BLUEGRASS INSTITUTE

How efficient are Kentucky's schools?

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Bang for the Buck 2012: How Efficient Are Kentucky's Schools?

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The General Assembly shall, by appropriate legislation, provide for an <u>efficient</u> system of common schools throughout the State
(emphasis added).

Constitution of the Commonwealth of Kentucky[1]

By Richard Innes

Executive Summary

Kentucky, like most states, currently spends a large portion of each tax dollar on education. In fact, nearly 60 percent of the Bluegrass State's General Fund supports education in the state's public schools and colleges.

Furthermore, there has been a dramatic increase in the commonwealth's funding for education since the Kentucky Education Reform Act of 1990 was enacted. In inflation-adjusted dollars, real spending on public education in Kentucky nearly doubled between 1989 and 2010.

However, more spending by itself does not create an efficient education system – just a more expensive one.

Neither do rising test scores and other measures of educational progress by themselves necessarily signal an efficient education system. It is the ratio of educational performance per dollar expended that determines whether Kentucky is operating an efficient system – a system that provides students, parents and taxpayers good "Bang for the Buck." In this report, we examine the bang for the buck ratio to see if Kentucky's education system is really complying with the requirements of the Kentucky Constitution.

The Bluegrass Institute's first report on Kentucky education's "Bang for the Buck" was released in 2006. It was the first known publicly released attempt to determine which schools in Kentucky were providing the best performance for each dollar expended. Six years later, we update the original report with current information.

However, we ran into a major obstacle when we examined the credibility of publicly available school level funding data for 2011. The credibility of the available data came into sharp question about six months after our initial "Bang for the Buck" report was released in 2006. At that time, the Kentucky Office of Education Accountability (OEA) issued a report identifying serious problems with Kentucky's MUNIS education finance system, which generates funding data for schools. Improvements to the MUNIS system were promised by the Kentucky Department of Education.

Unfortunately, in the process of updating "Bang for the Buck" we learned that efforts during the past six years to repair problems with the MUNIS system have failed to provide us with a reliable way to examine bang for the buck performance in individual schools.

Thanks to MUNIS' continuing deficiencies six years after the OEA report's release – even after we attempted contacted local school systems to correct the most obvious problems – we still could not develop enough confidence in 2011 school level spending data to be willing to report results based on those figures.

Thus, while our previous report focused on school-level performance, we turn in this release to a higher level – school districts – but one that offers more credible funding information than what is available for individual schools. .

Unfortunately, the consequences of a flawed MUNIS accounting system are more significant now than ever before.

With the state's economy in considerable difficulty, there simply are no more tax dollars to throw at the education problem. To improve education, we need to know what is working most efficiently in individual schools so those efficient programs can be replicated elsewhere. Without a MUNIS system tuned to provide such information, Kentucky's ability to improve its schools is seriously hampered.

Can an efficiency analysis really provide useful clues about educational approaches that work better? Looking at the results from our district level "bang for the buck" analysis, we think the answer is "Yes."

We found four districts in our new analysis that we consider to be "Diamonds in the Rough": Graves County, Eminence Independent, LaRue County and Mason County. These districts have student school lunch eligibility rates equal to or greater than the state average yet still manage to generate notably above average test scores despite below average per-pupil funding. All four districts also have high school graduation rates higher than the state average.

How did these districts accomplish this efficient operation? Can we replicate their success elsewhere? Those are the sorts of questions educators should be asking themselves. However, getting really good answers requires better data. We need a refined MUNIS system that allows us to accurately and consistently track program costs across schools and districts – separate and specific programs for teacher professional development, for example – so we can determine which programs really provide the most effective and efficient performance for students.

We should note that our "Diamond in the Rough" districts don't get the top academic scores on important tests from the ACT, Inc. Neither do they get the very lowest funding. Normally, all four would probably be overlooked. It is their efficiency – the combination of good bang for each buck despite considerable poverty rates – that makes these districts stand out.

It is essential for the Kentucky Department of Education to fix the MUNIS education finance system so we can drill down much deeper into our school systems and see what specific education programs in schools work best for our dollars. With a fully functional and useful MUNIS system, we could provide educators with a powerful tool to do a much better job of delivering a bigger – much bigger – bang for the buck for our children.

Introduction

There is a growing consensus that countries and lower level governmental regions within those countries where residents lag in educational attainment are likely to face very serious economic challenges in the future. Indeed, as devices we use and must interface with daily – communications devices, automobiles, computers, entertainment equipment and home appliances – become more complex, a good education becomes more of a basic quality of life issue.[2]

Recognizing the importance of a well-educated citizenry, Kentucky, like most states, currently spends a large portion of each tax dollar on education. In fact, nearly 60 percent of the Bluegrass State's General Fund Budget supports education activities.[3]

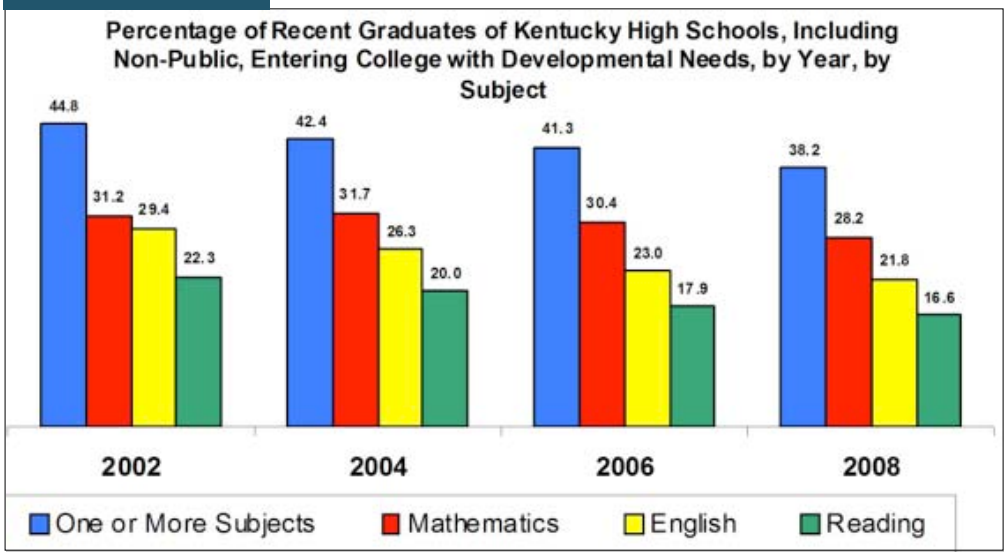
Furthermore, educational expenditures in Kentucky have increased dramatically since the Kentucky Education Reform Act of 1990 (KERA) was enacted. As Table 1 shows, even after correcting for inflation using constant 1989 dollars, real educational funding in Kentucky nearly doubled between the passage of KERA and the release of the latest annual edition of the US Census Bureau's "Public Education Finances" document.[4]

Table 1[5]
Kentucky's Public School Education Expenditures, 1988-1989 and 2009-2010, as Reported by the US Census Bureau and Converted Into Constant, Inflation-Adjusted Dollars

School Term	Reported Expenditures per US Census Bureau	Inflation-Adjusted Expenditures In Constant 1989 Dollars
1988-89	$2,076,138,000	$2,076,138,000
2009-10	$7,090,274,000	$4,031,964,160
Expenditures, 2009-2010 As Percent Of 1988-1989	342%	194%

Despite the tremendous increase in education spending shown in Table 1, the unfortunate truth is that Kentuckians have fewer resources to spend on education when compared to most of the rest of the country. The US Census Bureau ranks Kentucky No. 47 in median household income.

Figure 1[6]



Furthermore, as shown in Figure 1, after nearly two decades of expensive education reform, the latest available data indicate significant proportions of Kentucky's high school graduates still enter the state's public postsecondary education system with inadequate preparation.

Thus, just as Kentucky's legislators recognized way back in 1891 when the state's current constitution was enacted, an efficient educational system is especially essential for the Bluegrass State.

How do you evaluate education efficiency?

When it comes to evaluating education, it's not enough to spend a lot or get high test scores. The education efficiency equation implicit in the Kentucky Constitution has two parts – acceptable educational accomplishment accompanied by realistic funding levels Kentuckians can afford.

