VCG Index Score are all shown. The VCG Growth Index Score for the PD group is comprised of a comparison group of students matched to students in schools with PD; students in their VCG group may or may not have received professional development services. The comparison being made is between students in schools which had PD services compared to the overall comparison group for those students. Likewise, the VCG Growth Index for the No PD group reflects national NWEA students who may or may not have received PD.

Table 13: Math Fall, Spring, Norm Growth Index, and VCG Growth Index for Professional Development groups

Math	Count		Fall09 RIT		Spring10 RIT		Norm Growth Index		VCG Growth Index	
	PD	No PD	PD	No PD	PD	No PD	PD	No PD	PD	No PD
K	373	115	132.8	130.4	146.7	144.6			-0.51	-2.93
1	442	156	154.7	149.4	166.2	164.6			-1.13	-0.91
2	489	506	171.2	172.2	182.8	183.4	-3.12	-3.21	0.14	-0.66
3	453	541	180.7	184.1	191.5	194.5	-1.17	-0.80	-0.88	-0.83
4	505	503	190.6	194.0	200.1	202.1	-2.52	-3.15	0.39	-0.57
5	440	497	198.5	201.7	207.0	207.7	-1.83	-4.28	0.45	-2.19
6	441	493	204.5	208.3	211.2	214.4	-2.59	-2.79	-0.69	-1.23
7	364	517	209.0	213.6	214.1	218.5	-2.16	-2.77	0.60	-0.80
8	306	563	215.5	217.9	221.3	223.3	-0.89	-1.01	1.70	1.17
9	112	538	225.0	220.7	228.0	224.1	-2.81	-2.72	1.06	0.67
10	110	431	226.2	225.0	229.2	226.8	-1.72	-3.39	1.45	-0.23
11	95	363	225.1	227.7	229.4	229.1	-0.69	-3.37	2.72	-0.21
12	87	111	231.9	230.4	233.1	232.7			-0.07	0.74
Total	4217	5334					-2.09	-2.68	0.10	-0.52

Table 14: Reading Fall, Spring, Norm Growth Index, VCG Growth Index for Professional Development groups

Reading	N		Fall09 RIT		Spring10 RIT		Norm Growth Index		VCG Growth Index	
	PD	No PD	PD	No PD	PD	No PD	PD	No PD	PD	No PD
K	386	125	134.3	130.7	142.6	146.4			-1.65	-2.15
1	455	170	152.3	147.1	165.0	159.6			-2.04	-3.54
2	488	512	165.5	168.4	177.2	179.9	-5.08	-4.6	-1.11	-1.56
3	460	530	175.3	180.2	183.1	188.3	-4.60	-3.1	-2.33	-0.96
4	501	491	185.0	189.1	192.0	195.7	-2.28	-1.9	-0.78	-0.52
5	444	467	190.5	196.3	196.1	201.6	-1.83	-1.2	-1.09	-0.37
6	437	486	195.8	201.0	200.1	205.5	-2.65	-1.5	-1.65	-0.41
7	383	524	199.8	205.8	203.8	209.6	-2.65	-1.8	-0.04	0.53
8	302	551	203.2	208.9	207.5	212.0	-1.74	-1.9	0.03	-0.05
9	128	547	212.5	211.1	215.7	213.6	-0.16	-0.5	1.67	1.17
10	129	465	214.9	214.9	216.7	216.3	-1.81	-1.1	0.73	1.31
11	104	381	213.9	216.2	215.9	216.6	-1.15	-2.3	1.44	0.46
12	87	106	218.1	217.4	217.9	217.4			0.07	0.39
Total	4304	5355					-2.87	-1.98	-1.01	-0.18

In Math, students from schools with NWEA Professional Development courses started at lower fall scores in grades 3-8 and higher fall grades in grades 1 and 9. Norm-based growth index scores were higher for the PD group in total and in grades 5 and 11. VCG index scores for Math were higher overall and in grades K, 7 and 11. In grade 11, for instance, students from schools with NWEA PD scored 2.72 points above their VCG while students from schools without PD scored .21 below their VCG. In Reading, students in schools with Professional Development started at lower scores and stayed at lower scores in grades 2-8, and showed less norm-based and VCG-based growth in total and in grades 3 and 6 than students from schools without PD. For 1st grade Reading, however, better scores and better growth was seen for students from schools with NWEA PD courses. The difference in results between Reading and Math is pronounced; we recommend that the BIE look at curriculum and instructional practices to see what may have influenced this difference.

Note that schools may have received professional development in any grade; grades that did not show a difference for PD may be because that grade did not receive PD. More information is needed about the nature of the professional development received before true inferences can be drawn. Note also that norm growth information is not available for Kindergarten and 1st grade where VCG growth showed a difference for PD schools.

Difference for Tenure with NWEA

The following tables show the calculated difference between students from schools that had first tested with NWEA before the 2008-2009 school year (>2 years) and schools that started testing in the last two years (new). Statistical significance is shown as it was for the Professional Development chart: differences in growth favoring schools with long tenure are in green, differences favoring the new schools are in pink. Note that "new school" does not mean that the school was new; it means that the school is a relative newcomer to NWEA testing. As with the previous set of tables, the VCG Growth Index shows the difference between BIE students in schools that have been testing with NWEA for more than 2 years compared to a national group that may or may not have been testing for 2 years.

Table 15: Math Fall, Spring, Norm Growth Index, and VCG Growth Index for NWEA tenure groups

Math	Count		Fall09 RIT		Spring10 RIT		Norm Growth Index		VCG Growth Index	
	>2 years	new	>2 years	new	>2 years	new	>2 years	new	>2 years	new
K	384	104	131.6	134.7	148.3	138.3			-1.13	-0.89
1	427	171	151.5	157.7	165.1	167.7			0.15	-5.09
2	742	253	171.3	172.7	183.8	181.2	-2.27	-6.23	0.33	-2.28
3	739	255	182.6	182.4	193.8	191.1	-0.27	-3.08	-0.55	-1.77
4	749	259	192.3	192.2	201.6	199.7	-2.38	-4.21	0.08	-0.58
5	694	243	200.2	200.1	207.3	207.4	-3.13	-3.11	-1.25	-0.07
6	679	255	206.2	207.3	213.1	212.2	-2.03	-4.55	-0.59	-2.05
7	613	268	212.4	210.1	217.6	214.4	-2.22	-3.24	-0.04	-0.69
8	544	325	217.1	216.8	223.2	221.6	-0.62	-1.57	1.76	0.67
9	525	125	221.4	221.7	224.9	224.6	-2.65	-3.09	0.79	0.53
10	400	141	225.1	225.8	226.6	229.4	-3.34	-2.20	-0.25	1.17
11	323	135	227.2	226.9	228.3	231.3	-3.83	-0.44	-0.61	2.73
12	190	8								
Total	7009	2542					-2.14	-3.28	-0.09	-0.69

