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Calculation of the Cost of an Adequate Education in Kentucky: A Professional Judgment Approach

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Abstract

What is an adequate education and how much does it cost? In 1989, Kentucky's State Supreme Court found the entire system of education unconstitutional-"all of its parts and parcels". The Court called for all children to have access to an adequate education, one that is uniform and has as its goal the development of seven capacities, including: (i) "sufficient oral and written communication skills to enable students to function in a complex and rapidly changing civilization . . . .and (vii) sufficient levels of academic or vocational skills to enable public school students to compete favorably with their counterparts in surrounding states, in academics or in the job market". Now, over a decade later, key questions remain regarding whether these objectives have been fulfilled. This research is designed to calculate the cost of an adequate education by aligning resources to State standards, laws and objectives, using a professional judgment approach. Seven focus groups were convened for this purpose and the

scholarly literature was reviewed to provide multiple inputs into study findings. The study produced a per pupil base cost for each of three prototype school districts and an total statewide cost, with the funding gap between existing revenue and the revenue needed for current operations of $1.097 billion per year (2001-02). Additional key resource requirements needed to achieve an adequate education, identified by professional judgment panels, include: (1) extending the school year for students and teachers, (2) adding voluntary half-day preschool for three and four year olds, and (3) raising teacher salaries. This increases the funding gap to $1.23 billion and suggests that significant new funding is required over time if the Commonwealth of Kentucky is to provide an adequate and equitable education of high quality for all children and youth as directed by the State Supreme Court.

Introduction

What is the cost of an adequate education in Kentucky? Note 1 This research examines the cost of educational adequacy in the Commonwealth of Kentucky. The study is designed to determine the funding levels necessary for different school districts to meet State standards and objectives that define an adequate education, using a professional judgment approach. Work began for the Council for Better Education, Inc., in July 2002 and seven focus groups were held in Louisville and Lexington in November and December 2002. These meetings were convened for the purpose of conducting a “professional judgment” adequacy study. In total, 80 Kentucky citizens and educators with knowledge of education issues were invited to contribute to the information contained in this report; there was a 65 percent response rate. Information gathered from professional judgment panels was cross-referenced to the research literature to provide multiple inputs into study findings.

Currently the State of Kentucky uses a three-tiered finance system, entitled SEEK (Support Education Excellence in Kentucky), to distribute State aid to school districts. SEEK was created by the Kentucky Education Reform Act of 1990 (KERA) in response to the Supreme Court ruling in *Rose v. the Council for Better Education* that found the entire education system unconstitutional. The Court called for all children to have access to an adequate education, one that is uniform and has as its goal the development of the seven capacities, including: (i) “sufficient oral and written communication skills to enable students to function in a complex and rapidly changing civilization . . . .and (vii) sufficient levels of academic or vocational skills to enable public school students to *compete* favorably with their counterparts in surrounding states, in academics or in the job market” (emphasis added). The Court directed the Kentucky General Assembly to create and enact into law a new system of education that was not only constitutional but also was based upon efficiency as defined by equity and adequacy. Note 2

The Kentucky Education Reform Act (KERA) has been referred to as the most comprehensive educational reform ever attempted in the United States; it called for systemic change in finance, governance, curriculum and assessment. The

new finance system, created under KERA, is composed of three levels of funding: the minimum foundation program and two additional funding tiers. Under the foundation program, each school district is guaranteed a minimum amount of funding per pupil. Districts contribute to that amount through the proceeds of the equivalent of a uniform property tax. Wealthy districts that have higher property values per pupil raise more funding and less affluent districts with lower property values raise fewer dollars. The State makes up the difference between what a district raises and the State guarantee. This is referred to as “equalization”. In 2001-02 the base SEEK State guarantee per pupil (i.e., the foundation guarantee) was $3,066. Note 3 However, it is difficult to say what the foundation guarantee represents. In most States it is determined more by available revenue than rational analysis. Note 4 Often it is a number that is set by the State to allocate as much total support as the State legislature provides. Note 5 However, assuring that the system provides an adequate level of support requires the foundation level to be set at an appropriate level—a level that is aligned with State laws, standards and objectives.

It is common practice to adjust the foundation guarantee for cost pressures beyond the control of the school district. For example, some districts have more students with disabilities, limited English Proficiency or economic disadvantages that require higher costs to educate to State standards and objectives. School systems can also have uncontrollably “high costs” due to e.g., size and location. The State of Kentucky provides funding to school districts in addition to the guaranteed base amount for transportation, children with disabilities (including home and hospital), and economic disadvantages. Under Tier I, districts can also supplement funding through additional taxes that are matched by the State to 15 percent above the SEEK base guarantee plus add-ons; and through Tier II, to 30 percent above base SEEK and Tier I funding, which is not matched by the State. Note 6

Although many aspects of KERA have been examined over time, still major questions remain almost thirteen years after Kentucky enacted a new school funding system and major education reforms into law. Key among them are the following: What is the cost of an adequate education in Kentucky? How do costs vary for students and districts with special needs? Does the Commonwealth of Kentucky provide sufficient funding to support an adequate education? This study addresses these questions. It is designed to determine the funding levels necessary for different school districts to meet State standards and objectives that define an adequate education. Other States such as Alaska, Illinois, Ohio, Maryland, New Hampshire, Oregon, and Wisconsin have estimated funding school districts need to fulfill State laws, standards and objectives either as part of school finance litigation or at the request of State legislatures or education officials. These States are using calculation procedures based on one of two data-based approaches that have been refined over the past several years: (1) the professional judgment model also called a resource cost model (RCM) or (2) the successful district approach, also referred to as the empirical approach. These are two of four approaches used to rationally determine an average base cost of an adequate education for a State. The other approaches include: costing comprehensive school reform models (CSR), and the econometric approach--a complex statistical method. Of the

latter two approaches only CSR has been employed by a single State. Note 7

The research approach used in this study to determine the average base cost of an adequate education, the professional judgment approach, is a version of what has been called the “resource cost model” or the “ingredients approach.” Note 8 In the past it asked professional educators to specify the resource needs of quality schools using their professional judgments. Currently the approach enlists professionals and service providers to specify the resource and service needs of prototype schools in order for students to have an adequate education. Once resources have been specified, prices are added which, when summed, provide a cost estimate. Costs for elementary, middle and high schools can be combined with district level costs to produce an overall cost of education per pupil. The district level costs include additional expenditures beyond school site costs or costs that cannot be disaggregated to schools, such as district administration, central office costs, transportation, plant maintenance and operations. To these costs, adjustments can be made to provide additional assistance to students with special needs, such as exceptional children, children who are English language learners, and economically disadvantaged children.