Sadly, while separated information on spending and on educational performance has become more available since our first "Bang for the Buck" report, and while the need for good education efficiency studies has never been more vital than in the current economy, reports examining bang for education bucks – or any discussions whatsoever about efficiency in Kentucky's schools – remain in short supply.

To our knowledge, there had never been a publicly released efficiency report on Kentucky's schools prior to the release of our "Bang for the Buck" paper in 2006. Building on excellent ideas from the Yankee Institute for Public Policy – our State Policy Network partner in Connecticut – the Bluegrass Institute's initial "Bang for the Buck" report inaugurated use of a new and easy-to-understand figure of merit called the Score-Spending Index or SSI.

The SSI presents a clear numerical rating of school achievement versus per-pupil spending. The SSI reports this relationship in a percentage-like manner that makes it easy to see which schools produce the most results for each tax dollar they receive.

The original "Bang for the Buck" has been cited repeatedly by other researchers who share the same concerns about the efficiency factor in public education.[7] Our Score-Spending Index measurement has also been used by at least one other State Policy Network partner, the Alabama Policy Institute, to analyze that state's educational economics.[8]

It's time for an update

It is now more than a half-decade since the original "Bang for the Buck" report was released. Kentucky no longer uses the academic testing and reporting system, the Commonwealth Accountability Testing System, upon which a major portion of the analysis was based. Still, the institute received repeated requests for updated data on efficiency in Kentucky's school system.

However, we encountered significant obstacles when we attempted to update our 2006 "Bang for the Buck" report.

Financial data to compute school level education efficiency in Kentucky is questionable

About six months after we released our first "Bang for the Buck" report in 2006, the Kentucky Legislative Research Commission's (LRC) Office of Education Accountability (OEA) reported on its attempt to conduct a much more detailed analysis of education efficiency in the state.[9] That effort proved unsuccessful because significant problems were discovered with the quality of the state's MUNIS education finance data. As the OEA report points out:

> ***In order to achieve precise measures that can assist districts in improving efficiency and effectiveness, the reliability and validity of Kentucky's education finance data must be improved.***[10]

The OEA's effort foundered when researchers discovered many data entry errors in the MUNIS system. For example, different schools and school districts sometimes were entering expenditures for the same types of activities into entirely different accounting classifications in the system.

One significant contributor to the problem was the Kentucky Department of Education's (KDE) failure to maintain an accurate "Chart of Accounts" for MUNIS so that local school personnel could easily and accurately determine how various expenses were supposed to be coded and recorded in the system.

The OEA discovered that schools were even coding expense items into account numbers that had been deleted from the active MUNIS chart of accounts. Apparently, MUNIS had no function to alert schools even to such obvious and simple-to-detect errors as making entries under non-existent accounting codes.

The resulting extensive errors discovered by the OEA corrupted the accuracy of the MUNIS financial data and the comparability of that data across schools and districts. The breadth and depth of the errors were sufficient to undermine the OEA's attempts to drill down below the level of overall funding amounts to determine which specific programs – like the important area of teacher professional development – were functioning efficiently.

One progress report to legislators during the development phase of the LRC/OEA report disclosed that MUNIS coding errors were so serious that the OEA was unable to reliably determine even the overall amount of money spent statewide in the critical area of teacher professional development. Drilling down even deeper to specific costs versus impacts for subprograms in the professional development area – an initial goal of the study – was clearly impossible.

In the end, the OEA's study never engaged in any real "bang for the buck" analysis.

How long should it take educators to fix accounting problems?

Because serious shortcomings with MUNIS were identified way back in 2006, more than a half-decade later as we began work on our 2012 report update, we expected the situation had improved. However, it became apparent that the MUNIS-based spending figures reported in the 2011 school report card database still did not appear uniform and trustworthy.

Some of the examples of poor data quality we discovered are rather extreme:

- Seven schools in the 2011 report card database reported spending ridiculously low per-pupil amounts of only $100 or so.[11] That clearly was not possible.
- At the other end of the spectrum, one school said it was spending an incredible $99,048 per student while the runner-up for outlandish expenditures indicated it was shelling out $29,209 per pupil. The claimed spending in both schools was more than three standard deviations above the statewide average spending per pupil, an important clue that problems were afoot in these figures.

No officials involved with the official school report cards caught these problems and official school report cards were distributed to the public with these grossly incorrect figures.

Even after correcting for the very top and bottom outlier spending listings in the school report card database, the extremely large differences in spending levels reported by the remaining schools remain difficult to accept. With outliers removed, reported spending still ranged from a low of just $3,363 per pupil in the Barbourville City School to a high of $17,593 at Anchorage Independent's lone school – a spending differential exceeding 500 percent.

We found notably smaller variations in total per pupil spending at the school district level,

ranging from a low of $7,792 in the Science Hill Independent School District to a high of $17,330 in the Anchorage Independent School District.[12] That spending differential of 246 percent is only about half the school-level differential.

Comparing district level and school level data raised still more issues. In comparing the district to school level spending, it appears the Anchorage Independent School District passes all of its spending on to its lone school. That makes sense because only one school is served by the district.[13] What else would the district funding do besides supporting that one school?

But the full flow-through of funding found in Anchorage's MUNIS accounts is not repeated elsewhere. The school report card data for the Science Hill School District shows only 88 percent of the district level funding of $7,792 per pupil is reflected down to the lone school in that district. At least for school report card purposes, why wouldn't virtually all of the funding for the Science Hill School District be reflected to the school level, just as happens in Anchorage?

Consider another example – the Barbourville School District. Barbourville only reflects about 40 percent of its district level funding of $8,232 per pupil down to its lone school. How can that be? There is only one school in Barbourville, serving all grades from Primary to Grade 12. What else could the district's operations support that ultimately do not support that school?

These three examples add to our concern that something is clearly problematic with the school funding figures from the school report card database. Obviously, costs are not being consistently assigned to schools across school districts, which destroys comparability of the data.

As a note, we did attempt to get correct figures for obviously incorrect school level spending data. As we talked to district and school finance officials, we got more confirmation that there is still confusion about what really is supposed to be included in school spending figures for school report cards.

For example, one district finance officer told us his district contracts for janitorial services at the district level – expenditures not reflected in the individual MUNIS school accounting files for this district. Other districts were reported to handle this differently, apportioning the costs for janitorial services to each individual school's MUNIS accounts. This apparently happens in Anchorage Independent, for example.

Another potential area for problems could involve accounting for the cost of instructional coaches, such as those with expertise in math or reading. These specialists might be assigned either to the district central office or within individual schools. Does MUNIS direct apportionment of the costs of such nominal central office workers accurately and fairly among all the schools that workers actually serve?

To summarize, it became apparent to us that, as of 2011, there was no effective monitoring of the quality – let alone accounting comparability – of the MUNIS-based spending figures in the school report card database. In the end, we could not in good conscience rely on those dubious figures for a follow-up "bang for the buck" report.

Thus, we do not repeat our 2006 "Bang for the Buck" report's school-level analysis here. Continuing deficiencies in MUNIS-generated school level data preclude that.

We can still present efficiency information

While the accuracy and comparability of the MUNIS school level spending data appears problematic, another set of high-level spending data is available for school districts. This separately reported data is reported as the total dollar amount of local, state and federal spending combined for each district. Using these overall funding amounts largely avoids the types of problems that continue to plague more detailed MUNIS breakdowns.

This does not mean that the district level funding reporting is perfect, however. We do know that two very expensive education support programs for teacher retirement and teacher health care are managed entirely at the state level in Kentucky. The districts never see that money.

However, we think it is reasonable to assume that the costs across Kentucky's school districts for health care and retirement are generally fairly uniform.

Thus, while we can't provide a more detailed school level bang for the buck examination as we would like, we did look at which districts operate more efficiently, which yielded some interesting – and important – lessons.

What we analyze this time

While our new "bang for the buck" report only examines a Score-Spending Index for school districts rather than individual schools, we have made some improvements in the data compared to what we used in 2006.