Table 16: Reading Fall, Spring, Norm Growth Index, VCG Growth Index for NWEA tenure groups

Reading	N		Fall09 RIT		Spring10 RIT		Norm Growth Index		VCG Growth Index	
	>2 years	new	>2 years	new	>2 years	new	>2 years	new	>2 years	new
K	395	116	132.0	138.0	147.8	129.3			-1.97	-1.02
1	456	169	149.6	154.4	162.8	165.4			-2.24	-3.11
2	743	257	166.3	168.9	179.0	177.4	-3.86	-8.13	-1.00	-2.49
3	737	253	177.9	177.9	186.2	184.9	-3.45	-4.94	-1.52	-1.86
4	738	254	186.5	188.4	194.1	192.8	-1.41	-4.19	-0.27	-1.79
5	669	242	192.8	195.2	199.1	198.5	-0.77	-3.56	-0.19	-2.18
6	673	250	197.9	200.5	203.1	202.5	-1.26	-4.17	-0.40	-2.70
7	628	279	203.4	202.9	207.4	206.6	-2.00	-2.49	0.41	0.02
8	535	318	206.4	207.8	210.2	210.8	-1.73	-2.05	-0.01	-0.03
9	542	133	211.1	212.7	213.1	217.5	-0.98	1.53	0.74	3.25
10	443	151	213.7	218.4	215.2	220.0	-1.42	-0.89	0.80	2.27
11	353	132	214.8	218.1	215.4	219.4	-2.37	-1.28	0.13	2.03
12	185	8								
Total	7097	2562					-1.98	-3.32	-0.45	-0.85

The effect of splitting the data by length of time testing with NWEA is dramatic. For both Math and Reading, students from schools testing with NWEA for more than 2 years showed better growth, relative to both the norms and their VCG, than schools testing less than two years. In some cases, the differences were very large. For instance in Math, 2nd grade students were behind the norm growth by 2.27 points while students from schools that were newer with NWEA lagged by 6.23 points. In the 5th grade in Reading, long time testers were almost at the norm growth (-.77) while newer testers lagged by over three and a half points.

The upper grades show a different pattern. There was no statistically significant difference between the two groups for most grades 7-11 in both subjects, except for 11th grade math and 9th grade Reading where students from long tenure schools had lower growth and 11th grade for the VCG Index. One possible explanation for this is that testing doesn't begin for all grades at the same time. Many schools working with NWEA start by testing the early grades, then add high school testing later. No information was available to determine if testing time by grade had a similar effect for upper grades as it did for lower grades. Note that the 12th grade cannot be measured because the sample size is too small.

Difference for BIE School Type

The following tables show the calculated difference between students from schools operated by the Bureau (BIE Day Schools and BIE Boarding Schools) and schools operated through partners (Contract Day Schools, Grant Day Schools, and Grant Boarding Schools). Statistical significance is shown as it was for the prior two sections: differences where Bureau-operated student performance was higher than non-Bureau-operated school performance are highlighted in green; where Bureau performance was lower are highlighted in pink. As with the previous set of tables, the VCG Growth Index

shows the difference between BIE students in Bureau schools compared to a national group; none of the VCG group is in either Bureau or BIE non-Bureau schools.

Table 17: Math Fall, Spring, Norm Growth Index, and VCG Growth Index for BIE school type

Math	Count		Fall09 RIT		Spring10 RIT		Norm Growth Index		VCG Growth Index	
	Bureau	Non-Bureau	Bureau	Non-Bureau	Bureau	Non-Bureau	Bureau	Non-Bureau	Bureau	Non-Bureau
K	232	256	132.0	132.5	150.0	142.7			0.09	-2.21
1	283	315	152.7	153.8	164.7	166.8			0.52	-2.32
2	389	606	172.2	171.3	184.7	182.1	-2.04	-3.93	0.53	-0.79
3	396	598	183.4	182.0	195.0	191.8	0.56	-2.02	0.46	-1.76
4	414	594	192.0	192.5	202.2	200.4	-1.27	-3.92	1.39	-1.11
5	386	551	199.7	200.6	207.8	207.1	-2.14	-3.81	-0.19	-1.48
6	384	550	207.1	206.0	214.2	212.0	-1.91	-3.26	-0.24	-1.49
7	288	593	213.4	210.9	219.5	215.3	-1.37	-3.09	0.84	-0.75
8	268	601	219.0	216.1	225.5	221.3	0.45	-1.57	2.86	0.74
9	247	403	220.4	222.1	225.7	224.3	-1.06	-3.77	2.25	-0.20
10	140	401	221.8	226.5	224.6	228.3	-2.42	-3.27	0.21	0.09
11	141	317	224.7	228.2	226.7	230.3	-2.97	-2.73	0.06	0.56
12	119	79	229.2	233.9	231.5	235.0			0.85	-0.30
Total	3687	5864					-1.30	-3.12	0.72	-0.85

Table 18: Reading Fall, Spring, Norm Growth Index, VCG Growth Index for BIE school type

Reading	N		Fall09 RIT		Spring10 RIT		Norm Growth Index		VCG Growth Index	
	Bureau	Non-Bureau	Bureau	Non-Bureau	Bureau	Non-Bureau	Bureau	Non-Bureau	Bureau	Non-Bureau
K	236	275	131.5	135.0	149.7	138.3			-0.30	-3.15
1	298	327	149.7	152.0	164.4	162.7			-1.58	-3.13
2	386	614	166.6	167.3	180.2	177.6	-2.80	-6.20	0.28	-2.43
3	397	593	177.5	178.2	186.4	185.5	-2.83	-4.48	-1.29	-1.81
4	412	580	184.8	188.6	193.6	193.9	-0.33	-3.42	0.83	-1.75
5	388	523	192.1	194.5	198.1	199.5	-1.05	-1.85	-0.54	-0.86
6	384	539	197.2	199.6	202.0	203.7	-1.62	-2.31	-1.02	-0.99
7	289	618	201.7	204.0	206.0	207.7	-2.06	-2.19	0.00	0.44
8	259	594	204.4	208.0	209.6	210.8	-0.64	-2.37	0.96	-0.45
9	244	431	209.3	212.6	214.2	213.9	1.62	-1.73	3.29	0.03
10	140	454	209.7	216.5	212.0	217.8	-0.62	-1.48	1.02	1.24
11	145	340	211.1	217.7	213.0	217.9	-1.44	-2.33	0.64	0.68
12	118	75	215.0	222.1	214.8	222.1			-0.33	1.12
Total	3696	5963					-1.33	-2.94	0.03	-0.91