The following sections will discuss alternative cost methods and explain in greater detail the professional judgment approach to studying adequacy as it was implemented in Kentucky.

Alternative Methods for Determining an Adequate Base Cost of Education

Scholars have identified a variety of methods for measuring the cost of education. Note 9 The principal methods include: 1) resource cost models (RCM)—based on research and/or professional judgments, 2) empirical approaches--deductive inference from exemplary districts, 3) econometric modeling--a complex statistical technique and 4) costing comprehensive school reform models. Each of these methods provides an average base cost of education for a presumed or hypothetical student that is further adjusted for special student/district characteristics.

Professional Judgment/Resource Cost Models

Using the professional judgment approach for determining costs, resources or ‘ingredients’ deemed necessary to meet State laws, objectives and standards are identified by service providers and/or research, and then prices are attached and summed. The result is the estimation of an average, base cost of a defined set of resources in the average district needed to achieve particular State constitutional requirements and objectives that define adequacy. Resources that are priced include class sizes, personnel, materials, supplies, technology and equipment. As the approach has been implemented, it aligns resources with State laws and standards but does not determine how funding is distributed or how funds should be used in districts and schools. The advantages of the approach are that it is easy to understand and transparent. The disadvantages are that it tends to be based on current practice and it needs to be

supplemented (not supplanted) by research to assure resource configurations/strategies are able to produce desired results. Note 10

For example, the professional judgment approach based on consultation with local experts has been used in Wyoming, South Carolina, Montana, Maryland, Missouri, Illinois and Alaska. In Wyoming, Note 11 the method for determining costs relied heavily on consultation with professional expert groups including teachers, counselors, principals, business managers and superintendents from elementary, middle and high schools; from large and small districts; and from rural and urban areas of the State. Note 12 Practitioners views were used to "form the consultant's views" related to the resource elements necessary to produce an adequate educational system, as was reliance on national research. Note 13 Complex statistical methods to calculate resource costs were avoided in Wyoming, and more transparent, prototypical model budgets for elementary, middle and high schools were constructed including adjustments for high cost students and districts. This included students with disabilities or economic disadvantages, and isolated rural school districts. For example, the prototypical model cost for elementary school assumed an average school size of 288 students, class size of 16 and average teacher compensation of $41,433 (1996); however, districts were permitted local control in the manner in which they deployed resources as the budget models were primarily used to determine costs. Required numbers of and/or costs for additional factors included personnel, supplies and equipment, food service, categorical aid, student activities, maintenance and operations, transportation and administration. Capital expenditures were not included in the estimates. This model was adopted by the Wyoming legislature but required a special session to address the special high costs of small schools/districts, which were omitted from the initial calculations.

The Empirical Approach -- Deductive Inference of Costs from Exemplary Districts

This strategy for defining costs—referred to as the successful school district approach--identifies schools or school districts where student performance meets desired targets, and determines the level of resources expended by such schools/school districts to estimate costs. It can include controls for non-school factors that may affect student achievement and adjustments for high cost students.

This approach has been used in Illinois, Mississippi, Maryland and Ohio. In Ohio, Note 14 all school districts except outliers (defined by high and low property wealth and spending) meeting most of the State's 18 outcome measures defined the foundation level of spending. In New Hampshire, a modified approach was used that included only the lower spending of those districts that were within a narrow range of meeting the State's objectives; they were used to calculate base cost figures for instruction, administration, and plant maintenance and operations, which were then combined to produce a single, base cost figure. Note 15

This approach of inferring costs from "exemplary" districts is intuitively appealing and understandable. However, the approach necessitates a

well-developed State accountability system and database. Also, as implemented, it usually eliminates 'outlier' school districts leading to the possibility of recommendations that underfund education and calling into question whether adequate costs have been defined for the entire State. "Exemplary" districts are generally affluent districts with few high need students raising questions about whether findings can be generalized to districts with a more diverse student population. Finally, and perhaps most importantly for the purposes of this study, if the funding system is inadequate for all districts in the State, as was the case in Kentucky under *Rose,* then correlating *current* spending in select districts to student outcomes will fail to capture the cost of an adequate education.

Econometric Modeling

Using econometric modeling, costs are derived by associating total district spending with predetermined pupil performance levels or proficiencies, such as student achievement test scores. The statistical technique is least squares analysis. In essence, this approach statistically isolates factors contributing to school costs independent of other related factors and adjusts them by the cost factors to achieve an overall cost figure; controls may be used for non-school factors contributing to these costs. Thus, the calculation summarizes all the information about costs into a single number, which indicates how much each school district must spend to achieve a given level of educational output, such as the average level of current student performance in a State.

For example, an econometric study of the cost of education in New York Note 16 related student achievement to multiple schooling and non-schooling factors, including per pupil spending, for 631 school districts. The study resulted in six cost indices for New York school districts; however they provided widely divergent results for the same districts depending on the assumptions embedded in the model. The cost of education in New York City was found to be 30 percent higher than the average cost of education in the State, using the alternative measure for school district performance. Conversely, using pupil performance indicators directly for the outcome measure, the cost of education in New York city was found to be almost 300 percent higher than average when efficiency was not included in controls; it was 126 percent higher when efficiency was included but considered exogenous; it was 287 percent higher when efficiency was included but considered endogenous. Note 17

These widely varying costs of education produced through econometric modeling can weaken the confidence in the findings particularly because the assumptions undergirding the models are obtuse. These and other problems raise questions about the defensibility of the findings emerging from the studies. While these models contribute to theory and academic interest, at a practical level they are difficult to understand or explain to policymakers and may be counterintuitive. No State has employed the resulting cost figures into law; those that have include them to adjust the final revenue allocation figure, in an effort to recognize the variations in the purchasing price of the dollar across the State--not as a determinant of the average base cost of education necessary to achieve an adequate education.

