

April 9, 2014

TO: Jeffco Board of Education

CC: Members of Jeffco SPAC/DAC  
Heather Beck, Marcia Anker, Terry Elliott

FM: Tom Coyne, SPAC/DAC Member

**RE: Updated Analyses on Full Day Kindergarten and Charter Schools**

Since Rachel Swalley and I (with input from Jeremy Schupbach) submitted the Minority Report of the SPAC Budget Review Subcommittee, controversies have arisen with respect to additional funding for expanding Jeffco's full-day kindergarten program and charter schools. This memo amends the Minority Report by providing additional analysis to help better inform your decisions about these issues.

**Expanding Full Day Kindergarten**

Full day kindergarten programs are now offered in approximately 40 Jeffco elementary schools that have significant percentages of students eligible for free and reduced lunch. The proposed budget increase would expand full day kindergarten to five more schools with slightly lower percentages of F&R students. The theory behind these programs is that providing increased early learning to F&R students will result in improvements in academic achievement in elementary school and beyond.

Children eligible for free and reduced lunch now account for about one-third of Jeffco's student population. That there is a need to substantially improve academic achievement results for these students is beyond doubt, as evidenced by the following table:

Percent Proficient & Advanced -- Students Eligible for Free and Reduced Lunch								
Jeffco TCAP Data from CDE Schoolview/Datalab								
<b>Math</b>	<b>2005/2006</b>	<b>2006/2007</b>	<b>2007/2008</b>	<b>2008/2009</b>	<b>2009/2010</b>	<b>2010/2011</b>	<b>2011/2012</b>	<b>2012/2013</b>
Grade 3	56	54	53	59	56	58	58	57
Grade 4	53	53	51	53	57	59	60	61
Grade 5	48	43	47	45	49	53	49	50
Grade 6	43	47	47	51	49	54	53	51
Grade 7	28	33	27	35	32	38	39	42
Grade 8	29	28	31	34	34	36	35	36
Grade 9	22	21	23	20	27	23	21	24
Grade 10	16	15	19	16	17	21	20	20
<b>Reading</b>	<b>2005/2006</b>	<b>2006/2007</b>	<b>2007/2008</b>	<b>2008/2009</b>	<b>2009/2010</b>	<b>2010/2011</b>	<b>2011/2012</b>	<b>2012/2013</b>
Grade 3	54	59	58	64	60	64	66	65
Grade 4	55	48	51	51	58	55	57	59
Grade 5	53	50	56	55	56	60	60	60
Grade 6	56	60	63	62	67	67	71	70
Grade 7	50	48	49	51	54	54	57	58
Grade 8	49	46	52	45	52	50	54	56
Grade 9	47	51	51	51	53	50	53	53
Grade 10	46	50	49	53	47	52	51	57
<b>Writing</b>	<b>2005/2006</b>	<b>2006/2007</b>	<b>2007/2008</b>	<b>2008/2009</b>	<b>2009/2010</b>	<b>2010/2011</b>	<b>2011/2012</b>	<b>2012/2013</b>
Grade 3	38	42	37	41	35	38	39	36
Grade 4	37	33	35	35	35	44	34	37
Grade 5	44	37	39	39	39	46	44	41
Grade 6	47	46	46	47	46	53	46	50
Grade 7	40	45	39	42	41	42	47	49
Grade 8	33	33	33	32	35	35	37	38
Grade 9	30	31	31	32	32	33	32	37
Grade 10	29	30	30	31	27	30	29	32

Over the past four years, Jeffco’s Uniform Improvement Plans, which have, per state law [CRS 22-11-302 (1) (b)], been reviewed by members of the SPAC/DAC, and approved by the Board of Education, have repeatedly identified a range of root causes for this poor achievement performance:

- “Students needing to catch-up do not receive quality and/or adequate time for universal/core instruction in addition to effective, aligned targeted/intensive interventions” (2010/2011)
- “Teaching and learning have not consistently demanded high expectations in every classroom due to superficial coverage of a large number of standards, lack of understanding of grade level mastery, lack of relevance for students, and lack of systemic progress monitoring” (2011/2012)

