

Summary of Findings and Determinations Resulting from the
Investigation of a Testing Irregularity at Kelly Elementary School, Clark
County School District, in the 2011-12 School Year



Nevada Department of Education
Dale A.R. Erquiaga
Superintendent of Public Instruction

April 16, 2014

INTRODUCTION

This investigation was prompted by the submission of an anonymous Report of Testing Irregularity in April 2012, accusing the principal of improperly coaching students to change their answers during the administration of the Criterion-Referenced Test (“CRT”) at Matt Kelly Elementary School (“Kelly ES”) in the spring of 2012. According to the Report of Testing Irregularity, the person filing the report did not feel comfortable providing his or her name because of a fear of retaliation. In response to the Report of Testing Irregularity, Clark County School District (“CCSD”) sent an associate superintendent to interview the principal. During the interview, the associate superintendent asked the principal whether she had administered the examination to any students and whether she had told them to change their answers. She answered in the negative to both questions, and the assistant superintendent closed the investigation soon thereafter.

When the CRT scores for Kelly ES were released in June 2012, significant increases in student math and reading scores were reported. Six students received perfect scores on the reading CRT. The CCSD Superintendent of Schools contacted the Nevada Department of Education (“Department”) to express concerns and the need for a further investigation was discussed. In October 2012, CCSD staff distributed a Department survey to approximately 29 employees at Kelly ES related to testing irregularities. In December 2012, NDE staff conducted follow-up interviews with four staff members and requested written statements from the principal and assistant principal.

While more thorough than the first phase of the investigation, the second phase yielded inconclusive evidence and the matter was left idle. Not until the summer of 2013, with the release of the 2013 CRT test scores,¹ did the matter reach a level of heightened concern. In the 2013 tests, Kelly ES performance dropped significantly, making the 2012 CRT scores and the school’s overall accountability rating appear to be an aberration. A third phase of the investigation was then launched by the Department to determine if the aberration was a testing irregularity.

The Department has deposed or interviewed fifteen witnesses, including the then-assistant superintendent at CCSD who had investigated the Report of Testing Irregularity, educators who administered the CRT, the Kelly ES office manager, the assistant principal, and the principal. The Department has reviewed the *Kelly Elementary School Test Security Plan (2011-12)*, the *Clark County School District Plan for Test Administration and Test Security 2011-2012*, the *Procedures for the Nevada Proficiency Examination Program 2011-2012*, erasure detection analysis from the 2011-12 and 2012-13 school years (for Kelly ES and CCSD as a whole²), and over 2,000 pages of documents received in response to subpoenas, including without limitation performance evaluations and discipline records of teachers who administered the test and administrators dated from 2009 to present; AimsWeb data for Kelly Elementary School students

¹ The 2013 CRT administration was conducted by CCSD personnel, not Kelly ES staff.

² The comparison group for making judgments regarding the degree of differences from the expected values was based solely on CCSD elementary schools and not on all elementary schools in Nevada.

in 3rd, 4th, and 5th grades during the 2011-12 school year; and CRT results for school years 2010-11, 2011-12, and 2012-13.

On the surface, the events at Kelly ES during the three-year period beginning in September 2010 and culminating in the release of new test scores in August 2013 appear to represent exactly what many believe to be the best practices of public education accountability reforms. A persistently underachieving school applies new strategies and receives “turnaround team” assistance to focus on student achievement; the school’s leadership sets high expectations for students and faculty; a resulting increase in test scores and student success is celebrated. This is precisely what many believe must happen in schools like Kelly ES. Even the subsequent precipitous drop in test scores seems to fit with commonly held attitudes about supports and interventions. When the test scores rose in 2012, turnaround team supports were taken away, and Kelly ES slipped back in terms of student achievement. This would seem to feed the argument that supports must be differentiated, consistent, and sustained at schools with a persistent history of underperformance like that seen at Kelly ES.

However, this common perception and even this Department’s strongly held conviction that all children can succeed do not explain what transpired at Kelly ES. The Department has solid evidence that answers were changed. What the Department does not have is the identity of a perpetrator or group of perpetrators. Despite an exhaustive investigation, involving many hours of interviews and depositions, extensive document review, erasure detection analysis, and fingerprint detection, the Department is left with evidence of the irregularity but no clear way to identify the perpetrator(s). Either an individual or a group of individuals has lied under oath, or some un-determined and un-interviewed perpetrator or group of perpetrators exists. In the interest of the students and families at Kelly ES, however, the Department can and must take appropriate action.

Based on the evidence gathered and pursuant to NRS 385.175(6), NRS 389.636, and the *Procedures for the Nevada Proficiency Examination Program 2011-2012*, the Department, by and through the Superintendent of Public Instruction as executive head of the agency, hereby makes the following findings and determinations.³

FINDINGS

- 1. Clark County School District unsatisfactorily conducted the investigation of a possible testing irregularity, as required by NRS 389.628, and therefore violated its plan for test administration and security.**

The Department received correspondence in April of 2012 alleging that the Kelly ES principal was providing inappropriate assistance to students during the administration of the Criterion-Referenced Tests, and responded by instructing CCSD to begin an investigation. An associate superintendent interviewed the principal on May 14, 2012, reported he had no concerns, and concluded his investigation.

³ Findings and determinations herein span all three phases of the Kelly Elementary School testing irregularity investigation; a timeline is included as an appendix to this report.

The associate superintendent asked the principal whether she administered the exam to any students and whether she coached the students to change their answers. According to the associate superintendent, the principal answered in the negative to both questions. Both the *Clark County School District Plan for Test Administration and Test Security 2011-2012*, and the *Procedures for the Nevada Proficiency Examination Program 2011-2012*, require sign-in and sign-out sheets for the exams and a listing of staff members who administered the exam with the names and test numbers of the students. However, the associate superintendent did not request a list of staff members who administered the exam to students. In fact, the principal is listed as having administered the exam to a group of students, and it is undisputed that she administered the exam to some students.

Based on the findings from the initial data analysis, the Department inquired in September 2012 regarding any new developments that may have arisen during the District's investigation. Despite the June 2012 release of the CRT scores, which were significantly higher than the scores from the previous year, the associate superintendent reported there were no changes since his previous correspondence.

The District's investigation consisted of a two-question interview with the principal; a request for the Department to conduct a data analysis; distribution/collection of the Department's questionnaire and summary of the responses; and District-administered CRTs for 2013. In light of the 2013 student performance while under District administration, the District turned to the Department for guidance and further investigation. Although this is a laudatory demonstration of partnership, Nevada Revised Statutes provide a means for local districts to conduct investigations of this type. It is unclear how the District would have proceeded without the State taking responsibility for the investigation. Indeed, testimony from Clark County administration indicates that several options for a more rigorous district-led investigation early in this process were never pursued.

2. School administration did not view the excessive gains in test scores as an anomaly, and therefore did not investigate or report the activity.

Educators who have high expectations for the academic achievement of their students are to be congratulated. However, at Kelly ES the principal and assistant principal ignored anomalous and arguably dramatic swings in data reported, disregarded reported staff concerns about individual and aggregate scores, conducted no investigation of possible irregularities,⁴ and offered no plausible explanation for the situation other than asserting that "our students tried hard" or pointing to a variety of instruction strategies employed in other schools where no such gains in student achievement have been seen. Even when scores declined and reports of testing irregularity became public, the school-level administration took no action except as directed by the District or Department.

⁴ NRS 389.628(1) requires the following: "If a school official has reason to believe that a violation of the plan adopted pursuant to NRS 389.620 may have occurred, the school official shall immediately report the incident to the board of trustees of the school district." NRS 389.628(1) (emphasis added).