Comprehensive Schoolwide Reform Models

Another approach for developing an adequacy target is based on costing-out comprehensive schoolwide reform (CSR) models, in an effort to link educational strategies to resources. Note 18 The approach is a variant of the original RCM: resources needed to implement a CSR model are identified, priced and summed. These model costs are then added to a base cost of education and/or substituted for resources currently deployed and used in schools to arrive at a cost estimate that can be adjusted for special needs students and districts. To be meaningful, the models used for developing cost estimates should be based on proven, effective programs with a long research track record demonstrating effectiveness in teaching all children to high levels and achieving State standards. A difficulty is that most CSR models, particularly New American Schools (NAS), have not had the time to prove their effectiveness. According to a recent study: “Many of the newer approaches, including New American Schools approaches, showed promise, but had not been in schools long enough to build a substantial research base on student outcomes.” Note 19 In addition, CSR costs include design elements, consultant costs and training estimates—base costs must also be specified and priced apparently by employing one of the previously mentioned approaches. While several models of comprehensive reform are currently available and have been priced, at this time, few have been field tested or used for policy purposes.

Summary

In summary, there are several approaches for determining an average, adequate base cost of education that have been refined over the past decade and used in several States. However, as one researcher has noted, “none of these approaches are immune to manipulation; that is, each is subject to tinkering on the part of users that might change results.” Note 20 Moreover, it is not clear how results might compare using differing methods although the empirical approach and professional judgment method apparently have been successfully blended in at least one State. Nonetheless, each approach represents an attempt to rationally determine the cost of an adequate base education and other parameters that drive State aid levels, and therefore, the use of almost any rational approach improves current practice and raises the level of discussion, much of which is based on the availability of State aid rather than the costs necessary to provide an adequate education.

Implementing the Professional Judgment Approach

The professional judgment approach used in this study focuses on identifying resources needed to meet State laws, objectives and standards. Once resources are specified, prices are affixed, which, when applied across all resource components, and summed, produce a cost estimate. Costs for elementary, middle and high schools are combined with district level costs to produce an overall average base-cost of education. District costs are those in addition to school site expenditures, such as plant maintenance and operations, transportation, central office personnel and other costs that cannot be

disaggregated to school sites. The average cost of education produced is then adjusted to include the excess costs necessary to educate students with special needs, and districts with exceptional circumstances or uncontrollably high costs. Special needs students can include students in special education, with economic disadvantages, and English language learners. Size and location can create cost pressures for school districts.

In Kentucky, using panels of highly qualified education professionals and the professional judgment method for determining costs resulted in the identification of the resource needs of prototype elementary, middle and high schools with a particular set of characteristics based on current Kentucky school districts and student demographics. Because the State's schools could not reasonably be represented by one set of characteristics, multiple panels were constructed to represent the diversity that exists across the State, and focused on districts of different sizes. Multiple panels were used for each set of districts and each cost level—school, district and State. Three school level panels worked exclusively on estimating the resource needs of school sites. Three district level panels reviewed the work of the school level panels and estimated district-level resource needs. An expert panel brought consistency across divergent State resource elements identified by the previous panels, and made decisions about prices.

Defining Adequacy

The first step in estimating the cost of an adequate education is to identify the State's definition of adequacy. States utilize a variety of measures to which districts are held accountable, including input and output measures. For example, there are input measures defining State requirements for specific resource inputs, such as the minimum number of days and/or hours school must be in session, graduation requirements, maximum class sizes, curriculum standards and personnel requirements. The second type of measure is based on outputs that include indicators of student performance levels, dropout and attendance rates, average yearly progress on tests, and gaps between disaggregated demographic student groups. This study began with a review of input and output measures that currently exist in the State.

In Kentucky, six student-learning goals were established in 1990 and the Core Content Standards Note 21 provide lists of curriculum content that will be assessed for accountability and therefore should be taught and learned by all students in all schools. Kentucky's key output indicator--CATS, the Commonwealth Accountability Testing System--is perhaps one of the most clearly articulated accountability systems in the nation. CATS consists of academic and nonacademic indictors for all students. As part of the academic indicators, students are assessed in writing, reading, science, mathematics, social studies, arts and humanities, and practical living/vocational skills. Student outcomes are then classified as novice, apprentice, proficient or distinguished. A level of proficient is required of all students by 2014. Both academic and non-academic indicators are assessed and represented by a separate Index; they are also combined in the Accountability Index score by student, school and district. The goal is an Accountability Index of 100 (proficient) by 2014. Indicators included in the Index are aligned to student achievement on content

standards as well as other nonacademic State standards included in regulations such as dropout rates and attendance. Other important output measures are contained in the high Court decision in *Rose v. the Council for Better Education*, which called for efficiency in education defined, by a system that is "uniform, adequate, and unitary", with seven essential competencies listed to define adequacy. Note 22

After reviewing both input and output measures, it was decided in concert with school officials and professional judgment panels, both were needed. Appendix A shows how these measures were summarized with equal emphasis on inputs and outputs, including CATS, *Rose* definitions and *post*-Rose learner goals. Also utilized were State trajectories for improvement on student assessments that delineate average yearly progress if proficiency is to be reached by 2014; and disaggregated data between population groups-- by race, gender, disability, and English proficiency--with a goal of closing the gaps. Note 23 Thus, for the purpose of this study, these input and output measures define an adequate education in Kentucky.

