

**Jefferson County Treasurers Office
Financial Analysis Research Paper**

**Colorado's Twenty Largest
School Districts
Funding and Performance Analysis,
Including Jeffco R-1
(Fiscal Year 2001-2002)**

Prepared by the Office of Jefferson County Treasurer

Mark Paschall, Treasurer

October 1, 2004

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EXECUTIVE SUMMARY

At State and County levels, the most substantial collection and disbursement of Colorado taxes is for K through 12 public education. In 2002, State K-12 funding accounted for 40% of the state's General Fund, totaling \$2.27 billion and supplying about 60% of Colorado public education. The other 40% is funded by county property and automobile specific ownership taxes. Since substantial taxpayer disbursements are earmarked for public schools, it is necessary to explore the beneficiaries of and accountability for that funding.

Formed May 31, 1950, by merging 11,117 students and 39 school districts, Jefferson County District R-1 is the largest school district in Colorado. The budget of R-1 is approaching \$1 billion a year to provide educational services to about 85,000 students. In 2002, R-1 required \$271 million, or 53%, of Jeffco's \$515 million taxes collected. However, every three or four years a mill levy override (tax increase) and/or bond election is needed to shore up dwindling district finances and failing facilities. Given this information, it was determined that a comparison of statewide public school funding was needed to accurately study the trends of Jefferson County R-1.

A major factor of interest is a measure of Academic **Performance** that the Colorado Department of Education (CDE) calls "Accountability." From Colorado Student Assessment Program (CSAP) results, CDE rates student scores as Advanced, Proficient, Partially Proficient, and Unsatisfactory. From student scores, CDE rates each individual school as Excellent, High, Average, Low, or Unsatisfactory, and posts the results on its website (cde.state.co.us). In 2002, all 159 high schools, comprising 165,289 full time equivalent (FTE) students (of 527,064) in the 20 largest districts in Colorado (707,202 total students) were evaluated according to pupil-weighted performance.

These fiscal 2001-2002 Performance Scores for the twenty largest districts are reported in the table. Jeffco R-1 is number eight at 80.64. El Paso Academy 20 is number one at 96.55. Westminster 50, at 55.00, is ranked twentieth.

Education **Efficiency** (revenue per pupil) placed Jeffco R-1 sixteenth at \$7,288. Pueblo R 70 is first at \$6,087, and Denver County, twentieth at \$8,149.

This analysis introduces a new and powerful metric in evaluating our public K-12 education system called **PRODUCTIVITY**. Productivity is doing more and better for less, and is calculated as Performance (P) divided by costs (C) x 1000. In productivity values, Jeffco ranked twelfth at 11.06. El Paso Academy 20 was first at 14.06, and Denver County was twentieth at 7.32.

By this study, projections show that deconsolidating the largest districts to smaller ones of about 17,000 students could reduce costs by \$655 per student. In Jefferson County, this plan would save almost \$55 million. Similar savings would be possible in the Denver and Cherry Creek districts.

Among the 50 states in 2001, Colorado ranks number 14 in Efficiency, 22 in Performance, and 14 in Productivity. A new "productivity metric" for public schools holds great promise in higher performance at lower education cost.

Productivity, as presented in this analysis, provides the taxpayer with a single measurement that incorporates the **TOTALITY** of Revenues and Expenditures with the essence of their performance expectations; e.g., "What am I getting for the money I am spending?" Or, using a common idiom, "getting the biggest bang for the buck."

This report offers insights into Colorado public school district efficiencies, performances, and productivities.

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October 1, 2004

Executive Summary: **ACADEMIC PERFORMANCE** Ranking, Score, Grade for Colorado Twenty Largest Public School Districts, Fiscal 2002, Including also By-District Productivity Values, Revenue \$/Student, Student Size and Rank

Rank	ACADEMIC PERFORMANCE	Score	Grade	Productivity Value	Revenue \$/Std	Size # Stdts	Rank # Stdts
1	Academy 20	96.55	A	14.06	\$ 6,867	17,350	12
2	Littleton 6	95.66	A	13.43	\$ 7,124	15,922	15
3	Poudre R-1	92.78	A	12.49	\$ 7,431	23,358	9
4	Douglas Co RE 1	90.83	A	13.21	\$ 6,874	35,808	4
5	Boulder Valley RE 2	88.35	B	12.08	\$ 7,316	26,718	8
6	Cherry Creek 5	83.69	B	11.02	\$ 7,597	42,141	3
7	Thompson R-2J	80.89	B	11.86	\$ 6,822	14,335	16
8	Jefferson Co R-1	80.64	B	11.06	\$ 7,288	84,765	1
9	Colorado Springs 11	78.92	C	11.19	\$ 7,053	31,152	5
10	St Vrain Valley RE 1J	77.14	C	11.88	\$ 6,495	19,213	10
11	Mesa Co Valley 51	76.95	C	11.85	\$ 6,495	19,032	11
12	Pueblo Co R 70	72.39	C	11.89	\$ 6,087	7,221	20
13	Widefield 3	69.48	D	11.24	\$ 6,180	8,311	19
14	NorthGlenn-Thornton 12	67.72	D	9.70	\$ 6,984	29,727	7
15	Weld Greeley 6	65.83	D	10.07	\$ 6,539	16,007	14
16	Harrison 2	65.01	D	9.18	\$ 7,081	10,504	18
18	Pueblo City 60	62.56	D	9.07	\$ 6,897	16,863	13
17	Adams-Arapahoe 28J	62.28	D	8.85	\$ 7,039	29,803	6
19	Denver County 1	59.62		7.32	\$ 8,149	68,066	2
20	Westminster 50	55.00		8.30	\$ 6,629	10,771	17
Average		76.11		10.99	\$ 6,947	26.353	

Colorado's Twenty Largest School Districts: Funding and Performance Analysis, Including Jeffco R-1



Prepared by the Office of Jefferson County Treasurer

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Public Schools: Single Largest Tax Expenditure in Colorado, Jefferson County

Taxpayer funding of government services, particularly schools, always seems insufficient. The fact is, K-12 education appropriations for fiscal 1993 through 2002 by the legislature were always significantly more than the year before. K-12 funding increased 86% from \$1.217 billion to \$2.269 billion, according to the 2002 Colorado Comprehensive Annual Financial Report, CAFR, (p.178). Annual dollars per student increased 55% (inflation was up 35.9%), from \$1,947 to \$3,018, and enrolled students increased from 625,062 to 751,862 (up 20.2%).

Compound annual growth rate per year (CAGR) of dollars per student was 4.99% while the CAGR for inflation for the same period was 3.47%. The 1.52% difference for the 9-year period was easily over one percent more than the rate of inflation. Amendment 23 guaranteed that annual school funding in dollars-per-student to be "inflation plus one percent for ten years and inflation thereafter," because K-12 education was reported to be underfunded during the 1990s. Though the legislature provided more than their projected funding, local tax and other sources of revenue were not satisfying expectations.

Jefferson County R-1 Schools: A Case Study of Financial Struggle

Jefferson County R-1 is the largest school district in Colorado. It was formed May 31, 1950, by merging 11,117 students and 39 school districts into one conglomerate. Today it serves about 85,000 students with an annual budget approaching one billion dollars, making it one of the largest governmental institutions in the State of Colorado.

Of the \$515 million taxes collected from Jefferson County property taxpayers, Jeffco R-1 Public Schools received \$271,153,669. At almost 53%, this represents the largest public expenditure in Jefferson County, according to the 2002 "Abstract of Assessment" published annually by the Jefferson County Assessor. As published by the Colorado Department of Education, this figure amounts to 32% of the total \$846,252,707 reported being received and spent by R-1 in 2002. In the past four years, over a billion dollars of Jeffco property taxes collected were disbursed to R-1 schools.

Even with reliable and ever-increasing revenues, every three or four years school finances "hit the wall," necessitating another run at a mill levy increase and/or bonded debt election. The reasons are conceptually straightforward and easily understood. Incoming revenues increase at a rate of inflation plus student growth, say three or four percent. If either of these levels or drops off, funding increases stall while expenses continue to grow. Meanwhile, with "automatic pilot" employee policies that specify raises of say, two percent, and as high as 16% and more, and with district personnel costs over 86% of the total, it is impossible for routine

continuing funding increases ever to be sufficient. Not surprisingly, this situation of financial circumstances is a formula for bankruptcy.

According to the Colorado Department of Education (CDE), the average Jeffco teacher salary for 2002 was \$47,288 up 4.85% from \$45,098 in 2001. It is important to understand that salary is only one part of total compensation, and 100% of government employees' compensation package is paid for by the taxpayer. The compensation package also includes benefits, retirement, and office/job-related expenses. Therefore, a district employee's benefit package may add up to one-third or more of the employee's base salary. Also, breaking the salary into three parts—step, level, and inflation—can be misleading. It makes it possible to put a self-serving spin on the truth such as, "We got only a two percent raise this year," which would likely be the part related to inflation. "Step" has to do with a salary increment higher for an additional year of service and experience. "Level" has to do with added increments obtained of teaching education—additional hours, masters degree, etc.—but unrelated to individual teacher performance.

Early 1990s, R-1 had difficulty achieving voter approval of mill levy increases. In 1999, in good faith, voters passed a \$20 million a year mill levy override property tax increase. In addition, the district created the "Performance Promise," which mandated increased funding up \$24 million if the district raised its Colorado Student Assessment Program (CSAP) scores a specified amount. Based on that contract, R-1 received a portion, over \$10 million, of the additional funding the second year, relatively little the third year. Concurrently, Voter approval of public schools' Constitutional Amendment 23 provided another five million dollars per year for R-1. Considering various funding increases and mechanisms, R-1's fiscal house remains shaky. R-1 has scheduled a vote on a \$38.5 million mill levy (property tax) increase and \$323.8 million bond election for November 2, 2004.