Much better test data

The first "Bang for the Buck" report used each school's Commonwealth Accountability Testing System (CATS) School Accountability Index as the primary measure of academic performance. We conducted that analysis with misgivings because the Bluegrass Institute never had high confidence in the accuracy of the CATS program. CATS assessments were poorly coordinated with what students needed to be adequately prepared for college and careers. While the CATS scores rose consistently, other data, such as that shown earlier in Figure 1, indicated Kentucky's educational system continued to have major problems. However, at the time we created our first report, no other testing data was available for either the elementary or middle school grade configurations in Kentucky.

Fortunately, Senate Bill 130, passed during Kentucky's 2006 Regular Legislative Session, makes much more credible testing data – targeted at what students need for success in college and careers – available now. The state now tests all middle and high school students with very high quality tests from the ACT, Inc., publisher of the ACT college entrance tests.[14] Those tests are collectively known as ACT's EPAS® Educational Planning and Assessment System.[15]

All Kentucky's 11th grade public school students now universally take the ACT college entrance test each year. The 2011 ACT scores we examined were extracted from the Kentucky Department of Education's "2011 ACT-Tested Juniors—ACT Average 2010-2011" Excel file.[16]

That ACT data provides a useful, college-and-career relevant "final output" measure of academic quality for the 169 Kentucky school districts that have high schools.

Five Kentucky school districts don't have high schools. For these districts, we take advantage of the fact that Senate Bill 130 also requires all eighth grade students in Kentucky to take the ACT EPAS assessment called EXPLORE.[17] This ACT, Inc. test is grade-level coordinated with what students need to know and be able to do in order to be prepared for good performance in high school that will, in turn, result in adequate preparation for college and careers.

Thanks to availability of these ACT-created EPAS tests, we can examine credible performance information for all state school districts that is aimed at what students need for college and careers.

Spending from the Kentucky Department of Education's Revenue and Expenditures Report

The spending data used in our new "bang for the buck" analysis comes from the Kentucky Department of Education's "Receipts and

CATS No More

The Bluegrass Institute's extensively researched concerns about the shortcomings of the CATS assessment were shared by many in Kentucky. Thus, with the enactment of Senate Bill 1 from the 2009 Regular Legislative Session, the Kentucky Legislature disbanded the testing program. As a consequence, reporting of CATS School Accountability Index scores ceased after 2008.

Expenditures Audited 2010-2011" Excel spreadsheet.[18] We used the data from the spreadsheet tab labeled "AFR Expenditures per Pupil" found in the far-right column titled, "Total Expenses 1000-5200 (Does Not Include 0280 On Behalf Expenditures)." This includes all expenses combined from local, state and federal funding sources. The Kentucky Department of Education indicates that the data in this 2011 Excel spreadsheet for all districts have been audited.

Poverty rates still based on the school lunch statistics

As a proxy for student poverty, we again (as with our first "Bang for the Buck" release) report each school district's student participation rate in the federal free and reduced cost lunch program. The data used this time were collected in October 2010 and pertain to the 2010-11 school term. The data come from the federal lunch program's "FY 2011 Qualifying Data (Source - Oct 2010).xls" Excel spreadsheet.[19]

How we analyze the 2011 data

The Score-Spending Index (SSI)

Our Score-Spending Index (SSI) was initially developed for school-level analysis. However, it can equally apply to school districts.

In formula form:

$$SSI = \left[\frac{\frac{\text{District's Test Score}}{\text{Average Test Score for All Same Configuration Districts}}}{\frac{\text{District's Per Pupil Spending}}{\text{Average Per Pupil Spending for All Same Configuration Districts}}} - 1 \right] \times 100\%$$

The SSI for a school district is calculated as follows:

The basic SSI numerator starts with the subject district's average Composite Score from either the ACT or EXPLORE. For districts with high schools, that is divided by the simple average of all the districts' ACT Composite Scores. For the five districts that don't have a high school, the district's EXPLORE score is divided by the simple average of the EXPLORE scores for those five districts. The end result in both cases is a normalized score for the district.

The basic SSI denominator is the per-pupil spending in the subject district divided by the overall simple average per-pupil spending for all districts of the same grade configuration.

- *After the division of the basic SSI numerator (the test score part) by the basic SSI denominator (the spending part) is completed, a value of one is subtracted from the result. This shifts the scale so that a perfectly average district for educational efficiency will have an SSI of zero. Finally, to make the SSI a percentage-like figure, the result is multiplied by 100 percent.*

Using the SSI formula, a district with a positive SSI is performing above the statewide average for efficiently delivered education for similar configuration districts. A district with a negative SSI is underperforming for each tax dollar it receives.

One limitation of the SSI approach is that it is possible for a district to get a positive SSI even though its test scores are below state average. Although the SSI is positive in such cases, this clearly does not indicate a truly effective performance. To control for this problem, our SSI tables for each district configuration are divided into two sections. The top section, which is un-shaded, is for districts that have above average test results. The bottom section of each table, which is shaded, shows districts that have below average test scores.

Because school financing varies by grade configuration, we conduct separately-grouped SSI analyses for each district configuration, one for those districts that serve all grades, and a separate analysis for those districts that only serve up to the eighth grade.

What the SSI Analyses Shows

ACT-based SSI analysis for districts with high schools

SSI results for the 169 Kentucky school districts that have at least one high school are found in Appendix A.

Some interesting observations can be made from this data.

Overall, the simple average of the ACT Composite Score for the 169 districts, which is used to calculate the SSI, is 18.5. The district-wide average per pupil spending used for the SSI denominator calculation is $10,503.57. These numbers are slightly different from the published overall state averages of 18.8 and $10,814, respectively. That is explained by our computing simple, rather than weighted, averages.

Using Simple Averages to Assess District Performance

We use simple district averages rather than weighted averages to prevent several large-population Kentucky districts from skewing the overall numbers. For example, our computed simple average ACT Composite Score for the 169 Kentucky school districts with high schools is 18.5, but the student-weighted statewide average is reported as 18.8. As discussed in the main text, spending averaged across the districts is also several hundred dollars lower than the student-weighted spending reported in the official Excel spreadsheet. Overall, we think comparing district to district results using the district-based simple averages rather than using statewide student-weighted averages is more appropriate because this avoids biasing the data with statistics from some large-enrollment districts.

Most school districts found at the top of Table A-1 in Appendix A have relatively low poverty rates, while districts at the very bottom of the shaded area have significantly high poverty rates, using federal school lunch program eligibility as the poverty proxy.

Beechwood Independent School District, the listing's top efficiency district, has well above average ACT scores and notably below state average per pupil funding. Beechwood's state-leading SSI indicates its taxpayers are getting a good deal. However, Beechwood is a low poverty district, which some argue allows the district to serve its students for lower costs. If not for its low student poverty level, Beechwood would be one of this report's "Diamond in the Rough" districts.

Unlike Beechwood, Harlan Independent, the second-most efficient district in Appendix A, records an ACT Composite Score more than two points above the state average ACT score and somewhat further above the simple average ACT score among listed districts. However, Harlan Independent also has a rather notable 53 percent school lunch eligibility rate – just three points below the statewide average rate.

Furthermore, Harlan Independent's poverty rate isn't much lower than the poverty rate found in the low-SSI Union County School District, although Harlan's SSI of 37.36 is way above Union's negative SSI of minus 19.59.

While Union got $12,850 per pupil in 2010-11 to produce its below-average efficiency statistics, Harlan Independent got its much more efficient and effective job done for only $8,639 per pupil, a rather remarkable difference of more than $4,200 per student. Harlan Independent misses our "Diamond in the Rough" classification, however, due to slightly below state average poverty and being just slightly below state average for high school graduation rates.

The Barbourville Independent School District is listed only a few places below Harlan in our SSI ranking yet has an even higher poverty rate of 60 percent with an SSI nearly equal to Harlan's.

Barbourville's poverty rate is actually higher than Union County's and isn't significantly different from a number of other districts – such as Frankfort Independent and Garrard County – that rank near the bottom of our SSI table.

Barbourville spent only $8,238 per pupil in 2010-11 while Frankfort and Garrard both spent thousands more. With its nearly equal poverty rate and much better test scores and efficiency, Barbourville's taxpayers, parents and students are getting a good deal. However, because its high school graduation rate is a shade below state average, Barbourville barely misses receiving a "Diamond in the Rough" classification.