Determining the Characteristics of Prototype Schools and School Districts

There are over half a million public school students in Kentucky's 176 school districts, which are organized as 120 county and 56 independent districts. The typical county district has about 2,500 students while an independent district has approximately 900 students. Note 24 School size is an important characteristic because it bears some relationship to school spending. To better understand the variations in size and demographics of districts across the State, three equal groups (thirds) were formed based on: (1) districts, and (2) students (Table 1 & 2). The first set of groups, based on equal numbers of school *districts*, showed that one-third of all school districts in the State with the lowest enrollments number 59 and have only 8 percent of the total number of students, with an average enrollment (ADA) of 797. The middle one-third of school districts includes 59 districts with an average ADA of 2,059. The one-third of school districts with the largest number of enrollments have over 70 percent of all students, with an average ADA of 6,822, and include 59 districts. Percentages of special needs students (based on total ADA) are also shown by thirds of school districts.

Table 1. Characteristics of Kentucky School Districts Based on Thirds of School Districts

District Size	***Small-Medium***	***Medium-Large***	***Large-Very Large***	***State Total***
Range in Enrollment (ADA)	125-1,363	1,404-2,707	2,723-80,378	125-80,378
Number of Districts	59	59	58	176
Total Number of Students	47,074	121,475	395,649	564,197
Average Number of Students per District	798	2,059	6,822	3,206
# Special Education	7,670.0	19,359.0	60,364.0	87,393
% Special Education	16.3%	15.9%	15.3%	15.5%
# Free & Reduced Lunch	28,338	70,908	208,793	308,039
% Free & Reduced Lunch	60.2%	58.4%	52.8%	54.6%
# Limited English Proficient	321	423	5226	5,970.0

% Limited English Proficient	0.68%	0.35%	1.32%	1.06%
# Migrant	227	277	4,208	4,712
% Migrant	0.48%	0.23%	1.06%	0.84%
# Gifted & Talented	6,898	17,309	51,076	75,283
% Gifted & Talented	14.65%	14.25%	12.91%	13.34%

Note: n=176; 2001-02

Table 2. Characteristics of Kentucky School Districts Based on Thirds of Enrollment (ADA)

District Size	***Small-Medium***	***Medium-Large***	***Large-Very Large***	***State Total***
Range in Enrollment (ADA)	125-2,885	2,935-8,074	8,155-80,378	125-80,378
Number of Districts	125	41	10	176
Total Number of Students	188,257	185,413	190,527	564,197
Average Size of District	1,506	4,522	19,053	3,206
# Special Education	30,299	29,682	27,412	87,393
% Special Education	16.1%	16.0%	14.4%	15.5%
# Free & Reduced Lunch	111,626	102,380	94,033	308,039
%Free & Reduced Lunch	59.29%	55.22%	49.35%	54.60%
# Limited English Proficient	791	998	4181	5,970
% Limited English Proficient	0.42%	0.54%	2.19%	1.06%
# Migrant	543	613	3556	4,712
% Migrant	0.29%	0.33%	1.87%	0.84%
# Gifted & Talented	26,513	26,548	22,222	75,283
% Gifted & Talented	14.08%	14.32%	11.66%	13.34%

Note: N=564,197, 2001-02.

The second group of districts shown in the table is based on equal numbers of *students* (ADA) in the State divided by thirds. There are about 188,500 students in average daily attendance (ADA) in each third. The first third was made up of 125 of the 176 school districts in the State with an average size of 1,500 students in ADA. The middle third, with 41 districts, averaged 4,522 ADA. Only ten districts made up the largest one-third of districts, with an average size of 19,052. Based on this information, it was decided to divide the State into three groups of school districts based on enrollments (ADA), not only because schools are largely funded based on the number of students (ADA), but also because this breakout captured important variations among the 176 districts across the State. For example, the small to moderate cluster contained most of the districts in the State (125), and the large to very large cluster contained the 10-12 very large districts of about 8,000 ADA or above, including Jefferson County. There was also a medium to large size cluster of 39 districts that contained between 3,000-8,000 students. The table above shows the characteristics of students in each size grouping as well as the averages for the State.

It shows the enrollment, number of districts, average number of students per district, and the characteristics of the student population based on thirds of enrollment (ADA). The percentage of students with disabilities, economic disadvantages (free and reduced price lunch) and limited English proficiency (LEP), as well as migrant and gifted and talented students are provided. These demographic features, based on actual numbers of children and youth in each

category, suggest the extent to which districts face cost pressures associated with special need students. Additional or excess costs are usually associated with educating children with these characteristics. Students with disabilities are generally an accepted added cost factor. Low-income children are used as a proxy for children in danger of failing or dropping out of school. Limited English Proficient students cannot perform ordinary class work in English. Migrant students often need extra assistance to catch up or become acquainted with school procedures. These factors translate into extra costs. These students groups are also highlighted in State and district reports by the Kentucky Department of Education and compared to their more advantaged counterparts on Kentucky's academic and nonacademic indicators with a goal of closing the gap between them.

Thus, with districts divided into groups based on size for the purposes of the study, it was necessary to establish the grade level organization of the prototype schools within districts. Analysis was performed on information provided by the Kentucky Department of Education to determine the major organizational patterns across the State. The data showed that of the 1,745 regular academic schools, Note 25 the largest cluster of elementary schools were organized as either primary and upper elementary or entry through 5th, and contained grades K-5 (47.5%), with most middle schools containing grades 6-8 (74%), and 98 percent of high schools, consisting of grades 9th-12th. These grade configurations were used in designing the prototype schools by the professional judgment panels.

Professional Judgment Panels

The next step was to identify the prototype school panels. Three school site panels were created to identify the resource "ingredients" that were needed to deliver an adequate education to students. They were assembled from experienced, well-qualified professional educators, including teachers, curriculum personnel and administrators employed in Kentucky's schools. The CBE with assistance from the Kentucky Education Association took the characteristics of the type of professionals that were needed for the school site meetings and secured the people that would be working on the panels. Twenty-three individuals participated in the school site panels that met in Lexington on November 15th (Appendix B). School site panel members were asked, "What, in your experience and judgment, are key resource requirements of schools needed to provide an adequate education to children and youth in Kentucky?" Each panel was given a set of materials to guide their work and designated a reporter for the group. This person kept a record of the decisions made by the panel and consulted with the facilitator to compare, record and verify information that would be entered into a computer summary after the meeting. Each panel also worked with a facilitator (Professors' Verstegen, Gurley and Knoeppel) who, for example, answered questions, moved the discussion from topic to topic, recorded decisions, and maintained a focus on the alignment of resources to an adequate education.