Disaggregation by Bureau and non-Bureau schools shows a clear pattern. Bureau schools started at performance levels that are similar to non-Bureau schools in fall 2009. Spring results indicate that Bureau schools showed significantly greater growth than non-Bureau schools (when compared to both the norms and their respective Virtual Comparison Groups) and the positive differences in growth led to differences in performance that favored students attending the Bureau schools. This was true in both Mathematics and Reading.

Difference for ADD, ELO, and State

Because there were a large number of ADDs, ELOs, and states, analyses for these groupings have been limited to the VCG Growth Index and the Norm Growth Index for all grades combined. For each grouping, the results have been listed in order from highest to lowest Fall to Spring norm-indexed growth. Note that the order from highest to lowest may be different for VCG difference. The total for all students is listed and highlighted in blue to show states, ADDs, and ELOs which have better growth scores above the dark total line.

Table 19: Math Norm Growth Index and VCG Growth Index for ELOs

ELO	Math average across all grades			
	Count for VCG Growth	Count for Norm Growth	VCG Growth Index	Norm Growth Index
Standing Rock ELO	104	84	3.87	4.21
New Mexico Navajo North ELO	949	702	2.90	1.62
New Mexico North ELO	402	402	1.24	-1.66
Minneapolis ELO	1015	905	-0.18	-2.02
Turtle Mountain ELO	1116	1066	-0.42	-2.17
Seattle ELO	281	243	0.67	-2.19
New Mexico Navajo Central ELO	1098	894	-0.50	-2.20
New Mexico South ELO	231	231	1.67	-2.23
Arizona Navajo North ELO	565	542	-0.28	-2.43
Total	**9093**	**7973**	**-0.24**	**-2.44**
Sacramento ELO	50	50	0.24	-2.86
Southern & Eastern States ELO	126	126	-1.21	-2.98
Arizona Navajo Central ELO	1007	841	-1.49	-4.04
New Mexico Navajo South ELO	1511	1354	-1.17	-4.04
Arizona Navajo South ELO	123	105	-0.59	-4.36
Arizona South ELO	292	248	-3.86	-4.53
Billings ELO	164	140	-1.84	-4.60
Oklahoma ELO	59	40	-2.76	-5.10

Table 20: Reading Norm Growth Index and VCG Growth Index for ELOs

ELO	Reading average across all grades			
	Count for VCG Growth	Count for Norm Growth	VCG Growth Index	Norm Growth Index
Standing Rock ELO	105	85	1.96	1.41
New Mexico Navajo North ELO	953	706	2.12	1.01
New Mexico North ELO	422	422	2.72	0.07
Minneapolis ELO	1018	912	0.46	-1.25
Sacramento ELO	55	55	1.22	-1.40
Turtle Mountain ELO	1176	1133	0.17	-1.58
Seattle ELO	231	185	0.12	-1.78
Total	**9185**	**8004**	**-0.55**	**-2.34**
New Mexico South ELO	229	229	0.78	-2.60
Arizona Navajo North ELO	555	535	-0.98	-2.89
New Mexico Navajo Central ELO	1099	886	-1.80	-3.12
New Mexico Navajo South ELO	1512	1353	-1.21	-3.13
Southern & Eastern States ELO	125	125	-2.02	-3.56
Billings ELO	184	161	-2.36	-4.31
Arizona Navajo South ELO	131	109	-1.05	-4.61
Arizona Navajo Central ELO	1033	822	-2.99	-4.84
Arizona South ELO	295	244	-3.31	-4.92
Oklahoma ELO	62	42	-1.65	-7.21

Table 21: Math Norm Growth Index and VCG Growth Index for ADDs

ADD	Math average across all grades			
	Count for VCG Growth	Count for Norm Growth	VCG Growth Index	Norm Growth Index
ADD East	1405	1316	-0.27	-1.93
Total	**9093**	**7973**	**-0.24**	**-2.44**
ADD West	2435	2219	-0.22	-2.46
ADD Navajo	5253	4438	-0.25	-2.58

Table 22: Reading Norm Growth Index and VCG Growth Index for ADDs

ADD	Reading average across all grades			
	Count for VCG Growth	Count for Norm Growth	VCG Growth Index	Norm Growth Index
ADD East	1468	1385	0.03	-1.75
ADD West	2434	2208	0.20	-1.81
Total	**9185**	**8004**	**-0.55**	**-2.34**
ADD Navajo	5283	4411	-1.05	-2.79

Table 23: Math Norm Growth Index and VCG Growth Index for states

State	Math average across all grades			
	Count for VCG Growth	Count for Norm Growth	VCG Growth Index	Norm Growth Index
UT	137	103	2.58	0.47
OR	141	105	2.93	0.19
MI	141	102	0.50	-0.49
MN	243	189	-0.24	-1.08
ND	1297	1227	0.04	-1.60
WI	377	376	-0.76	-2.39
Total	**9093**	**7973**	**-0.24**	**-2.44**
WY	108	86	-0.10	-2.51
NM	3664	3178	-0.08	-2.63
AZ	2377	2038	-0.68	-2.69
NV	50	50	0.24	-2.86
ME	126	126	-1.21	-2.98
WA	140	138	-1.61	-4.00
IA	177	161	-0.16	-4.18
KS	59	40	-2.76	-5.10
MT	56	54	-5.20	-7.93