3. The Department's investigation was slow and cumbersome.

Although the Department's contract with its testing vendor included the erasure detection analysis capability as an option, it was not a part of the contracted state activities until the Department's investigative team requested it be added during the third phase of the investigation, and then the funding was not immediately available. By the Superintendent of Public Instruction taking personal responsibility for the investigation in September 2013, the process was arguably slowed further as depositions were scheduled and evidence reviewed with legal counsel. It can be argued that the Department did not demonstrate a sufficient sense of urgency and does not readily possess the ability to be nimble in a situation of this scope.

4. The climate at Kelly ES hindered the investigation and the Department's ability to resolve this matter.

Evidence revealed that there was a climate of fear created by the principal at Kelly ES. This fear existed in relation to teachers being assigned to particular grades or positions within the school based on how positive or negative their relationship was with the principal.

In his written statement attempting to explain why the CRT scores for Kelly ES were so much higher for the 2011-12 school year than they had been for the previous years, in addition to listing multiple programs and initiatives (many of which had been started in the previous 2010-11 school year), the assistant principal also blamed the Report of Testing Irregularity on "disgruntled employees" attempting to "mar the principal's character." Upon further questioning, the assistant principal listed one employee who he thought was disgruntled, and he admitted that he did not know whether she had submitted the Report of Testing Irregularity. Indeed, the person who submitted the Report of Testing Irregularity did so anonymously because of a fear of retaliation.

There is evidence that the principal talked with at least one other witness, one of her current employees, about the depositions, and pressured the employee regarding what to say at her deposition and tried to convince the employee to tell her what the employee's lawyer had advised. However, when the principal was questioned as to whether she had talked with anyone else about the subpoenas or depositions, she testified that she did not talk with anyone.

5. Kelly ES failed to file an accurate school security plan.

Each school participating in state assessments must produce a school test security plan that will be kept on file at the school site.⁵ The *Kelly Elementary School Test Security Plan (2011-12)* that was provided to CCSD as the school's security plan was inaccurate. It represented that the test booklets and student answer sheets would be stored in a locking file cabinet in the assistant principal's office, he would have one key, and the extra key would be kept in the school safe, with a sign-out sheet related to its use. It is

⁵ *Procedures for the Nevada Proficiency Examination Program 2011-2012*, pg. 4.

undisputed that the file cabinet referenced did not come to Kelly ES until the next school year (2012-13). Evidence reveals that the 2011-12 test booklets and student answer sheets were actually stored in a closet across the hall from the assistant principal's office. Three people reportedly had keys to the closet, and there was not a sign-out sheet for the key. The assistant principal did not know whether anyone had made a copy of the key.

6. Kelly ES failed to follow proper test security and procedures during testing.

Test booklets and student answer sheets must be stored in locked storage cabinets, which must not be accessible to anyone other than the principal or school test coordinator. (*Procedures for the Nevada Proficiency Examination Program 2011-2012*, pg. 8; *Clark County School District Plan for Test Administration and Test Security 2011-2012*, pg. 18) The teachers, assistant principal, and principal stated that the test booklets and student answer sheets were submitted to the assistant principal in his office, who put them in a storage closet. The assistant principal and principal stated that they, along with the office manager, had a key to that closet. While it is not believed that the office manager accessed the test booklets or student answer sheets, the storage of these documents in a closet to which she had access was a violation of security procedures.

7. Kelly ES security and procedures during testing lacked the requisite formality and structure.

There are no volunteer logs or lists of who was in the classroom while the students were taking the exam. One educator, on her own initiative, kept a record of who was in the classroom while the students were taking the exam, when students left, and when they returned. She is to be commended for her recordkeeping and accountability.

While Kelly ES has a security alarm, and security records reveal different user numbers accessing the alarm to arm or disarm it while the test booklets and student answer sheets were being stored at Kelly ES, the school does not have a record of who was assigned the various access codes. Indeed, one witness testified to there being generic access codes. A use of generic access codes would prevent identification of who accessed the alarm, for example, who was the first person in the building and who was the last person to leave. It also prevents identification of who may have been in the school building alone with the test booklets and student answer sheets.

8. Student scores increased dramatically in 2012.

The Department conducted an internal analysis of CRT data in August 2012 at the District's request to compare the average gains across all schools in CCSD to the gain experienced by Kelly ES from school years 2010-11 to 2011-12. The districtwide gain in reading from 2010-11 to 2011-12 was 4.2 scale score points; the gain at Kelly ES in reading was 45.1 scale score points.

The Department reviewed responses from a survey it distributed to Kelly ES staff in October 2012, a summary of those responses (produced by the District), and transcripts

from interviews it conducted in December 2012. Witnesses stated that a student who could not read received a perfect score on the 2012 Reading CRT. The Department reviewed the student's records in January 2013, and confirmed this student struggled to read before the 2012 CRT administration, and continued to struggle with reading skills after receiving the perfect score.

9. Student scores decreased significantly in 2013.

District personnel administered the spring 2013 CRT to ensure reliable test scores. Kelly's 2013 reading and math test scores were significantly lower than in 2012, and its Nevada Schools Performance Framework (NSPF) rating dropped from a 5-star rating for 2011-12 to a 2-star rating in 2012-13. Science scores, not included in NSPF ratings, did not experience similar fluctuations.

10. CRT answer sheets were altered in School Year 2011-12.

Measured Progress, the state's contracted vendor for the CRT, completed an erasure detection analysis in June of 2013 (following contract funding approval) for the 2012 CRT administration. The analysis revealed a disproportionately high occurrence of incorrect-to-correct erasures. The subsequent analysis for the District-administered CRT in 2013 indicated that erasures were within the normal range for the District. Findings from the detection analyses, in conjunction with the unusually high gains from 2010-11 to 2011-12, and the subsequent drop in 2012-13 when the District administered the examinations indicate that the 2012 student answer sheets were tampered with.

11. The Kelly ES principal failed to prevent test security from being compromised.

Erasure detection analysis shows that after the students returned the test booklets and student answers, security was compromised and student answers were changed, in violation of security procedures. (*Procedures for the Nevada Proficiency Examination Program 2011-2012*, pp. 7, 12; *Clark County School District Plan for Test Administration and Test Security 2011-2012*, pg. 13.)

The principal is required to ensure that the test booklets and student answer sheets are stored in a secure manner. (NAC 389.054) Additionally, the principal executed the *Authorization to Administer Tests in the Nevada Proficiency Examination Program in Accordance with Nevada Revised Statutes (NRS) and Nevada Administrative Code (NAC) (School Year 2011-2012)*. Pursuant to that document, the principal agreed to, among other things, ensure compliance with the principles and procedures described in the *Procedures for the Nevada Proficiency Examination Program*, the Test Coordinator and Administration Manuals, NAC Chapter 389, and NRS Chapter 389. Further, the principal explicitly agreed to “[a]ccept personal responsibility for all materials required for the administration of the Nevada Proficiency Examinations and the supervision of the administration and security of those examinations.” She also agreed to “[p]rovide secure locked storage for all testing materials while on site” and “[i]mmediately report any suspected irregularity in test administration or test security to the District Test Director.”

As the *Procedures for the Nevada Proficiency Examination Program 2011-2012*, pg. 17, explains, “[a]lthough the principal may choose to assign test scheduling and training responsibilities to a school test coordinator, delegating these duties does not absolve the principal of the ultimate responsibility for test security and proper test administration.”

12. Kelly’s assistant principal served as the test coordinator at the school and must share responsibility for failure to carry out security plans and procedures.

The test coordinator at Kelly ES served the role of delivering test booklets to teachers and securing documents in the storage closet. He provided training in advance. As part of this investigation, the assistant principal provided conflicting stories about test security procedures and accepted responsibility under oath for administration of the security procedures.