A Larger Study: Colorado's Twenty Largest School Districts

Comparisons in this analysis are made by using accurate, audited data and applying that data to the state's largest public school districts. Recently, CSAP tests have provided standardized education results and information for research analysis. The Colorado Department of Education (CDE) dissects the data from the CSAPs and analyzes the results for a greater examination into education processes and finances. Specifically, the data posted on CDE's website prompted a larger look at Colorado school districts, their finances, accountability, performance, and productivity possibilities.

The scope of this study was narrowed to high schools in the 20 largest Colorado public school districts. There are 159 schools with 165,299 of the 527,064 students enrolled in the 20-districts analyzed. Interestingly, of Colorado's 178 school districts, the 20 largest had 74.5% (527,064) of Colorado's 707,202 full time equivalent students, while the other 158 districts had the other 25.5% (180,138) of the students.

Numbers of students are reported in different ways, such as number enrolled and number in attendance. The number used in this paper is the CDE classification of Full Time Equivalent (FTEs). This minimizes some of the variance in counting, such as part-time students and percent attendance, and is especially important in that state funding calculations are derived from the FTE.

FTE numbers are obtained from the CDE website in a table titled "Public School Finance/Fiscal Year 2001-2002 Revenues and Expenditures" (the most recent comprehensive data available). The first column of

COMPARISON OF ALL PROGRAM EXPENDITURES (ALL FUNDS)		
FY 2001-2002	TABLE IVC (excerpt)	
	Student Count (FTE)	Total Instruction
JEFFERSON COUNTY R-1		
Amount		364,466,568
Per Pupil	84,764.9	4,300
All Funds	(%)	43.1
BOULDER VALLEY RE 2		
Amount		127,303,208
Per Pupil	26,718.0	4,765
All Funds	(%)	48.4
DENVER COUNTY 1		
Amount		312,273,484
Per Pupil	68,065.5	4,588
All Funds	(%)	43.7

the table shows student FTE numbers which are used in this report to rank district size from largest to smallest. Shown is an illustrative *excerpt* of TABLE IVC from the web site (more about this table later).

TABLE 1 ranks Colorado’s 20 largest school districts by numbers of students from CDE’s TABLE IVC. The largest district in the state for fiscal year 2001-2002 was Jefferson County, with 84,765 students. Average district size was 26,353. Two other large districts are Denver County (68,066) and Cherry Creek (42,141). The smallest district of the twenty was Pueblo County R 70 with 7,221 students.

Colorado Department of Education Web Excellence

The CDE makes comprehensive, uniform, credible, and audited education data available to the public. The complete data for school year 2001-2002 contain a multitude of statistics and information for Colorado public schools, including detailed, school-by-school performance and preceding year district financial information. The School Accountability Reports (SARs) can be accessed via the internet at www.cde.state.co.us¹.

**This CDE “School Accountability Report” serves
 as the primary data source for this analysis.**

<u>Rank</u>		<u># Students</u>
1	Jefferson Co R-1	84,765
2	Denver County 1	68,066
3	Cherry Creek 5	42,141
4	Douglas Co RE1	35,808
5	Colorado Springs 11	31,152
6	Adams Arapahoe 28J	29,803
7	Northglenn-Thornton 12	29,727
8	Boulder Valley RE 2	26,718
9	Poudre R-1	23,358
10	St. Vrain Valley Re-1J	19,213
11	Mesa Co Valley 51	19,032
12	El Paso Academy 20	17,350
13	Pueblo City 60	16,863
14	Weld Greeley 6	16,007
15	Littleton 6	15,922
16	Thompson R-2J	14,335
17	Westminster 50	10,771
18	El Paso Harrison 2	10,504
19	El Paso Widefield 3	8,311
20	Pueblo Co R 70	<u>7,221</u>
	Average	26,353

Exploring the School Accountability Report (SAR)

The “School Accountability Report 2002-2003” has six panels: School Performance Summary (main panel), Taxpayers’ Report (with fiscal 2001-2002 financial data), Safety and School Environment, Student Performance, School History, and About Our Staff. This analysis deals mainly with the first two panels.

The Taxpayers’ Report in three parts begins with “Sources of School District Revenue 2002.” Equivalent to all specific schools in the district, it includes local and state tax contributions, federal and state grants, and other income leading to Total School District Revenue and Revenue Per Pupil (a key number used in this report). Dividing the latter by the former yields the total number of students, or FTEs. “District Use of Funds 2002” apportions moneys received to these categories of spending: Teachers, Administration, Building & Facilities Maintenance, Operational Expenses, Textbooks/Materials, and Total. Finally, “District Debt and Capital Construction & Equipment” is detailed to include total outstanding bonded debt and its average annual percentage interest rate.

Analysis Approach: High Schools of Twenty Largest Public School Districts

The most recent (and only at this writing) Accountability data presented online are for school year 2002-2003, with financial data for fiscal 2001-2002. “All” Schools is the default, with sub-choices of “Elementary,” “Middle,” or “High.” High Schools were selected for this study for two reasons: 1) to limit the amount of units to analyze, and 2) because this is the ending of K-12 education for these students. All that remains educationally for the student is at or near its end. Because of standards testing of students, however, it is possible, even likely, that Accountabilities will improve in ensuing years.

¹ Colorado Department of Education home page: cde.state.co.us, click left on “Accountability,” fourth line down, to “List Search,” to selected school district, then “Go.” That brings a page listing all the schools in the district, or limiting your search to “All,” “Elementary,” “Middle,” or “High” schools. Click the school you are interested in to view overall academic performance and improvement, one word each, and related information. Click “See Detailed Report” to get to the School Accountability Report and view a wealth of information—district finances, specific school student performance, staffing, history, attendance, and much more.

Academic Efficiency: Getting the Job Done at Lowest Cost

The education establishment commonly and popularly links funding to performance, which studies have proven to be flawed. In some exaggerated cases, upwardly-biased funding needs are expressed not in dollars per student but imputed dollar values that take into account other demographic factors such as geographical per capita personal income, property values, and other measures of wealth. The presupposition that more dollars equals better education obfuscates the truth and introduces a form of social and cultural discrimination that equates intellectual capacity with relative wealth and status.

In 1997, Colorado was nationally ranked 34th in education at \$5,550 per student with a national average of \$6,360²; two years later in 1999, Colorado was 38th at \$5,697 vs national average of \$6,734, according to the *Statistical Abstract of the U.S.* This information does not corroborate the statements and propaganda that “Colorado is 49th in the nation” in school funding (*Education Week* magazine), nor do any of the aforementioned numbers give the taxpaying public a clear or comprehensive view of how much money is directed towards public K-12 education.

Academic efficiency refers to educating students at the lowest cost in terms of dollars per student, at least for this important first step. Of course, the job that gets done and how it gets done is even more important, but that comes next. TABLE 2 ranks the Top 20 school districts from most efficient (least cost) to least efficient (highest cost) per student. The lowest-to-highest is a wide spread of \$2,062, especially considering the School Finance Act goal to attempt to equalize education in Colorado. With an overall average of \$6,947 per student, the top efficiency-three were Pueblo R 70, Widefield 3, and St. Vrain Valley Re-1J. The low efficiency-three were Denver 1, Cherry Creek 5, and Poudre R-1. (The three largest school districts are in boldface.)

TABLE 2
Rank by Efficiency

Rank		\$/Student
1	Pueblo Co R 70	\$ 6,087
2	Widefield 3	6,180
3	St. Vrain Valley Re-1J	6,495
4	Mesa Co Valley 51	6,495
5	Weld Co Greeley 6	6,539
6	Westminster 50	6,629
7	Thompson R-2J	6,822
8	Academy 20	6,867
9	Douglas Co RE1	6,874
10	Pueblo City 60	6,897
11	Northglenn-Thornton 12	6,984
12	Adams Arapahoe 28J	7,039
13	Colorado Springs 11	7,053
14	Harrison 2	7,081
15	Littleton 6	7,124
16	Jefferson Co R-1	7,288
17	Boulder Valley RE 2	7,316
18	Poudre R-1	7,431
19	Cherry Creek 5	7,597
20	Denver County 1	<u>8,149</u>
	Average	\$ 6,947

The Confusion of Full Monetary Disclosure in School Funding

School funding is expressed in dollars per student, and in tax revenues received and spent to deliver schooling to students. TABLE 2 is a good example. These are the published numbers of dollars per students taught and are somewhat comparable to information published elsewhere. But they are not the whole story. These numbers account for classroom and classroom-related administrative expenses and are usually presented as dollars from the General Fund. This area encompasses a substantial part of the whole district budget and expenditures but is rarely communicated to the taxpayer. A local news story illustrates.

“School district approves \$880 million budget” was a local story³ about Jeffco R-1’s 2003-2004 total budget. Part of that budget is the “General Fund” portion of \$575,665,100—about \$6,899 per student for their reported funded count of 83,442 students. The approved budget was \$881,079,000, which makes the overall cost per year to educate a Jeffco student appear to be \$10,559 (\$881,079,000 divided by 83,442).

A complete three-school excerpt of CDE’s TABLE IVC follows for fiscal year 2001-2002. The table’s title emphasizes the important inclusion of “all program expenditures, all funds.” This example shows the complete taxpayer-paid costs of education reported for the public school districts of Jeffco R-1, Boulder Valley RE-2 and

² 1998 *Statistical Abstract of the United States*, page 178.

³ *Arvada Sentinel*, page 13, July 3, 2003.