Table 24: Reading Norm Growth Index and VCG Growth Index for states

State	Reading average across all grades			
	Count for VCG Growth	Count for Norm Growth	VCG Growth Index	Norm Growth Index
OR	141	103	1.40	0.02
MI	142	103	-0.15	-0.56
UT	134	102	1.16	-0.65
WI	363	362	0.88	-0.89
ND	1358	1295	0.38	-1.27
NV	55	55	1.22	-1.40
MN	257	208	-0.47	-1.93
NM	3691	3191	-0.37	-2.27
IA	179	162	0.97	-2.33
Total	**9185**	**8004**	**-0.55**	**-2.34**
WY	123	102	-1.28	-2.87
AZ	2404	2013	-1.67	-3.36
ME	125	125	-2.02	-3.56
WA	90	82	-1.88	-4.05
MT	61	59	-4.54	-6.80
KS	62	42	-1.65	-7.21

Separating norm-indexed growth scores and VCG differences by ADD, ELO, and State showed interesting results. Two ELOs stood out as achieving more growth in comparison to other ELOs: in Math, Standing Rock ELO had an average of 4.21 growth points above the national norms, and New Mexico Navajo North had 1.62 growth points above. This is in comparison to an average across all ELOs of -2.44 points. Standing Rock and New Mexico Navajo North, along with New Mexico North and Minneapolis also had higher growth rates in comparison to their VCG groups.

In Math, ADD East had better norm growth index scores than the other two ADDs, but all ADDs scored similarly on VCG index. This suggests that while ADD East has better results than the other ADDs in growth, their schools were comprised of different poverty and geography characteristics than the other two. In Reading, ADDs East and West scored significantly better than ADD Navajo on both the Norm Index Growth Score and the VCG Growth Index Score.

Among states, Oregon and Utah showed higher growth scores than the national NWEA norms while other states score below. Oregon and Utah were also significantly higher than their VCG groups. For instance, Oregon scored almost three points higher than their VCG group. In Reading, Oregon was still the highest performer on the Norm Growth Index, although it was exactly at the norm, not above. Several states showed better growth than their VCG groups: Oregon, Nevada, Utah, Iowa, Wisconsin, and North Dakota.

Note that these comparisons have not been separated by grade level. While norm-indexed growth scores are comparable across grades, there may be differences between the grades. ADDs, ELOs, and states with higher growth scores overall may not have higher growth on a grade-by-grade basis.

DISCUSSION

MEASURING PERFORMANCE FOR BIE STUDENTS

The main way this report is different from other types of performance reports is that it measures actual student growth, not just whether student performed above a particular state's cut score. In addition, MAP tests measure the level of subject matter knowledge in reading and math that a student has attained, not simply whether they have met a grade-level standard. BIE students have often not passed state AYP measures and are mislabeled with the term "failing." Achievement for the educational system should be measured on student growth, particularly for students who are behind others, so successes can be measured, encouraged, and increased. The Bureau of Indian Education has recognized this fact in its partnership with NWEA to help schools and students to understand what it takes for students to improve and to see what it looks like when they do. This Project is early in its inception, but the rigorous measurement of student performance will, over time, allow the BIE to identify successes as well as challenge areas that need more attention.

SUMMARY OF FINDINGS

The average starting Fall RIT scores for students in BIE Project schools were lower than non-Project school students, possibly because schools were chosen for the Project based on student performance. The average for BIE students—Project, non-Project, and overall—was lower than the national norms provided by NWEA. BIE students lagged more in Reading than in Math.

There were two main growth comparisons used in this analysis. The Norm Indexed Growth Score shows whether a group of students is above or below the national growth rate for students with the same starting score. The VCG Indexed Growth Score shows whether a group of students is above or below the growth rate for a group of students similar to them in starting score, school poverty rate, and geographical location (urban or rural). The Norm Index puts all students on an equal measurement with students in other grades and states, but the VCG Index further refines the comparison to schools that face similar challenges to BIE schools.

Average BIE school Fall to Spring growth scores were lower than the national norm sample, as indicated by the negative Norm Growth index Score. BIE students averaged across all grades had similar performance to their VCG groups. By grade, BIE students were generally lower than their VCG group in early grades K-7 and higher than their VCG group in later grades 8-12. 2nd and 8th grade Math and 9th grade Reading showed particularly high growth for BIE students compared to their comparison groups. The same pattern was true for students in the BIE Project.

Statistical significance tests show which differences truly reflected a difference between student groups and weren't just due to random chance. This is particularly important to measure when only one year of growth data is available and a trend cannot be established. Unfortunately, statistical significance also depends on the number of students in each group; with a small number of students, differences cannot be identified with certainty. The pattern for these tests of significance was generally consistent: BIE students showed less growth than their virtual comparison groups in Math for the total across all grades and specifically for grades, grades 3, 5, 6 , and also in Reading grades 3-6. BIE students showed statistically more growth than their comparison groups in Math in 8th and 9th grade, and in Reading in 9th and 10th grade. Some of these differences, while showing a strong *statistical* significance, may not result in a *meaningful* difference. For instance, the difference between the BIE student average and the comparison group average in 4th grade Math was .65 norm indexed growth points. A half of a RIT point less growth in the 4th grade will put the student at a significant disadvantage if sustained over several years, but can also be recovered within a school year.

When disaggregated by type of school, some patterns emerged. Students who were in schools that had NWEA Professional Development courses had higher growth rates as measured by Norm Indexed Growth Score and VCG Growth Score in Math overall. Growth rates were significantly better in grades K, 7, and 11. In addition, students from schools that had been testing with NWEA for more than 2 years showed better growth rates overall and especially in grades 1-6.

When disaggregated by geography, other differences became apparent. ADD East showed better student growth than the other ADDs in both subjects, and ADD West also showed good growth in Reading. Standing Rock ELO and New Mexico Navajo North ELO had higher growth scores on both metrics in both subjects. New Mexico North and South ELOs had better growth than their comparison groups in both subjects, and four more ELOs showed good growth in Reading compared to their comparison groups: Minneapolis, Sacramento, Turtle Mountain, and Seattle ELOs were added to this list of performers. Among states, Oregon and Utah showed better performance than other states.

One additional way to separate schools is by BIE status. Bureau-managed schools showed better growth than schools that were managed through a grant or contract. This was true for Reading and Math in most grades. In future years when there are a larger number of students whose growth can be measured, we recommend doing two separate analyses: one for all BIE students, and one for just students in Bureau schools.

HIGHLIGHTS

Overall, the academic performance of BIE students reflects the challenges that the group faces in their lives. BIE students on the whole have lower test scores and lower growth than a national norm population of students. In addition, BIE students in some subjects, grades, and geographic areas have lower growth than a group of students with similar test scores, similar school poverty rates, and similar rural geography. The data from this report reflects the difficult situation for BIE students and the necessary challenge for BIE schools to overcome. Within the data, however, there were several areas with positive outcomes that can be highlighted and should be celebrated and continued. Looking at high-level averages often masks the remarkable success stories for some students and schools. A few examples are listed below.