DETERMINATIONS

1. The Department cannot determine which individual(s) altered the student answer sheets in this matter, yet it is clear that a testing irregularity occurred. There is no evidence that students were coached to change their answers, however. Kelly students are the victims in this irregularity; it is the determination of this Department that adult behavior lead to the erasure and alteration of the answer sheets.
2. Test scores from the Criterion-Referenced Tests administered pursuant to NRS 389.550 in School Year 2011-12 are to be invalidated.
3. The Department must update its test security plans and erasure detection analysis procedures. The test security plan must require at least two licensed individuals present in the testing room and provide for the keeping of log books as individuals come and go from the class. The Department must more clearly delineate rules and procedures for building principals to delegate test coordination authority to an assistant principal or other employee.
4. The Department must create new test administration and security plans, or recommend changes to state law, in order to prepare for steadily increasing consequences of these evaluations, particularly the use of student achievement data in the evaluation of educators.
5. The Department must create new plans and procedures for future administrations of statewide assessments via computer.
6. The current resources and structure of the Department are insufficient for investigations of this scope. The Superintendent must present a plan to rectify this situation.
7. Clark County School District must demonstrate improved plans for educating school personnel in test security procedures.

8. Clark County School District must demonstrate it has improved internal processes related to the investigation of testing irregularities. The District must strictly adhere to investigative protocol outlined in *Clark County School District Plan for Test Administration and Test Security* and NRS 389.628, and will hereafter be subject to sanctions for failure to carry out the procedures outlined in the plan and NRS 389.628.
9. Clark County School District must demonstrate how it will identify and address school climate issues such as those at Kelly ES.
10. The 2014 CRT administration at Kelly ES must be administered by District personnel, not Kelly ES employees.
11. A letter of admonition concerning the conduct of the Kelly ES principal will be prepared by the Superintendent of Public Instruction and forwarded to the Clark County School Superintendent for his consideration of disciplinary action.
12. A letter of admonition concerning the conduct of the Kelly ES assistant principal will be prepared by the Superintendent of Public Instruction and forwarded to the Clark County School Superintendent for his consideration of disciplinary action.
13. If the Clark County School Superintendent finds disciplinary action is warranted for the Kelly ES principal pursuant to NRS 391.31297(1)(q) or NRS 391.31297(1)(r), the Board of Trustees shall consider whether to request a recommendation to the State Board for the suspension or revocation of her license (NRS 391.322). Pending that action, the Department's investigation will remain open.
14. If the Clark County School Superintendent finds disciplinary action is warranted for the Kelly ES assistant principal pursuant to NRS 391.31297(1)(q) or NRS 391.31297(1)(r), the Board of Trustees shall consider whether to request a recommendation to the State Board for the suspension or revocation of his license (NRS 391.322). Pending that action, the Department's investigation will remain open.
15. Clark County School District is directed to treat Kelly ES as if student achievement had not spiked upward during the 2011-12 school year. The Board of Trustees must submit a plan of corrective action to the Department to rectify achievement issues at this school. The plan must be submitted prior to the commencement of the 2014-15 school year.
16. This report and a summary of resultant actions should be submitted to the U.S. Department of Education for its determination of the need for a federal investigation and/or any corrective action against the parties involved. Pending federal action, the Department's investigation will remain open.

APPENDICES

- A. Investigation Team Roster
- B. Investigation Timeline
- C. Report of Data Analysis
- D. Report of Erasure Detection Analysis

Appendix A

Nevada Department of Education

Kelly Elementary School Testing Irregularity Investigation Team:

- Dr. Richard Vineyard
- Carol Mason
- Dr. Andrew Parr
- Superintendent Dale Erquiaga

Department Legal Counsel:

- Deputy Attorney General Carrie Parker

Appendix B

**KELLY ES TESTING IRREGULARITY INVESTIGATION
TIMELINE OF EVENTS**

Source: Nevada Department of Education (NDE)

April 26, 2012	NDE receives an anonymous report of a possible testing irregularity at Kelly ES, indicating that the principal was providing inappropriate assistance to students taking tests.
May 2012	Clark County School District (CCSD) conducts internal investigation.
August 28, 2012	NDE is notified by CCSD assessment division of unexpectedly large increases in CRT test data for school year 2011-12.
Sept 10, 2012	NDE acknowledges CCSD's concern about test scores.
Sept 11, 2012	Results of NDE's initial data analysis sent to CCSD.
Oct. 8, 2012	CCSD letter to NDE requesting erasure detection analysis.
Oct. 16, 2012	NDE letter to CCSD stating that NDE is investigating.
Oct. 19, 2012	CCSD personnel visited the school to distribute a preliminary questionnaire from NDE.
Nov. 30, 2012	NDE reports there is insufficient evidence at this time to necessitate invalidation of scores; but because the investigation is still in progress, scores may be invalidated pending new findings.
Dec. 14, 2012	Based on information from the questionnaire's responses, NDE and CCSD staff conducted interviews with school staff.
June 2013	2013 CRT test scores available to use as a critical comparison in determining that the 2012 data may have been compromised.
June 2013	NDE's testing vendor, Measured Progress, conducts an erasure detection analysis for the 2011-12 CRT data (this complex analysis required an amendment to NDE's contract with Measured Progress and cost an additional \$20,000, which was not available earlier in the year).
June 26, 2013	NDE receives results of erasure detection analysis from Measured Progress.

August 9, 2013	CCSD reports CRT score swing concern to NDE.
Oct. 22, 2013	NDE sends Attorney General's Office a formal request to conduct an investigation.
Nov. 2013 – Feb. 2014	Depositions conducted; subpoenaed documents reviewed.
Jan. 27, 2014	Erasure analysis updated to include 2012-13 school year data; erasures for 2012-13 are within normal range for CCSD.
Feb. 14, 2014	NDE selects 20 suspect answer documents and submits to AG's office for fingerprint analysis.
March 24, 2014	Results of fingerprint analysis deemed inconclusive.

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Appendix C

Examination of Student Reading CRT Results for Kelly ES

Prepared by Dr. Andrew Parr, APAC

Edited by Dr. Richard Vineyard, APAC

In late August of 2012, assessment personnel from the Clark County School District (LEA) contacted the Nevada Department of Education (SEA) regarding what appeared to be and were characterized as anomalous CRT results from several LEA schools (Kelly ES, Parson ES, and Elizondo ES). The SEA conducted a series of statistical analyses to determine whether:

1. The results could be considered anomalous, extreme, or outliers,
2. The results could be explained by changes in student population,
3. The results could be attributed to a particular grade level, and
4. Systematic patterns were evident from the individual responses.

The results of the analysis by the SEA, detailed below, show that in relationship to results from other elementary schools in the LEA, data from Kelly ES show a evidence that are difficult to explain. First, (Item 1) the average gain in test scores in 2011-2012 across grades 3, 4 and 5 in both reading and math are of a magnitude that is far outside of the expected range for all schools in the district, and a substantial increase from the scores achieved at Kelly ES in 2010-2011. Second, (Item 2 and Item 3) the substantial gains do not seem to be related to changes in the population size or demographic profile of students at Kelly ES. Finally, there are a variety of systematic patterns in the data related to differential performance on item types and between grade 5 student performance on the science assessment relative to the same students' performance on the tests in reading and math.

Item 1 – Identification of Outliers

To answer Item 1 (above), the SEA calculated reading and mathematics proficiency rates for all schools in the state based on the 2012 Growth File for students continuously enrolled from Count Day to the date of testing. The SEA computed the change in school proficiency rate from 2011 to 2012 and then examined the LEA school-level proficiency rate changes for schools with 25 or more students in both the 2011 and 2012 school years. The analyses below are derived from 214 schools from the LEA.

