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The Evaluation Center
School of Education & Human Development

Innovation Schools in DPS: Year Three of an Evaluation Study

Prepared for

Denver Public Schools, Colorado Education Association, A+ Denver, and Denver Classroom Teachers Association

Advocating quality teaching & learning.

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Executive Summary

Beginning in 2010, The Evaluation Center in the School of Education and Human Development, at the University of Colorado Denver, was contracted through a collaborative effort by Denver Public Schools (DPS), Colorado Education Association, A+ Denver, and Denver Classroom Teachers Association to provide external evaluation services to study the Innovation Schools in Denver.

This report summarizes the evaluation conducted during the final year of a three-year study. Three factors – school climate of empowerment, workforce capacity, and student outcomes – were examined in 19 Innovation Schools[1] in DPS and 12 Comparison Schools. The study looked at differences between these groups of schools. Data from 34 DPS Charter Schools were included, when possible, as an additional point of reference.

All results were consistent with the findings from the previous year's study. A summary of the results is presented below, organized by evaluation question.

How does innovation status affect school climate?

As a group, teachers in Innovation Schools scored higher than those in Comparison Schools on the Empowerment Survey for the total scale and on five subscales: Decision Making, Capacity, Ownership, Empowerment, and Innovation. Differences were statistically significant. Teachers in schools having Innovation status longer (Cohort One) were shown to have a greater sense of empowerment than Comparison School teachers; teachers from Innovation Schools Cohort Two had similar Empowerment Scale scores as Comparison School teachers.

Nearly three-fourths of teachers who responded to the survey reported they were "generally satisfied" with being a teacher at their current school (74% of Innovation School teachers and 70% of Comparison School teachers). Similar percentages of teachers in both Innovation and Comparison Schools plan to stay at their current school next year (64%). For those teachers in Innovation Schools, 45% felt Innovation status had a positive influence on their decision to teach at the school, 40% felt it had no influence, and 14% felt it was a negative influence.

How does Innovation status affect the composition and stability of the workforce?

Workforce data for 2012-13 at Innovation and Comparison schools were examined.

Teacher Experience

Teachers in Innovation Schools as a group were less experienced than their counterparts in Comparison Schools; average total teaching experience was 3.77 years in Innovation Schools and 9.05 years in Comparison Schools, a statistically significant difference.

[1] The 19 Innovation Schools in the study were those granted Innovation status through August 2011.

Principal Experience
Principals in Innovation Schools as a group were less experienced than administrators in Comparison Schools; 54% of Innovation School principals/assistant principals had less than three years experience as administrators in DPS, while 38% had less than three years of experience at Comparison Schools.

Teacher Education Levels
Teachers in Innovation Schools had lower levels of educational attainment on average than those in Comparison Schools; 48% of teachers in Innovation Schools have a Masters degree or higher, while 58% of those in Comparison Schools have this level of educational attainment, a statistically significant difference.

Teacher Turnover
Teacher turnover was higher in Innovation Schools than in either Comparison Schools or DPS overall. Teacher turnover at Innovation Schools was 29%, while it was 18% at Comparison Schools and 18% in DPS. The differences between Innovation and Comparison Schools were statistically significant.

How does innovation status affect students' academic growth and proficiency?

The Transitional Colorado Assessment Program (TCAP) results for 2013 showed Innovation Schools had considerable variation across schools in both proficiency levels and median growth. Innovation Schools were likely to show school-level proficiency below the state average and median growth exceeding the state median in reading, writing, and math.

Proficiency levels at Innovation Schools were lower than at Comparison Schools; however, the difference in the means for these two groups was not statistically significant for any subject area. There were no statistically significant differences between cohorts of Innovations Schools.

Innovation Schools had a larger range of summed median growth levels (207 to 88) than Comparison Schools (200 to 138). More than half (52%) of Innovation Schools had median growth greater or equal to the DPS summed growth score (163); 64% of Comparison Schools had median growth above the DPS average sum.

Are there Correlations across Data?

Preliminary data suggests there is a relationship between student achievement and two factors in the theory of change: teacher empowerment and teacher turnover. In both Innovation and Comparison Schools, positive correlations were found between school-level academic proficiency and the Empowerment Survey results. This means schools where teachers as a group felt empowered had higher levels of student achievement and, conversely, schools with lower empowerment attitudes had lower achievement levels. Likewise, positive correlations were found between school level academic proficiency and the percentage of teachers retained during the last year. Both findings were statistically significant. However, teachers' scores on the Empowerment Survey were not significantly correlated with teacher turnover rates. These results are considered preliminary and warrant further study.

Introduction

Beginning in 2010, The Evaluation Center in the School of Education and Human Development, at the University of Colorado Denver, was contracted through a collaborative effort by Denver Public Schools (DPS), Colorado Education Association (CEA), A+ Denver, and Denver Classroom Teachers Association (DCTA) to provide external evaluation services to study the Innovation Schools in Denver.

In the first year of study (2010-11), evaluators explored how schools were implementing changes based on their Innovation School status. (Please see a summary of the waivers of Colorado statutes requested by each school in this study under the Innovation Schools Act in Appendix A.) The study included the initial eight schools granted Innovation status in DPS between February 2008 and May 2010. Five Comparison Schools were also selected. (Please see a summary the first year results in Appendix B.)

During year two (2011-12), the study was expanded to include those 11 schools granted Innovation status between May and August 2011, as shown in Exhibit 1. The evaluation focused on examining changes occurring in Innovation Schools in relation to the impact on the school climate, workforce capacity, and student outcomes. For some analyses, schools were grouped by cohort based on the date Innovation status was granted. (Please see a summary of year two results in Appendix C.)

Exhibit 1: Innovation Schools in this Study

	School	Date Innovation Status
Cohort One	Bruce Randolph Middle and High School (Autonomous School status)	February 2008
	Montclair School of Academics and Enrichment	March 2009
	Manual High School	March 2009
	Cole Arts and Sciences Academy	August 2009
	Denver Green School	April 2010
	Valdez Innovation School	June 2010
	Whittier K-8 School	September 2010
	Martin Luther King Jr. Early College Middle and High School	September 2010
Cohort Two	Noel Community Arts School	May 2011
	Denver Center for International Studies at Ford and Montbello	May 2011
	Collegiate Prep Academy	June 2011
	High Tech Early College	June 2011
	Denver Center for 21st Century Learning at Wyman Middle and High School	June 2011
	Godsman Elementary	August 2011
	Green Valley Elementary	August 2011
	McGlone Elementary	August 2011
	Summit Academy	August 2011
	Swigert-McAuliffe International School	August 2011
	Vista Academy Middle and High School	August 2011

In year three (2012-13), the evaluation continued for the same groups and cohorts of Innovation Schools.[2] Data from the five Comparison Schools previously identified were also used; however, to improve the match, seven additional Comparison Schools were selected using the same criteria (in descending order of importance) as was used with the previous five schools:

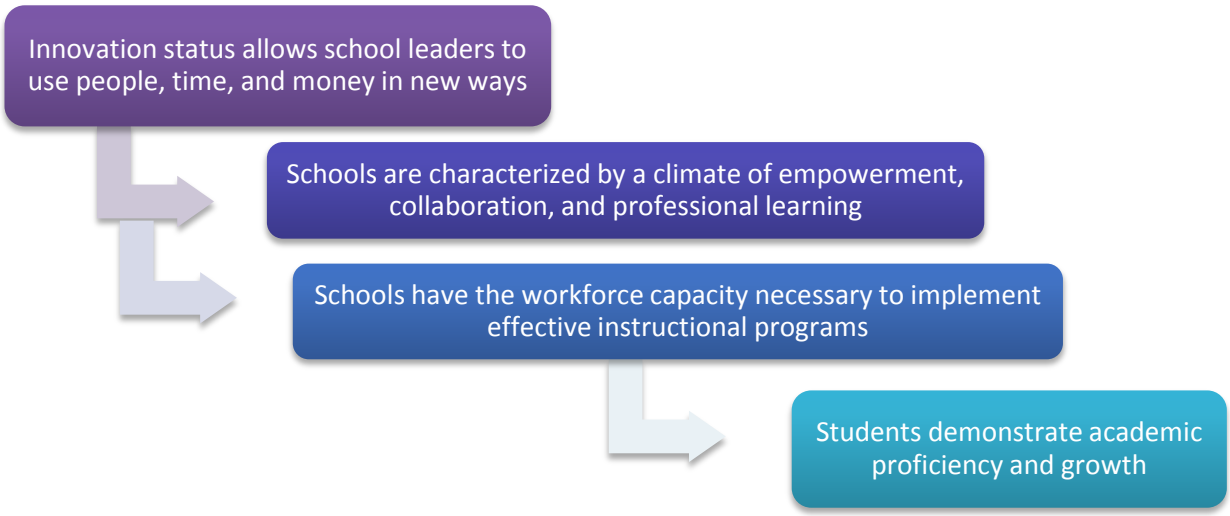
- School level (elementary, K – 8, 6 – 12, high school)
- DPS School Performance Framework rating (Distinguished, Meets Expectations, Accredited on Watch, Accredited on Priority Watch, Accredited on Probation)
- Percentage of students qualifying for Free and Reduced Meals
- Percentage of students qualifying for English Language Learner services

Data from 34 Charter Schools in DPS were also included, when possible, as another point of reference, although evaluation of the effectiveness of charter schools was not the primary purpose of this study.[3]

Theory of Change

Previously DPS stakeholders identified key indicators of Innovation School success during the process of developing a theory of change[4]. A simplified version of the more comprehensive theory of change is shown in Exhibit 2.

Exhibit 2: Brief Theory of Change for Innovation Schools



[2] Additional DPS schools have since been granted Innovation status but are not included in this study since it was considered too soon to expect changes to be evident.
[3] Eight DPS Charter Schools were excluded because they were in their first year of implementation during 2012-13.
[4] Please see the complete theory of change in the evaluation report for 2011-12, year two.

Evaluation Questions

These factors in the theory of change – school climate, workforce capacity, and student outcomes – were initially examined in year two and continued to be investigated in year three guided by three evaluation questions:

1. How does innovation status affect school climate?
2. How does Innovation status affect the composition and stability of the workforce?
3. How does innovation status affect students' academic growth and proficiency?

This report is organized by the evaluation questions, followed by analyses of the correlations among the three data sources to further explore the theory of change model.

Limitations

Survey response rates were low and not all Innovation Schools are represented, therefore, results should be viewed cautiously since responding teachers may not be representative of the perceptions of the entire population. In particular, only 28 teachers representing 9 of the 34 Charter Schools responded.

School-level analyses of achievement data provide only a limited view of student outcomes. Because achievement results are reported separately by school level (e.g., elementary and middle school), some schools (both Innovation and Comparison) may be over-represented in the sample. Achievement results were not available for schools with fewer than 20 students (Summit Academy).

Data were not divided by school level consistently across the three data sources, which may influence the results of comparisons across the outcome variables. Because of the small number of schools in the sample, results must be viewed as preliminary.

How does innovation status affect school climate?

Methods

Instrument Refinement

The Empowerment Survey[5] was developed collaboratively with DPS stakeholders in 2011-12 to examine school climate elements considered important to the success of Innovation Schools. The 68-item survey was first administered online in May 2012 to teachers in Innovation and Comparison Schools. Based on a review of these initial results, the survey was refined for 2013 administration to minimize the time required to complete the survey while maintaining each of the subscales in the previous version. In Exhibit 3, the revised survey is described.

Exhibit 3: 2013 Empowerment Survey Constructs and Items

Subscale Title	Number of items
Climate of innovation and professional learning	3
Collaborative environment	4
Decision making	3
Development of capacity	3
Sense of empowerment	6
Sense of ownership	3
Pride and fulfillment in work	3
Self-accountability	3
Expectations	3
Total Empowerment Scale	**31**

For 2013, five new questions were added to the survey to collect demographic information and to assess general satisfaction from all respondents; two additional items were added only for teachers identifying as working at Innovation Schools. (Please see the revised survey in Appendix D.)

Respondents

Denver Public Schools (DPS) personnel provided email addresses for all teachers in Innovation and Comparison Schools. (Please see the "Introduction" for Comparison School selection information.) Surveys were administered to this group (n = 1,158) via online survey software in April 2013; two reminders were sent, and the survey closed in May 2013. For Charter School teachers, survey links were sent to administrators and office personnel to distribute to their teachers.

[5] The survey was initially entitled "School Climate" survey, but the title was revised to "Empowerment Survey" to avoid confusion with other district assessments.

Responses were received from a total of 436 teachers; 159 were from teachers at Innovation Schools and 229 from teachers at Comparison Schools, a 34% response rate. Respondents represented 83% of Innovation Schools and 100% of Comparison Schools. Only 28 responses were received from teachers representing 9 of the 34 Charter Schools,[6] and 20 teachers did not identify their schools.