The school site panels worked together to create prototype elementary, middle, and high schools based Kentucky's student demographics, for districts of different sizes: 1) a small to moderate size district, 2) a moderate to large

district, and 3) a large to very large district. This included defining prototypical school sizes, the number and size of classes, and the required numbers and types of personnel, supplies, equipment, technology, categorical aid, student activities and any opportunities that would be available outside of the school day--such as extended school services for Saturday school, summer school, and before and after school programs. Panels provided adjustments to general "ingredients" and resource items as needed for students with disabilities, Limited English Proficiency, economic disadvantages and gifted and talented students, based on actual demographics (Table 3). The work of each of the panels was subsequently entered into computer records and summarized for review by the prototype school district panels.

Table 3. Characteristics Of K-12 Prototype Schools by Size of School District

	Level of School		
	Elementary	**Middle**	**High School**
Schools in Small School Districts			
Enrollment (ADA)	348	315	480
Grade Span	K-5	6-8	9-12
% Special Education	16.1%	16.1%	16.1%
% Limited English Proficient	0.42%	0.42%	0.42%
% Low Income Students	59.29%	59.29%	59.29%
% Gifted and Talented	14.65%	14.65%	14.65%
% Migrant	0.29%	0.29%	0.29%
Schools in Moderate School Districts			
Enrollment (ADA)	384	567	768
Grade Span	K-5	6-8	9-12
% Special Education	16.0%	16.0%	16.0%
% Limited English Proficient	0.54%	0.54%	0.54%
% Low Income Students	55.22%	55.22%	55.22%
% Gifted and Talented	14.32%	14.32%	14.32%
% Migrant	0.33%	0.33%	0.33%
Schools in Large & Very Large Districts			
Enrollment (ADA)	288	504	672
Grade Span	K-5	6-8	9-12
% Special Education	14.4%	14.4%	14.4%
% Limited English Proficient	2.19%	2.19%	2.19%
% Low Income Students	49.35%	49.35%	49.35%
% Gifted and Talented	11.66%	11.66%	11.66%
% Migrant	1.87%	1.87%	1.87%

Note: 2001-02.

For the district level, three additional panels, composed of twenty-three, well-qualified school and district level professional educators and other personnel, met in Louisville, December 10th. At least one individual (or like position) served in both school and district level sessions to aid the facilitiator, and provide overlap and continuity between sessions. CBE invited individuals to serve on the panels with assistance from the Kentucky School Board Association. Professors Verstegen, Gurley and Knoeppel oversaw the groups' work. Like the school site panels, the members of the district level panel were given a set of materials to guide their work and one participant acted as the

recorder for each group. The district panel reviewed the work of the school site panels, changed the resource configurations as needed, reviewed approaches for determining district level costs and made judgments. District budgets were used for reference. The panels adopted current figures for districtwide costs except for transportation expenditures that were considered “inadequate.” Recommendations were made for a State study to determine the full and adequate cost of student transportation, including transportation to and from summer school, Family and Youth Service Centers, and Extended Day programs. After the work of the panels was completed, the decision choices were entered into computer records and comparisons were made for review by the expert panel.

The expert panel met on December 20th in Lexington. Panel members responded to an invitation issued by CBE. A set of materials guided their work. The panel reviewed variations in resource configurations across all panels as related to State level issues, such as the length of the school year, and made decisions. Refinements were also made, in part, to resource lists for the school prototypes that were developed by previous panels. Finally, the panel discussed prices and made recommendations for different resource elements that would be used to cost out the prototypes.

Resource Needs of Schools and Districts

Based on the work of the professional judgment panels, the resource needs of elementary, middle and high schools are shown in Tables 4A, 4B, and 4C for staffing. When reviewing these tables it is important to keep in mind that the figures indicate the resource needs of schools, not the manner that resources should be deployed and used in schools and in classrooms. The resource configurations that are shown were developed based on demographic specifications from actual school districts in Kentucky, which are shown in the top half of each table. As shown in the balance of the table, when determining personnel units, panels distinguished between general education students and special needs students while treating each group of special needs students as separate. In practice it is possible that there is some overlap between special student populations, however, leading to some extra resources due to double counting, but this may be warranted to some extent. For example, a student receiving special education services may also be an English language learner.

Table 4a. Personnel Requirements of K-12 Prototype Schools to Achieve State Standards & Objectives Given Specified School Characteristics

	Small to Medium School District		
	K-5 School	Middle School	High School
Specified Characteristic			
Enrollment (ADA)	348	315	480
Number of Students with Disabilities	56	50.7	77
Number of Limited English	14.6	13.2	20.2
Number of Students At-Risk Students	206	186.8	284.6
Number of G&T Students	49	44.4	67.6
Number of Migrant Students	10	9	13.9
(1) Personnel: Teaching Staff			

Regular Student			
Classroom Teacher	22	21	24
Other Teacher	5	5.2	7.8
Instructional Aides (Kindergarten)	4	0	0
*Special Education**			
Teacher (10:1)	6	5	8
Other Teacher:	0	0	0
Clerk/Sec'y	1	1	1
Instructional Aide	4	4	4
*Low Income**			
Classroom Teacher			
Other Teacher	1	2	2
Aide			
*Limited English Proficient**			
Classroom Teacher	1	1	1
Other Teacher			
Aide			
Gifted and Talented*			
Classroom Teacher	1	3	3
Other Teacher			
Aide			
(2) Pupil Support Staff			
Regular Student			
Guidance Counselor	1	2	2
Nurse	1/school	1/school	1/school
*Special Education**			
Psychologist		1 districtwide	
Occupational Therapy-district		½ time districtwide	
Physical Therapy-district		½ time districtwide	
Speech Pathologist	1 FTE	1 FTE	1 FTE
(3) Other Staff			
All Students			
Library Media Specialist	1	1	1
Technology/Technician	1	1	1
Substitutes**	1	1	1
(4) Administration			
All Students			
Principal	1	1	1
Assistant Principal	0	1	1
Clerk/Bookkeeper	2	3	3
Other: Instructional Facilitator	0.5	0.5	1

Note: *Weighted. Additional staff not shown in this table may be available although they are counted at the district level.