**COMPARISON OF ALL PROGRAM EXPENDITURES (ALL FUNDS)
FY 2001-2002**

TABLE IVC		(EXCERPT)		(EXCERPT)	
Student Count (FTE)	Total Instruction	Total Support Services	Community Services	Other Expenditures	Total Expenditures
JEFFERSON COUNTY R-1					
Amount	364,466,586	332,201,108	9,700,993	139,884,019	846,252,707
Per Pupil	84,764.9	4,300	3,919	114	1,650
All Funds	(%)	43.1	39.3	1.1	16.5
BOULDER VALLEY RE 2					
Amount	127,303,208	70,654,703	3,897,745	61,014,094	262,869,750
Per Pupil	26,718.0	4,765	2,644	146	2,284
All Funds	(%)	48.4	26.9	1.5	23.2
DENVER COUNTY 1					
Amount	312,273,484	236,628,645	4,763,604	160,661,292	714,327,025
Per Pupil	68,065.5	4,588	3,476	70	2,360
All Funds	(%)	43.7	33.1	0.7	22.5

Denver County 1, respectively. Compared with previously reported per-student costs of \$7,288, \$7,316, and \$8,149, the differences are above and beyond teaching and administrative expenses. For instance, “Boulder Valley School District 2001-2002’s Revised Adopted Budget” lists the following funds: Bond Redemption, Building, Capital Reserve, Energy Conservation, Food Service, Insurance Reserve, Governmental Designated-Purpose Grant, Tuition-based Preschool, Pupil Activity, Trust and Agency, and Colorado Preschool Funds, per the 2002 SAR.

CDE TABLE IVC continues for all 178 Colorado public school districts and more, citing 707,202.3 total (FTE) students, \$6,637,436,977 in total schools’ expenditures at an average state cost of \$9,385 per student. This is the total cost of public education to Colorado taxpayers which illustrates significantly higher numbers than those routinely reported or generally understood.

TABLE 2A’s two columns provide both classroom and total 2001-2002 per-student educational expenditures for Colorado’s 20 largest districts.

The taxpaying public needs to be assured of receiving the highest standard of education for the least cost. This concept of “more and better for less” is referred to as “productivity.” First, taxpayers would view the range of demonstrated efficiencies shown in Table 2 (or 2A), then consider relative district accountabilities and performances. Finally, using district efficiency and performance, the public would be better able to assess both in terms of a single descriptive number—educational productivity.

TABLE 2A
Rank by Efficiency (and Taxpayer Dollars)

Rank		\$/Student	Total \$/Student
1	Pueblo Co R 70	\$ 6,087	\$ 7,257
2	El Paso Widefield 3	6,180	6,674
3	St. Vrain Valley RE 1J	6,495	8,707
4	Mesa Co Valley 51	6,495	7,283
5	Weld Greeley 6	6,539	8,925
6	Westminster 50	6,629	7,351
7	Thompson R-2J	6,822	7,757
8	El Paso Academy 20	6,867	7,936
9	Douglas Co RE 1	6,874	9,803
10	Pueblo 60	6,897	7,187
11	Northglenn-Thornton 12	6,984	11,360
12	Adams-Arapahoe 28J	7,039	7,759
13	Colorado Springs 11	7,053	8,551
14	El Paso Harrison 2	7,081	8,540
15	Littleton 6	7,124	7,722
16	Jefferson Co R-1	7,288	9,984
17	Boulder Valley RE 2	7,316	9,839
18	Poudre R-01	7,431	9,731
19	Cherry Creek 5	7,597	10,730
20	Denver County 1	<u>8,149</u>	<u>10,495</u>
	Average	\$ 6,947	\$ 8,680

Turning CDE-Determined Accountabilities into District Performance Scores

The Colorado Department of Education has implemented a formalized student learning evaluation program called Colorado Student Assessment Program (CSAP). Annual tests are evaluated, standardized, and reported with aggregated scores developing the basis for defining school performance. Under “Student Performance” on the School Accountability Report, Colorado Department of Education methodology is specifically stated:

Each school in the State received a rating of “Excellent”, “High”, “Average”, “Low”, or “Unsatisfactory” for student academic performance in school year 2001-2002 using the CSAP results printed above. Every student in this school who took these tests was included in the calculation used to assign a rating, except for students who do not speak English, whose special needs require that they spend less than 45% of their time in a regular classroom, or who enrolled in the public school after February 1 of this school year. Your school’s rating was determined by the percentage of students performing in each of the Advanced, Proficient, Partially Proficient, and Unsatisfactory levels. These percentages were weighted and combined across grade levels and academic areas. These weights reward performance at the Advanced and Proficient levels over performance at the Partially Proficient and Unsatisfactory levels. The ratings were assigned after calculating the weighted total for each academic area and grade level for each school and comparing this school to all other high schools for the 2001-2002 school Year.

Accountability is one method of measuring district academic performance. Student test scores ranged from Advanced to Unsatisfactory, and the CDE rated schools from Excellent to Unsatisfactory in their published “Overall Academic Performance” listed for every school in each of the 20 districts.

Converting “Overall Academic Performance” to a Number and Assigned Grade

The five CDE school ratings reported in the School Accountability Reports were converted to a Performance Score for measurement and comparison. The schools were assigned the following Overall Academic Performance (OAP) values: Excellent, to a value of 100; High-85; Average-70; Low-55; and Unsatisfactory-40. The scores then reflected more familiar assigned letter gradations: A (90-100), B (80-90), C (70-80), and D (60-70). Because each district has more than one high school, the best representation was to weigh and combine each school’s Performance Score with the number of students achieving the score. For example, for a district with two high schools, one “Excellent” with 400 students, one “High” with 600 students, the combined district score would be 40,000 (400 x 100) and 51,000 (600 x 85), or 91,000 divided by 1,000 students, resulting in a Performance Score of 91.00, an “A” grade. Here is an actual example of two excellent and one high Overall Academic Performance ratings, incidentally, the second highest score, for Littleton 6 district:

Littleton 6	<u>OAP/CDE</u>	<u>Enrollment</u>	<u>Score</u>	<u>Weight</u>
1 Arapahoe H.S.	excellent	2097	100	209,700
2 Heritage H.S.	excellent	1860	100	186,000
3 Littleton H.S.	high	<u>1611</u>	85	<u>136,935</u>
Totals		5568		532,635
Performance Score:		95.66	<===	

TABLE 3
Rank by Performance

<u>Rank</u>		<u>Score</u>
1	El Paso Academy 20	96.55
2	Littleton 6	95.66
3	Poudre R-1	92.78
4	Douglas Co RE1	90.89
5	Boulder Valley RE 2	88.35
6	Cherry Creek 5	83.69
7	Thompson R-2J	80.89
8	Jefferson Co R-1	80.64
9	Colorado Springs 11	78.92
10	St Vrain Valley Re 1J	77.14
11	Mesa Co Valley 51	76.95
12	Pueblo Co R 70	72.39
13	El Paso Widefield 3	69.48
14	Northglenn-Thornton 12	67.72
15	Weld Greeley 6	65.83
16	El Paso Harrison 2	65.01
17	Pueblo City 60	62.70
18	Adams-Arapahoe 28J	62.28
19	Denver Co 1	59.62
20	Westminster 50	<u>55.00</u>
	Average	76.11

This same procedure was conducted for each of the 159 high schools (165,289 students) of Colorado's 20 largest school districts. TABLE 3 shows the Top 20 school districts' Performance Scores, highest ranked number one, derived from CDE's individual School Accountability Report classifications.

El Paso Academy 20 was first in performance at 96.55, followed by Arapahoe Littleton 6 at 95.66. Westminster 50 was at the bottom at 55.00, with Denver County 1 at 59.62. Jefferson County R-1 ranked 8 at 80.64. The spread of over-40 points, not quite 2-to-1, shows promise for investigation and analysis for those near or below the 76.11 average.

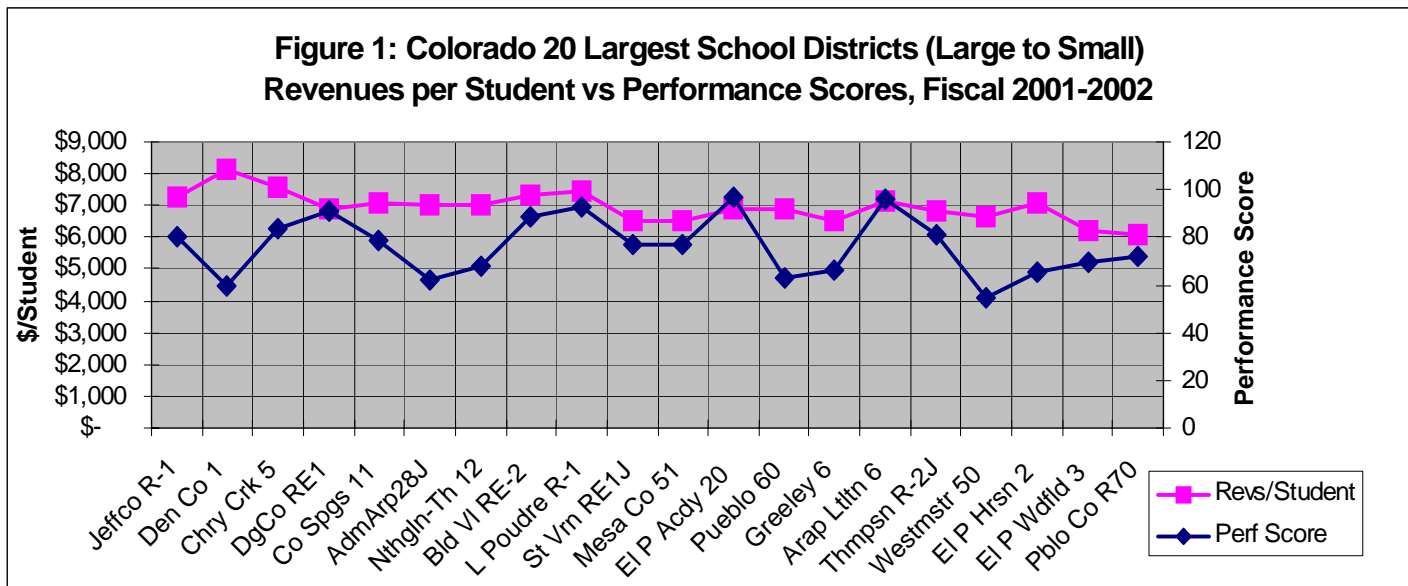
Academic Productivity: Higher Performance at Lower Cost

Two sides to the education coin are academic performance and cost to deliver. "Education at any price" is not an economically defensible or intellectually honest concept. If we divide "Performance" by cost (dollars per student) and multiply by 1,000, we get an important value for measuring and comparing district productivities. TABLE 4 shows how top performers at lower costs excel in academic delivery, and vice-versa. The productivity values of Colorado's Top-20 school districts range from a high of 14.06 for El Paso Academy 20 to a low of 7.32 for Denver County, a spread of over two-to-one, with an average productivity value of 10.99. Jeffco is ranked 12th at 11.06, just above the average.