For additional analysis, the Innovation Schools were divided into two cohorts to see if differences were evident for those having Innovation status for a longer time. (Please see the list of schools by cohort in the "Introduction" section.)

While the majority of teachers responding to the survey had been teaching for five or more years, teachers in the Comparison Group were more likely to be long-time teachers, as shown in Exhibit 4.

Exhibit 4: Survey Respondents by Number of Years Teaching

	Years Teaching		**Years Teaching in DPS**		**Years Teaching at Current School[7]**	
	Comparison School	Innovation School	Comparison School	Innovation School	Comparison School	Innovation School
One year	4%	8%	12%	22%	18%	30%
Two to four years	17%	29%	24%	41%	32%	47%
Five years of more	78%	63%	65%	38%	51%	23%

Analysis

A Total Empowerment Scale score was calculated by summing the 31 items divided by the number of responses[8] and scores were calculated for each of the nine subscales. An alpha coefficient was calculated for the total scale and for each subscale to determine internal consistency reliability.[9] Because none of the alpha coefficients would improve if any items were deleted, the scales did not change for the purposes of analysis. The alpha scores are shown in Exhibit 5.

[6] Response rate for Charter School teachers is unknown since it is unclear how many survey invitations were sent.
[7] The question asked about years at current school, but it did not ask how long they had been at the school after Innovation status was granted.
[8] For the total score, respondents must have answered at least 70% of the items (22 of the 31 items). For subscales, scores were calculated by summing the items in the scale divided by the number responses. Respondents were excluded from the analyses within subscales if they did not answer all the items, reducing the sample by 9-25 respondents, depending upon the scale.
[9] Acceptable internal consistency reliability is 0.70.

Exhibit 5: Alpha Values

Subscale Title	Alpha coefficient
Sense of empowerment	0.81
Sense of ownership	0.78
Expectations	0.76
Pride and fulfillment in work	0.88
Self-accountability	0.85
Decision making	0.88
Collaborative environment	0.88
Development of capacity	0.82
Climate of innovation and professional learning	0.89
Total Empowerment Scale	0.95

Results

Comparisons by Innovation and Comparison Schools

As shown in Exhibits 6 and 7, Innovation School respondents scored significantly higher than those in Comparison Schools on the Total Empowerment Scale[10] and on five subscales: Decision making, Development of capacity, Sense of ownership, Sense of empowerment, and Climate of innovation and professional learning. Results were statistically significant. Although the differences cannot be attributed to Innovation status, the schools scored higher than would be expected merely by chance. On the four other subscales, respondents from Innovation and Comparison Schools reported similar views. (Please see Appendix E for results by survey item.)

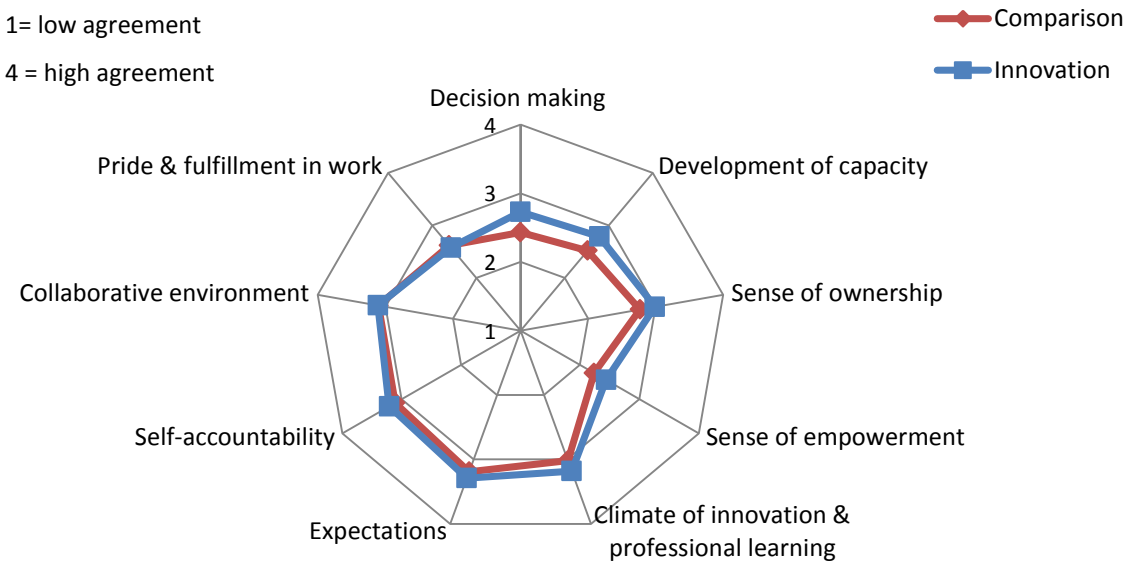
Exhibit 6: Average Empowerment Survey Scores, by Scale (1 = low, 4 = high)

Scale	Comparison	Innovation	Difference (sorted high to low)
Decision making	2.43	2.73	0.30***
Development of capacity	2.52	2.79	0.27**
Sense of ownership	2.77	2.99	0.22**
Sense of empowerment	2.24	2.44	0.20**
Climate of innovation and professional learning	3.02	3.18	0.16*
Expectations	3.19	3.29	0.10
Self-accountability	3.11	3.21	0.10
Collaborative environment	3.10	3.11	0.01
Pride and fulfillment in work	2.62	2.58	-0.04
Total Empowerment Scale	**2.74**	**2.89**	**0.15****

*p <.05. **p < .01. ***p<.001

[10] Total Empowerment Scale: t (378) = 2.734, p < .01, Cohen's d = .29, a small effect

Exhibit 7: Average Empowerment Survey Score by Scale



Comparison by Cohorts

Teachers in schools that had Innovation status longer (Cohort One) reported higher scores than respondents from the Comparison Schools matched to this group of schools, as shown in Exhibit 8. The difference was statistically significant.[11] Analyses indicated Cohort One teachers reported more positive views on every scale except for one, Collaborative environment.

Exhibit 8: Average Empowerment Survey Scores for Cohort One by Scale (1 = low, 4 = high)

Scale	Comparison Cohort One	Innovation Cohort One	Difference Comp & Cohort One (sorted high to low)
Decision making	2.11	2.78	0.67 ***
Sense of empowerment	2.05	2.54	0.49 ***
Development of capacity	2.31	2.79	0.48 ***
Sense of ownership	2.55	2.99	0.44 **
Pride and fulfillment in work	2.24	2.62	0.38 **
Climate of innovation and professional learning	2.90	3.23	0.33 ***
Expectations	3.01	3.26	0.25 *
Self-accountability	3.07	3.32	0.25 *
Collaborative environment	3.08	3.25	0.17
Total Empowerment Scale	**2.56**	**2.95**	**0.39 *** **

*p <.05. **p < .01. ***p<.001

[11] Cohort One, Total Empowerment Scale: t (100.75) = 4.535, p < .001, Cohen's d = .79, a large effect

In contrast, Cohort Two teachers in Innovation and matched Comparison Schools reported similar views on every measure except for one, Pride and fulfillment in work. Specifically, Comparison School teachers reported significantly higher pride and fulfillment with their work than Innovation School teachers.

Exhibit 9: Average Empowerment Survey Scores for Cohort Two by Scale (1 = low, 4 = high)

Scale	Comparison Cohort Two	Innovation Cohort Two	Difference Comp & Cohort Two (sorted high to low)
Development of capacity	2.68	2.78	0.1
Sense of ownership	2.95	2.99	0.04
Climate of innovation and professional learning	3.12	3.15	0.03
Decision making	2.68	2.69	0.01
Sense of empowerment	2.39	2.38	-0.01
Self-accountability	3.14	3.13	-0.01
Expectations	3.34	3.31	-0.03
Collaborative environment	3.10	3.01	-0.09
Pride and fulfillment in work	2.92	2.55	-0.37 **
Total Empowerment Scale	2.89	2.84	0.05

*p <.05. **p < .01. ***p<.001

Charter School Empowerment Survey Results

Although the sample of survey respondents from Charter Schools is likely not a representative population, Empowerment Survey mean scores are presented in Exhibit 10 as reference.

Exhibit 10: Average Survey Scores for Charter School Respondents by Scale (1 = low, 4 = high)

Scale	Charter
Climate of innovation and professional learning	3.27
Collaborative environment	3.25
Self-accountability	3.15
Sense of ownership	3.01
Development of capacity	2.89
Decision making	2.81
Pride and fulfillment in work	2.68
Sense of empowerment	2.53

Teacher Satisfaction

Nearly three-fourths of teachers who responded to the survey agreed or strongly agreed they were "generally satisfied" with being a teacher at their current school (76% of Innovation School teachers and 70% of Comparison School teachers). While a higher percentage of teachers reported being dissatisfied in the Comparison Schools, this difference was not statistically significant.

Exhibit 11: "I am generally satisfied with being a teacher at this school."

	Comparison School	Innovation School
Strongly Agree	25% (55)	28% (44)
Agree	45% (101)	48% (75)
Disagree	16% (36)	17% (26)
Strongly Disagree	14% (31)	6% (10)

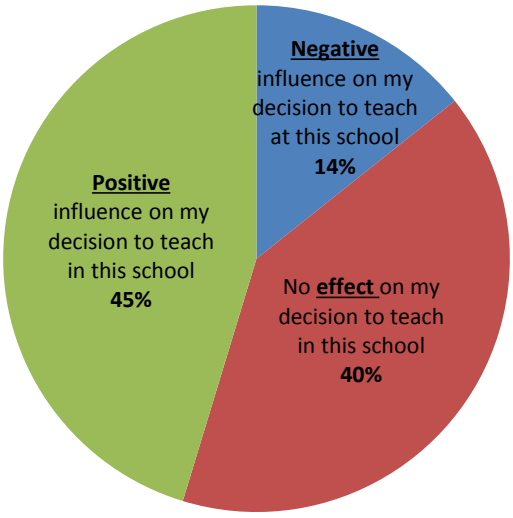
Similar percentages of teachers in both Comparison and Innovation Schools plan to stay at their current school next year (64%).

Exhibit 12: "Do you plan to stay at your current school next year?"

	Comparison School	Innovation School
Yes	64% (143)	64% (99)
Don't know	16% (35)	15% (23)
No	20% (44)	21% (32)

For those teachers in Innovation Schools, 45% felt Innovation status had a positive influence on their decision to teach at the school, 40% felt it had no influence, and 14% felt it was a negative influence.

Exhibit 13: How does the status of your school as an Innovation School affect you?



Teachers in Innovation Schools were asked a follow-up question, "How, if at all, does your school's Innovation status affect your teaching?" In response, teachers described the benefits of working in an Innovation School, specifically, the freedom, flexibility, and decision-making power they had to design curriculum to meet their students' needs. Representative quotes are presented below:

- *Innovation allows the instructional leader and teaching staff to supplement and modify curriculum based on student need and data. We are not held to a rigid pacing schedule that does not allow for differentiation.*
- *I feel more flexible in my lesson planning and classroom content - taking risks and trying new/different things is supported and encouraged.*
- *It allows me a lot of flexibility with the current district's curriculum that is not always appropriate for English Language Learners (ELLs). Our school has brought in many wonderful things for ELLs that they wouldn't have if it weren't for our innovation status.*
- *The Innovation status gives me the flexibility as a teacher to teach the State standards in a way that I believe is best for our students. I really enjoy not being required to teach specific curriculum because there is no single curriculum that is best, it is a combination of different strategies, modalities, and sources of information that creates a good curriculum.*

However, many Innovation School teachers also expressed the challenges inherent in their position: the extended work hours and the fear they may lose their positions without a contract.

- *I think it is very hard to work longer days. If I am this tired, my students must be exhausted! This is the only thing I dislike about working at my school.*
- *It exhausts me to have nine-hour days, weekly staff meetings that go beyond that 9-hour day and a longer school year that takes more of my time away from my family. I love the kids I serve … but I would/will move to have a better work schedule. If this school were to return to a traditional calendar and day, I could happily commit to staying here indefinitely.*
- *You end up trying harder out of fear, rather than desire. This is because we can be fired at any moment for any reason, if the administration does not like you. Working out of fear is stressful.*
- *It just means I'm afraid to lose my job because I have no contract so I do whatever the administration tells me to and I'm afraid to speak up. It just makes me exhausted because teachers without a contract are taken advantage of.*

Summary – Climate Survey Results

The goal of this survey was to explore the constructs outlined in the theory of change and to continue to examine differences in Innovation and Comparison schools in these areas. The theory of change suggests that greater empowerment of teachers in schools receiving Innovation status will lead to other positive changes (including climate and behavior), which would result in improved outcomes for students. Consistent with the findings from 2012, survey results indicated a greater sense of teachers' empowerment in Innovation Schools in 2013, particularly for those in the first cohort of schools granted Innovation status. As previously noted, this may suggest it takes time for Innovation status to affect a school's climate and culture; it may also reflect fundamental differences between the cohorts of schools.