Descriptive statistics for the 214 LEA schools are presented in Table 1a (Reading) and 1b (mathematics). For discussion purposes, the calculated mean for the school-level reading proficiency rate change was slightly more than four percentage points while the school-level mathematics proficiency rate change was

approximately three percentage points. A histogram (Table 2A) showing the distribution of the school-level reading proficiency rate changes and Table 2B for mathematics are provided below for reference. As indicated in Table 1, most elementary schools showed a small increase in reading proficiency from 2011 to 2012 but the reading proficiency rate for a number of schools decreased.

Table 1A. Reading Descriptive Statistics for 214 Elementary Schools in the Clark County SD

Variable	Variable Description	Statistic	Std. Error
Read_Change	Mean	4.180400	.4201500
	95% Confidence Interval for Lower Bound	3.352216	
	Mean Upper Bound	5.008585	
	Median	3.881642	
	Variance	37.777	
	Standard. Deviation	6.1462641	
	Skewness	1.267	.166
	Kurtosis	9.257	.331

Table 1B. Mathematics Descriptive Statistics for 214 Elementary Schools in the Clark County SD

Descriptives		Statistic	Std. Error
Math_Change	Mean	3.040450	.4055980
	95% Confidence Interval for Lower Bound	2.240950	
	Mean Upper Bound	3.839950	
	Median	2.993850	
	Variance	35.205	
	Standard. Deviation	5.9333876	
	Skewness	.017	.166
	Kurtosis	4.303	.331

The calculation of standard deviation (SD) in Tables 1A and 1B provides a measure of the variability of the average values, relative to the mean (average) for the entire population. Sixty eight percent (68%) of all the values are found within one SD of the population mean, 95% are within two SD, and 99.8% of all values are found within three SD of the mean. For the 214 elementary schools in CCSD the average change from 2010-2011 to 2011-2012 was 4.18 points in reading and 3.04 points in math. The value at three SD above the mean (99.8%) for Reading is 22.62 points and for Math, three SD above the mean is 20.84. As seen in Tables

3A (reading) and 3B (math) the values for Kelly ES showing a gain of 45.066 points in reading and 27.308 points in math, are much greater than would be expected.

Table 2A. Histogram for School Reading Proficiency Rate Changes.

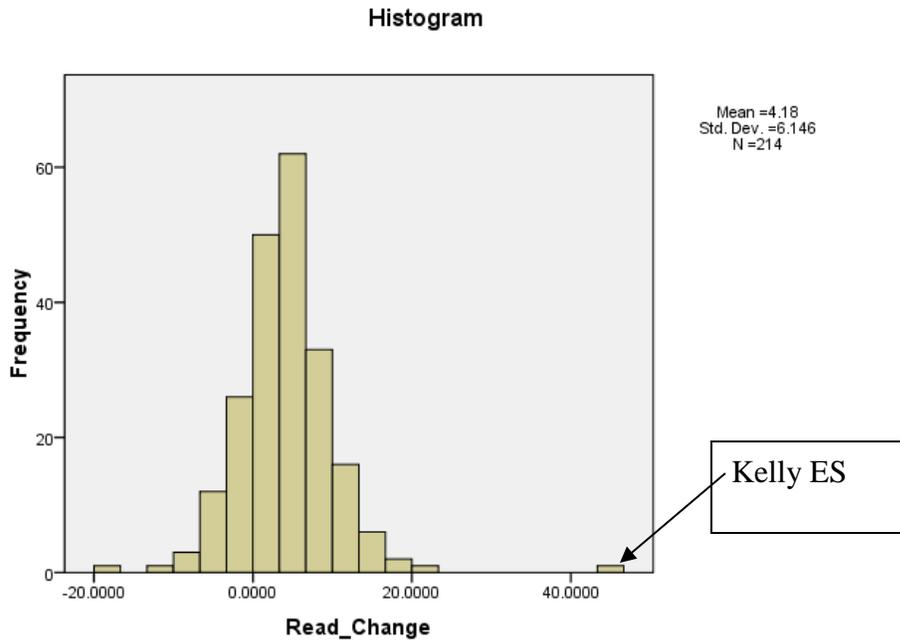
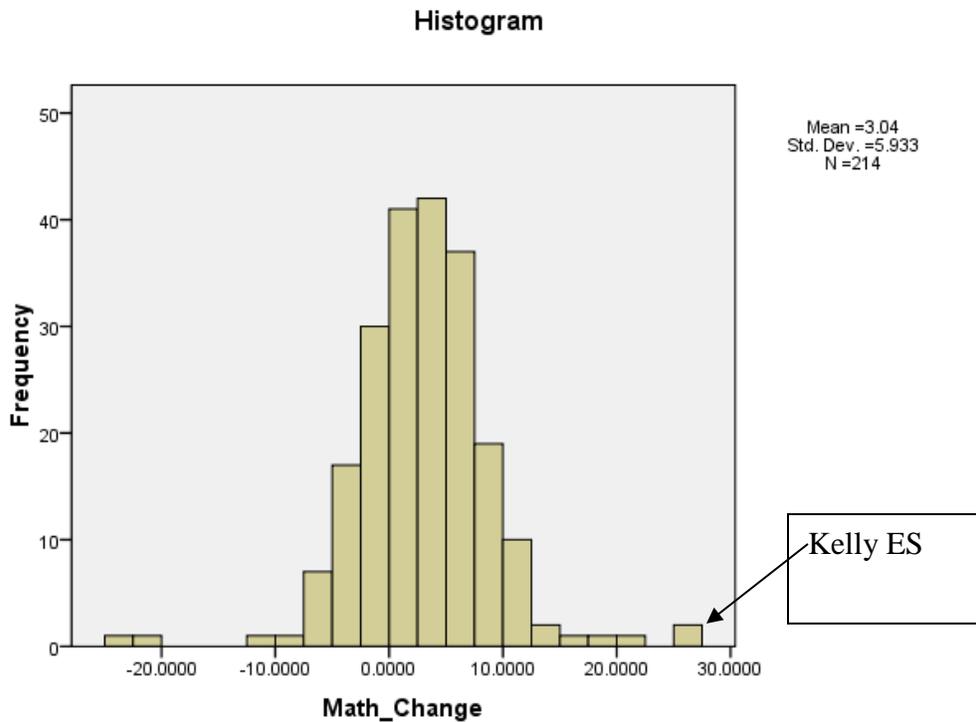


Table 2B. Histogram for School Mathematics Proficiency Rate Changes.



Three elementary schools (Kelly ES, Hancock ES, and Elizondo ES) were identified (Table 3A) as extreme or outlier cases with respect to reading proficiency rate increases from 2011 to 2012. Four elementary schools (Kelly ES, Hancock ES, Elizondo ES, and Parson ES) were identified (Table 3B) as outlier cases with respect to mathematics proficiency rate increases from 2011 to 2012. The LEA notified the SEA as to their suspicions about the Kelly ES, Elizondo ES and Parson ES CRT results, but the inclusion of Hancock ES to this list is new information.

Table 3A. Identification of Outlier Schools Based on Reading Proficiency Rate Increases.

		School Number	School Name	Reading Proficiency Rate Change
Read_Change	1	2226	Kelly ES*	45.0660
	2	2207	Hancock ES	23.2751
	3	2164	Elizondo ES*	19.2713

*Note: School was flagged by LEA as yielding unusually high proficiency rates.

Table 3B. Identification of Outlier Schools Based on Mathematics Proficiency Rate Increases

		School Number	School Name	Reading Proficiency Rate Change
Math_Change	1	2226	Kelly ES*	27.3083
	2	2207	Hancock ES	25.3437
	3	2164	Elizondo ES*	21.5636
	4	2110	Parson ES*	19.0395

*Note: School was flagged by LEA as yielding unusually high proficiency rates.