Rank	District	Value
1	El Paso Academy 20	14.06
2	Littleton 6	13.43
3	Douglas Co RE1	13.22
4	Poudre R-1	12.49
5	Boulder Valley RE 2	12.08
6	Pueblo Co R 70	11.89
7	St Vrain Valley Re-1J	11.88
8	Thompson R-2J	11.86
9	Mesa Co Valley 51	11.85
10	El Paso Widefield 3	11.24
11	Colorado Springs 11	11.19
12	Jefferson Co R-1	11.06
13	Cherry Creek 5	11.02
14	Weld Greeley 6	10.07
15	Northglenn-Thornton 12	9.70
16	El Paso Harrison 2	9.18
17	Pueblo City 60	9.09
18	Adams-Arapahoe 28J	8.85
19	Westminster 50	8.30
20	Denver County 1	<u>7.32</u>
	Average	10.99

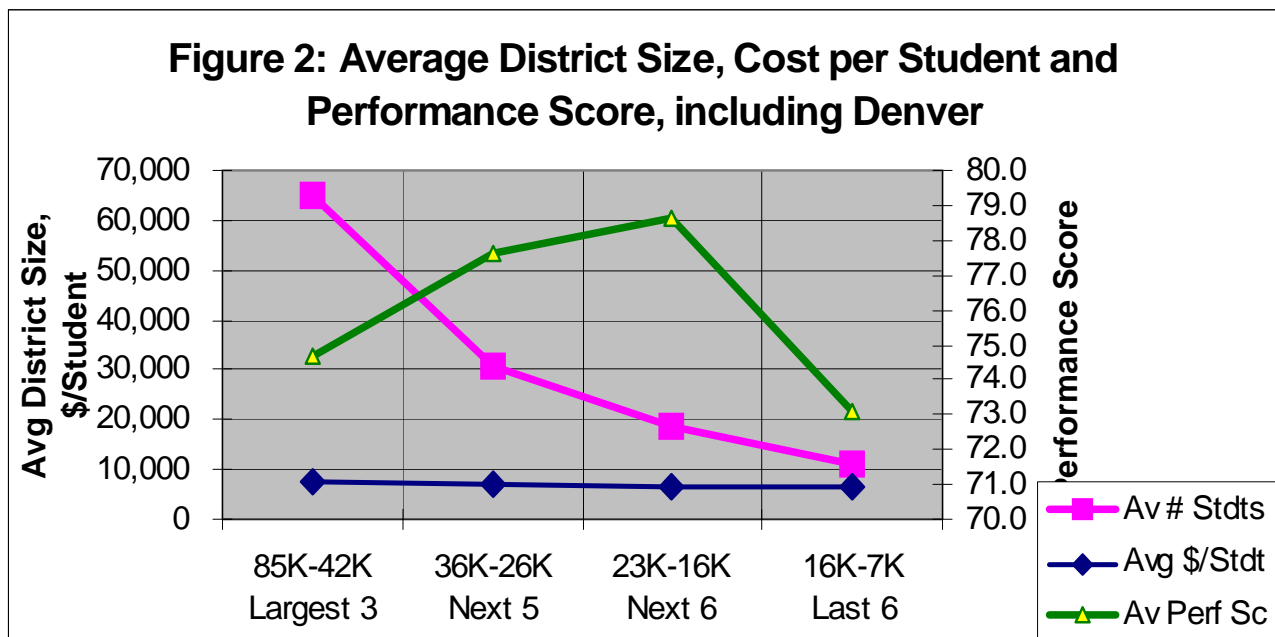
Analysis of District Size and Cost vs. Performance Scores

With the data available, several rigorous analyses were presented to explore various facets of education delivery system performance. Probably the first and most important relationship is revenues per student vs. performance scores, from largest to smallest schools, left to right, as in Figure 1. There are obvious large differences in district sizes, especially in Colorado's larger population centers. The Big Three, Jefferson County R-1 (84,765), Denver (68,066), and Cherry Creek (42,141), are on the high end. The bottom three in the study are El Paso Harrison 2 (10,504), El Paso Widefield 3 (8,311), and Pueblo R 70 (7,221).



The subtle patterns of Figure 1 appear to show a slight increasing trend of Performance Scores and a slight decreasing trend in revenues per student with decreasing district size. Perhaps the actual values can better demonstrate the conditions and trends. The 20 districts offered four groups of data on the *decreasing district size* in students: the quite large district (85,000 down to 42,000), medium large (36,000 down to 26,000), large (23,000 down to 16,000) and medium (16,000 down to 6,000). These groupings and trends pose interesting observations and corresponding possibilities.

Figure 2 shows increasing district Performance Scores by decreasing district size (“K” means thousand; 85K = 85,000 students), and a significant and continuous drop in average revenues per student. The last two words, “including Denver,” are important because the Denver school district has the highest cost per student combined with a comparatively low Performance Score, thus it may be a less representative or correlative data point. Denver is statistically an outlier: It does not fall within one or two standard deviations from the mean in a normally distributed curve.



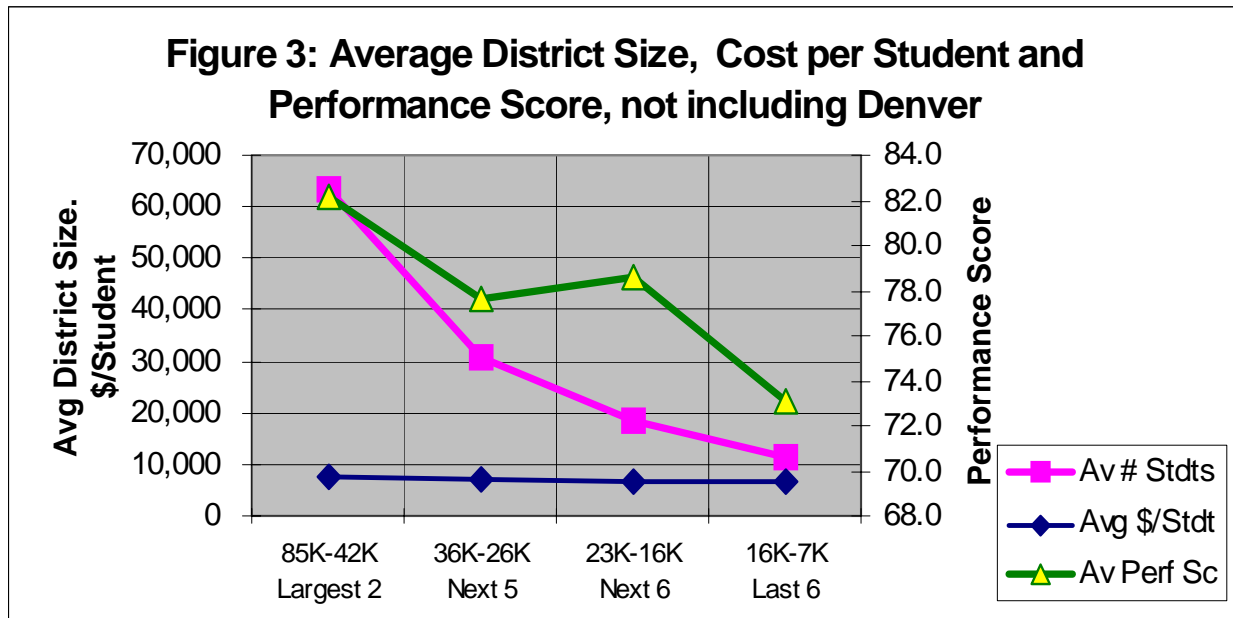
Actual data for Figure 2 provide for more specific appraisal and investigation (includes Denver):

District Grouping	<u>Largest 3</u>	<u>Next 5</u>	<u>Next 6</u>	<u>Last 6</u>
School District Size Range	(85K-42K)	(36K-26K)	(23K-16K)	(16K-6K)
Average # of Students	64,990	30,642	18,637	11,177
Average Revenue \$/Student	\$7,678	\$7,053	\$6,787	\$6,654
Average Performance Score	74.9	77.6	78.6	73.1
Dollars per Student Differences		\$625	\$266	\$134
Potential Cumulative Savings	(Includes Denver)	\$625	\$891	\$1,024

Actual comparable and audited school district size, cost, and performance data indicate that higher scores and lower costs may result from optimizing district size to 23K-16K students. From the district data of the largest three and the subsequent five, Performance Scores increased over two points and cost dropped a significant \$625 per-student. The “Next 6” schools display another Performance Score increase of one point with 11,000 fewer students and a further cost reduction of \$266 per student, to \$891 per-student. Reducing district size another 7,000 students indicate another \$134 per student potential saving to \$1,024, but with a sizable performance drop of over five points.

According to the actual data, Jeffco could realize potential savings of over \$75 million (84,769 x \$891) if it deconsolidated into four or five smaller districts. Similar savings may be possible with Denver or Cherry Creek.