How does Innovation status affect the composition and stability of the workforce?

Methods

Denver Public Schools (DPS) Human Resources Department provided workforce data for teachers (n = 1,518) and principals/assistant principals (n = 102) at Innovation and Comparison Schools for the 2011-12 and 2012-13 school years. Innovation School data were compared by cohort and with Comparison Schools as groups. (See the "Introduction" for the list of schools by cohort and Comparison School selection information). Workforce analyses were designed to address three questions:

Q1: How does the level of teacher and principal experience compare in Innovation and Comparison schools?

Average total years of teaching experience in 2012-13 were calculated for all teachers with a greater than 0.5 FTE assignment. Differences between groups were compared using a Mann Whitney *U* test.[12] Average years of principal experience were examined using data for administrator experience within DPS. (Total years of administrator experience were not reported for all individuals.) The percent of principals new to their jobs in DPS was accessed from the Colorado Department of Education (CDE) website and presented for comparison.[13]

Q2: Do Innovation schools have teachers with more education than Comparison schools?

The highest degrees earned by teachers in Innovation and Comparison Schools were also examined for the teachers for whom this information was reported (91.28% of all teachers). Percentages of teachers who have earned a Masters or Doctorate degree were calculated for Innovation Schools, Comparison Schools, and cohort groups and examined using a Chi-square analysis to determine if the observed percent of those with higher degrees was significantly different than expected outcomes for each group.

Q3: How does Innovation status affect schools' teacher turnover?

Turnover rates for Innovation Schools, Comparison Schools, and cohort groups were calculated for the 2012-13 school year, using the formula used by CDE.[14] A Chi-square analysis was used to examine if observed turnover rates were significantly different than expected rates for each group. Turnover percentages for DPS as a district were downloaded from the CDE website for further comparison.[15]

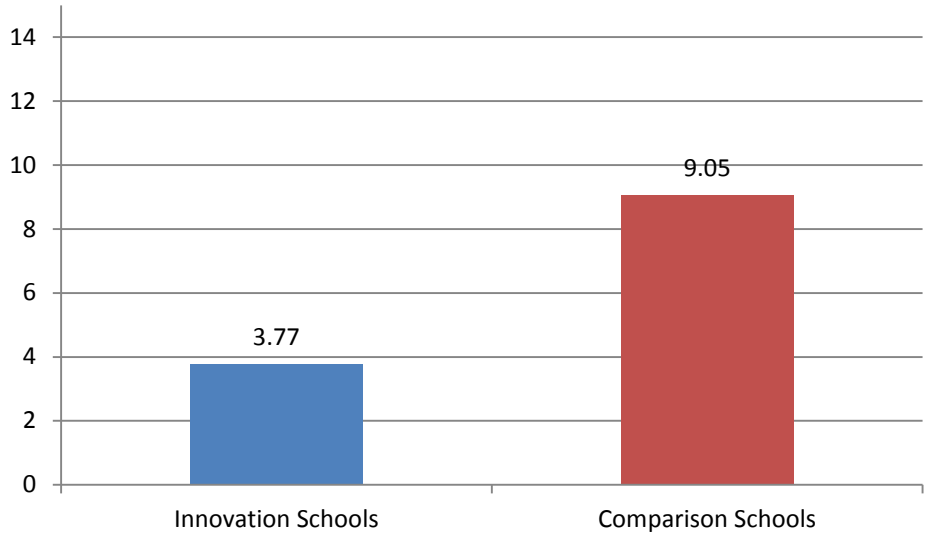
[12] Non-parametric statistical analyses were used for all workforce data analyses because samples were not normally distributed.
[13] Spreadsheet titled "Personnel Turnover Rate by District and Position Category" downloaded from CDE webpage: http://www.cde.state.co.us/cdereval/staffcurrent
[14] The number of teachers who leave a school for any reason is divided by the number of teachers employed the prior year to calculate the turnover percentage.
[15] Spreadsheet titled "2012-2013 Staff Turnover Report Final" on CDE website, http://www.cde.state.co.us/index_stats.htm

Results

Teacher Experience

In 2012-13, teachers in Innovation Schools as a group were less experienced than their counterparts in Comparison Schools. The average teacher experience for Innovation teachers was 3.77 years (n = 623, standard deviation = 6.305) while the average years of experience for Comparison teachers was 9.05 years (n = 649, standard deviation = 9.353), as shown in Exhibit 14. These differences were statistically significant. Teachers in Comparison Schools had significantly higher mean ranks (737.11) than did teachers in Innovation Schools (531.69), U = 136,869, p. < .001.

Exhibit 14: Average Years of Teaching Experience in 2012-13, Innovation and Comparison Schools Teachers



The differences between mean ranks of teacher experience between Innovation Cohort One and Comparison Group One and between Innovation Cohort Two and Comparison Group Two were also statistically significant. (Please see means by Cohorts in Appendix F.)

In the 2012-13 school year, teachers in the first cohort of Innovation Schools had more experience on average than those in the second cohort of Innovation Schools (4.14 years versus 3.40 years, respectively). However, this was not a statistically significant difference (mean ranks for Cohort One = 320.02, mean ranks for Cohort 2 = 304, U = 46,020.5, p = 0.248.)

Principal Experience

In 2012-13, 54.35% of principals and assistant principals at Innovation Schools were reported to be in their first, second, or third year as administrators in DPS. At Comparison Schools, only 37.84% of principals had less than three years of experience as administrators. Principals at Innovation Schools in Cohort Two were less experienced than those in Cohort One; 65.52% of principals in Cohort Two had less than three years of experience while only 25.39% of principals in Cohort One had this level of experience. (Please see Principal experience by year and groups in Appendix F.)

In DPS overall, 29.69% of principals and assistant principals were new to their position in the 2012-13 school year (114 of the 384 principals in the district).

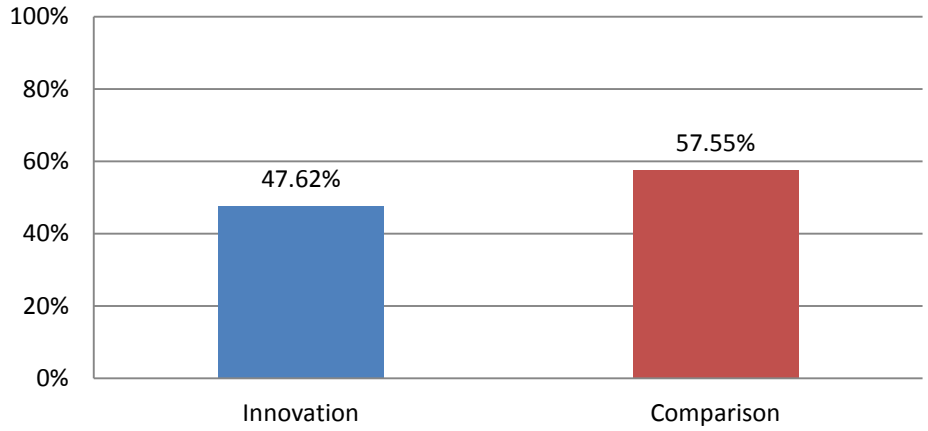
Exhibit 15: Principal Years of Experience in DPS

Principal Experience	Innovation Schools		Comparison Schools	
	n	*%*	*n*	*%*
0-2 years	25	54.35%	14	37.84%
3-5 years	13	28.26%	13	35.14%
More than 5 years	8	17.39%	10	27.03%
	46	100.00%	37	100.00%

Teacher Education Levels

Analyses showed that teachers in Innovation Schools have lower levels of educational attainment on average than those in Comparison Schools. As shown in Exhibit 16, 47.62% of teachers in Innovation Schools have a Masters degree or higher, while 57.55% of those in Comparison Schools have this level of educational attainment. The difference was statistically significant.[16]

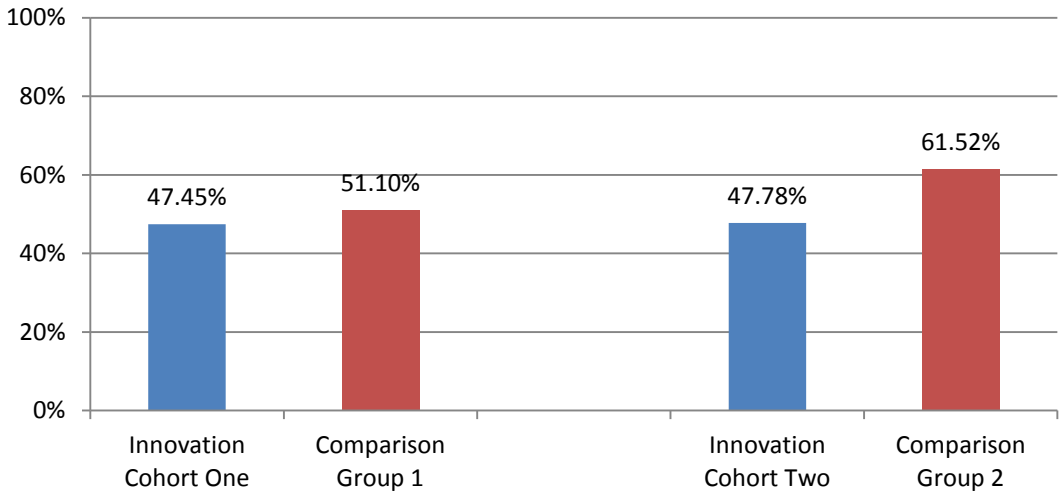
Exhibit 16: Educational Attainment: Masters Degree or Higher



Comparison Group 2 had more teachers with Masters degrees or higher than did Comparison Group 1 (61.52% and 51.10%, respectively). The difference between Innovation Cohort Two and its Comparison Cohort was statistically significant while the difference between Innovation Cohort One and its Comparison Cohort was not. (Please see a complete education level summary in Appendix F.)

[16] Chi-square analysis results: $\chi^2 = 11.497$, $df = 1$, N = 1,163, p=.001

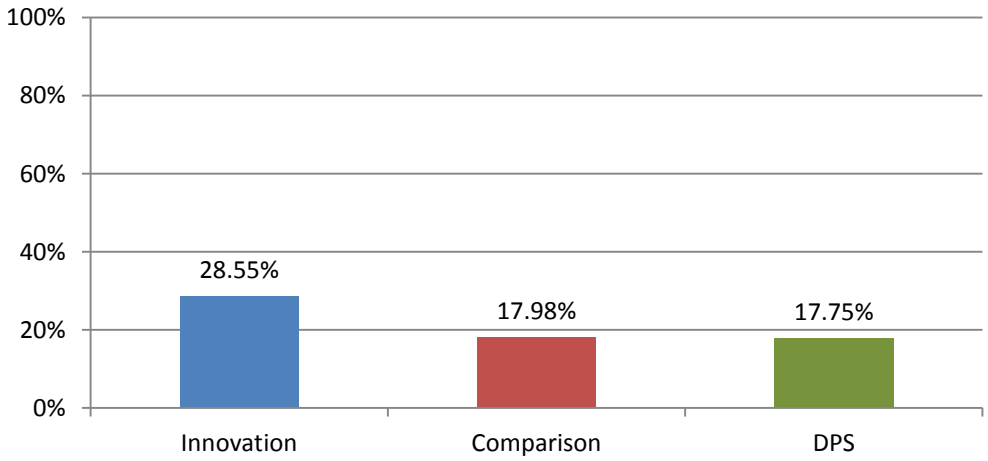
Exhibit 17: Masters Degree or Higher, by Comparison and Cohort



Teacher Turnover

For the 2012-13 school year, teacher turnover was higher in Innovation Schools than in either Comparison Schools or DPS overall. Teacher turnover at Innovation Schools was 28.55%, while it was only 17.98% at Comparison Schools and 17.75% in DPS. The differences in teacher turnover between Innovation and Comparison Schools were statistically significant.[17] (Please see a summary of teacher turnover data in Appendix F.)

Exhibit 18: Percent Teacher Turnover 2011 to 2012



Summary – Workforce Profile

In the 2012-13 school year, the workforce at Innovation and Comparison Schools differed. Teacher level data showed statistically significant differences between Innovation and Comparison Schools. As a

[17] Chi-square analysis results: $\chi^2 = 12.953$, $df = 1$, N = 2,456, $p < .001$

group, teachers at Innovation Schools had less experience than those in Comparison Schools. Principals at Innovation Schools also had fewer years of experience as administrators in DPS. Teachers at Innovation Schools also had lower levels of education. In addition, teacher turnover was higher at Innovation Schools than at both Comparison Schools and DPS as a district.