- “The district lacks structures to ensure consistent quality professional development is provided to all instructional staff to address the needs of all populations, including students in the catch-up category” (2012/2013)
- “Educators have received inconsistent training on effective literacy instruction and use of research-based resources” (2013/2014)
- “Math instruction tends not to be differentiated, lacking a variety of structures to meet student needs” (2013/2014)
- “Systemic implementation of intentional lesson design to engage students’ conceptual understanding of their learning and increase student cognitive load is not evident in all classrooms” (2013/2014)

These root cause assessments have been echoed in comments made to the Board and the SPAC/DAC by Jeffco’s Chief Academic Officer, who has referred to poor “fidelity of implementation” of initiatives in some schools, “widely varying levels of rigor” in Jeffco classrooms, and the “lack of a common understanding in Jeffco of what rigor means.”

With respect to the proposed expansion of full day kindergarten, the Board needs to answer three key questions:

1. The extent to which the proposed expansion of full day kindergarten will address the root causes of poor achievement results noted above in comparison to other proposed uses of scarce budget funds.
2. The evidence, if any, that Jeffco’s existing full day kindergarten program has had a systematic positive impact on achievement results for free and reduced eligible students, and the magnitude of that impact.
3. Whether the current design of Jeffco’s current full-day kindergarten program is efficient.

In our Minority Budget Report, we emphasized the lack of evidence presented by District staff with respect to the second point. Since then, the Board has asked District staff for evidence of the efficacy of full day kindergarten in Jeffco. To date, I am not aware that District staff has presented any such evidence to the Board or to the SPAC/DAC. In response to the Board’s request, some parties have claimed that national research studies show full day kindergarten to be effective at increasing free and reduced eligible students’ academic achievement. However, to my knowledge, these parties have not shared their studies with the Board or with the SPAC/DAC. It is also important to note that there are also many studies that have reached the opposite conclusion.

For example, in 2005 the RAND Corporation found that, relative to half-day

kindergarten, “there are initial benefits for students and the mothers of students that attend full-day kindergarten, but these differences largely evaporate by third grade. Contrary to claims by some advocates, attending full-day kindergarten is found to have no additional benefit for students in families with income below the poverty threshold” (*Is Full Better than Half? Examining the Longitudinal Effects of Full-Day Kindergarten Attendance* by Cannon, Jackowitz, and Painter).

A year later, RAND published another analysis of the same issue, “*School Readiness, Full-Day Kindergarten, and Student Achievement: An Empirical Investigation*” by Le et al. This study found that “attendance in a full-day kindergarten program was not related to achievement in mathematics in fifth grade except when nonacademic school readiness factors were included in the model. When those factors were considered, full-day attendance was negatively related to math achievement. In other words, after controlling for nonacademic readiness at kindergarten, children who had attended a full-day program at kindergarten showed poorer mathematics performance in fifth grade than did children who had attended a part-day kindergarten program...[Also] Attendance in a full-day kindergarten program was negatively associated with attitudes toward learning, self-control, and interpersonal skills, and was positively related toward internalizing (measured by a scale indicating presence of anxiety, loneliness, low self-esteem, and sadness) and externalizing behaviors...Our analyses reinforce the findings of earlier studies that suggest that full-day kindergarten programs may not enhance achievement in the long term.”

As opposed to single studies of the full-day kindergarten issues, “meta-analysis” studies are more powerful because they compare the results of different single studies of an issue, and combine their conclusions on the basis of the strength of the methodologies they use. Two recent meta-analyses of full day kindergarten have reached the same conclusion. In “*Effects of Full-Day Kindergarten on Academic Achievement and Social Development*”, Cooper et al conclude that “attending full-day kindergarten had a positive association with academic achievement (compared to half-day kindergarten) equal to about one quarter standard deviation [i.e., an Effect Size of .25] at the end of the kindergarten year. But the association disappeared by third grade.” In “*Full Day Kindergarten: A Review of the Evidence and Benefit-Cost Analysis*,” Kay and Pennucci of the Washington State Institute for Public Policy Analysis ([www.wsipp.wa.gov](http://www.wsipp.wa.gov)) concluded that “full-day kindergarten leads to higher standardized test scores than half-day programs, but this effect appears to fade out within a few years.”