Denver County’s Academic Performance was significantly lower with much higher cost per student. This result may cause Denver to be a statistical outlier in this analysis. Since Denver’s performance findings illustrated higher cost, but lower performance, it may be more meaningful to omit it for another analysis as in Figure 3, which excludes Denver data. Specific chart data follow the figure.



District Grouping	<u>Largest 2</u>	<u>Next 5</u>	<u>Next 6</u>	<u>Last 6</u>
School District Size Range	(85K-42K)	(36K-26K)	(23K-16K)	(16K-7K)
Average # of Students	63,453	30,642	18,637	11,177
Average Revenue \$/Student	\$7,443	\$7,053	\$6,787	\$6,654
Average Performance Score	82.2	77.6	78.6	73.1
Dollars per Student Differences		\$389	\$266	\$ 134
Potential Cumulative Savings (<u>Excludes Denver</u>)		\$389	\$655	\$789

With Denver data omitted, “Largest 2” shows lower average revenue per student and a higher initial average Performance Score, 82.1 (versus Fig 2’s 74.9). Potential savings are still significant but not as large.

Is Bigger Always Better In Public School Systems?

It appears that if Colorado’s three very large districts were to deconsolidate into smaller (23,000-16,000 students) districts, Performance Scores might actually increase or hold steady, and costs per student would decrease substantially. The prospect of reducing costs while stabilizing or increasing performance merits serious consideration of big-district downsizing. The data show that it may be possible for a Jeffco size district of 85,000 to better deconsolidate into four 20,000, or five 17,000-sized districts and subsequently increase productivity. Furthermore, Denver’s 66,732 students could effectively deconsolidate to four of the same, resulting in lower per-student cost to the taxpayer while containing taxpayer costs and improving student performance.

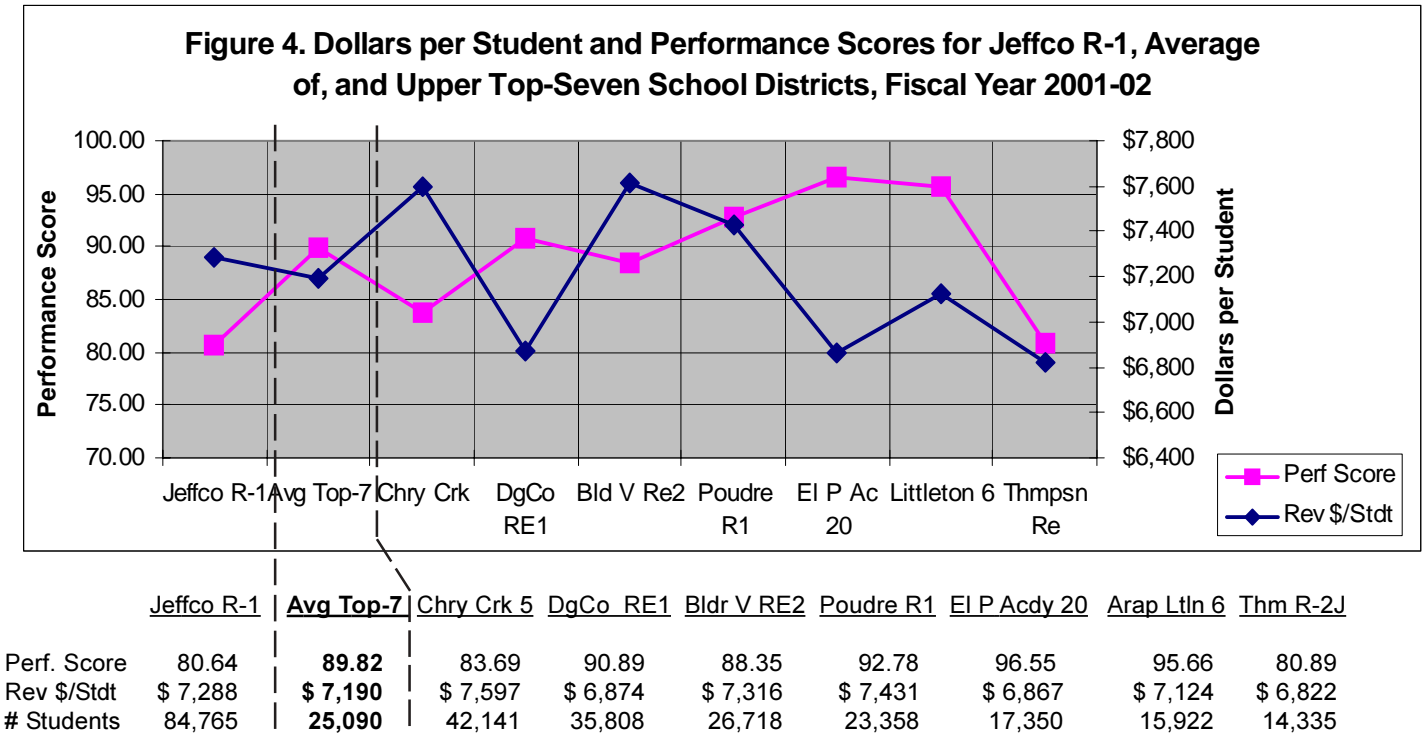
Because of the districts’ size, modest per-student savings would translate into significant taxpayer savings, with the same or improved performance. Suppose Jeffco R-1 became five smaller districts. The “including-Denver” model showing potential Jeffco savings of \$891/student for 84,765, indicates possible efficiencies of \$75 million. Denver school district, with 68,066 students could benefit by the \$60 million cost reductions and increased Performance Score.

With the “excluding Denver” model, Jeffco savings could still be over \$55 million (\$655 x 84,765), with similar potential deconsolidation savings for Denver of \$44 million. In an era of reduced revenues, encumbered taxpayers, and state and local government budget anguish, such possibilities and considerations may be a worthwhile endeavor.

Please note: These savings and resultant enhanced performance would suggest possible revision of the 1994 School Finance Act and repeal of Amendment 23.

Jeffco R-1 Performance Score: Slip Sliding Away

Seven districts had higher Performance Scores than Jeffco R-1. Figure 4, with its accompanying data chart, presents these results, which first show R-1, then the top seven average (without Jeffco), then the seven individual data points, in decreasing order of district size. With the exception of the last data point (Thompson R2-J), the Performance Score trend is upward as district sizes get smaller. Actual data follow Figure 4.



These data, which compare Jeffco R-1’s Performance Score and revenues/students with the average of the seven districts’ average and each district, show direct correlation of increasing performance and slightly dropping dollars per student, by descending numbers of students. They start with Cherry Creek’s 42,141 students and end at Thompson R-2J’s 14,335 students. Not competitive with these better performing districts, Jeffco’s cost per student is \$98 higher than the seven-district average, with Performance Score nine points lower. The \$98 difference translates into over \$11 million. With decreasing district size, the curve trends are upward for performance and downward for costs.

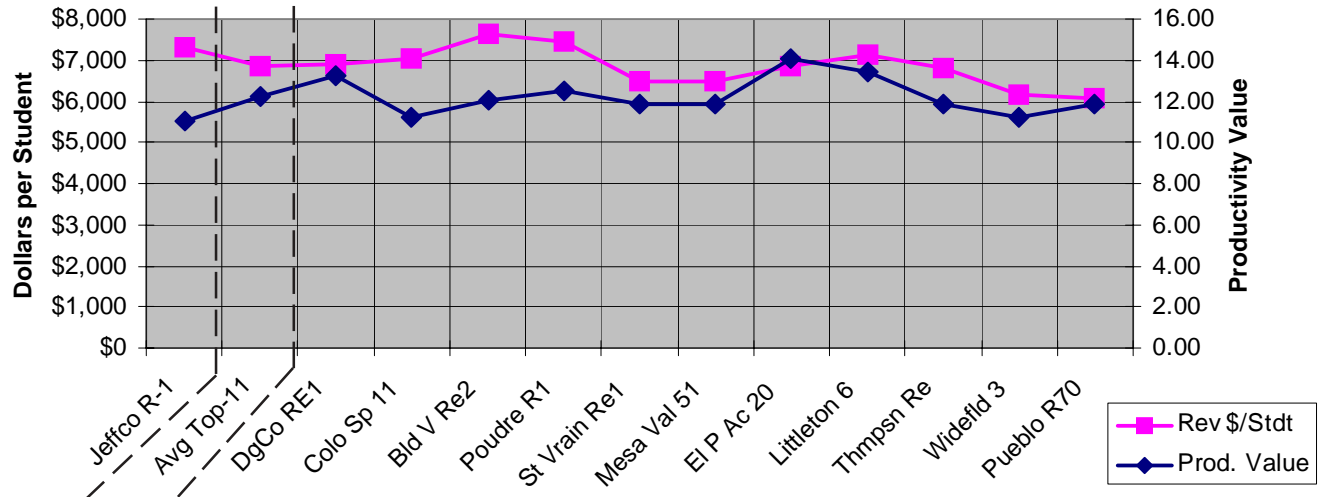
Jeffco R-1 Productivity Score: Number 12 of 20

In Figure 5, productivity is expressed in terms of output per cost—Performance Score per Cost per Student (x 1,000). Jeffco R-1, at 11.06 significantly lags the Top-11 average productivity value of 12.19. R-1 especially fares dismally against top-performing El Paso County Academy 20’s 14.06. Specific data follow the chart.

To the right of “Average Top-11” are the eleven schools with higher productivity values than Jeffco R-1, in order of decreasing student numbers left-to-right. Jeffco’s cost per student is \$427 more than the top-11 average, with a productivity value 1.13 points lower. Among the high-performing districts it appears that productivity values are fairly uniform and level in district sizes from 31,000 students to 19,000 with somewhat higher scores from 17,000 to 14,000 students. Larger school productivity metrics indicate an inversely proportional relationship to expenditures per student; for example, productivity declines as expenditures increase.