How does innovation status affect students' academic growth and proficiency?

Methods

Student achievement analyses were designed to address three questions:

Q1: How does performance in DPS Innovations Schools compare to state averages/medians?

The percentages of students scoring at proficient/advanced and the median growth percentiles for each Transitional Colorado Assessment Program (TCAP) subject in 2013 were graphed in relation to the statewide average percentages and the state median. However, it is noted demographics of the students statewide differed from those in DPS; for example in 2012, the state free/reduced lunch rate was 42% while the DPS rate was 73% and the rate for the Innovation Schools ranged from 10 to 99%.

Q2: How does performance in Innovation Schools compare to other selected schools and DPS overall?

School-level achievement results for 2013 were compared for Innovation and Comparison Schools using mean proficiency scores by TCAP subject area. Achievement results were also compared by Innovation cohort. (See the "Introduction" for cohort and Comparison School selection information). Differences between groups were examined using independent samples t-tests. Results were also compared to the overall proficiency rates in DPS by subject. The sum of the median growth percentiles (reading + writing + math) for Innovation and Comparison Schools was also examined and compared to the DPS sum.

Q3: How does performance in Charter Schools compare to DPS overall?

School-level achievement proficiency rates and summed median growth percentiles for 34 DPS Charter Schools were also compared to DPS results.

Data Source

Achievement results were examined using school-level data from the TCAP for 2013. All data were retrieved from the Colorado Department of Education (CDE) website (www.cde.state.co.us/cdegen/2013studentachievementresults).

Because TCAP results are reported separately by school level (i.e., elementary, middle, and high school), some schools have two data points (e.g., Whittier Elementary School and Whittier Middle School). Summit Academy and Swigert International School were not included in the achievement analyses because data were not reported for these schools by CDE.

Results

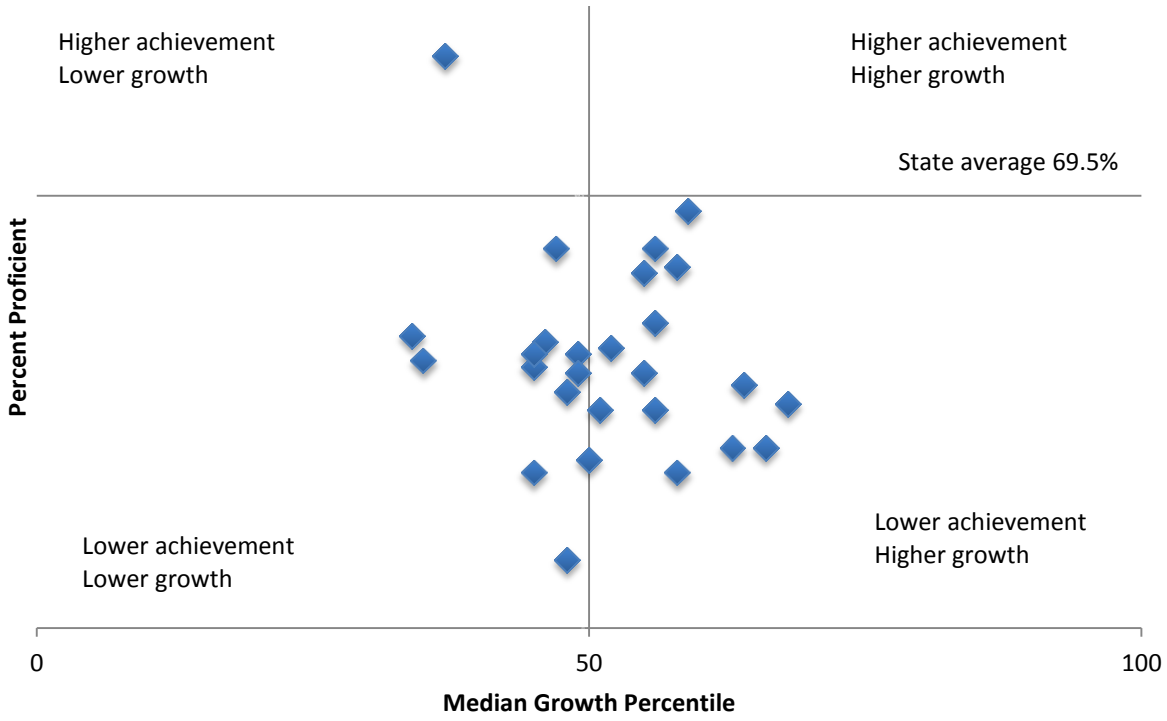
Innovation School TCAP Proficiency/Growth compared to State Results

Examination of TCAP results for Innovation Schools revealed considerable variation across schools as evident in Exhibits 19 - 21. Innovation Schools were likely to show school-level proficiency below the state average and median growth exceeding the state median. (See the data for each Innovation School in Appendix G.)

Reading

Only one Innovation School (Denver Center for 21st Century Learning at Wyman High School) was above the 2013 state average percentage of proficient/advanced students (69.5%) on reading assessments, while the remaining 26 schools had lower levels of proficiency. However, Innovation Schools typically demonstrated higher growth than the state median; 15 schools were at or above the state median growth percentile while 12 schools were below the median.

Exhibit 19: 2013 Reading Proficiency and Growth for Innovation Schools

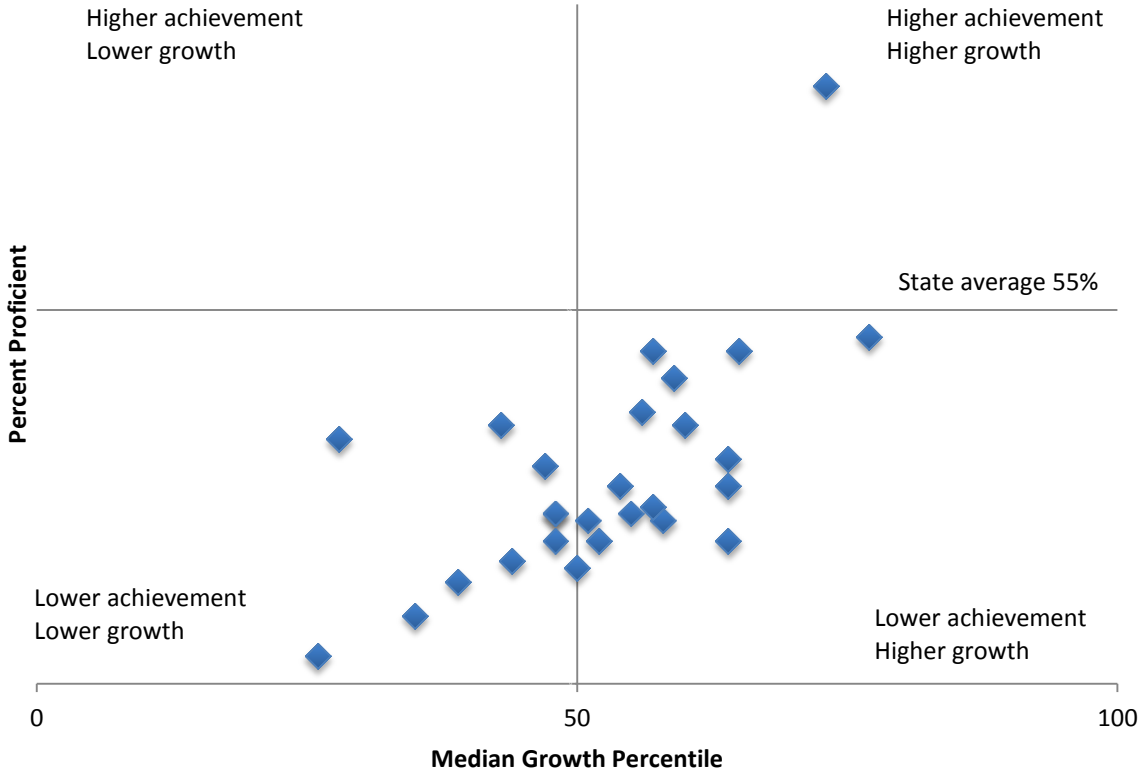


Writing

Only one Innovation School (McAuliffe International School) was above the 2013 state average percentage of proficient/advanced students (55%) on writing assessments; McAliffe also showed higher growth than the state median. The remaining 26 schools had lower levels of proficiency than the state average. As with reading achievement, Innovation Schools tended to demonstrate more growth than

the state median in writing. Ten schools were below the state median for growth while the other 17 schools were at or above the state median.

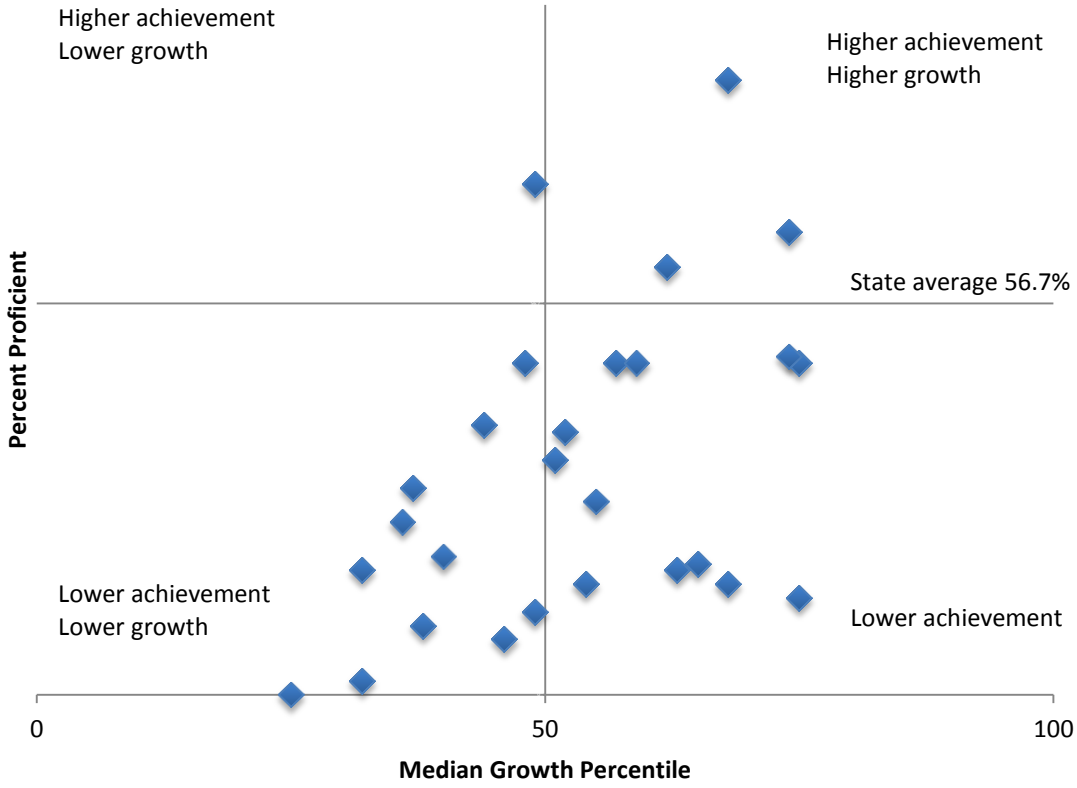
Exhibit 20: 2013 Writing Proficiency and Growth for Innovation Schools



Math

Four schools (Green Valley Elementary, Montclair, McAuliffe International, and Denver Green Elementary) scored above the 2013 state average of proficient/advanced (56.7%) on math assessments. Three schools (Green Valley, Montclair, and McAuliffe) showed both higher achievement and higher growth than state averages/medians. As with reading and writing achievement, Innovation Schools tended to demonstrate more growth than the state median in math. Twelve schools were below the state median for growth while the other 15 schools were at or above the state median.