Item 2 – Student Demographics (Kelly ES)

The demographics and reading proficiency rates for the students attending for the full academic year (YIS=1) are presented in Table 4A. Neither the number of students nor the percentage of students by race and ethnicity changed dramatically over the previous three school years. One interpretation of this fact is that the school population remains relatively unchanged over the most recent three-year period; the school does not appear to have been rezoned.

Table 4A. Student Demographics and Reading Proficiency Rates for Kelly ES.

	2010			2011			2012		
	Students (YIS=1)		Reading	Students (YIS=1)		Reading	Students (YIS=1)		Reading
	#	%	% Prof.	#	%	% Prof.	#	%	% Prof.
Asian	1	1	100						
African American	58	69	17.2	63	68	39.7	54	61	87.0
Caucasian	5	6	20.0	3	3	33.3	4	5	75.0
Hispanic	20	24	40.0	21	23	33.3	24	27	70.8
Two or More				5	5	20.0	7	8	85.7
Total	84	100	23.8	92	100	37.0	89	100	82.0

The demographics and mathematics proficiency rates for the students attending for the full academic year (YIS=1) are presented in Table 4B. As was the case for reading, neither the number of students nor the percentage of students by race and ethnicity were changed over the previous three school years. The school does not appear to have been rezoned.

Table 4B. Student Demographics and Mathematics Proficiency Rates for Kelly ES.

	2010			2011			2012		
	Students (YIS=1)		Math	Students (YIS=1)		Math	Students (YIS=1)		Math
	#	%	% Prof.	#	%	% Prof.	#	%	% Prof.
Asian	1	1	100						
African American	59	69	32.2	63	68	42.9	54	61	79.6
Caucasian	5	6	40.0	3	3	66.7	4	5	25.0
Hispanic	20	24	55.0	21	23	42.9	24	27	58.3
Two or More				5	5	40.0	7	8	71.4
Total	85	100	38.8	92	100	43.5	89	100	70.8

The distributions of students in special programs at Kelly ES and proficiency rates for the all students are presented in Table 5A (Reading) and 5B (Mathematics). Neither the number of students nor the percentage of students by participating in special programs changed dramatically over the previous three school years. The increase in proficiency rates for the school cannot be attributed to a change in the percentage of students participating in special programs. For Tables 5A and 5B the special programs identified are: IEP- Individualized Education Program (students receiving services under the Americans With Disabilities Act); LEP- Limited English Proficient (students with limited proficiency in English); FRL- Free or Reduced Price Lunch (economically disadvantaged); YIS- Years in School (a measure of transiency, students with a YIS value of 0 have been enrolled in a specific school for less than an entire academic year).

Table 5A. Student Special Populations and Reading Proficiency Rates for Kelly ES.

		2010			2011			2012		
		Students (All)		Reading	Students (All)		Reading	Students (All)		Reading
		#	%	% Prof.	#	%	% Prof.	#	%	% Prof.
IEP	No	80	81	30	103	84	45.6	99	80	98.0
	Yes	19	19	0	20	16	0	24	20	25.0
LEP	No	87	88	25.3	111	90	40.5	102	83	89.2
	Yes	12	12	16.7	12	10	16.7	21	17	57.1
FRL	No	0	0		0	0		0	0	
	Yes	99	100	24.2	123	100	38.2	123	100	83.7
YIS	0	15	15	26.7	31	25	41.9	34	28	88.2
	1	84	85	23.8	92	75	37.0	89	72	82.0
Total		99	100	24.2	123	100	38.2	123	100	83.7

Table 5B. Student Special Populations and Mathematics Proficiency Rates for Kelly ES.

		2010			2011			2012		
		Students (All)		Math	Students (All)		Math	Students (All)		Math
		#	%	% Prof.	#	%	% Prof.	#	%	% Prof.
IEP	No	80	80	48.8	103	84	51.5	99	80	77.8
	Yes	20	20	0	20	16	0	24	20	12.5
LEP	No	88	88	39.8	111	90	45.0	102	83	68.6
	Yes	12	12	33.3	12	10	25.0	21	17	47.6
FRL	No	0	0		0	0		0	0	
	Yes	100	100	39.0	123	100	43.1	123	100	65.0
YIS	0	15	15	40.0	31	25	41.9	34	28	50.0
	1	85	85	38.8	92	75	43.5	89	72	70.8
Total		100	100	39.0	123	100	43.1	123	100	65.0

Item 3: Grade Level Distributions

The distributions of students by grade level at Kelly ES and CRT mean scaled scores for the students continuously enrolled from Count Day to the date of testing are presented in Table 6A and Table 6B. Neither the number of students nor the percentage of students by grade level changed dramatically over the previous three school years. The increase in CRT mean reading and mathematics scaled scores for the school and by grade level cannot be attributed to changes in the percentage of students by grade level.

Table 6A. Grade Level Populations and CRT Reading Scaled Scores for Kelly ES.

	2010			2011			2012		
	Students (YIS=1)		Reading	Students (YIS=1)		Reading	Students (YIS=1)		Reading
	#	%	Mean SS	#	%	Mean SS	#	%	Mean SS
3	33	39	271.8	38	41	277.5	38	43	407.2
4	25	30	239.4	30	33	266.2	24	27	375.6
5	26	31	252.0	24	26	241.4	27	30	335.5
Total	84	100	256.1	92	100	264.4	89	100	376.9

Table 6B. Grade Level Populations and CRT Mathematics Scaled Scores for Kelly ES.

	2010			2011			2012		
	Students (YIS=1)		Math	Students (YIS=1)		Math	Students (YIS=1)		Math
	#	%	Mean SS	#	%	Mean SS	#	%	Mean SS
3	35	39	285.6	38	41	289.3	38	43	314.3
4	25	30	257.0	30	33	284.9	24	27	323.5
5	25	31	282.4	24	26	244.5	27	30	310.5
Total	85	100	276.3	92	100	276.2	89	100	315.6

The distributions of students by grade level at Kelly ES and Growth Model median Reading Student Growth Percentile (SGP)s for the students continuously enrolled from Count Day to the date of testing are presented in Table 7A (Reading) and 7B (Mathematics). Neither the number of students nor the percentage of students by grade level changed dramatically over the previous three school years. The increase in Median Reading SGP's for the school and by grade level cannot be attributed to changes in the percentage of students by grade level.

Table 7A. Grade Level Populations and Median Reading SGPs for Kelly ES.

	2010			2011			2012		
	Students (YIS=1)		Reading	Students (YIS=1)		Reading	Students (YIS=1)		Reading
	#	%	Median SGP	#	%	Median SGP	#	%	Median SGP
4	23	47	43.0	26	52	41.5	23	48	95.0
5	26	53	59.5	24	48	42.0	25	52	88.0
Total	49	100	47.0	50	100	42.0	48	100	91.0

Table 7B. Grade Level Populations and Median Math SGPs for Kelly ES.

	2010			2011			2012		
	Students (YIS=1)		Math	Students (YIS=1)		Math	Students (YIS=1)		Math
	#	%	Median SGP	#	%	Median SGP	#	%	Median SGP
4	23	48	45.0	27	53	48.0	23	48	65.0
5	25	52	56.0	24	47	29.0	25	52	60.0
Total	48	100	45.5	51	100	37.0	48	100	63.5

Item 4: Item Responses (Kelly ES) 2011-2012

Depth of Knowledge (DOK)

An attempt was made to assess student performance on “difficult” items as compared to the performance on “easier” items. To this end, school-level percent correct calculations were computed for reading DOK1, DOK2, and DOK3 items. At Kelly ES, the mean percent correct for DOK1 reading items was 82.9 percent which was the 9th highest rate for all of the LEAs elementary schools. Likewise, the mean percent correct for DOK2 reading items was 82.3 percent which was the 4th highest rate for all of the LEAs elementary schools. Curiously, the mean percent correct for DOK3 reading items was 21.6 percent which was the 3rd lowest rate for all of the LEAs elementary schools.