Another critical issue with respect to national studies of the effectiveness of different approaches to achievement improvement is the evidence regarding Jeffco’s poor “fidelity of implementation” of new initiatives. Given this, the fact that full-day kindergarten may have produced achievement improvements in some studies is no guarantee that it will do so in Jeffco. For this reason, we also need to look at what Jeffco’s existing full day kindergarten programs have actually achieved.

The following table shows the change in Grade 3 TCAP results over the past three years for Free and Reduced eligible students who are neither special education (IEP) or GT (ALP) at the elementary schools that have offered full-day kindergarten and where sufficient public data is available. The metric we use is Effect Size, which is equal to the end year average TCAP scale score less the beginning year average TCAP scale score, divided by the end year standard deviation of TCAP scale scores. Based on the well-known research of professor John Hattie (see his book, Visible Learning), an Effect Size of .30 is roughly equal to an additional year of learning (or a lost year, if the Effect Size is negative .30 or more):

Schools with Full Day Kindergarten				
With N>16 F&R, Not GT, Not IEP students in both 2010 and 2013				
Grade 3 TCAP Scores Three Year Effect Sizes* Between 2010 and 2013				
School	Math	Reading	Writing	Average
Allendale	0.02	(0.03)	(0.02)	(0.01)
Campbell	(0.92)	(0.42)	(0.74)	(0.69)
Deane	(0.02)	0.26	0.26	0.17
Edgewater	0.01	0.40	(0.12)	0.10
Eiber	0.50	0.05	0.06	0.20
Foster	(0.03)	(0.20)	(0.55)	(0.26)
Glennon Heights	0.20	(0.10)	0.37	0.16
Kullerstrand	(0.35)	(0.22)	(0.34)	(0.30)
Lasley	0.03	0.15	(0.10)	0.03
Lawrence	(0.28)	0.11	0.11	(0.02)
Little	(0.23)	0.45	0.15	0.12
Lumberg	0.34	0.05	(0.29)	0.03
Molholm	0.19	0.52	0.23	0.31
Parr	(0.13)	(0.34)	(0.63)	(0.37)
Peck	0.13	0.12	0.38	0.21
Pennington	(0.79)	0.07	(0.06)	(0.26)
Pleasant View	(0.18)	(0.17)	0.04	(0.10)
Secrest	0.29	0.36	(0.09)	0.19
Slater	0.60	0.87	1.01	0.83
South Lakewood	0.36	0.40	0.45	0.40
Stein	(0.11)	(0.03)	(0.28)	(0.14)
Stevens	0.48	(0.03)	0.19	0.21
Stober	0.05	0.20	0.63	0.29
Swanson	(0.88)	0.09	(0.52)	(0.44)
Thompson	(0.24)	0.03	0.11	(0.03)
Warder	0.38	0.44	0.49	0.44
Weber	(0.07)	0.14	0.21	0.09
Welchester	(0.63)	(0.75)	(0.17)	(0.52)
Westgate	(0.35)	(0.13)	(0.13)	(0.20)
Wilmore Davis	(0.52)	0.42	0.52	0.14
Average	(0.07)	0.09	0.04	0.02

\*Effect Size = (ending year average TCAP scale score less beginning year score)/ending year standard deviation

\*Effect Size of .30 is roughly equal to a full year of learning (see the book Visible Learning, by Professor John Hattie)

As you can see, this analysis does not show any systematic improvement in Grade 3 free and reduced eligible students' TCAP scale scores in math, reading, or writing across all the schools that offer full-day kindergarten. To be sure, there are schools that have demonstrated a very impressive ability to increase Grade 3 F&R TCAP scores over time. But there are also schools that have produced exactly the opposite results. This data reinforces the point from our Minority Report that one of Jeffco's most critical achievement improvement challenges is how to develop a better process for identifying, understanding, and effectively scaling up the most successful initiatives from the school level experimentation and learning that is underway across the district.