Exhibit 21: 2013 Math Proficiency and Growth for Innovation Schools



Innovation School Achievement compared to Selected Schools and District TCAP Results

Proficiency

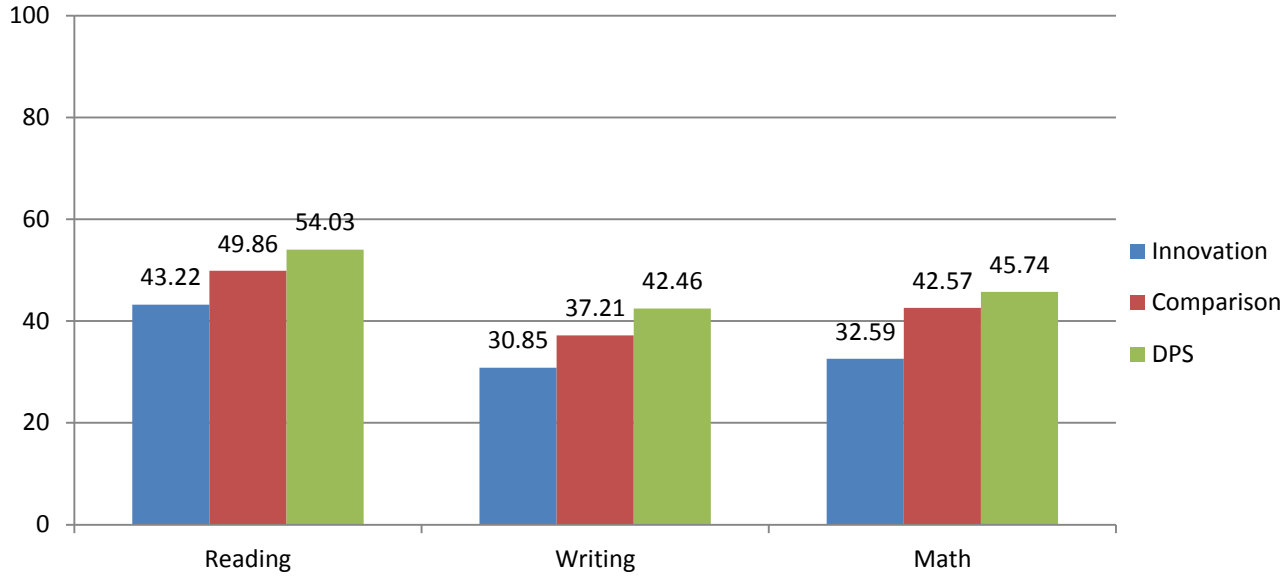
Proficiency levels at Innovation Schools were lower than at Comparison Schools; however, the difference in the means for these two small sample groups was not statistically significant for any subject area.[18]

There were no statistically significant differences in proficiency levels between cohorts of Innovation Schools or between Innovation Schools and the Comparison Schools selected for that cohort.

Innovation and Comparison Schools demonstrated lower levels of proficiency on 2013 state assessments than DPS as a whole, as shown in Exhibit 22.

[18] Reading – $t(39) = 1.28$, $p = .209$; Writing – $t(39) = 1.21$, $p = .232$; Math – $t(39) = 1.40$, $p = 1.69$.

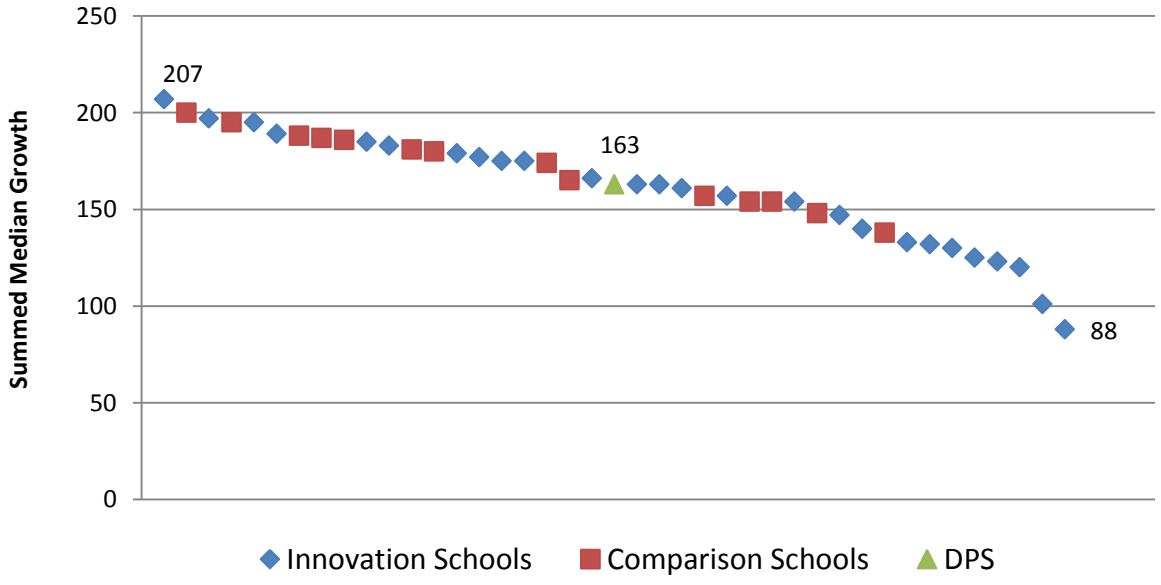
Exhibit 22: 2013 Comparing School-Level Proficiency Means by Subject Area



Growth

Innovation Schools had a larger range of summed median growth levels (207 to 88) than Comparison Schools (ranged 200 to 138). More than half (52%) of Innovation Schools had median growth greater or equal to the DPS summed growth score (163); 64% of Comparison Schools had median growth above the DPS average sum.

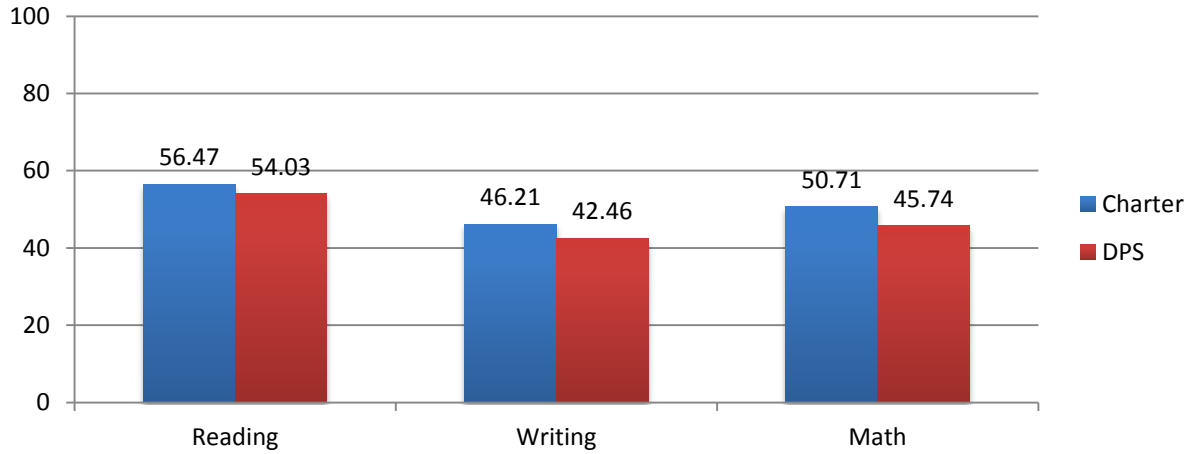
Exhibit 23: 2013 Median Growth Sums, by Innovation and Comparison School



Charter School Achievement compared to District TCAP Results

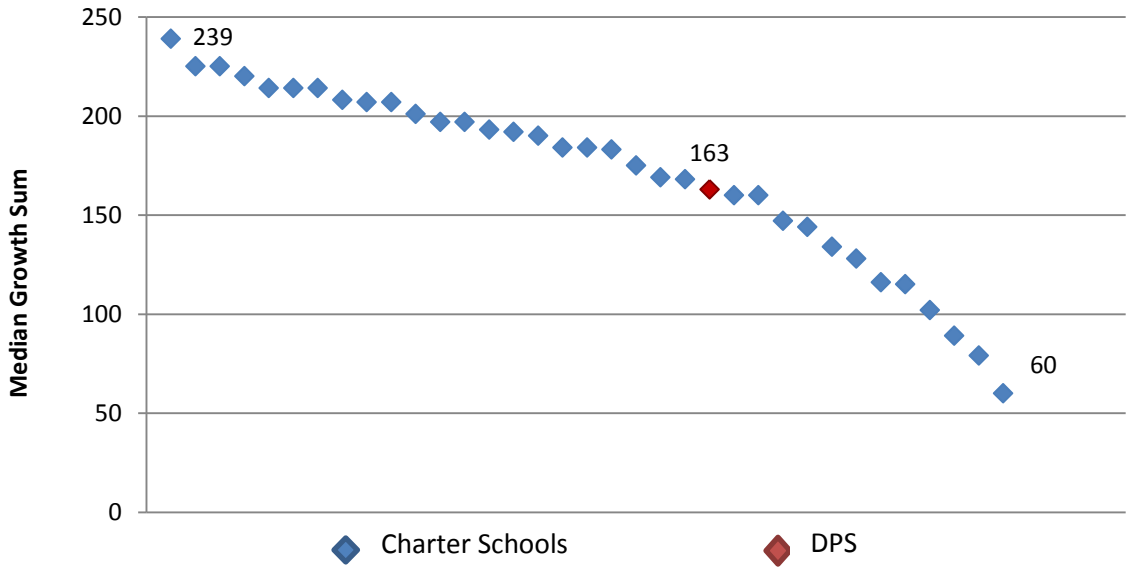
Although this study primarily sought to examine achievement in Innovation Schools, TCAP results for 34 DPS Charter Schools are presented as reference. As shown in Exhibit 24, Charter School achievement for 2013 was comparable to DPS overall in each subject area; however, like Innovation Schools, there was considerable variation across Charter Schools. (See the data for each Charter School in Appendix H.)

Exhibit 24: 2013 Charter School-Level Proficiency Means by Subject Area



This large range of achievement is evident in the summed median growth percentiles for each Charter School (239 to 60), shown in Exhibit 25. Nearly two-thirds (65%) of Charter Schools had summed median growth greater than the DPS average sum.

Exhibit 25: 2013 Median Growth Sums, by Charter School



Summary – School Achievement

Because of the variation within the group of Innovation Schools both in student academic proficiency and growth, it is difficult to draw conclusions about any influence Innovation status may have on student achievement. Analyses of individual student level data may contribute additional insights.

As noted in the evaluation report submitted in November 2012, it is hopeful that some Innovation Schools are demonstrating high rates of growth as compared to the state median, higher than the median growth rate for DPS overall (i.e., 54 percentile in reading and writing, and 55 in math) and higher than the DPS summed growth score. However, because some Comparison and Charter schools showed similar patterns of growth, it is likely that factors other than Innovation status are influencing student academic growth.

Are there Correlations across Data?

As a final analysis, evaluators explored relationships among the three factors outlined in the theory of change: teachers' sense of empowerment, workforce capacity, and student achievement. Although it is not possible to attribute causation to Innovation status, these analyses were intended to examine any areas of correlation among the factors as expected in the theory of change model. Because of the limitations of the study including a small sample size for conducting correlational studies, these analyses are best viewed as preliminary.

Looking at school-level data[19] for only the Innovation Schools, three results were examined:

- Total Scale Empowerment survey means;
- Percentages of teachers retained in 2012: and
- Summary achievement scores (i.e., reading, writing, math proficiency and summed growth).

Given the data available on workforce capacity, teacher retention was selected as one indicator, although this is likely only one element of the larger construct of capacity.

Results

As shown in Exhibit 26, in Innovation Schools, positive correlations were found between school-level reading, writing, and math proficiency and the Empowerment Survey results to a level of statistical significance. This means schools where teachers as group felt empowered had higher levels of student achievement and, conversely, schools with lower empowerment attitudes had lower achievement levels. Likewise, positive correlations were found between school level reading and writing proficiency (but not math) and the percentage of teachers retained. The school level summed growth showed positive correlations with both empowerment and retention, but not to a level of statistical significance.

Exhibit 26: Innovation Schools – Correlations across Factors

	Reading Proficiency	Writing Proficiency	Math Proficiency	Summed Growth	Retention Percent
Writing Proficiency	.874**				
Math Proficiency	.798**	.813**			
Summed Growth	.585**	.603**	.496**		
Retention Percent	.542**	.518**	.363	.339	
Empowerment Mean	.494*	.587**	.655**	.342	.086

**$p < .01$, * $p < .05$

Similar results were found in Comparison Schools, as shown in Exhibit 27. In these schools, all achievement outcomes (reading, writing, math, and growth) showed positive correlations with the Empowerment Survey results, and reading proficiency was correlated with the retention percentage.

[19] Schools with fewer than five survey responses were not included in these analyses. For schools with two levels (e.g., elementary and middle school), retention and survey results were used for both levels, if not differentiated.