There ARE Diamonds in the Rough'

As we did in our first "Bang for the Buck" report with individual schools, in this new report we wanted to identify school districts doing a noteworthy job of efficiently educating students despite significant challenges. A sidebar lists the criteria we used to designate a "Diamond in the Rough."

We found four Kentucky school districts met this fairly demanding set of selection criteria: Graves County, Eminence Independent, LaRue County and Mason County. Their detailed statistics are listed in Appendix C.

"***Diamond in the Rough" Districts*** – Have a positive, double-digit SSI with an ACT Composite Score at least 0.5 point higher than the overall simple district average composite score. "Diamonds in the Rough" also have a free and reduced cost school lunch rate of at least 56 percent (equal or above statewide average). To insure the higher than average ACT scores are not due to dropping more students out before graduation, each "Diamond in the Rough" also has an above state average high school graduation rate.

We call these districts "Diamonds in the Rough" because they would not stand out in any ranking scheme normally used in Kentucky. It is the combination of bang for the buck efficiency and better graduation rates despite poverty that makes them noteworthy.

Our four "Diamond in the Rough" districts are doing better than average at getting kids ready for college and careers at an efficient cost. The rest of the state's educators might benefit from learning how that happens.

As we discovered in 2006, there also is heartening evidence from this update that efficient school operations can be conducted in Kentucky – even in situations where notable student poverty is present.

Spending more doesn't necessarily produce more

I computed a Pearson Correlation Coefficient for the spending and scores data shown in Appendix A. This commonly employed statistical measure shows how the numbers in two columns of data relate to each other. The value can range from plus 1, indicating a perfectly positive relationship, to minus 1, which indicates that while one set of numbers increases, the other very strongly and consistently decreases.

The correlation for the relationship of spending to scores for the school districts listed in Appendix A was minus 0.29. This relatively small negative statistical correlation indicates that spending more in Kentucky actually is associated with LOWER test scores, not higher, though the trend is not terribly strong. It definitely indicates that spending more is not generally associated with higher performance.

That negative relationship between scores and spending also indicates Kentucky's school system can do more to operate with greater efficiently, thus generating more bang for more bucks.

EXPLORE Analysis for districts that don't have a high school

Because we wanted to examine Kentucky's educational performance using tests better aligned to what students need for college and careers than the CATS, we use the results from Kentucky's eighth grade EXPLORE testing for the five Primary to Grade 8 school districts that had such scores but lack high schools with ACT college entrance test scores. EXPORE data is available from 2011 testing for all five districts in this configuration category. The results are found in Appendix B, Table B-1.

One big surprise for some found in Table B-1 is a repeat situation from our 2006 "Bang for the Buck." The very heavily funded Anchorage Independent School District is not terribly efficient. Anchorage gets an SSI of minus 16.75 although Anchorage does produce top scores for its generally wealthy students (Anchorage has the lowest school lunch rate in the state).

Anchorage spent a lot per pupil to reach an EXPLORE Composite Score of 20.0 during the 2010-11 school year, besting next-highest Fort Thomas Independent's (a full Primary to Grade 12 district not listed in Table B-1) EXPLORE Composite Score by 1.9 points.

Although Fort Thomas Independent is a Primary to Grade 12 school system, I ran a quick SSI calculation for the district using its EXPLORE Composite Score. I used the EXPLORE and spending averages used for calculations in Appendix B, Table B-1 to quickly compute this EXPLORE-based SSI for Fort Thomas.

The result of this SSI comparison:

- Fort Thomas provides much better bang for the buck for its taxpayers than Anchorage does. Fort Thomas' EXPLORE-based SSI is 39.08, considerably better than Anchorage's minus 16.75 SSI.

- The Fort Thomas Independent School District's funding of $9,388 per pupil in 2010-11 amounts to little more than half of the $17,330 per pupil spent by Anchorage.

- While low compared to the state average, Fort Thomas' school lunch eligibility is more than five times higher than Anchorage's.

Because the Anchorage School District is a strong funding outlier in Kentucky school data, I also ran an SSI calculation for the EXPLORE-based districts with Anchorage removed. That analysis is summarized in Appendix B, Table B-2.

Note that most of the four remaining school districts without high schools are not terribly efficient, largely due to the fact that the Science Hill Independent School District now becomes the outlier. Science Hill's funding is well below that in the other districts listed in Table B-2. Its poverty rate is notably lower, though still significant. However, its EXPLORE Composite Score is far above the other listed districts' scores.

It appears that Science Hill is finding ways to operate a small, independent Primary to Grade 8 district efficiently, something other districts might want to examine more closely in this era of tight money. The district also provides a relatively good deal for taxpayers as well as its students. However, due to its somewhat lower poverty rate (and the absence of high school graduation data), we won't list Science Hill as a "Diamond in the Rough" district. Perhaps we should give it honorable mention among the Primary to grade 8 school districts, anyway.

Can schools learn anything from a high level Bang for the Buck study?

One of the Bluegrass Institute's goals is to develop reports with real usefulness for Kentucky's citizens.

Once we realized that accurate school level data would be unavailable for this edition of "Bang for the Buck," we were concerned about the utility of what we might find. Thus, we were very gratified to find our four "Diamond in the Rough" school districts and to interview their superintendents. As it turns out, finding those districts opened a pathway to some ideas that other school systems in Kentucky might want to consider.

For example, one comment we heard repeatedly from the superintendents is that relationships are important. This includes such things as respecting students and parents as important customers of the school system.

Several superintendents, including Mason County's Tim Moore, mentioned sending teachers – at least at the elementary school level – to every child's home prior to the start of the school year. This practice establishes a positive rapport with both students and parents before students even enter the school at the start of the term.

Concerning relationships, Moore also emphasized the importance of hiring great staff and then treating them with respect while providing superior professional development to make good teachers even better.

Professional development is important to these school leaders.

Graves County's Kenneth "Pete" Galloway was adamant about working aggressively to find schools doing better and to use that

information to mold better professional development programs.

Eminence Independent Schools Superintendent Buddy Berry personally conducts a significant portion of his district's professional development program – a great way of ensuring that all teachers are on the same track. In addition, the Eminence professional development sessions are videoed and are loaded onto You Tube, allowing other districts to immediately benefit from the sessions at no cost. The district even uses students in some parts of the district's professional development program – a powerful way to facilitate good customer feedback.

The subject of "high expectations" also came up repeatedly.

Senior leaders in the "Diamond in the Rough" school districts certainly don't try to claim poverty as an excuse (remember, all have poverty rates at least equal to the statewide average). Instead, these superintendents expect kids – regardless of backgrounds – to perform. High standards are set for all.

This is certainly a very different and positive attitude compared to that found not long ago in other schools when the Kentucky Department of Education started to do leadership assessments in the state's Persistently Low-Achieving Schools. Auditors found staff in some of the Persistently Low-Achieving Schools were quick to latch onto the poverty excuse, did not believe their students can learn at high levels and didn't accept ownership for their students' progress.[20]

Leaders of our "Diamonds in the Rough" districts viewed the poverty issue in a different light. For example, rather than waste time grieving about the relatively low levels of per pupil funding in his district, LaRue County's Sam Sanders is focusing on students, being data driven in meeting student needs, developing programs and working for constant improvement.

"Diamond in the Rough" superintendents are no different than most other school officials in that they would certainly appreciate more funding. However, unlike many of the leaders of the aforementioned Persistently Low-Achieving Schools, they skillfully use what's available to provide stellar educational experiences for their students.

Our "Diamond in the Rough" school system leaders proudly mentioned their extensive and growing use of digital learning, stressing there is more yet to come.

Thanks to digital learning, students are getting tailored courses; some are moving into college level work online. The norm in these school districts is, at a minimum, to equip all high school students with digital learning technology such as I-Pads or laptop computers.

The districts are carefully managing their money to make such provisions possible with an eye towards providing students with the kind of digital learning experience that will provide access to future education economies centered around information technologies.