Table 4b. Personnel Requirements of K-12 Prototype Schools to Achieve State Standards & Objectives Given Specified School Characteristics

	Moderate to Large School District		
	K-5 School	**Middle School**	**High School**
Specified Characteristics			
Enrollment (ADA)	384	567	768

Number of Students in Special Education	61	91	123
Number of Limited English Proficient	21	31	41
Number of Students At-Risk Students	212	313	424
Number of G&T Students	55	82	110
Number of Migrant Students	13	19	25
(1) Personnel: Teaching Staff			
Regular Student			
Classroom Teacher	24	27	44.8
Other Teacher	5.8	6.4	14
Aide	4	0	0
*Special Education**			
Classroom Teacher	12	10	16
Other Teacher			
Aide	12	10	16
*Low Income**			
Classroom Teacher	4	9	10
Other Teacher			
Aide			
*Limited English Proficient**			
Classroom Teacher	.5	.5	1
Other Teacher			
Aide			
*Gifted and Talented**			
Classroom Teacher	1	1	1
Other Teacher	0	0	0
Aide	0	0	0
(2) Pupil Support Staff			
Regular Student			
Guidance Counselor	2	3	5
Clerk/Guidance	0	0	0
Nurse	1	1	1
Social Worker	1	1	1
Special Education			
Psychologist	1	1	1
Speech Pathologist	1	.25	.25
(3) Other Staff			
All Students			
Librarian/Media Specialist	1	1	1
Media Aide	1	1	1
Technology Specialist**	1	1	1
Substitutes			
(4) Administration			
All Students			
Principal	1	1	1
Assistant Principal	1	1	2
Clerical/Data	3	4	7.5**
Other: Instructional Facilitator	.5	.5	1
Safety Officer	1	1	2

Note: *Weighted. Additional staff not shown in this table may be available although they are counted at the district level.

Table 4c. Personnel Requirements of K-12 Prototype Schools to Achieve State Standards Given Specified School Characteristics

	Large to Very Large School District		
	K-5 School	**Middle School**	**High School**
Specified Characteristics			
Enrollment	288	504	672
Number of Students in Special Education	41.5	72.6	96.8
Number of Limited English Proficient	6.3	11	14.7
Number of Students At-Risk Students	142.1	248.7	331.6
Number of G&T Students	33.6	57.8	78.4
Number of Migrant Students	5.4	9.4	12.6
(1) Personnel: Teaching Staff			
Regular Student			
Classroom Teacher	18	24	39.2
Other Teacher	4.5	5.8	12.9
Aide (kindergarten)	3		
*Special Education **			
Teacher (Ratio)	3	5	7
Other Teacher	0	0	0
Aide	3	3	3
*Low Income**			
Teacher	Needs addressed by small class size		
Other Teacher	SFA, Elementary; Comer, Middle/HS		
Aide			
*Limited English Proficient**			
Teacher			
Other Teacher			
Aide	1	1	1
*Gifted and Talented**			
Teacher	1	2	2
Other Teacher			
Aide			
(2) Pupil Support Staff			
Regular Student			
Guidance Counselor	1	1.5	4*
Clerk/Guidance Counselor	0	0	0
Nurse	.5	.5	1
Social Worker	0	0	0
Special Education			
Psychologist	.2	.5	.5
Speech Pathologist	.5	.5	0
(3) Other Staff			
All Students			
Librarian/Media Specialist	1	1	2
Technology Specialist	1	1	1
Media Aide	0	0	0
Substitutes**			
(4) Administration			
All Students			
Principal	1	1	1

Assistant Principal	0	2**	2
Clerical/Data	3	3	4
Other: Instructional Facilitator	.5	.5	1
Safety Officer	0	1	1

Note: *Weighted. Additional staff not shown in this table may be available although they are counted at the district level.

Panels developed a philosophy that guided resource deployment, that was later cross referenced to research as follows: 1) Early learning opportunities are cost effective and improve student outcomes Note 26—half day preschool (voluntary) and full day kindergarten Note 27 were recommended. 2) Small classes Note 28 and small schools Note 29 support student success—class sizes for grades K-5 were recommended to be fifteen to eighteen students. Elementary, middle and high school size averaged 340, 462, and 640, respectively. 4) Time and learning are related Note 30—summer school, Saturday school, and an extended school day and school year were recommended. 5) Needs drive costs—excess funding was recommended for students with disabilities, Note 31 Limited English Proficiency, Note 32 economic disadvantages, Note 33 and gifted and talented students Note 34. 6) Those closest to the students should have flexibility in making most instructional decisions—the “ingredients” included in prototype budgets were provided only for pricing resource components not for controlling resource allocations or deployment in schools and in classrooms.