- While the overall averages show BIE students with less growth than their comparison groups in early grades, there were more BIE students who outperformed their comparison groups than who underperformed. In some cases, students had vastly more growth than their comparison groups. In 10% of cases, BIE students had at least 10 points more of raw growth than their comparison groups.

- Some schools showed phenomenal growth. In one school, the average difference between their students and the comparison group was +5.3 points. That means students in that school outperformed comparison students by more than a year's worth of growth. In another school, the average growth for its students was +4.9 points above the national norms for students with similar scores, again showing remarkable growth. 8 schools had average norm-based growth index scores above a full point, meaning they were substantially outperforming the norms. 17 schools had average student VCG index scores of more than a point, meaning they were substantially outperforming their comparison groups.

- Although this report does not analyze AYP performance, estimates were made for whether students were meeting AYP in each of their states based on their MAP scores. Some ELOs showed an average of 45, 55, even 60% of their students estimated to meet their state's benchmark. In one school, for example, 77% of students were estimated to meet benchmark, a level that is perhaps even above their state average.

RECOMMENDATIONS

After analyzing the performance data for the 2009-2010 school year, we have the following recommendations for the Bureau of Indian Education.

- **We recommend that the Bureau continue to look closely at its student performance data on a regular basis.**

NWEA provides achievement and growth reports to BIE after each term. These interactive reports provide Bureau leaders as well as ADD, ELO, and school leaders a way to look at student data to find areas of success and areas of concern. This printed report shows at a high level how BIE students are doing in a variety of areas, but doesn't take the place of teachers and students looking at their data together throughout the year to create pathways for progress.

- **We recommend that the Bureau undertake further analysis in areas not pursued in this report.**

There are areas of analysis not included in this report or included only minimally that could provide additional information. For instance, disaggregation by schools receiving professional development showed a difference but the types of professional development received were studied. More analysis would be needed to understand whether the particular type of professional development has an effect for students. In addition, an area of research not included in this report is summer loss: whether growth gained by students during the year is sustained over the summer months into the next school year. Research in the field of education has shown that many students in poverty situations have more loss over the summer than students in affluent situations, meaning that these students stay further behind despite significant school year growth.

- **We recommend that the Bureau continue to monitor progress on an annual basis for several years, and then commission a program evaluation study including at least three years of student performance.**

This report serves as the first in what we recommend is a series of reports on the progress of BIE schools. With one year of testing data, some differences were able to be identified, but more years of data deepens the analyses and allows for the identification of trends and progress. Intervention strategies often take several years for results to be seen at a high level, so a multi-year evaluation is necessary to reflect the result of Bureau changes. NWEA can work with the BIE to identify an appropriate organization to provide such an evaluation.

- **We recommend that the Bureau use their data to ask difficult questions about student performance and school programs.**

This report and the "roll up reporting" provided every term gives BIE an opportunity to ask questions about whether their current interventions are working, and where they might need more interventions. For instance, in general growth for BIE students was better in Math than Reading—was this due to a particular intervention? Could students benefit from the same type of intervention in Reading? Why do students in different ELOs show such different growth? Are there best practices that could be shared among BIE schools? What is driving the strong growth for high school students?

- **We recommend that the Bureau celebrate and build on successes.**

  While some of the average numbers in this report are discouraging, there are examples of exemplary performance and growth for students and schools. Finding, celebrating, and replicating successes like these will help encourage schools to see what's possible.

We hope that the data from this report helps the Bureau of Indian Education understand the current state of their student achievement. However, data is merely the beginning of process improvement. Answering the questions raised by the data and implementing necessary changes is what brings about a true increase in student achievement.

APPENDICES

APPENDIX A: Counts of Students by Grade and School Group

MATH State	K	1	2	3	4	5	6	7	8	9	10	11	12	Total
AZ	143	226	303	295	288	280	263	236	212	141	45	31	13	**2476**
IA	0	17	21	17	12	13	22	22	14	15	17	10	0	**180**
KS	9	3	4	6	7	2	3	3	1	2	5	7	7	**59**
ME	0	0	12	12	17	25	22	19	19	0	0	0	0	**126**
MI	24	12	15	11	15	10	9	15	6	13	8	2	5	**145**
MN	37	29	41	37	30	27	17	24	15	17	19	13	0	**306**
MT	0	0	0	0	0	0	0	15	8	13	15	3	2	**56**
ND	35	43	154	158	168	128	144	163	159	89	94	73	0	**1408**
NM	197	247	363	363	369	352	353	320	347	283	256	235	126	**3811**
NV	0	0	0	0	0	0	0	3	19	11	9	10	0	**52**
OR	0	0	0	0	0	0	0	0	0	30	32	43	36	**141**
UT	25	9	15	22	20	23	23	0	0	0	0	0	0	**137**
WA	0	0	0	13	18	11	16	10	19	22	20	12	8	**149**
WI	0	0	51	45	54	48	51	39	45	12	16	15	1	**377**
WY	18	12	16	15	10	18	11	12	5	2	5	4	0	**128**
Total	488	598	995	994	1008	937	934	881	869	650	541	458	198	**9551**

READING State	K	1	2	3	4	5	6	7	8	9	10	11	12	Total
AZ	168	246	301	302	292	262	261	239	208	146	46	30	10	**2511**
IA	0	17	21	17	12	13	22	22	14	15	17	10	0	**180**
KS	9	3	4	6	8	2	3	4	1	2	6	8	8	**64**
ME	0	0	12	12	17	24	22	19	19	0	0	0	0	**125**
MI	23	12	16	10	15	10	9	15	6	13	8	2	5	**144**
MN	36	28	41	36	29	27	18	23	19	20	21	14	0	**312**
MT	0	0	0	0	0	0	0	16	10	15	17	3	2	**63**
ND	33	43	153	157	164	126	145	163	148	89	115	89	0	**1425**
NM	199	254	364	366	366	356	353	331	342	286	262	235	121	**3835**
NV	0	0	0	0	0	0	0	3	19	11	11	11	0	**55**
OR	0	0	0	0	0	0	0	0	0	27	33	43	38	**141**
UT	25	9	15	21	20	23	23	0	0	0	0	0	0	**136**
WA	0	0	0	4	6	2	5	20	16	36	36	19	8	**152**
WI	0	0	56	43	54	48	51	41	45	12	16	15	1	**382**
WY	18	13	17	16	9	18	11	11	6	3	6	6	0	**134**
Total	511	625	1000	990	992	911	923	907	853	675	594	485	193	**9659**