Pearson correlation coefficients were calculated (Table 8) for the school-level mean values of percent correct for DOK1, DOK2, and DOK3 items. Correlation coefficients are calculated when one wants to measure how similar two sets of data are. The correlation coefficients indicate a very strong and positive correlation between all three DOK levels. These values are what would be expected if the tests were effective in providing reliable and valid information about student academic performance. In other words, students who performed well on one type of question would be expected to show similar levels of performance on the other question types, and likewise schools scoring high on the multiple choice items (DOK1 and DOK2 items) would be expected to also score amongst the highest on the constructed response (DOK3) items. Kelly ES performs in opposition to this pattern as the high DOK 1 and DOK2 percentage correct rates are matched with the lowest DOK3 percentage rates. The pattern is curious or suspicious.

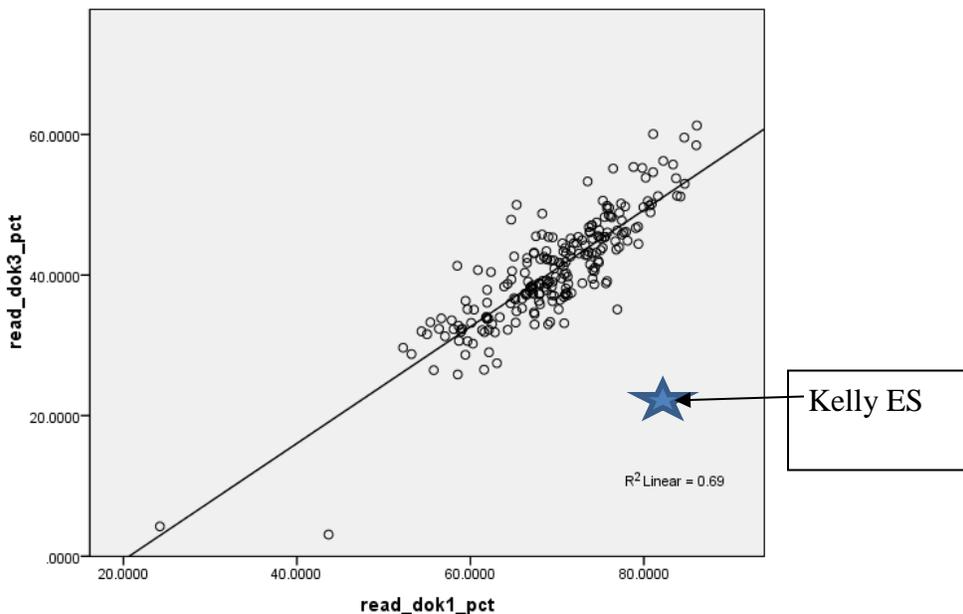
Table 8. Pearson Correlation Coefficients for the Reading DOK Items

	read_dok1_pct	read_dok2_pct	read_dok3_pct
read_dok1_pct	1.000	.972	.831
read_dok2_pct		1.000	.812
read_dok3_pct			1.000

The very strong and positive correlation between DOK1 and DOK3 correct item responses is presented in Table 9. The school (star) in the lower right quadrant is Kelly ES and the correlation between Reading DOK1 and DOK3 at Kelly differs substantially from the majority of the LEA elementary schools.

In the context of DOK levels, the patterns of performance identified for the reading assessment are not entirely replicated for the mathematics assessment. At Kelly ES, the mean percent correct for DOK1 mathematics items was 75.8 percent and the mean percent correct for the DOK2 mathematics items was 63.1, both of which are positioned below the 50th percentile of schools. On average, the students at Kelly answered only 21.2 percent correct on the DOK3 items, which was the third lowest rank.

Table 9: Correlation Plot for Reading DOK1 and DOK3 Item Responses at Kelly ES.



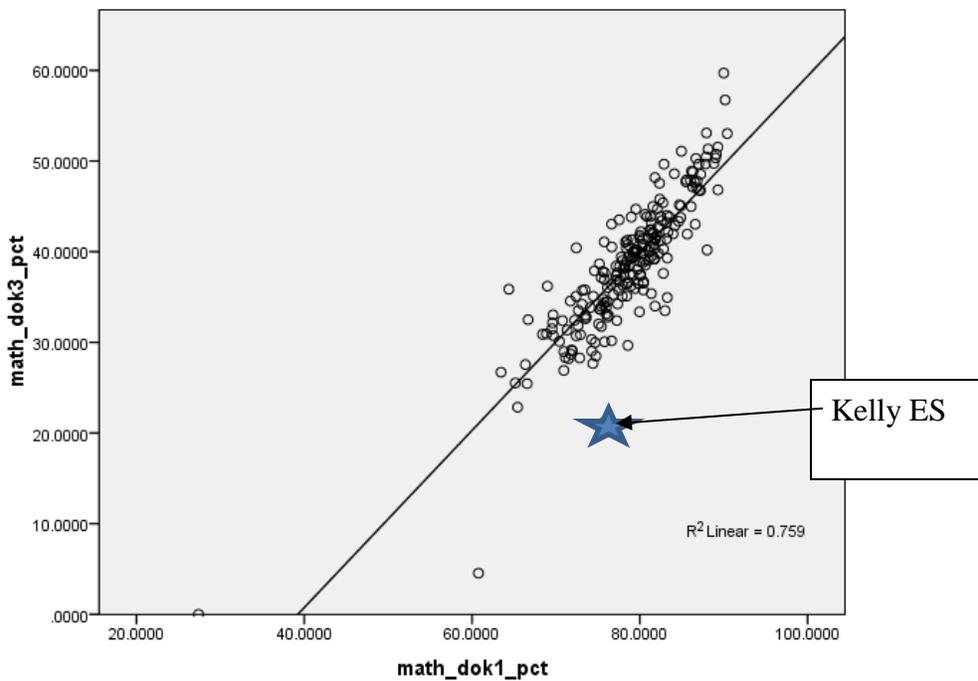
Pearson correlation coefficients were calculated (Table 10) for the school-level mean values of percent correct for DOK1, DOK2, and DOK3 mathematics items. The correlation coefficients indicate a very strong and positive correlation between all three DOK levels. In other words, schools scoring high on DOK1 and DOK2 item responses would be expected to also score amongst the highest on the DOK3 items. Kelly ES performs in opposition to this pattern as the high DOK 1 and DOK2 percentage correct rates are matched with the lowest DOK3 percentage rates.

Table 10. Pearson Correlation Coefficients for the Mathematics DOK Items.

	math_dok1_pct	math_dok2_pct	math_dok3_pct
math_dok1_pct	1.000	.944	.871
math_dok2_pct		1.000	.866
math_dok3_pct			1.000

The very strong and positive correlation between DOK1 and DOK3 correct item responses is presented in Table 11. The school (star) in the lower right quadrant is Kelly ES and the correlation between Mathematics DOK1 and DOK3 at Kelly differs substantially from the majority of the LEA elementary schools.

Table 11: Correlation Plot for Mathematics DOK1 and DOK3 Item Responses at Kelly ES



Item Response Analyses

A total of 49 3rd grade students participated in the 2012 CRT and the reading and mathematics item responses for these students were visually examined for similar response patterns. No readily apparent response pattern was observed for the 3rd grade records.

A total of 34 4th grade students participated in the 2012 CRT and the item responses for these students were visually examined for similar response patterns. After accounting for there being 6 different test forms, analysis of item responses reveals what appears to be an unusually high percentage of 4th grade students (<50 percent) incorrectly responded “C” to question 15 on the Reading CRT. The response pattern “appears” suspicious. As for the mathematics items, no readily apparent response patterns were observed.