To compare staffing among different school districts, figures were standardized to personnel per 1000 students, as shown in Tables 5A, 5B, and 5C. The schools consist of similar grade levels but are located in different size school districts. Full time kindergarten for all students is reflected in K-5 staffing ratios for classroom teachers. In each district size category, each kindergarten was allocated a full time teacher’s aide. Teacher aides are nearly absent from all other staffing arrangements, reflecting the thinking of panel members that additional funding for special needs students could provide additional aides for those populations; however, little evidence exists to show aides provide value added in terms of students outcomes. Note 35 The category “other teachers” was estimated based on 20 percent of school time, to allow core teachers a planning period each day. Note 36

Table 5a. Personnel per 1,000 Students for Selected Types of Personnel by School District Size Based on the Work of Professional Judgment Panels

	Primary and Upper Elementary School		
	Small	**Moderate**	**Large**
(1) Teaching Staff			
Classroom Teacher	63.2	62.5	62.5
Other Teacher	14.4	15.1	15.6
Aide	11.5	10.4	10.4
(2) Pupil Support Staff*			
Guidance Counselor	2.9	5.2	3.5
Nurse	2.9	2.6	1.7
(3) Other Staff*			
Librarian/Media Spec.	2.9	5.2	3.5

Technology Spec.	2.9	2.6	3.5
(4) Administration			
Principal*	2.9	2.6	3.5
Asst. Principal	--	2.6	--
Clerical/Data	5.7	7.8	10.4
(5) Other			
Instr. Facilitator	1.4	1.3	1.7
Safety Officer	--	2.6	--
Social Worker	--	2.6	--

* Minimum staffing ratio.

**: Other personnel may not be assigned at the school level but counted at the district level.

Table 5b. Personnel per 1,000 Students for Selected Types of Personnel by School District Size Based on the Work of Professional Judgment Panels

	Middle School		
	Small	**Moderate**	**Large**
(1) Teaching Staff			
Classroom Teacher	66.7	47.6	47.6
Other Teacher	16.5	11.3	11.5
Aide	--	--	--
(2) Pupil Support Staff*			
Guidance Counselor	6.4	5.3	3.0
Nurse	3.2	1.8	2.0
(3) Other Staff			
Librarian/Media Spec.	3.2	1.8	2.0
Technology Spec.	3.2	1.8	2.0
(4) Administration			
Principal	3.2	1.8	2.0
Asst. Principal	3.2	1.8	4.0
Clerical/Data	9.5	7.1	6.0
(5) Other			
Instr. Facilitator	1.6	0.9	0.9
Social Worker	--	1.8	--
Safety Officer	--	1.8	2.0

* Note: Other personnel may not be assigned at the school level but counted at the district level.

Table 5c. Personnel Per 1,000 Students for Selected Types of Personnel by School District Size Based on the Work of Professional Judgment Panels

	High School		
	Small	**Moderate**	**Large**
(1) Teaching Staff			

Classroom Teacher	50.0	58.3	58.3
Other Teacher	16.3	18.2	18.2
Aide	--	--	--
(2) Pupil Support Staff			
Guidance Counselor	4.2	6.5	6.0
Nurse	2.1	1.3	1.5
(3) **Other Staff**			
Librarian/Media Spec.	2.1	1.3	3.0
Technology Spec.	2.1	1.3	1.5
(4) Administration			
Principal	2.1	1.3	1.5
Asst. Principal	2.1	2.6	3.0
Clerical/Data	8.3	9.8	6.0
(5) Other			
Instr. Facilitator	2.1	1.3	1.5
Social Worker	--	1.3	--
Safety Officer	--	2.6	--

* Note: Other personnel may not be assigned at the school level but counted at the district level.

At the elementary level there is remarkable similarity in staffing core classrooms, although support staff and other staff vary across school districts with the highest ratios in the moderate size school district. The moderate size district includes extra staff (social worker and safety officer) and the highest numbers of clerical personnel per 1,000 students in elementary schools. The small school district has the highest number of classroom teachers in elementary and middle school and relatively more support and administrative staff per 1,000 students overall (the above notwithstanding). This is likely because of the high fixed costs and minimum staffing ratios that account for the high costs of very small schools/districts due to diseconomies of scale. Staffing patterns reflect professional judgments of panel members and research that indicates small class sizes in grades K-3, and small schools generally result in higher average outcomes for all students. Note 37

For the middle school, the small school district employs the most staff per 1,000 students. Staffing declines as the district size increases, particularly for core teachers and support staff. At the high school level, however, the highest teaching staff ratios are at the moderate and large to very large school district. The small school district tends to have the highest ratio of non-teaching staff per 1,000 students at the high school level.

Although the staffing arrangements shown in Table 5A, 5B, and 5C could be compared to the work of professional judgment panels in other States, participants did not feel that this would be appropriate due to different laws, goals, objectives, and standards across the States. The commonly expressed view was that Kentucky had high standards and goals that would render comparisons unsuitable and misleading.

Non-personnel resources, including instructional supplies, equipment, and technology are shown in Table 6A, 6B, and 6C. Instructional supplies were funded the highest overall in high schools. For equipment, assessment, co-curricular, athletics and textbooks, when variations occurred between

schools (elementary, middle and high school) higher allocations are found in the higher grade levels. Textbooks are shown as a separate category and are considered a special area of need. Technology was treated separately (see Table 7A, 7B, and 7C) with detailed specifications provided for an entire district, summed and reported based on a five-year replacement cycle (except in the small school district where costs were based on research estimates). Costs that are affixed to technology specifications were taken from current computer websites and dealer prices, as displayed in Table 7D. Technology costs listed do not include infrastructure; it is included in districtwide costs (under KETS). Panel members also added assessment costs to pay for non-State supported tests, including tests every other year for CATS in addition to annual assessments using NAEP, ACT and SAT. Panel members treated athletics differently. The moderate school district did not include funding, considering this to be a revolving account paid for by e.g., gate receipts. Both the small and the large district estimated partial costs for such areas as bus drivers and gas, field watering, coaching supplements, utilities, etc. Professional development is also listed on this table. Panel members indicated that five days of professional development are needed for all certified staff (excluding guidance and administration); four days of professional development are included for certified staff. There was no discussion of library media center materials.