Digital learning isn't just for students, either. Aside from the You Tube professional development programs already mentioned, Eminence Independent uses other digital delivery techniques for teacher professional development such as using Skype teleconferencing to conduct joint professional development activities with a highly regarded school in the United Kingdom.

There is frequent discussion of collaboration with the postsecondary system.

Several "Diamond in the Rough" districts are sending students to college classes at Bellarmine University. After graduation from high school, these students can arrive full time on campus with one or more years of undergraduate work already completed.

There is another point that I think needs to be stressed. I was struck by the "Diamond in the Rough" superintendents' universal enthusiasm for what they are doing for kids and their willingness to actively and aggressively search out ways to do it even better.

Several of the superintendents mentioned they are not satisfied with current performance and enthusiastically discussed near-term plans for ways to boost their districts' performance. Rather than being an excuse-loving group, these educators set high goals for all and then work hard to achieve them. Based on their identification as "Diamonds in the Rough," they already are.

This summary does not begin to encompass all ideas shared by the four superintendents. But I hope this listing will encourage leaders from other school districts across Kentucky to explore all that is happening in the "Diamonds in the Rough" districts. Superintendents, their staff members and teachers might find some very helpful answers to an increasingly perplexing problem: How do we continue to improve Kentucky's schools without increasing funding, which simply may not be possible in the current economy?

I would also encourage the Kentucky Department of Education leaders to spend some serious time with "Diamond in the Rough" districts. Certainly, the You Tube professional development packages from Eminence Independent could be worthy of at least an article in Kentucky Teacher, the department's newspaper for teachers. Some of the other things briefly discussed above might make other good articles, too.

Summary of Findings and Thoughts for the Future

It's not surprising that this "bang for the buck" analysis of Kentucky's education system confirms that many of the findings from 2006 remain valid.

Although our "mining" had to be restricted to a higher level, we can still find "Diamonds in the Rough" education systems. Just as in 2006, those systems don't get much attention despite the fact that they do a notably above-average job of providing efficient education – just as the state's Constitution requires.

As in 2006, we still find evidence that poverty is no excuse. In a number of cases, districts with high SSI numbers have higher poverty rates than other school systems found well down in the negative SSI region of our tables.

Still, much of the promise of efficiency remains untapped. We need a much better MUNIS system that allows us to dig deeper, finding out such things as which specific professional development programs work best for teachers and students and which programs of study in math, reading and science provide the best learning at reasonable costs.

Efficiency studies can point us to school systems and programs that do a stellar job of converting valuable tax dollars into better student performance. Other school systems operating at lower efficiency could certainly benefit from such pointers.

Once the Kentucky Department of Education repairs MUNIS, school managers need to drill much deeper into what works efficiently in our educational program. We might get answers to important questions about which professional development programs work best for our teachers and students, to reiterate the question the OEA wanted – but was unable – to answer in its 2006 study.

Recommendations

Overall, Kentucky's educational system needs to get a much better handle on the issue of efficiency in education. Given the fact that funding for education is unlikely to significantly increase, the most promising way to make further significant improvements in our schools is by identifying and widely replicating ideas that work both efficiently and effectively. To that end, these specific recommendations are offered to enhance the state's ability to better polish more "Diamonds in the Rough."

- The Kentucky Department of Education needs to significantly improve the MUNIS fiscal accounting system and related reporting. Changes should focus on providing information that can facilitate more detailed efficiency studies such as those attempted unsuccessfully by the Kentucky Legislative Research Commission in 2006. A crucial goal must be creating consistent cross-school and cross-district fiscal reports that contain high quality research. Participation by district and school finance personnel in this effort is essential. Members of the research community should also be consulted.
    - The MUNIS Chart of Accounts should be updated to add appropriate codes, enabling better program-performance tracking. In particular, accounting for funding should, when possible, be reflected to the school, not held at the district level. Standardized procedures also are needed to insure rapid and accurate updating of the chart of accounts. There also needs to be a solid mechanism to alert and educate district and school financial officers about these changes.
    - Proper resources and continuation training on the MUNIS system should be made available to district and school-level finance personnel.
    - Error-trapping features are needed to protect the future MUNIS system from such obvious mistakes as coding against obsolete and invalid codes.
- Once the MUNIS system is fixed and its codes updated, the Kentucky Office of Education Accountability should attempt another detailed efficiency study. In addition, both the Kentucky Department of Education and the OEA should encourage independent efficiency studies by researchers in the commonwealth's university system and other independent organizations.
- The Kentucky Department of Education rather than districts or schools should load the school report card spending information directly from the improved MUNIS system to insure comparable data is presented across schools and districts. In addition to improving data quality, this will reduce the report-card preparation burden on local district and school staff.
- The school code information included in the free and reduced cost school lunch report should also include a separate column with the school codes used for Kentucky's internal state reporting. This will greatly facilitate future research by making merges of the lunch data with other state-developed data much more efficient and accurate.

Final thoughts

Unfocused increases in education spending are unlikely to improve academic results for Kentucky's children. Without improved efficiency, most of those extra dollars are likely to just be frittered away.

Kentucky's education system needs to be much more concerned about schools that show a negative relationship between school spending and results. The "Diamond in the Rough" school districts hint that such inefficiency does not have to be the case, but much more evidence is needed than currently is provided from Kentucky's MUNIS education finance system before we can drill down to the level required to make significant improvements in educational efficiency.

State leaders, including legislators and executive branch personnel, need to develop the will and resolve to find out what produces a "Diamond in the Rough" school district and then take action to replicate that in other, less efficient school systems.

Appendix A[21]

Table A-1
Score-Spending Index Ranking for Districts with High Schools – Based on ACT Composite Score

Districts in shading have below average ACT Composite Scores

Code/District	Average Daily Attendance 2011	Total Expenses Per Pupil in 2011 [1000-5200 (Does Not Include 0280 On Behalf Expenditures)]	Percent of Students in Free and Reduced Cost Lunch for 2011	2011 District ACT Average Composite Score	ACT-Based Score-Spending Index	RANK
026 Beechwood Independent	1081.03	9018	**12%**	24.3	52.99	1
236 Harlan Independent	730.459	8639	**53%**	20.9	37.36	2
176 Fort Thomas Independent	2396.571	9388	**16%**	22.2	34.26	3
016 Barbourville Independent	603.931	8238	**60%**	19.1	31.64	4
465 Oldham County	10900.903	9336	**19%**	21.5	30.75	5
411 Meade County	4600.508	8453	**48%**	19.4	30.30	6
567 Walton Verona Independent	1433.065	9667	**32%**	21.8	28.04	7
541 Spencer County	2512.467	8336	**39%**	18.7	27.36	8
522 Russell Independent	2014.965	9313	**31%**	20.7	26.20	9
205 Graves County	4242.911	8762	**56%**	19.4	25.71	10
381 Marshall County	4352.551	9084	**47%**	20.0	25.00	11
255 Henry County	2004.161	8563	**53%**	18.7	23.99	12
291 Kenton County	12987.051	9042	**37%**	19.6	23.07	13
536 Somerset Independent	1347.95	8862	**54%**	19.1	22.37	14
241 Harrison County	2778.002	8816	**55%**	18.9	21.72	15
502 Raceland Independent	959.502	8879	**37%**	18.9	20.85	16
156 Eminence Independent	571.916	9868	**67%**	20.9	20.25	17
601 Woodford County	3664.47	9561	**35%**	20.2	19.95	18
305 LaRue County	2201.663	9164	**57%**	19.3	19.57	19
091 Campbell County	4450.01	9729	**41%**	20.2	17.88	20
152 Elizabethtown Independent	2105.564	10073	**46%**	20.9	17.80	21
012 Ashland Independent	2832.656	9596	**53%**	19.8	17.15	22
133 Corbin Independent	2440.506	9776	**54%**	20.1	16.73	23
135 Crittenden County	1153.84	9102	**53%**	18.7	16.65	24
561 Trimble County	1314.653	9268	**57%**	19.0	16.39	25
354 Ludlow Independent	797.882	9252	**61%**	18.9	15.98	26
121 Clark County	4930.156	9281	**54%**	18.9	15.62	27
181 Franklin County	5404.727	9340	**48%**	19.0	15.50	28
391 Mason County	2435.988	9365	**58%**	19.0	15.19	29
157 Erlanger-Elsmere Independent	2033.595	9431	**63%**	19.1	14.98	30
231 Hardin County	13001.093	9440	**48%**	19.1	14.88	31
585 Webster County	1936.936	9182	**57%**	18.5	14.39	32
361 Lyon County	782.216	9558	**46%**	19.2	14.05	33
451 Nelson County	4250.196	9423	**51%**	18.9	13.88	34