Excluded from the productivity data was Denver, which ranked lowest with a score of 7.32—which rates about half of El Paso County Academy 20’s score of 14.06. These groundbreaking data provide great insight to all stakeholders of our educational system’s ability to deliver more and better education with slower funding growth.

Figure 5. Productivity Value and Revenue \$/Student for Jeffco, And Average of and Each of Top-Eleven Districts, Fiscal Year 2001-2002



	Jeffco R-1	Av Top-11	DgCo RE1	Colo Sp 11	Bld V Re2	Poudre R1	St Vrain Re1	Mesa Val 51	El P Ac 20	Littleton 6	Thmpsn Re	Widefld 3	Pueblo R70
Prd Val	11.06	12.19	13.22	11.19	12.08	12.49	11.88	11.85	14.06	13.43	11.86	11.24	11.89
\$/Stdt	\$7,288	\$6,861	\$6,874	\$7,053	\$7,616	\$7,431	\$6,495	\$6,495	\$6,867	\$7,124	\$6,822	\$6,180	\$6,087
# Stdts	84,765	25,265	35,808	31,152	26,718	23,358	19,213	19,032	17,350	15,922	14,335	8,311	7,221

Productivity: Key to Public Education’s Better Future

In enterprise sector (industry, commerce) manufacturing and services, productivity is an ever-present main ingredient in business and organization success. Productivity is usually measured as output per labor hour. If an organization does not have high productivity and continuing productivity growth, it will eventually go out of business because its competition beats it in output, costs, quality, price, and service. Similarly, employees of businesses that are not continually more productive stagnate in or lose their jobs.

The same productivity concepts should be adopted and applied to public education. Economic realities such as escalating costs and more limited funds, emphasize the growing importance of continually applying and accomplishing higher productivity. While technology makes it conceivable and enhanced education delivery systems make it possible, people make it happen. Technological innovations are the tools in the new age of learning and teaching, as distance learning is now a popular reality in today’s education system. Educational institutions can successfully instruct more students with less expense and administration.

... higher productivity. While technology makes it conceivable and enhanced education delivery systems make it possible, people make it happen.

Teaching students productivity through deliberate verbal and actual application throughout their curriculum and schooling is an important part of the overall education experience. Instructing students on the aspects of productivity through textbooks, and applying and demonstrating it in the education system, provide students with a needed experiential edge in today’s economy.

Productivity Turns Education Finance Upside-Down to Make Real Sense

Productivity is an entirely different way of looking at the operations and services of government, especially public education. The education establishment has continuously demanded increasing tax dollars regardless of output or results. A familiar free market dissection of education funding would mandate increased productivity at decreased expense to the taxpayer, per unit output—again, doing more and better for less.

One continuing problem with education information is the number of definitions and variations of the reported data. For instance, the 2002 *Statistical Abstract of the United States*, Table No. 235, reports that the District of Columbia maintains the highest 2001 per-student spending at \$13,525 compared with North Dakota, which ranked lowest at \$4,459. The national average was \$7,640, with Colorado ranked 31st among the states at \$6,945. Contrast this with an earlier CDE-derived number, \$8,631 (page 6). Per-student spending figures include “all program expenditures (all funds).” The lower number includes only dollars for the general fund for teaching—classroom instruction—leaving out payments for contracted debt, interest and other items defined not to be a specific factor of delivering education to the classroom. *But every dollar*, no matter how defined or how spent, is furnished by the taxpayer and recipient, and *that*, is the true cost of public education.

Another example is the definition of “numbers of students.” Is it enrollment on a certain day? Attendance on a certain day, or average attendance over a defined period of time? Is it calculated as full time equivalents (FTEs)? Is it those who attend? Is it some calculated, formulaic value that funds more students than are actually attending, to preserve and cushion funding—e.g., some districts in Colorado with declining enrollment?

A popular bumper sticker told that Colorado is 49th in per-student public education funding, a measure reported by *Education Week* magazine. That concept took into account taxpayer ability-to-pay based on per capita personal income, property tax assessment base, or other criteria. The more objective, less obviously self-serving way to rank states uses reported equivalent dollars spent per student, as in the *Statistical Abstract*.

In the monetary paradigm, D.C. (at \$13,525) is rated number one, while North Dakota (at \$4,459) is rated fiftieth. But in the efficiency paradigm, the positions are exactly the opposite. For educating at the lowest cost per student, North Dakota is first and D.C. is fiftieth. Colorado becomes number 19 of 52—50 states, D.C. and the U. S. average—in national public education efficiency, per data from the 2002 *Statistical Abstract*.

Does More Money Deliver Better Education?

To this billions-of-dollars question, the answer is ... not necessarily. Productivity takes into account cost and level of performance delivered, i.e., output divided by cost. Hence, the productivity measurement for Colorado public school education is the performance score times 1,000 divided by dollars per student.

What is that “level of performance delivered”? Answering this on a national scale may be instructive, and sufficient data are available to illustrate the concepts of education efficiency, academic performance and the most important, district or state productivity (performance divided by cost).

The National Center for Education Statistics (NCES) maintains a large, comprehensive database of education information. Two NCES sources for year 2001 were used, one with the Scholastic Assessment Test (SAT, formerly Student Aptitude Test), and another with cost per student, among other data. The data encompassed all 50 states, plus District of Columbia and United States averages, giving 52 line items. The math and verbal skills test scores were added together to offer a score for state performance. The total was then divided by cost per student to yield the productivity value for performance delivered divided by cost (times 100 for the states level). All of the rankings—efficiency, performance, and productivity, plus their relevant numbers, scores, and values—are placed on a single chart, Table 5.

Efficiency ratings for 2001 rank the various states by those able to deliver education at the lowest cost. Utah ranked first at \$4,372 per student, followed by Arizona, \$4,968, and Arkansas, \$5,269. Colorado’s efficiency of \$6,085 was 14th, much better than the U. S. average of \$7,079. Least efficient was New Jersey at \$10,787 followed by the District of Columbia at \$10,252 and Connecticut at \$10,135. The spread of data is equal to over 90% of the U. S. average at \$5,415 (\$10,787 - \$4,372). The Utah low of \$4,372 versus the New Jersey high of \$10,787 leaves a tremendous gap from which to learn and implement new education efficiencies.

Obviously, being efficient isn’t enough. Taxpayers, students, and parents expect education performance and accountability. In **Performance**, Iowa was number one with 1,196 combined SAT math and verbal scores; second,

Table 5: Fifty States, plus DC and U.S. Average, Education Rankings, Fiscal 2001, for Productivity (Performance/Student Cost), Performance (Sum of School Assessment Test, SAT, Scores, Verbal and Math), and Efficiency (Cost/Student)

Productivity = (P/E) x 100

Rank	Productivity	Value	Rank	Performance	Score	Rank	Efficiency	\$/Student
1	Utah	26.19	1	Iowa	1,196	1	Utah	\$4,372
2	Mississippi	21.14	2	North Dakota	1,191	2	Arizona	4,968
3	Arkansas	21.10	3	Wisconsin	1,180	3	Arkansas	5,269
4	Arizona	21.10	4	Minnesota	1,169	4	Mississippi	5,283
5	Idaho	20.14	5	Illinois	1,165	5	Idaho	5,386
6	Tennessee	19.45	6	South Dakota	1,159	6	Nevada	5,632
7	Missouri	19.22	7	Kansas	1,157	7	Tennessee	5,733
8	Oklahoma	18.98	8	Missouri	1,154	8	Oklahoma	5,943
9	South Dakota	18.95	9	Utah	1,145	9	Alabama	5,968
10	Louisiana	18.82	10	Michigan	1,133	10	Florida	5,982
11	Alabama	18.65	11	Nebraska	1,130	11	Louisiana	5,983
12	Nevada	18.18	12	Oklahoma	1,128	12	Missouri	6,003
13	Iowa	17.83	13	Louisiana	1,126	13	North Carolina	6,028
14	Colorado	17.76	14	Mississippi	1,117	14	Colorado	6,085
15	Kansas	17.04	15	Tennessee	1,115	15	South Dakota	6,115
16	New Mexico	16.91	16	Alabama	1,113	16	California	6,255
17	Montana	16.87	17	Arkansas	1,112	17	Texas	6,384
18	Florida	16.67	18	Kentucky	1,100	18	Montana	6,390
19	No. Carolina	16.46	19	New Mexico	1,093	19	Hawaii	6,391
20	California	16.23	20	Wyoming	1,092	20	New Mexico	6,463
21	Washington	16.23	21	Idaho	1,085	21	Georgia	6,478
22	Illinois	16.20	22	Colorado	1,081	22	Washington	6,496
23	Kentucky	16.11	23	Montana	1,078	23	South Carolina	6,586
24	Nebraska	16.03	24	Ohio	1,073	24	Iowa	6,707
25	Ohio	15.76	25	Washington	1,054	25	Virginia	6,750
26	Hawaii	15.66	26	Oregon	1,052	26	Kansas	6,789
27	North Dakota	15.55	27	Arizona	1,048	27	Ohio	6,809
28	Texas	15.54	28	West Virginia	1,039	28	Kentucky	6,829
29	Georgia	15.13	29	New Hampshire	1,036	29	Nebraska	7,050
30	Virginia	14.98	30	Massachusetts	1,026	30	United States	7,079
31	So. Carolina	14.79	31	Alaska	1,024	31	Illinois	7,190
32	United States	14.41	32	Nevada	1,024	32	New Hampshire	7,302
33	Oregon	14.30	33	United States	1,020	33	Oregon	7,357
34	New Hampshire	14.19	34	Connecticut	1,019	34	West Virginia	7,565
35	Wisconsin	14.11	35	Maryland	1,018	35	Maine	7,656
36	Michigan	14.08	36	Vermont	1,017	36	North Dakota	7,660
37	Minnesota	13.83	37	California	1,015	37	Indiana	7,754
38	Wyoming	13.77	38	New Jersey	1,012	38	Maryland	7,773
39	West Virginia	13.73	39	Virginia	1,011	39	Wyoming	7,928
40	Maine	13.14	40	Maine	1,006	40	Michigan	8,045
41	Maryland	13.10	41	Hawaii	1,001	41	Pennsylvania	8,321
42	Indiana	12.90	42	Delaware	1,000	42	Wisconsin	8,363
43	Pennsylvania	12.01	43	Indiana	1,000	43	Minnesota	8,453
44	Vermont	11.93	44	New York	1,000	44	Vermont	8,527
45	Delaware	11.43	45	Rhode Island	1,000	45	Delaware	8,752
46	Alaska	11.34	46	Pennsylvania	999	46	Alaska	9,031
47	Massachusetts	11.17	47	Florida	997	47	Massachusetts	9,188
48	Rhode Island	10.51	48	North Carolina	992	48	Rhode Island	9,515
49	New York	10.07	49	Texas	992	49	New York	9,935
50	Connecticut	10.05	50	Georgia	980	50	Connecticut	10,135
51	New Jersey	9.38	51	South Carolina	974	51	Dist of Columbi.	10,252
52	Dist of Columbia	9.33	52	Dist of Columbia	956	52	New Jersey	10,787