To be sure, one can criticize this analysis as being too coarse grained, as it is necessarily based on public data for Grade 3, while the District has access to other non-public assessment results from grades K through 3 (e.g., it could have done randomized control trials on the long term achievement effect of a F&R student being assigned to the full day treatment or half-day treatment in schools that offer FD kindergarten, and comparing these results to F&R students who attend schools that don't offer FD kindergarten). Clearly, other confounding factors could account for the observed results in the Grade 3 data, including differences across schools in full day kindergarten program structure, curriculum, instructional practices, teacher and/or principal quality. However, if the District has in fact done its own analyses of the efficacy of its experiment with full day kindergarten (and one would hope that it has), thus far, and despite the Board's request, staff has chosen not to share its analysis results with the Board, with the SPAC/DAC, or with the taxpayers who are paying for the current full day kindergarten programs.

In the absence of further evidence from the District, and in light of the public evidence that is available, it does not appear that expansion of Jeffco's full day kindergarten program is warranted, if its purpose is to make a substantial contribution to improving academic achievement results (particularly the Board's goals for early literacy and elementary mathematics mastery) for students eligible for free and reduced meals. In fact, the available evidence raises serious questions about Jeffco's willingness and ability to systematically evaluate the effectiveness of achievement improvement initiatives, and to terminate spending on those that have failed to deliver their promised results.

Finally, there is a third issue with respect to the efficiency of Jeffco's existing full-day kindergarten program. As noted above, the theory that has been used to justify this program is that it has a positive impact on the academic achievement growth of F&R students. However, in allocating funding on a per school rather than per student basis, Jeffco's current program is, in effect, enabling non-F&R students who attend elementary schools with a relatively high percentage of F&R students to also benefit from a program that is not targeted at them. This seems

to be a very inefficient program design, regardless of your views on the overall effectiveness of full-day kindergarten.

### Charter Schools

In contrast to the situation with Full Day Kindergarten, where there have been calls for increased funding in the absence of evidence, in the case of charter schools, the opposite argument has been made, demanding evidence of effectiveness before the provision of additional funding.

It is important to put budget support for Jeffco's choice programs, option schools, charter schools, and (if they are approved), innovation schools into the broader context of our critical need to improve academic achievement, and to graduate more students who are "college and career ready" and prepared to succeed in our intensely competitive global economy. For too many of our children and their families, Jeffco schools are not meeting this fundamental promise. The ACT is a national test, taken by all Colorado 11<sup>th</sup> graders. Despite spending almost a billion dollars per year, in 2013, 55% of all Jeffco 11<sup>th</sup> graders were below the minimum ACT math and reading scores for "college and career readiness." For science, 61% fell below this mark.

As is the case in any complex adaptive system, there are no simple silver bullet solutions that we can use to quickly improve our performance. Instead, we have no alternative but to systematically innovate, experiment and learn our way to success. Some of these experiments will take place at the classroom level, in the form of different curriculum materials and instructional practices. Some of them will take place at the school level, including different leadership approaches and different organizational forms (e.g., choice programs, option schools, innovation schools, and charter schools). And some of these experiments will take place at the district level, with new approaches to identifying, understanding, and transferring the most promising classroom and school level practices. There is nothing new about this experiment and learning driven approach to performance improvement – it is what the private sector and the military have been doing successfully for at least the past 25 years.