Code/District	Average Daily Attendance 2011	Total Expenses Per Pupil in 2011 [1000-5200 (Does Not Include 0280 On Behalf Expenditures)]	Percent of Students in Free and Reduced Cost Lunch for 2011	2011 District ACT Average Composite Score	ACT-Based Score-Spending Index	RANK
375 Marion County	2881.146	9342	**60%**	18.6	13.04	35
225 Hancock County	1517.208	10230	**46%**	20.3	12.66	36
545 Taylor County	2427.943	9490	**57%**	18.7	11.88	37
095 Carlisle County	719.045	9600	**57%**	18.9	11.78	38
501 Pulaski County	7236.502	9538	**65%**	18.7	11.31	39
151 Edmonson County	1808.007	9643	**58%**	18.9	11.28	40
311 Laurel County	8410.687	10008	**62%**	19.5	10.62	41
001 Adair County	2291.735	9596	**62%**	18.6	10.05	42
072 Burgin Independent	414.061	9804	**54%**	19.0	10.03	43
405 McLean County	1436.422	9652	**56%**	18.6	9.41	44
435 Montgomery County	4132.675	9638	**57%**	18.5	8.98	45
005 Allen County	2667.016	9761	**57%**	18.7	8.77	46
021 Barren County	4255.662	9690	**57%**	18.5	8.40	47
035 Boone County	17658.631	10703	**31%**	20.4	8.22	48
365 Madison County	9920.118	10044	**49%**	19.0	7.40	49
446 Murray Independent	1282.045	11158	**44%**	21.0	6.86	50
281 Jessamine County	6743.253	10321	**53%**	19.4	6.72	51
571 Warren County	12317.24	10333	**51%**	19.3	6.05	52
042 Bowling Green Independent	3529.46	10818	**55%**	20.2	6.02	53
017 Bardstown Independent	2181.672	10023	**63%**	18.7	5.93	54
492 Pikeville Independent	1069.767	11047	**29%**	20.5	5.36	55
575 Washington County	1483.613	9986	**61%**	18.5	5.18	56
392 Mayfield Independent	1326.722	10659	**81%**	19.7	4.93	57
251 Henderson County	6318.615	10011	**55%**	18.5	4.92	58
515 Rowan County	2826.64	10344	**60%**	19.1	4.84	59
034 Berea Independent	972.052	10942	**60%**	20.1	4.30	60
477 Paintsville Independent	742.787	10801	**46%**	19.8	4.08	61
272 Jackson Independent	358.709	10862	**60%**	19.9	4.02	62
471 Owen County	1697.471	10213	**60%**	18.6	3.40	63
145 Daviess County	9946.951	10647	**47%**	19.3	2.92	64
013 Augusta Independent	258.48	10482	**70%**	18.9	2.37	65
592 Williamsburg Independent	669.009	10363	**75%**	18.6	1.90	66
593 Williamstown Independent	820.486	11946	**53%**	21.3	1.23	67
395 McCracken County	6464.858	11249	**47%**	19.9	0.44	68
261 Hickman County	692.12	11233	**68%**	19.8	0.08	69
051 Boyle County	2444.017	11628	**40%**	19.9	-2.83	70
531 Shelby County	5967.656	10935	**45%**	18.5	-3.95	71
165 Fayette County	33390.355	12032	**47%**	20.1	-5.15	72
041 Bourbon County	2357.032	11329	**58%**	18.8	-5.78	73
425 Metcalfe County	1439.562	11401	**73%**	18.5	-7.87	74
481 Pendleton County	2345.018	11696	**53%**	18.9	-8.25	75
265 Hopkins County	6253.667	11644	**55%**	18.8	-8.33	76
085 Calloway County	2856.062	12239	**55%**	19.5	-9.54	77
143 Danville Independent	1606.069	12929	**62%**	20.3	-10.86	78

Code/District	Average Daily Attendance 2011	Total Expenses Per Pupil in 2011 [1000-5200 (Does Not Include 0280 On Behalf Expenditures)]	Percent of Students in Free and Reduced Cost Lunch for 2011	2011 District ACT Average Composite Score	ACT-Based Score-Spending Index	RANK
131 Clinton County	1509.818	11939	**64%**	18.6	-11.55	79
525 Scott County	7387.673	12881	**39%**	19.9	-12.29	80
472 Owensboro Independent	3710.306	12026	**75%**	18.5	-12.66	81
591 Whitley County	3964.065	13235	**77%**	18.5	-20.64	82
275 Jefferson County	85655.668	13236	**63%**	18.5	-20.64	83
071 Bullitt County	11456.312	8729	**46%**	18.1	17.73	84
055 Bracken County	1084.672	8828	**53%**	18.3	17.69	85
535 Simpson County	2717.213	8752	**55%**	17.7	14.82	86
162 Fairview Independent	747.913	9086	**60%**	18.2	13.73	87
146 Dawson Springs Independent	622.606	9120	**62%**	18.1	12.68	88
511 Rockcastle County	2654.785	9292	**68%**	18.2	11.21	89
555 Trigg County	1851.611	9446	**56%**	18.4	10.59	90
081 Caldwell County	1795.603	9361	**59%**	18.1	9.78	91
495 Powell County	2162.772	9527	**72%**	18.3	9.06	92
455 Nicholas County	1042.831	9484	**65%**	18.2	8.95	93
161 Estill County	2209.599	9541	**69%**	18.2	8.30	94
025 Bath County	1794.944	9339	**71%**	17.8	8.21	95
351 Logan County	3236.748	9512	**51%**	18.1	8.04	96
211 Grayson County	3851.48	9674	**69%**	18.4	7.99	97
246 Hazard Independent	838.778	9417	**54%**	17.9	7.92	98
111 Casey County	2101.47	9532	**68%**	18.1	7.81	99
115 Christian County	8087.347	9284	**69%**	17.6	7.63	100
065 Breckinridge County	2472.84	9630	**65%**	18.1	6.71	101
075 Butler County	1914.006	9115	**59%**	17.1	6.51	102
335 Lewis County	2087.161	9680	**71%**	18.0	5.58	103
285 Johnson County	3350.522	9710	**67%**	18.0	5.25	104
201 Grant County	3441.885	9635	**59%**	17.8	4.89	105
521 Russell County	2611.777	9875	**68%**	18.1	4.07	106
221 Greenup County	2611.646	9887	**60%**	18.0	3.36	107
191 Gallatin County	1441.543	9976	**68%**	18.0	2.44	108
032 Bellevue Independent	687.5	9803	**72%**	17.6	1.93	109
478 Paris Independent	667.346	10210	**69%**	18.0	0.09	110
445 Muhlenberg County	4668.999	10420	**55%**	18.3	-0.29	111
341 Lincoln County	3606.099	9921	**65%**	17.4	-0.42	112
171 Fleming County	2125.005	10040	**61%**	17.4	-1.60	113
315 Lawrence County	2122.697	10105	**67%**	17.5	-1.67	114
197 Glasgow Independent	1721.305	10752	**59%**	18.4	-2.84	115
441 Morgan County	1844.783	10376	**70%**	17.7	-3.15	116
493 Pineville Independent	479.167	10501	**68%**	17.9	-3.22	117
155 Elliott County	983.781	9992	**79%**	17.0	-3.40	118
491 Pike County	8723.608	10229	**69%**	17.4	-3.42	119
015 Ballard County	1259.113	10828	**51%**	18.4	-3.52	120
331 Letcher County	2912.169	10368	**70%**	17.6	-3.62	121
581 Wayne County	2277.573	10399	**71%**	17.5	-4.45	122