Sources: National Center for Education Statistics, Quick Tables Figures, "Estimated Student Membership, number of teachers, Revenues, Costs per Student, etc Survey 2001"; Table 137-Scholastic Assessment Test Score Averages by State: 1987-88 to 2000-01.

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Date: July 15, 2003, rev 1, 10/15/03

North Dakota, 1,191; then Wisconsin, 1,180. Colorado ranked comfortably above the U. S. average at 22nd with a score of 1,020. District of Columbia scored last with 956, followed by South Carolina at 974 and Georgia at 980. The data spread of 240, from Iowa's 1,196 down to District of Columbia's 956, at 23%, is much lower, but with significant room for improvement.

The real test is **Productivity**—performance delivered with consideration for cost. With the magnitude of performance data available, this national productivity formula is performance divided by cost per student times 100. Utah, the most efficient, was also the most productive, with the number one productivity value of 26.19. Next was Mississippi at 21.14, followed by Arkansas, 21.10. These top three in productivity are also among the top four in efficiency, showing that higher performance can be produced at lower cost. Colorado ranks 14th in productivity, significantly higher than the 14.41 U. S. productivity value average. Rating last again is the District of Columbia at 9.33, then New Jersey at 9.38, with Connecticut next at 10.05. Productivity values ranged from 9.33 to 26.19. This very wide spread of 16.86 is 117% of the nation's productivity average of 14.41.

“The three most expensive state public schools systems are the three least productive. The four most productive states are the least expensive.”

The three most expensive state public school systems are the three least productive. The four most productive states are the least expensive (most efficient).

Efficiency, performance, and productivity provide great opportunities for improvement through investigation of costs and performance in the various state public education delivery systems.

Colorado's Big-20 Schools Efficiency, Performance, and Productivity Rankings

Table 6 below shows Colorado's twenty largest school district rankings in efficiency, performance and productivity. These measurements can be helpful and enlightening with regard to school, district or state performance comparisons. Generally, higher performance and productivity are linked to lower efficiency.

Since the education productivity concept is so new, performance is the key research and analysis factor. Higher performance is linked to higher spending (lower efficiency), as evidenced by Littleton, Poudre R-1, and Boulder

Table 6
Colorado's Twenty largest Public School Districts: Education Rankings, for Fiscal 2001-2002, for Productivity (Performance x 1000/Student Cost), Performance and Efficiency (Cost Per Student)

(Note coded lines on chart show productivity, performance and efficiency positions of individual districts for comparison.)

Productivity = (P x 1000/E)								
Rank	Productivity	Value	Rank	Performance	Score	Rank	Efficiency	\$/Student
1	Academy 20	14.06	1	Academy 20	96.55	1	Pueblo Co R 70	\$6,087
2	Littleton 6	13.43	2	Littleton 6	95.66	2	Widefield 3	\$6,180
3	Douglas Co RE 1	13.21	3	Poudre R-1	92.78	3	St Vrain Valley RE 1J	\$6,495
4	Poudre R-1	12.49	4	Douglas Co RE 1	90.83	4	Mesa Co Valley 51	\$6,495
5	Boulder Valley RE 2	12.00	5	Boulder Valley RE 2	89.35	5	Weld Greeley 6	\$6,539
6	Pueblo Co R 70	11.89	6	Cherry Creek 5	83.89	6	Westminster 50	\$6,629
7	St Vrain Valley RE 1J	11.88	7	Thompson R-2J	80.89	7	Thompson R-2J	\$6,822
8	Thompson R-2J	11.86	8	Jefferson Co R-1	80.64	8	Academy 20	\$6,867
9	Mesa Co Valley 51	11.85	9	Colorado Springs 11	78.92	9	Douglas Co RE 1	\$6,874
10	Widefield 3	11.84	10	St Vrain Valley RE 1J	77.14	10	Pueblo City 60	\$6,897
11	Colorado Springs 11	11.19	11	Mesa Co Valley 51	76.95	11	NorthGlenn-Thornton 12	\$6,984
12	Jefferson Co R-1	11.06	12	Pueblo Co R 70	72.39	12	Adams-Arapahoe 28J	\$7,039
13	Cherry Creek 5	11.02	13	Widefield 3	69.48	13	Colorado Springs 11	\$7,053
14	Weld Greeley 6	10.07	14	NorthGlenn-Thornton 12	67.72	14	Harrison 2	\$7,081
15	NorthGlenn-Thornton 12	9.70	15	Weld Greeley 6	65.83	15	Littleton 6	\$7,124
16	Harrison 2	9.18	16	Harrison 2	65.01	16	Jefferson Co R-1	\$7,288
17	Pueblo City 60	9.07	17	Pueblo City 60	62.56	17	Boulder Valley RE 2	\$7,316
18	Adams-Arapahoe 28J	8.85	18	Adams-Arapahoe 28J	62.28	18	Poudre R-1	\$7,431
19	Westminster 50	8.30	19	Denver County 1	59.62	19	Cherry Creek 5	\$7,597
20	Denver County 1	7.32	20	Westminster 50	55.00	20	Denver County 1	\$8,149
Average		10.99	Average		76.11	Average		\$6,947

Three Largest Colorado School Districts are in Bold: Jeffco-84,765; Denver-68,066; Cherry Creek 5-42,141

Valley RE-2. However, Academy 20 and Douglas County RE 1 did very well with considerably fewer dollars per student. While ranked eighth in performance, Jefferson County R-1 ranked 16th in efficiency (fifth highest spending) and 12th in productivity. Pueblo County R 70 rated first in efficiency, sixth in productivity, and twelfth in performance. Still, the chief indicator is “Productivity,” which takes into account both performance and cost.

The Big Picture and the Power of Small Differences

It is instructive to place all four “Top-20” rankings and evaluation on a single sheet. Table 7 tells the whole story of Colorado’s twenty largest public school districts by Productivity, Performance, Efficiency, and Size.

These concepts provide an innovative means of monitoring, evaluating, and judging the delivery of public education. For instance, consider the power of small differences. Suppose Denver public education at \$8,149 per student could be delivered not at the Pueblo R 70 District low of \$6,087, but at the 20 district-average of \$6,947, a \$1,202 per student difference. The implication for Denver’s and Colorado’s taxpayers for 68,066 students is a possible savings of \$81.8 million. Accountability (i.e., performance) is a much more important indicator, and education productivity is the most powerful and comprehensive. These measures give a means of comparison within the state and across the nation, while also addressing possibilities of schools between and within school districts.

Test Scores *Only* are not a *Complete* Measure of Performance

Only with a performance measure or other parameter with numbers can productivity be determined. Subjective criteria can also be meaningful and useful but less measurable, if measurable at all. Other factors may include subjective and probably immeasurable concepts such as developing a lifelong love of reading and learning, problem-solving, making wise and proper choices, developing a sense of personal worth and self-esteem, and social experiences with peers and adults that prepare one for life’s challenges. A milestone measure of education is the ability to take, present, and defend either side of a controversial issue so that a convincing argument is offered and truly communicated. These criteria are important to consider but difficult to quantify. For the time being, they will be amassed and quantified within nationally reported tests, procedures, and scores.

Until education professionals come up with better measures, this type of quantitative data from formal testing is our only insight into education. Though appearing limited, test scores are very valuable for assessment, evaluation, comparison, and action.

The Bigger Picture: Not Pretty

This analysis examined Colorado’s 20 largest public school districts. These districts comprised 527,064 students, of which 165,299 are in high school, containing nearly three-quarters (74.53%) of all 707,202 Colorado students. The “Top-20” have 159 high schools averaging 1,040 students per high school .

Colorado’s great public education achievement is with those 28,999 (17.5%) of students in the “excellent” category, the 54,272 (32.8%) in the “high” category, and the 50,510 (30.6%) students in the “average” category.

There still remains a challenge with great opportunity for Colorado’s students in bringing up those in the lower categories—31,418 (18.0%) “low” and 986 (0.6%) “unsatisfactory.” Though relatively small numbers, the regrettable results are the distribution of those deserving young human beings in the lower two classifications. Their basic education is over or rapidly approaching completion. This is their launch platform to take off into the real world, and they would be much better served in the average-or-above categories.

The goal must be to gradually but surely move the spectrum up to where the number of schools with performing accountabilities of “unsatisfactory” and “low” becomes zero, and “average” becomes the base. With performance as judged by the Colorado Department of Education, new, impressive strides can be made in the delivery of public education in Colorado.