A total of 40 5th grade students participated in the 2012 CRT and the item responses for these students were visually examined for similar response patterns. After accounting for there being 6 different test forms, analysis of item responses reveals an unusually high percentage of 5th grade students (36 of 40 = 90 percent) incorrectly responded “D” to question 3 on the reading items.

Other Work (Erasure Marks)

While examining electronic copies of the 5th grade answer documents from Kelly ES, the SEA found comparatively few erasure marks on the science partition of the assessment but numerous erasure marks on the reading and mathematics portion of the assessment documents. The SEA computed Pearson correlation coefficients for reading, math, and science scale scores for all 5th grade CRT records for the state (Table 12) and for the Clark LEA (Table 13). A very strong and positive correlation is indicated for all three content area assessments, meaning that students earning a high score on one assessment would be expected to earn high scores on all three assessments. Note that the LEA correlation coefficients are slightly higher than those for the entire state.

Table 12: Pearson Correlation Coefficients for the 5th Grade CRT Assessments for all of Nevada.

	read_totl_ss	math_totl_ss	scie_totl_ss
read_totl_ss	1.000	.730	.791
math_totl_ss		1.000	.727
scie_totl_ss			1.000

Table 13. Pearson Correlation Coefficients for the 5th Grade CRT Assessments for the Clark LEA.

	read_totl_ss	math_totl_ss	scie_totl_ss
read_totl_ss	1.000	.735	.794
math_totl_ss		1.000	.739
scie_totl_ss			1.000

Pearson correlation coefficients were calculated for the Kelly ES 5th grade CRT records and are presented in Table 15. Note that the correlation coefficient for reading and math is slightly lower for Kelly ES as compared to the LEA and slightly lower for math and science. However, the correlation coefficient for reading and science is substantially lower than that calculated for the state and for the LEA.

Table 15¹: Pearson Correlation Coefficients for the 5th Grade CRT Assessments for Kelly ES.

	read_totl_ss	math_totl_ss	scie_totl_ss
read_totl_ss	1.000	.699	.595
math_totl_ss		1.000	.689
scie_totl_ss			1.000

¹ Editor’s note: Table 14 does not exist nor is it referenced within the text.

The smaller Pearson correlation coefficient for reading and science at Kelly ES might be explained by the greater variance related to the relatively small n-count. Nonetheless, the lower correlation coefficient looks suspicious or at least curious given the other anomalous items identified through the course of this examination.

The SEA computed Pearson correlation coefficients for the number of erasure marks and the reading SGP calculated for each student (Table 16). A strong and positive correlation is indicated for the relationship between erasure marks and reading SGP. This means that answer documents with higher numbers of erasure marks are related to higher reading SGPs.

Table 16: Pearson Correlation Coefficients for the 5th Grade Erasure Marks and Reading SGP for Kelly ES.

	read_eras_num	read_sgp
read_eras_num	1.000	.571
read_sgp		1.000

The SEA computed Pearson correlation coefficients for the number of erasure marks and the mathematics SGP calculated for each student (Table 17). A moderate and positive correlation is indicated for the relationship between erasure marks and math SGP. This means that answer documents with higher numbers of erasure marks are related to higher math SGPs.

Table 17: Pearson Correlation Coefficients for the 5th Grade Erasure Marks and Math SGP for Kelly ES.

	math_eras_num	math_sgp
math_eras_num	1.000	.283
math_sgp		1.000

The relationship between the number of erasure marks and SGP is most curious. The strong correlation between the two indicates that higher numbers of erasure marks are related to higher SGPs. This might indicate that an unusually high percentage of student-bubbled answers (initially incorrect) were changed to the correct answer. Because the erasure analysis represents school averages only, and 6 different versions of the CRT were administered, the SEA is unable to determine which answers were changed from incorrect to correct without a substantial investment in staff time. The SEA was able to conduct a student level analysis for grades 4 and 5.

Summary

Reading

On the basis of 2012 CRT reading assessment student results, three school outliers were identified on the basis of extraordinary increases of school-level proficiency rates. The SEA sought to explain the increases in

terms of changes in student population, subgroup changes, enrollment patterns, and grade level reconfigurations. However, none of these factors appear to account for or explain the change (increases) in the school and subgroup proficiency rates.

Not only did the school-level reading proficiency rate increase substantially (>40 percentage points) at Kelly ES, the school median Reading SGP was 91, up sharply from the previous year. Also, the mean Reading Scaled Score increased approximately 120 scale points as compared to the prior year. This astounding growth cannot be explained without further evaluation.

The student response patterns and performance on the difficult DOK3 items brings to question the validity of the assessment results. The stellar performance on DOK1 and DOK2 does not correspond to the low performance on the DOK3 items. The pattern of identical incorrect answers to the same question is highly suspicious.

Mathematics

A statistical analysis of the 2012 CRT mathematics assessment student results identified four school outliers were on the basis of extremely high increases of school-level proficiency rates. The SEA sought to explain the increases in terms of changes in student population, subgroup changes, enrollment patterns, and grade level reconfigurations. However, none of these factors appear to account for or explain the change (increases) in the school and subgroup mathematics proficiency rates.

The school-level mathematics proficiency rate increased approximately 27 percentage points at Kelly ES and the school median Math SGP was calculated to be 63.5, a 26 point increase from the previous year. Also, the mean Mathematics Scaled Score increased approximately 40 scale points as compared to the prior year, which is substantial but reasonable with focused school improvement. These substantial improvements in student performance cannot be explained without further evaluation.

Further but to a lesser degree compared to the reading item responses, the student response patterns and performance on the difficult DOK3 mathematics items brings to question the validity of the assessment results. The average or typical performance on DOK1 and DOK2 does not match with the lower performance on the DOK3 items. Although less well developed, the patterns of item responses are somewhat suspicious or at least curious.

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Appendix D

Data Summary from Erasure Detection Analysis

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The following tables show data from the erasure detection analysis conducted by Measured Progress on the results of the 2011-2012 and 2012-2013 CRT program assessments. The erasure detection analysis was conducted by Measured Progress at the request of the Department based on the internal data analysis that showed high numbers of erasures on test answer documents. The results of the detection analyses are presented in two ways. The first is a set of tables documenting the number of erasures and the erasure rate per test, the analysis also provided information on the proportion of answers changed from incorrect to correct, correct to incorrect, and incorrect to incorrect. The second analysis (Table 4) calculated the probability that the scores reported for Kelly ES would normally occur in the total population of test scores reported for elementary schools in Clark County School District (CCSD).

Tables 1-3 below compare the results from an analysis of the results from Kelly ES in relation to the average scores for all elementary schools (N=221) in the Clark County School District. Even though the total number of students at Kelly is relatively small, across all grades, Kelly ES shows a much greater total number of erasures on each of the tests than the average number of erasures seen in other schools in the district. The number of erasures per test (erasure rate) at Kelly ES is also much higher than the rate seen in other CCSD elementary schools. The lone exception to this pattern is seen in the results for 5th grade science, which is the only assessment administered at the school which does not contribute to the overall school performance evaluation.

The data also show that in addition to an unexpectedly high rate of erasures, there are also a disproportionately high percentage of cases where the erasure changed the answer from an incorrect response to a correct response. While this direction of change is what would be expected, and in fact hoped for, the differences between the levels of changes seen at Kelly ES are far greater than would be expected based on district averages.

The patterns that are evident in the data occur for reading and math tests across grades 3, 4, and 5, although the differences between the values for Kelly ES and the CCSD averages are less in grade 5 than in the earlier grades.