Let's now turn to the mix of students found in Jeffco's charter, non-charter, and option schools. The following demographic data is based on publicly reported information for the 2013 TCAP math test:



<b>Based on TCAP/Math/2013 Grades 3-10</b>			<b>Charter %</b>	<b>Non-Charter %</b>	<b>D'Evelyn &amp; Manning Middle %</b>
F&R Eligible	ALP	IEP	N/A	N/A	N/A
F&R Eligible	ALP	Not IEP	0.8%	1.6%	N<16
F&R Eligible	Not ALP	IEP	1.7%	3.8%	N<16
F&R Eligible	Not ALP	Not IEP	14.0%	29.1%	6.6%
Not F&R	ALP	IEP	N/A	N/A	N/A
Not F&R	ALP	Not IEP	10.2%	12.5%	29.6%
Not F&R	Not ALP	IEP	6.4%	4.0%	N<16
Not F&R	Not ALP	Not IEP	66.9%	49.0%	63.8%
			100.0%	100.0%	100.0%
<b>Students in State Category</b>					
<b>Total F&amp;R</b>			16.4%	34.5%	6.6%
<b>Total ALP</b>			11.0%	14.1%	29.6%
<b>Total IEP</b>			8.1%	7.8%	N/A

This table makes some interesting points. First, the often-heard claim that charters accept fewer special education (IEP) students than neighborhood schools isn't supported by this data. This finding also needs to be seen in relation to other studies that have found that charter schools are less likely than traditional schools to put students in special education programs (see, for example, "No Labels", by Marcus Winters which analyzes a recent controversy in New York about this issue).

Second, it appears to be Jeffco's option schools, and not its charters, that take the lowest percentage of students eligible for free and reduced meals. On this issue, it is also interesting to note the rapid increase over the last five years in the number of Free and Reduced students attending Jeffco charter schools, which ranges from 108% in Grade 3 to 331% in Grade 8. If the district provided transportation for F&R students to charter schools, this rate of increase would likely be even higher.

As noted above, charter and option schools are just one part of a larger program of innovation and experimentation, the goal of which is a dramatic improvement in Jeffco's Grade 3 to 10 TCAP academic achievement results, leading in turn to a much higher percentage of our 11<sup>th</sup> graders reaching the college and career ready standard on the national ACT test. With that in mind, a critical question is how our existing charter schools have been performing versus this goal, in comparison with our neighborhood schools.

The first issue to address is the right metric to use when answering this question. Absolute achievement level, as measured by the percent of students scoring proficient or advanced is not appropriate in this case, as it is driven not just by school value added but also by family socioeconomic status. Median Growth Percentile is also not appropriate, as it is a relative, not absolute measure, and only covers improvement over a one year time period. Again following John

Hattie’s conclusions, the best measure of academic achievement improvement over time is Effect Size, which captures the capacity of an organization to learn, adapt, and continuously improve its performance over time.

The following table compares the grade by grade Effect Sizes achieved by charters and non-charters between 2009 and 2013, for two groups of students: free and reduced eligible (but not GT/ALP or IEP) and not free and reduced eligible (and not GT/ALP or IEP). Remember, an Effect Size of .30 is about equal to an additional (or, if it is negative, a lost) year of learning.

<b>Jeffco Math Effect Sizes, 2009-2013, based on Average TCAP Scale Scores</b>				
F&R/NotGT/NotIEP		NotF&R/NotGT/NotIEP		
	<i>Charter</i>	<i>Non-Charter</i>	<i>Charter</i>	<i>Non-Charter</i>
Grade 3	<b>0.48</b>	(0.07)	(0.04)	0.02
Grade 4	0.02	0.17	0.24	0.07
Grade 5	(0.05)	0.13	0.06	0.13
Grade 6	0.20	(0.02)	0.17	0.01
Grade 7*	0.25	0.08	<b>0.30</b>	0.11
Grade 8	<b>0.54</b>	0.03	0.10	0.07
<i>* 2011 to 2013, due to insufficient public data in earlier years</i>				
<b>Jeffco Writing Effect Sizes, 2009-2013, based on Average TCAP Scale Scores</b>				
F&R/NotGT/NotIEP		NotF&R/NotGT/NotIEP		
	<i>Charter</i>	<i>Non-Charter</i>	<i>Charter</i>	<i>Non-Charter</i>
Grade 3	0.05	(0.12)	<b>(0.31)</b>	(0.18)
Grade 4	<b>0.30</b>	0.07	0.21	(0.07)
Grade 5	0.05	0.02	0.05	(0.03)
Grade 6	0.06	0.00	(0.04)	(0.10)
Grade 7*	0.25	0.10	0.05	0.12
Grade 8	<b>0.70</b>	0.15	0.04	0.14
<i>* 2011 to 2013, due to insufficient public data in earlier years</i>				