Exhibit 27: Comparison Schools – Correlations across Factors

	Reading Proficiency	Writing Proficiency	Math Proficiency	Summed Growth	Retention Percent
Writing Proficiency	.951**				
Math Proficiency	.709**	.729**			
Summed Growth	.072	.116	.358		
Retention Percent	.569*	.523	.204	-.389	
Empowerment Mean	.655*	.638*	.649*	.541*	.303

**$p < .01$, * $p < .05$

There was a positive relationship between retention percentages and Empowerment Survey results in both Innovation and Comparison Schools (.086 and .303, respectively), but the results were not statistically significant. In other words, teachers in schools with a more stable workforce were no more likely to feel empowered than teachers in schools with higher rates of turnover. Empowerment was also not found to vary by years of teaching experience.

In summary, these results support the proposed theory of change model in terms of confirming two linkages: 1) the correlation between teachers' sense of empowerment and increased student achievement, and 2) the correlation between workforce stability and achievement. However, the correlation results are similar in both Innovation and Comparison Schools. Given that student achievement is the overarching outcome, it would appear teachers' sense of empowerment and workforce stability are significantly related to student achievement, at least in this subset of schools, regardless of Innovation status.

All the variables examined in this study showed wide variation from school to school; the range of empowerment, workforce stability, and achievement was considerable in both Innovation and Comparison Schools. This indicates other factors beyond Innovation status are likely contributing to the differences among schools (e.g., leadership, academic model, teacher/student ratio, professional development, community support).

Additional study to examine the factors that contribute to the variation in the outcomes across schools and to replicate the findings of correlation between teachers' empowerment, workforce stability, and student achievement is warranted.

Exhibit 28: Areas for Further Study

Appendices

Appendix A: Waivers Granted to Innovation Schools

Waiver/Statute ID	Cole	Collegiate Prep	DCIS at Ford	DCIS at Montbello	Denver Center for 21st Cen Learning	Denver Green	Godsman	Green Valley Ranch	High Tech Early College	Manual	Martin Luther King Jr. Early College	McAuliffe International	McGlone	Montclair	Noel Community Arts	Summit	Swigert International	Valdez	Vista	Whittier	Total
Implement plan for content standard 22-32-109(1)(aa)	1	1	1	1	1	1	1	0	1	1	1	1	0	1	1	1	0	1	0	1	16
School calendar 22-32-109 (1)(n)(I)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
Adopt dress code policy 22-32-109(1)(cc)	1	1	1	1	1	1	0	1	1	1	0	1	1	1	1	1	1	1	1	0	17
Selection of staff, pay 22-32-109(1)(f)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
Return moneys to treasurer 22-32-109(1)(g)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
Identifying principals for training 22-32-109(1)(jj)	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	0	18
Determine teacher-pupil contact hours 22-32-109(1)(n)(II)(A)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
Adopt district calendar 22-32-109(1)(n)(II)(B)	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	20
Textbooks & curriculum 22-32-109(1)(t)	1	1	1	1	1	1	0	0	1	1	1	1	0	1	1	1	0	1	0	1	15
Terminate employment 22-32-110(1)(h)	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	19
Performance evaluations 22-9-106	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	18
Requirement to hold a certificate 22-63-201	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	19
Contracts in writing 22-63-202	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	19
Probationary teacher, renewal 22-63-203	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	19
Transfer of teachers 22-63-206	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	19
Portability of non-probationary status 22-63-203.5	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
Grounds for dismissal 22-63-301	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	19
Procedures for dismissal 22-63-302	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	0	18
Adopted salary schedule 22-63-401	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	19
Certificate required to pay teachers 22-63-402	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	19
Describes payment of salaries 22-63-403	1	1	1	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	19

Appendix B: Summary of Results from November 2011 Evaluation Report

Innovation schools did not tend to look drastically different than other schools. Most principals reported that they have taken the approach of deliberately moving slowly with the implementation of their Innovation plan. It was clear that principals felt they could make more substantial changes given the waivers they have from district, state, and union policies; some principals were considering additional changes in the coming years. Given the flexibility that Innovation schools have, it is possible that they will begin to implement more numerous and substantive changes in the future. However, there remains the question of what it means for a school to be "innovative", and what expectations exist (from the district and the schools themselves) around what an Innovation school looks like, and how it may differ or not from its previous practices and from other DPS schools.

The four major issues driving schools to seek Innovation status were: budget, schedule, workforce management, and level of control. These were also the areas in which respondents said they saw the most obvious changes following Innovation status. It was somewhat remarkable that principals did not raise issues around curriculum and instruction as a key reason for seeking Innovation, though they did note that flexibility in these other four areas allowed them to make shifts related to instruction. The changes schools made which had the most potential to impact instruction had to do with teacher planning time, teacher PD, funds for additional academic and enrichment activities, schedule changes, and workforce management (e.g., hiring, opting out of direct placement). Given that there was such a consistent set of core drivers for all schools seeking Innovation status, this suggests there may be key areas where principals feel that district constraints are most burdensome. Principals appeared to view these issues as key levers in their management of the school; eliminating or reducing constraints in these areas at other DPS schools could potentially improve principals' perceptions about their ability to make decisions and manage their schools. At this point there is no evidence from this study to support or refute the idea that autonomy in these areas will improve school outcomes, but removing constraints in these areas clearly improved the staff and community sense of autonomy and ownership in the Innovation schools.

Principals are relatively happy with the support they have received from DPS. They found that support improved after the formation of the Office of School Reform and Innovation (OSRI). A number of principals noted that in the early years of Innovation schools there had been challenges getting basic services from the district (particularly around HR and budget) because of a lack of understanding in central office. Departments did not know how to deal with the needs of Innovation schools, which differed from the traditional ways of doing things. Principals said that more recently, there had been a shift towards having dedicated central office liaisons in these departments who were knowledgeable about the Innovation schools and better prepared to assist. OSRI was cited by principals as a key force in helping the district better align systems of support for Innovation schools, though some principals felt that the high turnover of OSRI staff had impeded the unit's effectiveness.

Innovation led to an increase in both real and perceived control over the schools by principals, teachers, and parents. This increased control was viewed as a major positive by these groups, who expressed a sense of greater ownership of their schools. There was a general sense of increased empowerment around decisions including resources, workforce, and instruction. One specific change

that was appreciated by many respondents was the enhanced agility to make rapid decisions at the school level, without having to wait for approval of the decision by various central office entities.

Having control over the workforce was a significant change in Innovation schools, from the hiring process to one-year contracts. The Innovation schools have made substantive changes in the way that they deal with their workforce. One major change was around hiring, including changes to timelines and the interview process. Schools were particularly pleased about opting out of direct placements; respondents were very negative about direct placement because they felt it led to schools having teachers who were not a good fit with the school's culture, philosophy, or rigor. Innovation schools tended to use one-year contracts with their teachers, and most respondents were happy with this. Parents and principals particularly liked the idea that they had a chance to determine if the teacher was a good fit before committing to them longer term.

Innovation schools have experienced high rates of mobility among teachers and principals. Their teachers tend to be somewhat less experienced and are less likely to have master's degrees than teachers in comparable schools. Although the data available for this evaluation did not allow us to draw strong conclusions about the effect that Innovation has on a school's workforce, these findings suggest that Innovation schools may have unique needs around developing and maintaining their teacher (and principal) workforce.

Innovation schools tended to have overall positive cultures. Schools which had less positive cultures had experienced problems with the principal, principal turnover, and often lacked a clear vision for the school. In general, schools tended to be either high or low on all culture indicators. This suggests that different elements of school climate are highly intertwined, and problems in one area are likely to spill over into discontent in others. The interview data suggested that principal leadership was a key element, and that when the principal did not adequately support staff, or created an atmosphere of mistrust or negativity, climate indicators at the school tended to be more negative. Interestingly, the lack of a clear strategic vision was also present in schools which scored lowest on climate measures. Having a strong principal in whom the teachers and parents have trust, who is able to articulate a clear vision and align structures around that, seems to be an important element in the climate of schools.

With high principal turnover at the Innovation schools, there has been some confusion about the role of the district in choosing a new principal. Three of the Innovation schools have changed principals since they gained Innovation status, and this change was associated with difficulties and discontent at the schools. One theme which emerged in these schools was: What is the role of the district and the school in choosing a new principal? There appears to be a lack of clarity around which entity will make the final choice. Going forward, it will be important for the district to clarify the process of principal hiring, and the role that staff, community, and district have in choosing a new administrator.

Most of the Innovation schools were working on alignment across grades and subjects. Schools saw this work as critical, but the process was not necessarily effective at all schools. Innovation schools were dedicating considerable amounts of time to engaging teachers in work around creating better vertical and horizontal articulation. The work tended to focus on understanding what on-standard or on-grade work looked like. However, in several schools respondents felt the time dedicated to articulation

was poorly used. This was generally associated with a lack of articulated goals or expectations, or a lack of structure to help move teachers towards the goals (since this left the onus on them to push the process forward). The prevalence of these articulation activities across schools raises the question of what support DPS provides to all district schools around operationalizing the standards, and helping teachers understand what on-standard and on-grade work looks like in various subjects.

There was a lack of clarity around the boundaries of autonomy in Innovation schools – what flexibility they have, and what regulations they are still subject to. This theme emerged in various ways from principals and teachers and was centered on the idea that the district has not adopted a clear vision of what Innovation schools are and what they should be able to do. This has resulted in some frustration for school staff, who at times felt they had to battle for autonomies they thought they were entitled to under Innovation status, or led to confusion around district requirements. With the formation of OSRI, the district may now be better positioned to define the district's understandings around Innovation schools. However, it was clear that principals believed the district has a distance to go in defining and understanding Innovation schools. It may be very useful for DPS to consider outlining the expectations the district has for Innovation schools in a transparent way, including the autonomies Innovation schools enjoy as well as the boundaries they must still adhere to.

There are not yet clear trends to help us understand how Innovation will affect student achievement. Prior to gaining Innovation status, many of the Innovation schools were already trending up in terms of the percent of students proficient and advanced, and most also had median growth percentiles above the state average of 50%.

Important questions remain about Innovation schools, and the district's role in supporting them. These questions are not only important in relation to the Innovation schools themselves, but are also critical for the district as a whole as more schools gain Innovation status. Specific questions the district should consider include:

- Has DPS had a conversation around what it means to be 'innovative'? Are there particular expectations for what an Innovation school looks like and how it may differ or not from its previous practices, and from other DPS schools?
- What does success look like for an Innovation school? Is it only about student achievement? Are there other factors that should be considered? (e.g., teacher satisfaction, parent involvement, student perceptions).
- What are some cost implications (both in terms of additional costs or loss of economy of scale) as schools opt out of traditional district structures? What is the cost to the district and schools?
- How can the district best support Innovation schools as their practices diverge from district offerings (e.g., around curricula, assessment, professional development, leadership, etc.)?
- How is monitoring data about the Innovation schools used? What types of metrics are considered in the monitoring of Innovation schools (e.g., teacher satisfaction, parent involvement, teacher mobility, principal turnover, etc.)? How is this information used?

- What supports does the district provide to assist Innovation schools who are struggling with various issues (e.g., principal leadership, collaboration and planning, articulation, trust, etc.?
- The Innovation Schools Act requires a 3 year review of each school's Innovation status. What will be considered as part of this review? Under what circumstances would the district take action with regards to a school's Innovation status? Do issues like climate, student achievement, mobility, instruction, etc. play a role? If so, how? If not, why not?

Appendix C: Summary of Results from November 2012 Evaluation

School Climate and Culture

Innovation school respondents scored higher on the Climate Survey than those in Comparison schools on all measures. The largest differences were on the scales related to Decision Making and Ownership, while the groups were most similar on the Collaborative Environment scale.

Further analyses indicated those respondents in Cohort One (the first eight Innovation schools) scored higher on the Climate Survey than respondents from Cohort Two (the next group of eleven schools). Both groups from Innovation schools scored higher than those from Comparison schools; differences were statistically significant. These results suggest that it may take time for Innovation status to affect a school's climate and culture. However, it may also reflect fundamental differences among the schools.

Workforce Profile

Innovation schools as a group were found to have teachers with less experience than Comparison schools. However, schools having Innovation status for a longer period of time had higher average teaching experience than schools more recently attaining Innovation status. Trends showed experience levels declining for all groups between 2007-08 and 2010-11 and increasing in 2011-12. The exception is a decrease in average teaching experience for Cohort Two schools for 2011-12, the first year of Innovation status. A contributing factor to this decrease may be that six Cohort Two schools were new.

In 2011-12, more than two-thirds (68%) of principals and assistant principals at Innovation schools were reported to be in their first or second year as school leaders in DPS. This pattern is evident to a slightly lesser extent in Comparison schools where 56% of principals were in their first or second year. Over time, Innovation and Comparison schools both show declining levels of principal experience. Overall in DPS, 37% of principals were new in 2011-12 and 34% in 2010-11, which may indicate other factors beyond Innovation status are impacting the high turnover rates for principals in this district.