Table 1. Erasure Detection Analysis: Grade 3, Kelly ES vs CCSD, 2011-2012

Grade 3 (n = 49)	Math		Reading	
	Kelly ES	CCSD**	Kelly ES	CCSD**
Total erasures	631	175.94	879	164.56
Erasure rate (% of items changed)	21.57	2.79	31.98	2.81
Number changed incorrect to correct	548	120.78	813	97.08
% change incorrect to correct	86.85%	61.48%	92.49%	57.45%
Number changed correct to incorrect	35	20.83	31	27.86
% change correct to incorrect	5.55%	12.03%	3.53%	17.54%
Number changed incorrect to incorrect	53	35.79	39	41.73
% change incorrect to incorrect	8.4%	20.99%	4.44%	25.75%

** CCSD value is district average (n = 221)

Table 2. Erasure Detection Analysis: Grade 4, Kelly ES vs CCSD, 2011-2012

Grade 4 (n=34)	Math		Reading	
	Kelly ES	CCSD**	Kelly ES	CCSD**
Total erasures	112	105.89	303	94.1
Erasure rate (% of items changed)	5.53	1.70	15.93	1.64
Number changed incorrect to correct	87	66.07	271	56.51
% change incorrect to correct	77.68%	61.90%	89.44%	59.03%
Number changed correct to incorrect	11	14.06	19	14.74
% change correct to incorrect	9.82%	13.1%	6.27%	16.25%
Number changed incorrect to incorrect	14	26.23	13	23.37
% change incorrect to incorrect	12.5%	25.43%	4.29%	25.23%

** CCSD value is district average (n = 221)

Table 3. Erasure Detection Analysis: Grade 5, Kelly ES vs CCSD, 2011-2012

Grade 5 (n=40)	Math		Reading		Science	
	Kelly ES	CCSD**	Kelly ES	CCSD**	Kelly ES	CCSD**
Total erasures	170	82.53	279	69.23	34	85.09
Erasure rate (% of items changed)	7.1	1.34	12.92	1.26	1.47	1.36
Number changed incorrect to correct	105	46.96	251	39.83	20	47.07
% change incorrect to correct	61.76%	55.44%	89.96%	55.44%	58.82%	54.79%
Number changed correct to incorrect	39	13.24	17	12.17	5	13.98
% change correct to incorrect	22.94%	16.22%	6.09%	18.22%	14.71%	16.41%
Number changed incorrect to incorrect	27	22.70	11	17.61	9	24.38
% change incorrect to incorrect	15.88	28.77%	3.9%	26.79%	26.47%	29.15%

** CCSD value is district average (n = 221)

In addition to looking for the total numbers of erasures and the direction of change (e.g. incorrect to correct), the erasure detection analysis also evaluated other aspects of the data. When data from Kelly ES are evaluated within the population of all the elementary schools in the state, it is possible to calculate the

probability that the data from Kelly ES could have occurred by chance. The P values in the table below show that the probability that the data for overall erasure rates and the percentage of erasures that changed answers from incorrect to correct occurred by chance is always very low. In many cases, the probability that these data would have occurred by chance is 0. As in the data above the only test where there is even a moderate probability that the data are representative of the overall set of elementary schools is in Grade 5 Science; the only test that does not contribute to school accountability measures.

Table 4. Probability of Kelly ES data occurring in CCSD elementary school data set for 2011-2012.

Probability (p value) that Kelly ES data fit with total elementary school data set	G3M	G3R	GRM	G4R	G5M	G5R	G5S
P value for overall erasure rate	0.000	0.000	0.000	0.000	0.000	0.000	0.415
P value for rate of incorrect to correct changes	0.000	0.000	0.074	0.007	0.295	0.005	0.416

G3M = grade 3 math; G3R = grade 3 reading; G4M = grade 4 math; G4R = grade 4 reading; G5M = grade 5 math; G5R = grade 5 reading; G5S = grade 5 science

Erasure Detection Analysis for 2012-2013

As part of the ongoing investigation into the potential testing irregularities seen in the 2011-2012, Kelly ES CRT data, all of the CRT assessments at Kelly ES for 2012-2013 were administered by CCSD assessment program office staff. Tables 5-8 below show the same analyses as reported in Tables 1-4 (2011-2012 data), and compare the results from an analysis of the results from Kelly ES in relation to the average scores for all elementary schools (N = 224) in the Clark County School District. From the data, it is clear that for 2012-2013, the number of erasures is greatly decreased for all grades and subjects and also that the proportion of the changes from incorrect to correct is also lower. For the 2012-2013 CRT erasure detection analyses, with one exception, the results for Kelly ES are not significantly different from the average values for all elementary schools in CCSD. The lone exception is in the results for grade 5 reading where the number of erasures was much greater than the district average, and the percentage of changes from incorrect to correct was also significantly above the CCSD average.

Table 5. Erasure Detection Analysis: Grade 3, Kelly ES vs CCSD, 2012-2013 – test administered by CCSD testing office staff

Grade 3 (n = 49)	Math		Reading	
	Kelly ES	CCSD**	Kelly ES	CCSD**
Total erasures	32	380.69	18	368.68
Erasure rate (% of items changed)	1.45	6.06	0.86	5.92
Number changed incorrect to correct	15	268.79	9	239.28
% change incorrect to correct	46.88	58.00	50	49.36
Number changed correct to incorrect	3	49.29	2	62.21
% change correct to incorrect	9.38	15.37	11.1	21.89
Number changed incorrect to incorrect	14	82.67	7	94.18
% change incorrect to incorrect	43.75	27.95	38.9	30.87

** CCSD value is district average (n = 224)

Table 6. Erasure Detection Analysis: Grade 4, Kelly ES vs CCSD, 2012-2013 – test administered by CCSD testing office staff

Grade 4 (n = 34)	Math		Reading	
	Kelly ES	CCSD**	Kelly ES	CCSD**
Total erasures	300	558.64	236	536.78
Erasure rate (% of items changed)	12.24	9.24	10.32	9.46
Number changed incorrect to correct	169	361.92	150	353.82
% change incorrect to correct	56.33	59.70	63.56	59.68
Number changed correct to incorrect	62	106.39	30	104.90
% change correct to incorrect	20.69	15.32	12.71	17.09
Number changed incorrect to incorrect	74	157.85	57	145.87
% change incorrect to incorrect	24.67	28.05	24.15	26.45

** CCSD value is district average (n=224)

Table 7. Erasure Detection Analysis: Grade 5, Kelly ES vs CCSD, 2012-2013 – test administered by CCSD testing office staff

Grade 5 (n = 40)	Math		Reading		Science	
	Kelly ES	CCSD**	Kelly ES	CCSD**	Kelly ES	CCSD**
Total erasures	260	537.02	487	496.85	101	541.30
Erasure rate (% of items changed)	8.87	8.33	18.2	8.45	3.5	8.49
Number changed incorrect to correct	163	339.23	418	316.67	32	319.69
% change incorrect to correct	62.69	59.08	85.83	59.04	31.68	54.86
Number changed correct to incorrect	47	108.01	30	105.09	27	121.86
% change correct to incorrect	18.08	15.45	6.16	18.24	26.73	18.33
Number changed incorrect to incorrect	52	160.39	42	140.68	44	174.63
% change incorrect to incorrect	20	29.07	8.62	26.88	43.56	30.91

Table 8. Probability of Kelly ES data occurring in CCSD elementary school data set for 2012-2013.

Probability (p value) that Kelly ES data fit with total elementary school data set	G3M	G3R	GRM	G4R	G5M	G5R	G5S
P value for overall erasure rate	0.997	1.0	0.128	0.286	0.321	0.001	0.997
P value for rate of incorrect to correct changes	0.999	0.964	0.908	0.648	0.53	0.00	1.00

G3M = grade 3 math; G3R = grade 3 reading; G4M= grade 4 math; G4R = grade 4 reading; G5M = grade 5 math; G5R = grade 5 reading; G5S = grade 5 science

In contrast with the data in Table 4, for 2012-2013, the data from Kelly ES show a much greater similarity to the data from other elementary schools in CCSD.