To be sure, within both the charter and non-charter school groups, there are individual schools that have Effect Sizes significantly above and below these averages (which implies both a wide range of opportunities for learning and transfer of effective practices, as well as the need to either turnaround or close down ineffective charter and neighborhood schools). However, at this aggregate level, the Effect Size data indicates that Jeffco’s charter schools have often done a significantly better job of improving achievement scores than the district’s non-charter schools.

Given that a critical policy goal when approving charter schools is to find better ways of improving student achievement, Jeffco’s experiment with charters has

thus far, in aggregate, been successful. Unfortunately, the benefits of this success have been limited by Jeffco's broader failure to understand and scale up the most promising achievement improvement approaches (at charter, option, and neighborhood schools) across the whole district.

Finally, there is a link between the two issues discussed in this memo. Expanded full-day kindergarten programs, which are intended to improve achievement results for Jeffco's free and reduced students, appear to have had little impact, and not achieved their goal. In contrast, charter schools have, in aggregate, improved their achievement results for free and reduced eligible students faster than Jeffco's neighborhood schools.

As noted in a recent report by the Philanthropy Roundtable (*"From Promising to Proven"*, by Karl Zinsmeister), "nationally, two-thirds of existing charter students are minorities; approximately the same proportion are low-income." STRIVE and KIPP are two charter school organizations that target free and reduced students, and currently serve a substantial number of students in Denver. In Jeffco, only 36% of Grade 8 F&R students were proficient or advanced on the 2013 math TCAP, compared to 61% at STRIVE and KIPP charter schools in Denver. In the past, critics have claimed that these results were due to STRIVE and KIPP attracting students whose parents were more involved in their education. However, a recent independent analysis by Mathematica Policy Research (*"KIPP Middle Schools: Impacts on Achievement and Other Outcomes"*, 2013) refuted this claim and concluded that, "The average impact of KIPP on student achievement is positive, statistically significant, and educationally substantial."

Three of my children attend a high school with over 50% free and reduced students where I chair the Accountability Committee. We know from experience and from research by both CDE and the ACT organization that, despite their Herculean efforts, Jeffco's high school teachers cannot make up all the achievement ground that students have lost in elementary and middle school. If the Board and the SPAC/DAC are serious about improving Jeffco's dismal track record for free and reduced students, then we should be making every possible effort to attract charter schools like STRIVE and KIPP to our district, while also doing everything we can to improve our understanding of the reasons for their success, and how to reliably implement and scale their innovations and methods in Jeffco's neighborhood schools.

It is clear that Jeffco faces very serious academic achievement shortfalls that have largely resisted improvement for the past eight years, despite recognition of their root causes by staff, by the SPAC/DAC, and by previous Boards. In light of this track record, it is pure folly, and perhaps a violation the board's fiduciary duty of care, to insist, as some seem to do, that a billion dollar budget be allocated on the basis of anecdote, ideology, and emotion. As we emphasized in the Minority Budget Report, the Board, the SPAC/DAC, and District staff must substantially increase their systematic use of pragmatic, evidence-based policy analysis in

Jeffco's budgeting and other decision and implementation processes. The divisive controversies over expansion of full-day kindergarten and charter schools are just two examples of issues where our collective discussion would greatly benefit from this approach. To continue doing what we have always done, while hoping that this time it will produce a different result is, as they say, the definition of insanity.