Teachers in Innovation and Comparison schools were found to have similar education level profiles based on the highest degree earned. While Comparison schools had slightly more teachers with Masters degrees (51%) than Cohorts one and two of Innovation school groups (48% and 45%, respectively), these differences were not statistically significant.

Teacher turnover was higher in Innovation schools in relation to Comparison schools and DPS as a whole, although trends over time appeared consistent across the groups. The higher rates of turnover may be contributing to the decreasing experience levels because newly hired teachers are more likely to be teachers new to the profession, especially since Innovation schools are not required to accept in-district transfers of more experienced teachers. Principal experience levels are also likely affected by the turnover rates among those serving in leadership roles.

Student Achievement

The 2012 Transitional Colorado Assessment Program (TCAP) results showed Innovation schools typically demonstrated higher growth than the state median but lower levels of proficiency than statewide averages in all subjects with a few exceptions. When TCAP results were compared to DPS as a whole, Cohort One Innovation schools were below the district's level of proficiency; however, their proficiency levels were higher than those in Comparison schools.

Over time, student proficiency levels have shown gradual improvement in Innovation schools. However, the clear trajectory of improvement in Innovation schools is mirrored in district-wide improvement trends and was evident in most schools before they attained Innovation status so, therefore, cannot be solely attributed to this factor. For Innovation high schools, ACT composite scores showed little variation over time while Comparison high schools showed a small increase in ACT scores.

Conclusions and Questions for Further Exploration

In this year's study, teachers at schools with Innovation status for a longer period of time reported their schools were characterized by the attributes of the "empowerment equation" identified by DPS stakeholders. While this finding is hopeful, it is unclear if these attributes were already present in the culture of the schools before seeking Innovation status or if Innovation status enhanced their work in any way.

A complication to measuring the effectiveness of Innovation schools is the high turnover rates for both teachers and principals. Lack of continuity in both leadership and the workforce at Innovation schools may be interfering with progress that might otherwise be expected. What factors (including Innovation status) are influencing these high turnover rates? How can DPS support a more stable workforce in Innovation schools?

Because rates of student achievement were improving in DPS overall during this time period, many reform strategies may be effectively improving student outcomes; Innovation status may be just one of many effective options. However, it may also be merely too soon to see differences between this strategy and competing initiatives for school reform. Examination of achievement trends over a longer period of time is warranted for Innovation schools in comparison to those implementing other interventions intended to raise achievement levels.

If the Innovation school theory of change is accurate, improved student outcomes should be evident in schools where autonomy in decision-making has been exercised for that purpose. This raises additional questions: Have Innovation schools actually implemented changes that would require Innovation status (as principals reported were planned in interviews in 2011)? Additionally, if changes have been made, how have they been directly related to improving professional practice (as opposed to more organizational re-structuring around budgets, schedules, and hiring practices)? These questions must be answered before an expectation of improved student outcomes can be examined in a meaningful way and distinguished from the expectation that student outcomes improve in all schools in DPS.

Appendix D: Empowerment Survey Instrument

Spring 2013 (revised 2/27/2013)

0.1 How many years have you been a teacher (including this year)?
- ❍ One year
- ❍ Two years
- ❍ Three years
- ❍ Four years
- ❍ Five years
- ❍ More than five years

0.2 How many years have you been a teacher in Denver Public Schools (including this year)?
- ❍ One year
- ❍ Two years
- ❍ Three years
- ❍ Four years
- ❍ Five years
- ❍ More than five years (

0.3 How many years have you been at your current school (including this year)?
- ❍ One year
- ❍ Two years
- ❍ Three years
- ❍ Four years
- ❍ Five years
- ❍ More than five years

1.0 At your school, to what extent are teachers able to influence decisions about:

	Great Extent	Some Extent	A little bit	Not at all
1.1 Student behavior policies	❍	❍	❍	❍
1.2 Planning school budgets	❍	❍	❍	❍
1.3 Determining the school's schedule	❍	❍	❍	❍
1.4 Determining the school's curriculum	❍	❍	❍	❍
1.5 Hiring new teachers	❍	❍	❍	❍

Please mark the extent to which you agree or disagree with the following statements:

	Strongly Agree	Agree	Disagree	Strongly Disagree
1.6 Teachers in this school are empowered to make instructional decisions in their classrooms.	❍	❍	❍	❍

2.0 Please mark the extent to which you agree or disagree with the following statements:

	Strongly Agree	Agree	Disagree	Strongly Disagree
2.1 I feel a strong sense of ownership about what happens in my classroom.	❍	❍	❍	❍
2.2 I feel a strong sense of ownership about what happens in my school.	❍	❍	❍	❍
2.3 There is a culture of ownership at this school, where teachers believe they are responsible for the outcomes of all students.	❍	❍	❍	❍

3.0 Please mark the extent to which you agree or disagree with the following statements:

	Strongly Agree	Agree	Disagree	Strongly Disagree
3.1 The administration in this school has high expectations for teacher performance.	❍	❍	❍	❍
3.2 The teachers in this school have high expectations for student performance.	❍	❍	❍	❍
3.3 Teachers in this school have high expectations for their own performance.	❍	❍	❍	❍

4.0 Please mark the extent to which you agree or disagree with the following statements:

	Strongly Agree	Agree	Disagree	Strongly Disagree
4.1 I would not want to work in any other school.	❍	❍	❍	❍
4.2 I would send my own child to this school.	❍	❍	❍	❍
4.3 I feel proud being a teacher at this school.	❍	❍	❍	❍

5.0 Please mark the extent to which you agree or disagree with the following statements. Teachers at this school:

	Strongly Agree	Agree	Disagree	Strongly Disagree
5.1 ...feel a responsibility for helping other teachers do their best.	❍	❍	❍	❍
5.2 ...feel a responsibility for helping improve the entire school.	❍	❍	❍	❍
5.3 ...feel a responsibility for helping all students learn.	❍	❍	❍	❍

6.0 Please mark the extent to which you agree or disagree with the following statements:

	Strongly Agree	Agree	Disagree	Strongly Disagree
6.1 Decisions made at this school take into account the opinions of teachers, staff, and parent groups when appropriate.	❍	❍	❍	❍
6.2 Teachers in this school have enough autonomy to make decisions that will positively impact their students.	❍	❍	❍	❍
6.3 The decisions of our school leadership help improve our school's practices.	❍	❍	❍	❍

7.0 Please mark the extent to which you agree or disagree with the following statements:

	Strongly Agree	Agree	Disagree	Strongly Disagree
7.1 Teachers in this school discuss instructional strategies with one another.	❍	❍	❍	❍
7.2 Teachers in this school engage in conversations about student data.	❍	❍	❍	❍
7.3 Teachers in this school discuss curriculum issues with one another.	❍	❍	❍	❍
7.4 Teachers in this school make a conscious effort to align their instruction with other teachers.	❍	❍	❍	❍

8.0 Please mark the extent to which you agree or disagree with the following statements:

	Strongly Agree	Agree	Disagree	Strongly Disagree
8.1 Teachers in this school have a shared sense of our school's mission.	❍	❍	❍	❍
8.2 The educational programs at our school are thoughtfully designed so they best meet the needs of our students.	❍	❍	❍	❍
8.3 Professional development in this school enhances teachers' ability to implement instructional strategies that will meet the needs of students.	❍	❍	❍	❍

9.0 Please mark the extent to which you agree or disagree with the following statements. Teachers in this school:

	Strongly Agree	Agree	Disagree	Strongly Disagree
9.1 ...have a “can do” attitude.	❍	❍	❍	❍
9.2 ...are continually learning and seeking new ideas to improve their practice. (	❍	❍	❍	❍
9.3 ...seek or implement innovative strategies for improving the overall quality of our school.	❍	❍	❍	❍

10.1 I am generally satisfied with being a teacher at this school.
- ❍ Strongly Agree
- ❍ Agree
- ❍ Disagree
- ❍ Strongly Disagree

10.2 Do you plan to stay at your current school next year?
- ❍ Yes
- ❍ Don't know
- ❍ No

10.3 Please select your current school from the list below:

[Drop down list of all Innovation, Comparison, and Charter Schools in the study]

10.4 How does the status of your school as an Innovation School affect you?
- ❍ It is a negative influence on my decision to teach at this school; I would prefer to move to a school without Innovation status.
- ❍ It has no effect on my decision to teach in this school.
- ❍ It is a positive influence on my decision to teach in this school; I would prefer to continue to teach in an Innovation school.

10.5 How, if at all, does your school's Innovation status affect your teaching?

Appendix E: Empowerment Survey Results by Item

At your school to what extent are teachers able to influence decisions about:	Innovation or Comparison group					
	Comparison School			Innovation School		
	Mean	N	SD	Mean	N	SD
Expectations (6 items)						
1. Student behavior policies	2.33	229	.94	2.61	159	.96
2. Planning school budgets	1.83	229	.79	1.65	159	.77
3. Determining the school's schedule	2.09	229	.88	2.15	159	.96
4. Determining the school's curriculum	2.11	229	.97	2.59	159	1.03
5. Hiring new teachers	2.34	229	.82	2.54	159	1.02

Scale: Great Extent (4), Some Extent (3), A little bit (2), Not at all(1)

Please mark the extent to which you agree or disagree with the following statements:	Innovation or Comparison group					
	Comparison School			Innovation School		
	Mean	N	SD	Mean	N	SD
Expectations (continued)						
6. Teachers in this school are empowered to make instructional decisions in their classrooms.	2.74	229	.86	3.20	159	.74
Ownership (3 items)						
1. I feel a strong sense of ownership about what happens in my classroom.	3.28	229	.75	3.46	159	.68
2. I feel a strong sense of ownership about what happens in my school.	2.33	229	.88	2.64	159	.93
3. There is a culture of ownership at this school, where teachers believe they are responsible for the outcomes of all students.	2.71	229	.90	2.87	159	.89
Expectations (3 items)						
1. The administration in this school has high expectations for teacher performance.	3.15	229	.77	3.27	159	.75
2. The teachers in this school have high expectations for student performance.	3.17	229	.74	3.24	159	.77
3. Teachers in this school have high expectations for their own performance.	3.27	229	.64	3.35	159	.67
Pride and fulfillment in work (3 items)						
1. I would not want to work in any other school.	2.46	229	1.05	2.49	159	1.01
2. I would send my own child to this school.	2.43	229	1.12	2.18	159	1.10
3. I feel proud being a teacher at this school.	2.96	229	.96	3.10	159	.86

Self-Accountability (3 items)						
1. Teachers … feel a responsibility for helping other teachers do their best.	3.00	229	.74	3.06	159	.72
2. Teachers … feel a responsibility for helping improve the entire school.	3.02	229	.75	3.17	159	.77
3. Teachers … feel a responsibility for helping all students learn.	3.33	229	.66	3.38	159	.61
Decision making (3 items)						
1. Decisions made at this school take into account the opinions of teachers, staff, and parent groups when appropriate.	2.36	229	.84	2.65	159	.96
2. Teachers in this school have enough autonomy to make decisions that will positively impact their students.	2.52	229	.86	2.84	159	.82
3. The decisions of our school leadership help improve our school's practices.	2.41	229	.89	2.69	159	.91
Collaborative Environment (4 items)						
1. Teachers … discuss instructional strategies with one another.	3.13	229	.63	3.13	159	.65
2. Teachers … engage in conversations about student data.	3.12	229	.63	3.21	159	.69
3. Teachers … discuss curriculum issues with one another.	3.16	229	.62	3.17	159	.63
4. Teachers … make a conscious effort to align their instruction with other teachers.	2.95	229	.72	2.92	159	.75
Development of capacity (3 items)						
1. Teachers in this school have a shared sense of our school's mission.	2.80	229	.75	2.95	159	.76
2. The educational programs at our school are thoughtfully designed so they best meet the needs of our students.	2.48	229	.89	2.76	159	.85
3. Professional development in this school enhances teachers' ability to implement instructional strategies that will meet the needs of students.	2.28	229	.97	2.65	159	.89
Climate of innovation and professional learning (3 items)						
1. Teachers … have a "can do" attitude.	3.03	229	.65	3.19	159	.67
2. Teachers … are continually learning and seeking new ideas to improve their practice.	3.06	229	.63	3.19	159	.68
3. Teachers … seek or implement innovative strategies for improving the overall quality of our school.	2.99	229	.66	3.17	159	.70

[a]Scale: Strongly Agree (4), Agree (3), Disagree (2), Strongly Disagree (1)

Appendix F: Workforce Analyses Data Summary

Average Teacher Experience

Innovation/Comparison

	n	Mean	Std. Dev
Innovation – all	*623*	*3.77*	*6.305*
Comparison – all	*649*	*9.05*	*9.353*