Code/District	Average Daily Attendance 2011	Total Expenses Per Pupil in 2011 [1000-5200 (Does Not Include 0280 On Behalf Expenditures)]	Percent of Students in Free and Reduced Cost Lunch for 2011	2011 District ACT Average Composite Score	ACT-Based Score-Spending Index	RANK
245 Hart County	2084.048	10521	**64%**	17.6	-5.02	123
031 Bell County	2589.084	10404	**83%**	17.3	-5.59	124
485 Perry County	3690.102	10046	**79%**	16.7	-5.62	125
523 Russellville Independent	932.526	10772	**70%**	17.9	-5.65	126
415 Menifee County	1033.261	10329	**76%**	17.1	-6.01	127
175 Floyd County	5484.113	10453	**76%**	17.3	-6.03	128
345 Livingston County	1129.398	11152	**53%**	18.2	-7.34	129
276 Jenkins Independent	489.722	10678	**71%**	17.4	-7.48	130
147 Dayton Independent	786.442	10145	**75%**	16.5	-7.66	131
426 Middlesboro Independent	1248.983	11031	**81%**	17.9	-7.87	132
431 Monroe County	1761.601	10638	**70%**	17.2	-8.20	133
295 Knott County	2141.927	10997	**72%**	17.7	-8.62	134
505 Robertson County	319.602	11261	**61%**	18.0	-9.25	135
101 Carroll County	1721.308	11241	**60%**	17.9	-9.59	136
141 Cumberland County	902.804	10887	**71%**	17.2	-10.30	137
421 Mercer County	2803.346	11586	**50%**	18.3	-10.32	138
235 Harlan County	3580.702	10964	**76%**	17.3	-10.41	139
045 Boyd County	2863.415	11086	**57%**	17.4	-10.89	140
092 Campbellsville Independent	981.32	11365	**68%**	17.8	-11.08	141
436 Monticello Independent	749.758	10867	**72%**	17.0	-11.18	142
325 Leslie County	1567.695	11153	**65%**	17.3	-11.93	143
551 Todd County	1804.79	11157	**60%**	17.3	-11.96	144
401 McCreary County	2648.69	11124	**76%**	17.2	-12.21	145
461 Ohio County	3493.926	11944	**63%**	18.2	-13.49	146
271 Jackson County	1899.501	11572	**72%**	17.6	-13.65	147
132 Cloverport Independent	308.108	11593	**73%**	17.6	-13.81	148
011 Anderson County	3485.436	12079	**43%**	18.3	-13.98	149
385 Martin County	1916.439	10964	**69%**	16.6	-14.04	150
061 Breathitt County	1893.832	11631	**80%**	17.4	-15.06	151
301 Knox County	3992.937	11230	**78%**	16.8	-15.06	152
105 Carter County	4201.257	11834	**62%**	17.2	-17.48	153
321 Lee County	1004.354	11670	**77%**	16.7	-18.75	154
195 Garrard County	2241.508	12608	**63%**	17.9	-19.39	155
565 Union County	2067.621	12850	**58%**	18.2	-19.59	156
215 Green County	1541.68	12951	**66%**	18.1	-20.65	157
371 Magoffin County	1950.304	11862	**86%**	16.4	-21.50	158
177 Frankfort Independent	663.894	13292	**65%**	18.2	-22.26	159
595 Wolfe County	1140.333	12772	**78%**	17.4	-22.65	160
125 Clay County	3029.281	12705	**75%**	17.3	-22.69	161
452 Newport Independent	1589.892	12759	**85%**	17.2	-23.46	162
476 Paducah Independent	2450.585	13530	**73%**	18.2	-23.63	163
185 Fulton County	484.878	12204	**79%**	15.9	-26.03	164
113 Caverna Independent	659.805	12594	**73%**	16.2	-26.97	165
186 Fulton Independent	325.824	13870	**81%**	17.5	-28.36	166
134 Covington Independent	3246.01	13211	**88%**	15.6	-32.96	167
533 Silver Grove Independent	196.281	15965	**78%**	17.0	-39.54	168
475 Owsley County	690.043	16049	**88%**	16.8	-40.57	169
State	**593177.1**	**10814**	**56%**	**18.8**	**-1.30**	
District Averages		**10503.57**		**18.5**		

Appendix B
Score-Spending Index Ranking for Districts without High Schools – Based on EXPLORE Composite Score

Table B-1[22]
All 5 District Analysis

Districts in shading have below average EXPLORE Composite Scores

Code/District	Average Daily Attendance 2011	Total Expenses Per Pupil in 2011 [1000-5200 (Does Not Include 0280 On Behalf Expenditures)]	Percent of Students in Free and Reduced Cost Lunch for 2011	2010-2011 District EXPLORE Average Composite Score	EXPLORE-Based Score-Spending Index
524 Science Hill Independent	438.278	7792	**46%**	16.7	54.60
006 Anchorage Independent	335.634	17330	**3%**	20.0	-16.75
149 East Bernstadt Independent	445.89	9987	**60%**	14.6	5.45
537 Southgate Independent	185.82	10446	**66%**	14.8	2.20
586 West Point Independent	96.047	13235	**81%**	15.3	-16.61
District Averages		**11758.00**		**16.3**	

Table B-2[23]
Analysis with Anchorage Removed

Districts in shading have below average EXPLORE Composite Scores

Code/District	Average Daily Attendance 2011	Total Expenses Per Pupil in 2011 [1000-5200 (Does Not Include 0280 On Behalf Expenditures)]	Percent of Students in Free and Reduced Cost Lunch for 2011	2010-2011 District EXPLORE Average Composite Score	EXPLORE-Based Score-Spending Index
524 Science Hill Independent	438.278	7792	**46%**	16.7	44.25
149 East Bernstadt Independent	445.89	9987	**60%**	14.6	-1.61
537 Southgate Independent	185.82	10446	**66%**	14.8	-4.64
586 West Point Independent	96.047	13235	**81%**	15.3	-22.19
District Averages		**10365.00**		**15.4**	

Appendix C
"Diamond in the Rough" Districts

The districts listed in Table C-1 are examples of "Diamond in the Rough" systems that produce higher than average academic performance and higher than average efficiency with unusually low per pupil funding and surprisingly high poverty rates.

Table C-1[24]
"Diamond in the Rough" District Summary

Code/District	Average Daily Attendance 2011	Total Expenses Per Pupil in 2011 [1000-5200 (Does Not Include MUNIS 0280 On Behalf Expenditures)]	Percent of Students in Free and Reduced Cost Lunch for 2011	2011 District ACT Average Composite Score	ACT-Based Score-Spending Index	NCLB Averaged Freshman Graduation Rate for All Students in 2010
205 Graves County	4242.911	8762	56%	19.4	25.71	82.47%
156 Eminence Independent	571.916	9868	67%	20.9	20.25	100%
305 LaRue County	2201.663	9164	57%	19.3	19.57	84.94%
391 Mason County	2435.988	9365	58%	19.0	15.19	79.72%
Simple District Average				**18.5**		
Statewide Average			**56%**			**76.68%**

Note: The NCLB Averaged Freshman Graduation Rate is the official high school graduation rate in Kentucky for No Child Left Behind required reporting. All districts listed in this table have graduation rates above the statewide average.

Endnotes

[1] Kentucky Legislative Research Commission, ***The Constitution of the Commonwealth of Kentucky***, Informational Bulletin No. 59, November 2010, Page 55. On line at: http://www.lrc.ky.gov/lrcpubs/IB59.pdf.

[2] For example: Rivera, Manuel, "A critical connection: Education and the economy," Arizona Republic, Feb. 13, 2010, on line at: http://www.azcentral.com/arizonarepublic/opinions/articles/2010/02/12/20100212rivera13.html.

[3] "Commonwealth Of Kentucky, 2012 – 2014 Executive Budget, Budget in Brief," Page 18, shows combined K to 12 plus postsecondary education share well over half of the general fund budget. Report on line at: http://www.osbd.ky.gov/NR/rdonlyres/28C22F94-8799-47C4-9627-3CF8B40C388F/0/1214ExecBudBudInBrief.pdf.