MATH ELO	K	1	2	3	4	5	6	7	8	9	10	11	12	Total
Arizona Navajo Central ELO	88	92	117	134	122	118	110	67	72	82	11	9	3	**1025**
Arizona Navajo North ELO	0	15	75	71	58	67	67	65	66	59	34	22	10	**609**
Arizona Navajo South ELO	0	20	14	16	14	17	11	21	16	0	0	0	0	**129**
Arizona South ELO	11	52	47	35	40	36	36	37	26	0	0	0	0	**320**
Billings ELO	18	12	16	15	10	18	11	27	13	15	20	7	2	**184**
Minneapolis ELO	61	58	128	110	121	105	118	114	107	57	60	40	6	**1085**
New Mexico Navajo Central ELO	104	125	152	148	138	137	127	106	107	0	0	0	0	**1144**
New Mexico Navajo North ELO	116	98	108	98	115	85	84	46	32	51	47	36	38	**954**
New Mexico Navajo South ELO	46	49	125	133	140	142	163	165	158	151	115	99	88	**1574**
New Mexico North ELO	0	0	0	0	0	0	0	49	82	81	94	100	0	**406**
New Mexico South ELO	0	31	43	45	50	53	41	0	0	0	0	0	0	**263**
Oklahoma ELO	9	3	4	6	7	2	3	3	1	2	5	7	7	**59**
Sacramento ELO	0	0	0	0	0	0	0	3	19	11	9	10	0	**52**
Seattle ELO	0	0	0	13	18	11	16	10	19	52	52	55	44	**290**
Southern & Eastern States ELO	0	0	12	12	17	25	22	19	19	0	0	0	0	**126**
Standing Rock ELO	5	22	17	14	23	6	17	10	6	0	0	0	0	**120**
Turtle Mountain ELO	30	21	137	144	135	115	108	139	126	89	94	73	0	**1211**
Total	488	598	995	994	1008	937	934	881	869	650	541	458	198	**9551**

READING ELO	K	1	2	3	4	5	6	7	8	9	10	11	12	Total
Arizona Navajo Central ELO	99	111	118	136	123	101	110	67	69	84	11	9	3	**1041**
Arizona Navajo North ELO	0	15	73	74	60	67	66	67	65	62	35	21	7	**612**
Arizona Navajo South ELO	0	22	14	17	13	17	11	22	18	0	0	0	0	**134**
Arizona South ELO	25	51	46	36	42	35	34	37	24	0	0	0	0	**330**
Billings ELO	18	13	17	16	9	18	11	27	16	18	23	9	2	**197**
Minneapolis ELO	59	57	134	106	120	105	119	115	111	60	62	41	6	**1095**
New Mexico Navajo Central ELO	106	135	152	149	138	139	125	107	107	0	0	0	0	**1158**
New Mexico Navajo North ELO	116	99	108	97	116	86	86	46	32	51	48	36	38	**959**
New Mexico Navajo South ELO	46	45	126	134	136	143	164	166	152	149	114	104	83	**1562**
New Mexico North ELO	0	0	0	0	0	0	0	58	83	86	100	95	0	**422**
New Mexico South ELO	0	31	43	46	50	53	41	0	0	0	0	0	0	**264**
Oklahoma ELO	9	3	4	6	8	2	3	4	1	2	6	8	8	**64**
Sacramento ELO	0	0	0	0	0	0	0	3	19	11	11	11	0	**55**
Seattle ELO	0	0	0	4	6	2	5	20	16	63	69	62	46	**293**
Southern & Eastern States ELO	0	0	12	12	17	24	22	19	19	0	0	0	0	**125**
Standing Rock ELO	3	22	18	15	24	5	17	10	6	0	0	0	0	**120**
Turtle Mountain ELO	30	21	135	142	130	114	109	139	115	89	115	89	0	**1228**
Total	511	625	1000	990	992	911	923	907	853	675	594	485	193	**9659**

MATH ADD	K	1	2	3	4	5	6	7	8	9	10	11	12	Total
ADD East	44	46	170	176	182	148	150	171	152	91	99	80	7	**1516**
ADD Navajo	354	399	591	600	587	566	562	470	451	343	207	166	139	**5435**
ADD West	90	153	234	218	239	223	222	240	266	216	235	212	52	**2600**
Total	488	598	995	994	1008	937	934	881	869	650	541	458	198	**9551**

READING ADD	K	1	2	3	4	5	6	7	8	9	10	11	12	Total
ADD East	42	46	169	175	179	145	151	172	141	91	121	97	8	**1537**
ADD Navajo	367	427	591	607	586	553	562	475	443	346	208	170	131	**5466**
ADD West	102	152	240	208	227	213	210	260	269	238	265	218	54	**2656**
Total	511	625	1000	990	992	911	923	907	853	675	594	485	193	**9659**

MATH Project Status	K	1	2	3	4	5	6	7	8	9	10	11	12	Total
Not NWEA Project School	262	269	612	651	629	604	574	582	596	589	474	395	154	**6391**
NWEA Project School	226	329	383	343	379	333	360	299	273	61	67	63	44	**3160**
Total	488	598	995	994	1008	937	934	881	869	650	541	458	198	**9551**

READING Project Status	K	1	2	3	4	5	6	7	8	9	10	11	12	Total
Not NWEA Project School	268	285	616	641	616	575	566	605	586	617	526	421	149	**6471**
NWEA Project School	243	340	384	349	376	336	357	302	267	58	68	64	44	**3188**
Total	511	625	1000	990	992	911	923	907	853	675	594	485	193	**9659**

MATH School Type	K	1	2	3	4	5	6	7	8	9	10	11	12	Total
BIE Boarding School	139	130	224	213	244	263	256	191	192	247	140	141	119	**2499**
BIE Day School	93	153	165	183	170	123	128	97	76	0	0	0	0	**1188**
Contract Day School	0	0	12	12	11	15	9	8	13	0	0	0	0	**80**
Grant Boarding School	110	117	214	233	224	216	225	243	285	195	175	158	48	**2443**
Grant Day School	146	198	380	353	359	320	316	342	303	208	226	159	31	**3341**
Total	488	598	995	994	1008	937	934	881	869	650	541	458	198	**9551**
Bureau	232	283	389	396	414	386	384	288	268	247	140	141	119	**647**
Non-Bureau	256	315	606	598	594	551	550	593	601	403	401	317	79	**1200**
Total	488	598	995	994	1008	937	934	881	869	650	541	458	198	**9551**