Cohorts Only

	n	Mean	Std. Dev
Innovation Cohort One	311	4.14	6.549
Comparison Group One	*273*	*8.94*	*9.686*
Innovation Cohort Two	312	3.40	6.040
Comparison Group Two	*376*	*9.13*	*9.117*

All Data

	n	Mean	Std. Dev
Innovation Cohort One	311	4.14	6.549
Innovation Cohort Two	312	3.40	6.040
Innovation – all	*623*	*3.77*	*6.305*
Comparison Group One	273	8.94	9.686
Comparison Group Two	376	9.13	9.117
Comparison – all	*649*	*9.05*	*9.353*

Total Principal Experience

All cohorts – all detail presented

Years DPS Principal Experience	Innovation Cohort One	Comparison Group One	Innovation Cohort Two	Comparison Group Two	Total
0	0	0	2	*0*	2
1	4	2	10	*5*	22
2	2	3	7	*4*	16
3	5	6	5	*2*	18
4	1	1	0	*2*	4
5	1	0	1	*2*	4
6	1	1	0	*1*	3
7	0	0	1	*0*	1
8	1	2	1	*2*	7
9	0	0	1	*0*	1
10	1	0	0	*1*	2
11	1	0	0	*1*	2
12	0	1	0	*0*	1
13	0	0	1	*1*	2
Total	17	16	29	21	85

Innovation/Comparison only – Principal experience

Years DPS Principal Experience	*All Innovation Schools*	*All Comparison Schools*	*Total*
0	*2*	*0*	*2*
1	*14*	*7*	*21*
2	*9*	*7*	*16*
3	*10*	*8*	*18*
4	*1*	*3*	*4*
5	*2*	*2*	*4*
6	*1*	*2*	*3*
7	*1*	*0*	*1*
8	*2*	*4*	*6*
9	*1*	*0*	*1*
10	*1*	*1*	*2*
11	*1*	*1*	*2*
12	*0*	*1*	*1*
13	*1*	*1*	*2*
Total	46	37	*83*

Teacher Education Levels

	n (excluding missing)	missing	Bachelors		Masters		Doctorate	
			n	%	n	%	n	%
Innovation Cohort One	274	37	144	52.55%	128	46.72%	2	0.73%
Innovation Cohort Two	293	19	153	52.22%	137	46.76%	3	1.02%
Innovation	567	56	297	52.38%	265	46.74%	5	0.88%
Comparison Group 1	227	46	111	48.90%	113	49.78%	3	1.32%
Comparison Group 2	397	14	153	38.54%	239	60.20%	5	1.26%
Comparison	596	53	253	42.45%	335	56.21%	8	1.34%

Teacher Turnover

	Total number of teachers in 11-12	Number of teachers who left school after 11-12 year	Turnover Rate
Innovation Cohort One	291	76	26.12%
Innovation Cohort Two	259	81	31.27%
Innovation – all	550	157	28.55%
Comparison Group 1	272	61	22.43%
Comparison Group 2	399	90	22.56%
Comparison - all	634	114	17.98%
DPS			17.75%

Appendix G: Innovation TCAP Results, Growth and Proficiency, by School

TCAP Reading – Sorted high to low by growth percentile

Innovation Schools	Median Growth Percentile	Percent Proficient/Advanced
Martin Luther King Jr. Early College High School	68	36
McAuliffe International School	66	29
Noel Community Arts School High School	64	39
High Tech Early College	63	29
Godsman	59	67
Denver Green - Elementary	58	58
Green Valley Ranch Elementary	58	25
Bruce Randolph High School	56	49
Cole Arts & Science - Middle	56	35
Montclair	56	61
Valdez	55	41
Collegiate Prep Academy	55	57
DCIS at Montbello High School	52	45
Cole Arts & Science - Elementary	51	35
Denver Green - Middle	50	27
DCIS at Montbello Middle School	49	44
McGlone Elementary	49	41
Martin Luther King Jr. Early College Middle School	48	11
Whittier - Middle	48	38
Bruce Randolph Middle School	47	61
Vista Academy High School	46	46
DCIS at Ford	45	42
Noel Community Arts School Middle School	45	25
Vista Academy Middle School	45	44
Denver Center for 21st Century Learning at Wyman High School	37	92
Whittier - Elementary	35	43
Manual	34	47

TCAP Writing – Sorted high to low by growth percentile

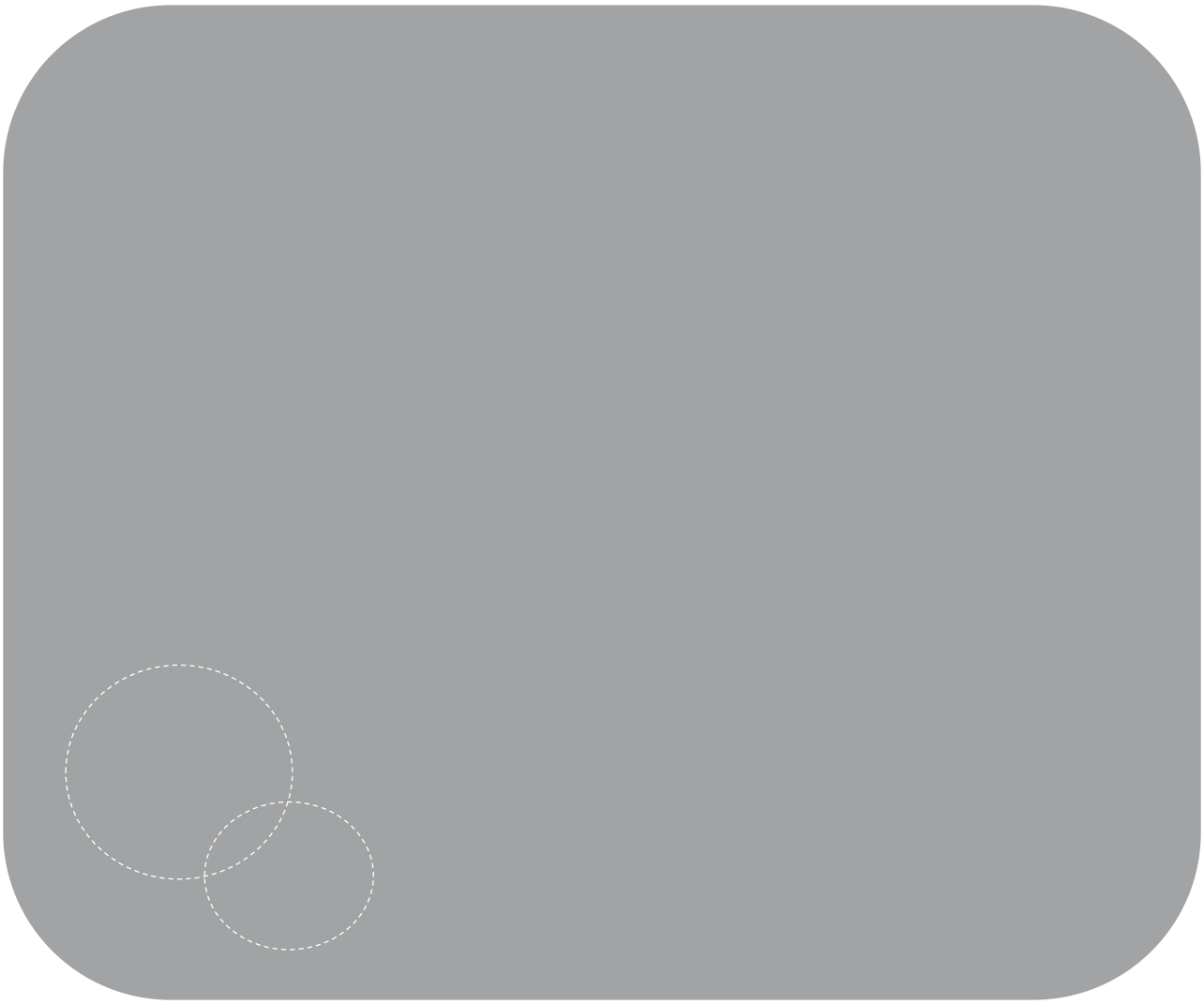
Innovation Schools	Median Growth Percentile	Percent Proficient/Advanced
Denver Green - middle	77	51
McAuliffe International School	73	88
Green Valley Ranch Elementary	65	49
Bruce Randolph High School	64	21
Martin Luther King Jr. Early College HS	64	29
Valdez	64	33
Whittier - middle	60	38
Godsman	59	45
ColeArts & Science - middle	58	24
Montclair	57	49
High Tech Early College	57	26
Denver Green - elementary	56	40
DCIS at Montbello HS	55	25
Martin Luther King Jr. Early College MS	54	29
McGlone Elementary	52	21
Bruce Randolph Middle School	51	24
Collegiate Prep Academy	50	17
ColeArts & Science - elementary	48	21
Noel Community Arts School MS	48	25
Noel Community Arts School HS	48	25
DCIS at Montbello MS	47	32
DCIS at Ford	44	18
Vista Academy MS	43	38
Vista Academy HS	39	15
Manual	35	10
Whittier - elementary	28	36
Denver Center for 21st Century Learning at Wyman HS	26	4

TCAP Math – sorted high to low by growth percentile

Innovation Schools	Median Growth Percentile	Percent Proficient
Cole Arts & Science - middle	75	14
Whittier - middle	75	48
Green Valley Ranch Elementary	74	67
McGlone Elementary	74	49
Noel Community Arts School HS	68	16
McAuliffe International School	68	89
High Tech Early College	65	19
Martin Luther King Jr. Early College HS	63	18
Montclair	62	62
Godsman	59	48
Whittier - elementary	57	48
Martin Luther King Jr. Early College MS	55	28
DCIS at Montbello HS	54	16
Denver Green - middle	52	38
DCIS at Ford	51	34
Denver Green - elementary	49	74
Collegiate Prep Academy	49	12
Cole Arts & Science - elementary	48	48
Bruce Randolph High School	46	8
Valdez	44	39
Noel Community Arts School MS	40	20
Vista Academy HS	38	10
Vista Academy MS	37	30
DCIS at Montbello MS	36	25
Bruce Randolph Middle School	32	18
Manual	32	2
Denver Center for 21st Century Learning at Wyman HS	25	0

Appendix H: Charter TCAP Results, Growth and Proficiency, by School

	Reading		Writing		Math	
	% Proficient	Median Growth	% Proficient	Median Growth	% Proficient	Median Growth
ACE Community Challenge School	21	47	3	55	2	32
Cesar Chavez Academy - elementary	58	34	43	42	64	39
Cesar Chavez Academy - middle	43	48	39	64	31	57
Denver Language School	74	68	55	56	85	60
Denver School of Science and Technology - Cole MS	61	60	55	59	63	78
Denver School of Science and Technology - GVR Campus HS	71	72	53	70	63	97
Denver School of Science and Technology - GVR Campus MS	68	57	63	64	66	76
Denver School of Science and Technology - Stapleton HS	88	61	79	68	74	85
Denver School of Science and Technology - Stapleton MS	81	60	80	74	83	80
Girls Athletic Leadership School (GALS)	76	64	68	69	64	81
Highline Academy - elementary	87	56	69	66	81	53
Highline Academy - middle	85	62	76	69	66	61
KIPP Denver Collegiate High School	62	80	42	72	32	73
KIPP Montbello College Prep	50	71	44	76	46	73
KIPP Sunshine Peak Academy - elementary	45	53	43	59	62	78
KIPP Sunshine Peak Academy - middle	49	68	64	70	66	87
Northeast Academy	39	35	19	31	20	23
Odyssey Charter - elementary	84	32	58	48	77	36
Odyssey Charter - middle	88	73	77	72	59	56
Omar D. Blair - elementary	71	56	56	68	71	69
Omar D. Blair - middle	59	58	52	62	50	63
Pioneer Charter - elementary	34	55	24	39	39	53
Pioneer Charter - middle	31	47	38	59	40	62
SOAR Green Valley Ranch	57	30	29	32	50	17
SOAR Oakland	25	25	11	21	19	14
Southwest Early College	51	55	28	48	13	41
STRIVE Prep - Federal Campus	52	62	50	67	65	78
STRIVE Prep - Highland Campus	55	63	51	67	60	78
STRIVE Prep - Lake Campus	39	51	35	51	39	58
STRIVE Prep - Westwood	54	65	50	69	63	73
Venture Prep HS	51	63	32	54	15	67
Venture Prep MS	33	38	24	51	19	39
Wyatt-Edison Charter - elementary	39	40	26	27	43	35
Wyatt-Edison Charter - middle	39	51	35	62	34	47



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