[4] Unlike Kentucky's own school finance data, which only reflects money that is passed along to the school districts, the data presented by the US Census Bureau include several 'high ticket' items like spending on teacher retirement and teacher health care programs administered at the state level in Kentucky. This funding is never seen by local school districts in Kentucky.

[5] Data Sources for Table 1: US Census Bureau, "Public Education Finances: 1989," Table 11, (not on line), and US Census Bureau, "Public Education Finances: 2010," Table 1, June 2012. On line at: http://www2.census.gov/govs/school/10f33pub.pdf. Calculation of constant 1989 dollar figure by author using the Bureau of Labor Statistics CPI Inflation Calculator, On line at: http://data.bls.gov/cgi-bin/cpicalc.pl.

[6] Data source for Figure 1: Kentucky Council on Postsecondary Education table on line at: http://dataportal.cpe.ky.gov/hsfr/historicaltables.shtm.

[7] For example: Stewart, Robert N., "More Money Won't Buy Better Student Achievement," "Institute Brief," March 2006. On line at: http://www.limitedgovernment.org/publications/pubs/briefs/pdfs/brf13-9.pdf. Also: Evers, Williamson M. and Clopton, Paul, "High-Spending, Low-Performing School Districts," Hoover Press, undated. On line at: http://media.hoover.org/sites/default/files/documents/0817947817_103.pdf.

[8] Hill, John R., "Alabama's Public Education Dilemma: Does Funding Influence Outcomes?" Alabama Policy Institute, 2008. On line at: http://alabamapolicy.org/pdf/education-2007-final.pdf

[9] Seiler, Marcia F. et al., ***Indicators of Efficiency and Effectiveness in Elementary and Secondary Education Spending,*** Research Report No. 338, Kentucky Legislative Research Commission, Frankfort, KY, Dec. 5, 2006. On line at: http://www.lrc.ky.gov/lrcpubs/RR338.pdf.

[10] Seiler, Marcia F. et al., Page xiii.

[11] The Kentucky Department of Education's 2011 school report card database file containing the school spending data is the "SCHOOL_DETAILS.xls" Excel Spreadsheet. The specific column is titled "SPENDING". On line at: ftp://ketsftp.k12.ky.us/OAA/School%20Report%20Card%20Data/SRC%2020102011/SCHOOL_DETAILS.xls.

[12] The Kentucky Department of Education's "Receipts and Expenditures Audited 2010-2011" report is available on line at: http://www.education.ky.gov/NR/rdonlyres/B1633420-521A-4BD7-8C12-DA4FDBCFC912/0/ReceiptsExpendituresAudited20102011.xls.

[13] The Kentucky Department of Education's Schools Directory lists only one school in the Anchorage Independent School District. The directory is on line at: http://www.education.ky.gov/KDEWebSite/Templates/KDE/General/General.aspx?NRMODE=Published&NRNODEGUID=%7b8EED686D-3D1E-496E-AB58-9F9327E07473%7d&NRORIGINALURL=%2fKDE%2fAbout%2bSchools%2band%2bDistricts%2fKentuckys%2bSchools%2band%2bDistricts%2fKentucky%2bSchools%2bDirectory%2ehtm&NRCACHEHINT=Guest#b.

[14] Senate Bill 130, 2006 Kentucky Regular Legislative Session. On line here: http://www.lrc.ky.gov/record/06rs/SB130.htm

[15] The ACT web site has more information about the EPAS system available here: http://www.act.org/epas/.

[16] Kentucky Department of Education, "2011 ACT-Tested Juniors--ACT Average 2010-2011" Excel file. On line at: http://www.education.ky.gov/NR/rdonlyres/4355C2DE-7528-4A72-990A-A7BFED39616C/0/ACT_Average_201011.xls.

[17] EXPLORE data for 2010-2011 comes from the EXPLORE Average 0607-1112 Excel Spreadsheet. On line at: http://www.education.ky.gov/NR/rdonlyres/843CD11C-18DC-4AFF-8334-6C3FBF1CD736/0EXPLOREAverage06071112.xls

[18] The Receipts and Expenditures Excel spreadsheet is on line at: http://www.education.ky.gov/NR/rdonlyres/B1633420-521A-4BD7-8C12-DA4FDBCFC912/0/ReceiptsExpendituresAudited20102011.xls.

[19] U.S. Department of Agriculture, Kentucky Department of Education, Division of Nutrition & Health Services, "FY 2011 Qualifying Data(Source - Oct 2010).xls" Excel spreadsheet. On line at: http://scn.ky.gov/octdataout/FY2011QualifyingData.xls.

[20] For examples of schools where the culture does not believe all students can learn, see: Kentucky Department of Education, "Jefferson County Public Schools, WESTERN HIGH SCHOOL, School Leadership Assessment Report 03/14/2010 - 03/19/2010," Frankfort Kentucky. Page 23; and Kentucky Department of Education, "Jefferson County Public Schools, WESTERN MIDDLE, School Leadership Assessment Report, 03/28/2010 - 04/02/2010," Frankfort, Kentucky, Page 25.

[21] References for data in Table A-1 include: Per Pupil Funding: The Kentucky Department of Education's "Receipts and Expenditures Audited 2010-2011" report. Available on line at: http://www.education.ky.gov/NR/rdonlyres/

B1633420-521A-4BD7-8C12-DA4FDBCFC912/0/ReceiptsExpendituresAudited20102011.xls; ACT Scores: Kentucky Department of Education, "2011 ACT-Tested Juniors--ACT Average 2010-2011" Excel file. On line at: http://www.education.ky.gov/NR/rdonlyres/4355C2DE-7528-4A72-990A-A7BFED39616C/0/ACT_Average_201011.xls; and Lunch Participation Rates: U.S. Department of Agriculture, Kentucky Department of Education, Division of Nutrition & Health Services, "FY 2011 Qualifying Data(Source - Oct 2010).xls" Excel spreadsheet. On line at: http://scn.ky.gov/octdataout/FY2011QualifyingData.xls.

[22] References for data in Table B-1 include: Per Pupil Funding: The Kentucky Department of Education's "Receipts and Expenditures Audited 2010-2011" report. Available on line at: http://www.education.ky.gov/NR/rdonlyres/B1633420-521A-4BD7-8C12-DA4FDBCFC912/0/ReceiptsExpendituresAudited20102011.xls; EXPLORE scores: Kentucky Department of Education, EXPLORE Average 0607-1112 Excel Spreadsheet. On line at: http://www.education.ky.gov/NR/rdonlyres/843CD11C-18DC-4AFF-8334-6C3FBF1CD736/0/EXPLOREAverage06071112.xls.; and Lunch Participation Rates: U.S. Department of Agriculture, Kentucky Department of Education, Division of Nutrition & Health Services, "FY 2011 Qualifying Data(Source - Oct 2010).xls" Excel spreadsheet. On line at: http://scn.ky.gov/octdataout/FY2011QualifyingData.xls.

[23] References for Table B-2 are the same as for Table B-1 listed in previous endnote.

[24] References for data in Table C-1 include: Per Pupil Funding: The Kentucky Department of Education's "Receipts and Expenditures Audited 2010-2011" report. On line at: http://www.education.ky.gov/NR/rdonlyres/B1633420-521A-4BD7-8C12-DA4FDBCFC912/0/ReceiptsExpendituresAudited20102011.xls; ACT Scores: Kentucky Department of Education, "2011 ACT-Tested Juniors--ACT Average 2010-2011" Excel file. On line at: http://www.education.ky.gov/NR/rdonlyres/4355C2DE-7528-4A72-990A-A7BFED39616C/0/ACT_Average_201011.xls; Lunch Participation Rates: U.S. Department of Agriculture, Kentucky Department of Education, Division of Nutrition & Health Services, "FY 2011 Qualifying Data(Source - Oct 2010).xls" Excel spreadsheet. On line at: http://scn.ky.gov/octdataout/FY2011QualifyingData.xls; and No Child Left Behind Averaged Freshman Graduation Rates: Kentucky Department of Education NCLB_AFGR.xls Excel spreadsheet on line at: http://www.education.ky.gov/NR/rdonlyres/B3C07B58-293A-435B-935B-351A5E80727C/0/NCLB_AFGR.xls