READING School Type	K	1	2	3	4	5	6	7	8	9	10	11	12	Total
BIE Boarding School	144	140	224	213	247	266	259	192	193	244	140	145	118	**2525**
BIE Day School	92	158	162	184	165	122	125	97	66	0	0	0	0	**1171**
Contract Day School	0	0	12	12	11	14	9	8	13	0	0	0	0	**79**
Grant Boarding School	119	132	212	229	214	190	212	250	274	199	183	152	45	**2411**
Grant Day School	156	195	390	352	355	319	318	360	307	232	271	188	30	**3473**
Total	511	625	1000	990	992	911	923	907	853	675	594	485	193	**9659**
Bureau	236	298	386	397	412	388	384	289	259	244	140	145	118	**647**
NonBureau	275	327	614	593	580	523	539	618	594	431	454	340	75	**1300**
Total	511	625	1000	990	992	911	923	907	853	675	594	485	193	**9659**

APPENDIX B: Paired Samples VCG Analysis

MATH Spring RIT									
	N	Correla-tion	Sig.	Student Mean	VCG Mean	Paired Differen-ces Mean	t	df	Sig. (2-tailed)
K	450	0.589	0.000	149.2	150.4	-1.19	-2.55	449	0.011
1	501	0.750	0.000	168.7	169.8	-1.07	-2.88	500	0.004
2	940	0.669	0.000	183.2	183.5	-0.26	-1.02	939	0.310
3	950	0.759	0.000	193.3	194.2	-0.90	-3.56	949	0.000
4	981	0.728	0.000	201.2	201.3	-0.16	-0.60	980	0.549
5	928	0.787	0.000	207.4	208.3	-0.96	-3.63	927	0.000
6	906	0.796	0.000	213.0	214.0	-1.00	-3.56	905	0.000
7	845	0.821	0.000	217.0	217.1	-0.16	-0.55	844	0.585
8	840	0.840	0.000	222.7	221.4	1.34	4.41	839	0.000

MATH Raw Growth									
	N	Correla-tion	Sig.	Student Mean	VCG Mean	Paired Differen-ces Mean	t	df	Sig. (2-tailed)
K	450	0.313	0.000	15.3	16.3	-1.08	-2.32	449	0.021
1	501	0.426	0.000	14.6	15.7	-1.07	-2.87	500	0.004
2	940	0.427	0.000	11.6	11.8	-0.25	-1.00	939	0.319
3	950	0.398	0.000	10.5	11.4	-0.86	-3.38	949	0.001
4	981	0.329	0.000	8.9	8.9	-0.08	-0.30	980	0.765
5	928	0.141	0.000	7.1	8.0	-0.95	-3.55	927	0.000
6	906	0.191	0.000	6.2	7.2	-0.97	-3.47	905	0.001
7	845	0.081	0.019	4.9	5.1	-0.23	-0.76	844	0.449
8	840	0.089	0.009	5.7	4.4	1.36	4.49	839	0.000

MATH Norm Growth									
	N	Correla-tion	Sig.	Student Mean	VCG Mean	Paired Differen-ces Mean	t	df	Sig. (2-tailed)
K									
1									
2	940	0.279	0.000	-3.2	-2.9	-0.25	-1.00	939	0.319
3	950	0.314	0.000	-1.0	-0.1	-0.86	-3.38	949	0.001
4	981	0.177	0.000	-2.8	-2.7	-0.08	-0.30	980	0.765
5	928	0.075	0.022	-3.1	-2.2	-0.95	-3.55	927	0.000
6	906	0.145	0.000	-2.7	-1.7	-0.97	-3.47	905	0.001
7	845	0.073	0.034	-2.5	-2.3	-0.23	-0.76	844	0.449
8	840	0.039	0.264	-1.0	-2.3	1.36	4.49	839	0.000

READING									
Spring RIT									
	N	Correla-tion	Sig.	Student Mean	VCG Mean	Paired Differen-ces Mean	t	df	Sig. (2-tailed)
K	448	0.525	0.000	148.6	150.4	-1.81	-4.31	447	0.000
1	549	0.763	0.000	164.1	166.6	-2.50	-7.38	548	0.000
2	937	0.752	0.000	178.6	180.0	-1.35	-4.61	936	0.000
3	956	0.773	0.000	186.2	187.8	-1.63	-5.69	955	0.000
4	952	0.728	0.000	193.8	194.4	-0.67	-2.19	951	0.029
5	905	0.743	0.000	198.9	199.7	-0.75	-2.53	904	0.012
6	901	0.747	0.000	203.1	204.1	-1.03	-3.40	900	0.001
7	866	0.715	0.000	207.3	207.0	0.28	0.83	865	0.408
8	826	0.778	0.000	210.5	210.6	-0.02	-0.07	825	0.947

READING									
Raw Growth									
	N	Correla-tion	Sig.	Student Mean	VCG Mean	Paired Differen-ces Mean	t	df	Sig. (2-tailed)
K	448	0.269	0.000	13.9	15.7	-1.78	-4.24	447	0.000
1	549	0.264	0.000	12.0	14.4	-2.43	-7.21	548	0.000
2	937	0.431	0.000	11.5	12.8	-1.34	-4.55	936	0.000
3	956	0.326	0.000	7.9	9.5	-1.60	-5.59	955	0.000
4	952	0.333	0.000	6.8	7.4	-0.65	-2.12	951	0.035
5	905	0.354	0.000	5.4	6.1	-0.72	-2.41	904	0.016
6	901	0.351	0.000	4.4	5.4	-1.00	-3.31	900	0.001
7	866	0.311	0.000	4.0	3.7	0.29	0.87	865	0.383
8	826	0.333	0.000	3.4	3.4	-0.02	-0.07	825	0.948