We congratulate the following seventeen districts for having zero high schools in the “unsatisfactory” category, in descending order of performance in the district: El Paso Academy 20, Arapahoe Littleton 6,

Table 7

Twenty largest Colorado School Districts: Education Rankings, Fiscal 2001-2002, for Productivity (Performance/Student Cost), Performance, Efficiency (Cost per Student) and District Size (# of Students, FTEs)

District Productivity		Value	Academic Performance		Score	Education Efficiency		\$/Student	District Size		#/Students
Rank	District		Rank	Performance		Rank	Efficiency		Rank	District Size	
1	Academy 20	14.06	1	Academy 20	96.55	1	Pueblo Co R 70	\$6,087	1	Jefferson Co R-1	84,765
2	Littleton 6	13.43	2	Littleton 6	95.66	2	Widefield 3	\$6,180	2	Denver County 1	68,066
3	Douglas Co RE 1	13.21	3	Poudre R-1	92.78	3	St Vrain Valley RE 1J	\$6,495	3	Cherry Creek 5	42,141
4	Poudre R-1	12.49	4	Douglas Co RE 1	90.83	4	Mesa Co Valley 51	\$6,495	4	Douglas Co RE 1	35,808
5	Boulder Valley RE 2	12.08	5	Boulder Valley RE 2	88.35	5	Weld Greeley 6	\$6,539	5	Colorado Springs 11	31,152
6	Pueblo Co R 70	11.89	6	Cherry Creek 5	83.69	6	Westminster 50	\$6,629	6	Adams-Arapahoe 28J	29,803
7	St Vrain Valley RE 1J	11.88	7	Thompson R-2J	80.89	7	Thompson R-2J	\$6,822	7	NorthGlenn-Thornton 12	29,727
8	Thompson R-2J	11.86	8	Jefferson Co R-1	80.64	8	Academy 20	\$6,867	8	Boulder Valley RE 2	26,718
9	Mesa Co Valley 51	11.85	9	Colorado Springs 11	78.92	9	Douglas Co RE 1	\$6,874	9	Poudre R-1	23,358
10	Widefield 3	11.24	10	St Vrain Valley RE 1J	77.14	10	Pueblo City 60	\$6,897	10	St Vrain Valley RE 1J	19,213
11	Colorado Springs 11	11.19	11	Mesa Co Valley 51	76.95	11	NorthGlenn-Thornton 12	\$6,984	11	Mesa Co Valley 51	19,032
12	Jefferson Co R-1	11.06	12	Pueblo Co R 70	72.39	12	Adams-Arapahoe 28J	\$7,039	12	Academy 20	17,350
13	Cherry Creek 5	11.02	13	Widefield 3	69.48	13	Colorado Springs 11	\$7,053	13	Pueblo City 60	16,863
14	Weld Greeley 6	10.07	14	NorthGlenn-Thornton 1	67.72	14	Harrison 2	\$7,081	14	Weld Greeley 6	16,007
15	NorthGlenn-Thornton 1	9.70	15	Weld Greeley 6	65.83	15	Littleton 6	\$7,124	15	Littleton 6	15,922
16	Harrison 2	9.18	16	Harrison 2	65.01	16	Jefferson Co R-1	\$7,288	16	Thompson R-2J	14,335
17	Pueblo City 60	9.07	17	Pueblo City 60	62.56	17	Boulder Valley RE 2	\$7,316	17	Westminster 50	10,771
18	Adams-Arapahoe 28J	8.85	18	Adams-Arapahoe 28J	62.28	18	Poudre R-1	\$7,431	18	Harrison 2	10,504
19	Westminster 50	8.30	19	Denver County 1	59.62	19	Cherry Creek 5	\$7,597	19	Widefield 3	8,311
20	Denver County 1	7.32	20	Westminster 50	55.00	20	Denver County 1	\$8,149	20	Pueblo Co R 70	7,221
	Average	10.99		Average	76.11		Average	\$6,947		Average	26,353

Prod = (P/E) x 1000

Three Largest Colorado School Districts are in Bold.

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Douglas RE1, Boulder Valley RE-2, Cherry Creek 5, Thompson R-2J, Jefferson County R-1, Colorado Springs 11, St. Vrain RE1, Mesa Valley 51, Pueblo R70, El Paso Widefield, Northglenn-Thornton, El Paso Harrison 2, Pueblo 60, Adams Arapahoe 28, and Westminster 50.

The New Productivity Path and New Knowledge Utilization

An industry quality-control adage says “the quality you inspect for is the quality you get.” That statement summarizes the increasing importance of standardized testing and other assessment innovations, to measure the results of public education. The Colorado Department of Education objectively analyzes and reports the standardized test data, providing online information to all interested and involved parties—parents, students, teachers, administrators, school board members, superintendent, and especially taxpayers. The data and concepts from this analysis may be used for comparison and insights into more and better education for less money.

“Colorado has too many Lone Rangers,” begins a *Denver Post* lead editorial, “Sharing what works at schools” (page 6B, 7/31/03). It continues, “... in the sense that too many schools and school districts are excelling on state tests but few outside their building know their secret.” After extolling the virtues of Colorado superintendents and principals who understand testing, etc., it notes, “they’re not sharing,” indicating they are operating under some “don’t ask, don’t tell” policy. The *Post* tells of “Just for the Kids,” coordinated by the Colorado Partnership for Education Renewal with a website (www.just4kids.org) that compares school test scores and will eventually “share the magic behind successful schools.”

“Colorado public school districts may create teams to examine Colorado’s most successful districts to study their methods.”

Within and among the districts exist the winners and losers, famous and infamous, high performers and also-rans. Comparable to the individual states in the United States within a federalism framework, the education system can scrutinize individual schools and districts to determine outcomes and indicators. For instance, Colorado public school districts may create teams to examine Colorado’s most successful districts to study their methods. The districts can also explore individual student success to learn more about socio-economic conditions and effects, parental involvement, teacher interaction, encouraged invention, innovation, camaraderie, teamwork, teaching methods, resources, and technologies. Study, adapt, adopt, and constantly apply productivity concepts.

In “Broke schools, busted system,” education-expert Ed Lyell, professor of business and economics at Colorado’s Adams State College, made a notable case for comprehensive and serious change in school administration and education delivery as well

as a need for school board members with expertise in financial management.

Emphasizing change (in the 2/2/03 *Denver Post* article, page E1) he said, “We need a different way to organize and fund our school

“We need to use people and technology more effectively, beginning with a better organization structure with financial incentives for productivity.”

districts; a different way to pay our teachers; a different way for impoverished children to learn. We need governing boards that will look to the rest of the world and adopt some of their policies for K-12 education.” Accentuating his position, he made this reference to productivity:

We will not produce the necessary high levels of student achievement from just tinkering with the current system. We need to redesign our schools for excellence in the 21st century. We need to use people and technology more effectively, beginning with a better organization structure with financial incentives for productivity.

Incentives: Why Use Fear if Productivity Works as Well or Better?

In early August, 2003, the education establishment had an opportunity to gain insight into the record-breaking productivity in the business, commercial, and industrial world. The article's first sentence was, "A scared employee is a productive employee." *Denver Post* editor Al Lewis in his "No brainer: Work more or lose job," heralds productivity "improving at a whopping 5.7 percent annualized rate from April through June—yet another sign that people who survived the recession with their jobs intact are working harder than ever" (*Denver Post*, p K1, 8/11/03). He continues, "Fear is a great motivator, and workers have much to fear ... Long term, rising productivity will raise standards of living as companies are able to pay workers more without raising prices." What a concept! And leadership, motivation, inspiration, and teamwork can work just as well, with respect to productivity, as fear.

Jeffco R-1 school district reports its 2003-2004 total budget to be over \$881 million. Annual productivity of two or three percent would be like finding \$16 million to \$24 million every year in addition to regular annual increases from state funding, property taxes, specific ownership taxes, etc.

Dr. Lyell offered this advice to Colorado's General Assembly:

The Colorado legislature should launch a major examination of new ways to design and operate our public schools with the goal of ensuring that every 18-year-old is literate, has completed two years of college or technical training and is employable in the new, more globally competitive world. To not change the system for these challenges is to continue to watch the jobs of the future go overseas, while our national quality of living continues to decline.

Education professionals can set their own goals and standards, strategize to find new teaching innovations, all for higher performance, and increase productivity and efficiency in their professional realm of expertise. All facets of productivity—theory, application, utilization, training, teaching, learning, administration—can become the great educational tools and breakthroughs of the 21st century. It is highly unlikely that districts will ever return money to taxpayers, but they may be able to get much more mileage from existing levels of funding even though it seems insufficient. Also, in addition to standardized tests, they must craft new, definable ways to measure and report education performance—ways that can be defended, articulated, and communicated.

New vistas of achievement for our young people's education and futures can be assured, recognizing the economic limits of higher funding, increasing taxpayer resistance to higher taxes and bigger government, the need for more and better delivered education performance all with an emphasis on, and commitment to, high education productivity.

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Limitations and Comments

Those items of information not audited and verified, and other subjective appraisals of the value and level of performance of education, are not included in this study; hence, no judgments of these are made. It is the same for class size, socio-economic status of children and their parents or guardians, race, religion, sex, geographical dispersion, etc. It is recognized that the meaning of education and performance thereof is different depending upon the audience or individual's point of view.

This study attempts to enhance the general public's ability to access educational information, while introducing a new measurement of our public school system. Differences in cost-of-living among the 50 states was not accounted for.

Virtually all of Colorado's twenty largest public school districts (except the Western Slope's Mesa County Valley) are located along the I-25 corridor. Cost-of-living differences among the twenty were not deemed statistically significant.

This study's findings should not be construed to be applicable to the 158 smaller, more rural, school districts. Rural school districts should be evaluated separately, as population densities substantially impact revenues and expenditures.

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