READING									
Norm Growth									
	N	Correla-tion	Sig.	Student Mean	VCG Mean	Paired Differen-ces Mean	t	df	Sig. (2-tailed)
K									
1									
2	937	0.275	0.000	-4.8	-3.5	-1.34	-4.55	936	0.000
3	956	0.150	0.000	-3.8	-2.2	-1.60	-5.59	955	0.000
4	952	0.079	0.015	-2.1	-1.5	-0.65	-2.12	951	0.035
5	905	0.086	0.010	-1.5	-0.8	-0.72	-2.41	904	0.016
6	901	0.103	0.002	-2.0	-1.0	-1.00	-3.31	900	0.001
7	866	0.010	0.767	-2.2	-2.4	0.29	0.87	865	0.383
8	826	0.033	0.336	-1.8	-1.8	-0.02	-0.07	825	0.948

APPENDIX C: Virtual Comparison Group Methodology

Virtual Comparison Groups

NWEA researchers have developed a research control group methodology called Virtual Comparison Groups, or VCGs. Using VCGs, researchers can compare a student's academic growth (based on the difference between two MAP scores) to students who perform similarly and share similar demographic characteristics. Unlike comparisons using norms, VCG reports provide apples-to-apples comparisons.

What is a Virtual Comparison Group?

A virtual comparison group is a group of students that matches key characteristics of the group of students being compared. Researchers refer to it as a matched group quasi-experimental design. The comparison group is "virtual" because it is comprised of data from NWEA's longitudinal student achievement database that includes growth data from millions of students. In addition to student growth data, the database holds relevant district, school, and student characteristics, such as socio-economic status (SES) data, urban/rural designations, grade level, and beginning performance level.

To construct a VCG, NWEA identifies the key characteristics of each student in the study group. The study group may be a class, school, or other logical organization of students. Next, for each student, NWEA filters the database to find students who perform similarly and share these key characteristics. A random sample of 51 comparison students is selected from that result and these become the Virtual Comparison Groups for each student in the initial study group. VCGs can provide valuable information for making program decisions or evaluating the effect of an educational intervention or policy. The VCG results control for variables that may otherwise mask the impact of the intervention.

How are VCGs created?

NWEA uses three types of filters to create a VCG for each student being studied.

1. General Assessment Filters – Only students with valid test scores for the same year and subject area are considered.
2. School Filters – The percentage of students qualified for free and reduced lunch is within 5 percentage points of the school being studied and schools have the same urban/rural classification (based on the National Center for Educational Statistics Common Core of Data Survey).
3. Student Filters – Students are in the same grade level, within 1 RIT point of the beginning score, and the beginning and ending tests were taken within 7 days of the student's test date. This assures that the student and members of the VCG group had about the same amount of instructional time.

After applying these three types of filters, a group of 51 students is randomly selected from the database. The median score of this group is the metric that is used to compare to the study group student score.

If you are interested in learning more about how to use VCG data for your research study design, please contact us.

APPENDIX D: NWEA-BIE Partnership Backgrounder

Backgrounder:

Northwest Evaluation Association – Bureau of Indian Education Partnership

NWEA
Northwest Evaluation Association
Partnering to help all kids learn

NWEA is a not-for-profit organization located in Portland, Oregon with offerings in computer-adaptive assessment, research, professional development and reporting. Measures of Academic Progress (MAP) assessments are aligned to state standards and can predict proficiency on state exams. 112 BIE schools in 17 states use MAP assessments to inform instruction and predict proficiency on state tests.

Through a professional development contract, NWEA works closely with School Leadership Teams and Education Line Officers in 53 schools and 17 line offices within the BIE's System of Support. Since the beginning of our work in September 2009, NWEA has delivered more than 150 workshops, 188 face-to-face leadership coaching events and 190 telephone coaching events to principals and Education Line Officers. "Roll-up" Reports with aggregated student achievement and growth data have been delivered to BIE at the conclusion of each testing season.

The professional development and coaching plan is designed to work seamlessly with the BIE System of Support to provide structures and build capacity for the application of MAP student achievement data to improve effectiveness in BIE schools and make a difference for children. The plan is designed to support and enhance BIE's "commitment to provide high-quality professional development opportunities" and help "ensure delivery of scientifically researched and evidence-based instructional practices."

The long term partnership between NWEA and the Bureau provides an environment for capacity building and proficiency in the use of student achievement data. The workshops delivered at schools are "leveled" over time to indicate a progression in complexity in the acquisition and development of skills and core knowledge. BIE personnel develop capacity to access and apply data to inform planning, implementation, and evaluation of student outcomes.

To accomplish this work, NWEA works closely with four groups:

1. Teachers
2. School Leadership Teams, which include principals and may include teachers, instructional leaders, instructional coaches, and other leaders
3. Education Line Officers
4. BIE System of Support Management Team

During the past year and a half, collaborative relationships between NWEA coaches and leaders have been established in most cases. The consistent support provided to BIE leaders is resulting in changes of practice in schools and line offices. Leaders are now eager to set and monitor goals and have articulated, in many venues, the value of the coaching relationship.

In addition to changes in leadership practice, significant student growth in reading and mathematics achievement has been observed. The most outstanding instances include:

Of the System of Support schools who tested fall 2009 and spring 2010 (17 of 46 total):

Outstanding Math growth from Fall '09 to Spring '10

Chilchinbeto grade 5: 11.8 RIT points	99%
Chilchinbeto grade 6: 14.9 RIT points	99%
Chilchinbeto grade 8: 9 RIT points	99%
Nenahnezad grade 4: 9.5 RIT points	99%
Tiis Nazbas grade 4: 17.4 RIT points	99%
Tiis Nazbas grade 5: 14.1 RIT points	98%
Chi-Chil-Tah grade 8: 13.8 RIT points	99%

**Nenahnezad and Tiis Nazbas both had more than typical growth in EVERY GRADE in Math

Outstanding Reading growth from Fall '09 to Spring '10

Chilchinbeto grade 4: 17.8 RIT points	99%
Chilchinbeto grade 6: 20.5 RIT points	99%
Nenahnezad grade 4: 17.8 RIT points	99%
Nenahnezad grade 6: 10.2 RIT points	99%
Chi-Chil-Tah grade 8: 14.6 RIT points	99%
Na Neelzhiin Ji Olta grd 4: 9.8 RIT points	99%
Ojo Encino grade 7: 13.9 RIT points	99%
Alamo Navajo grade 6: 10.7 RIT points	99%
Tohaali Community grd 5: 14.9 RIT points	99%

**Nenahnezad had more than typical growth in EVERY GRADE in Reading

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