Table 6a. Other Non-Personnel Costs to Operate Prototype Schools in K-12 Districts of Different Size Based on the Work of the Professional Judgment Panels

Small to Medium School District

	Grade Levels		
	Elementary	**Middle**	**High School**
(1) Professional Development	5 days cert. 4 days class.	5 days cert. 4 days class.	5 days cert. 4 days class.
(2) Instructional Supplies/Materials	$200/pup.	$225/pup.	$250/pup.
(3) Equipment	$100/pup.	$100/pup.	$125/pup.
(4) Technology*	$300/pup.	$300/pup.	$300/pup.
(5) Assessment	$20/pup.	$20/pup.	$20/pup.
(6) Co-curricular/Student Activities	$/pup.	$/pup.	$/pup.
(7) Athletics	$25/pup.	$100/pup.	$200/pup.
(8) Textbooks	$100/pup.	$140/pup.	$140/pup.

Note: Cert. = Certified staff; Class. = Classified staff. * 5-year replacement cycle.

Table 6b. Other Non-Personnel Costs to Operate Prototype Schools in K-12 Districts of Different Size Based on the Work of the Professional Judgment Panels

Medium to Large District

	Grade Levels		
	Elementary	**Middle**	**High School**
(1) Professional Development	5 days cert. 4 days class.	5 days cert. 4 days class.	5 days cert. 4 days class.
(2) Instructional Supplies/Materials	$200/pup.	$200/pup.	$200/pup.
(3) Equipment	$25/pup.	$25/pup.	$25/pup.*
(4) Technology*	$267/pup.	$267/pup.	$267/pup.

(5) Assessment	$15/pup.	$15/pup.	$15/pup.
(6) Co-curricular/Student Activities	$8/pup.	$25/pup.	$35/pup.
(7) Athletics	$5/pup.	$33/pup.	$83/pup.
(8)Textbooks	$75/pup.	$75/pup.	$100/pup.

Note: Cert. = Certified staff; Class. = Classified staff. *5-year replacement.

Table 6c. Other Non-Personnel Costs to Operate Prototype Schools in K-12 Districts of Different Size Based on the Work of the Professional Judgment Panels

Large to Very Large District

	Grade Levels		
	Elementary	**Middle**	**High School**
(1) Professional Development	5 days cert. 4 days class.	5 days cert. 4 days class.	5 days cert. 4 days class.
(2) Instructional Supplies/Materials	$128 /pup.	$ 133 /pup.	$142 /pup.
(3) Equipment*	above	above	above
(4) Technology**	$ 308/pup.	$308/pup.	$308/pup.
(5) Assessment	$10/pup.	$10/pup.	$10 /pup.
(6) Co-curricular/Student Activities	$ 5/pup.	$ 5/pup.	$ 20/pup.
(7) Athletics**	above	above	above
(8) Other: Textbooks***	n/a	n/a	n/a

Note: Cert. = Certified staff; Class. = Classified staff. *Equipment is included in instructional supplies; athletics included with student activities. **5-year replacement. ***Textbook funds needed; estimate not available (n/a).

Table 7a. Technology Needs of Prototype Schools in Districts of Different Size Based on the Work of the Professional Judgment Panels

Small Size District

	Elementary	**Middle**	**High School**	**Est. Cost**
Total	--	--	--	$300/pup/year
Replacement Cycle	--	--	--	5 years

Table 7b. Technology Needs of Prototype Schools in Districts of Different Size Based on the Work of the Professional Judgment Panels

<

Moderate Size District

	Elementary	**Middle**	**High School**	**Est. Cost**
(1) Classroom				
Computer	5/class (120)	6/class (227)	1/staff/desktop (58.8) 5 laptops/class(225)	$443,475
Printer (Inkjet)	5/class (120)	1/class (37.8)	1/class (44.8)	$37,076
TV/VCR	1/class (24)	1/class (37.8)	1/class (44.8)	$67,046
(2) Computer Lab				
Computer	One 30-station lab (30)	Two 30-station labs (60)	Three 25-station labs (75)	$118,635
Mobile Lab	1/classrm (456)	1/grade level (72)	4 (96)	$1,085,000
Scanner	1	2	10	$1,062
Printer (Laser)	1	2	40 (dist. among labs)	$98,960
(3) Media Center				

Computer	10	10	20	$28,760
Printer	10	1	10	$48,329
Digital Video Camera	2	1	10	$9,087
Digital Camera	2	1	10	$4,762
Video Editing Complex	1	0	1	$2,998
Projector	3	1/classroom	10	$111,709
DVD-ROM Tower	3	1	1/server	$370
Server	1	3	1	$17,300
(4) Admin./Support/Other Staff				
Computer	5	8	1/person (20.5)	$24,087
Printer (Laser)	5	8	1/person (20.5)	$77,097
(5) Other				
Faculty Laptop	10	1/teacher (24)	1/every two teachers (27)	$95,903
Server	2	2	2	$20,759
(6) Total				$2,293,418

*Note: See Table 7D for prices

Table 7c. Technology Needs of Prototype Schools in Districts of Different Sizes Based on the Work of the Professional Judgment Panels

	Large to Very Large Size District			
	Elementary	**Middle**	**High School**	**Est. Cost**
(1) Classroom				
Computer	5/class (90)	10/class (336)	5/class (196)	$447,218
Printer (Laser)	1/class (18)	1/class(33.6)	1/class(39.2)	$208,967
TV/VCR	1/class (18)	1/class(33.6)	1/class(39.2)	$65,285
(2) Computer Lab	1	3	4	
Computer*	20	75	108	$145,957
Mobile Lab				
Scanner	2	3	4	$735
Printer (Laser)	1	3	4	$18,411
(3) Media Center				
Computer	20	30	25	$53,925
Printer (Laser)	1	1	1	$6,904
Digital Video Camera	3	3	4	$6,999
Digital Camera	3	3	4	$3,663
Video Editing Complex	X	X	X	
Projector	6	3	4	$28,587
DVD-ROM Tower	Built into computer	Built into computer	Built into computer	
Server	2	2	2	$20,759
(4) Admin. /Support/Other Staff				
Computer	5	8	12	$17,975
Printer (Laser)	3	4	12	$43,727
(5) Other				
Faculty Laptop		1	1	$3,144
(6) **Total**				$2,256,061

Table 7d. Estimated Costs Of Technology

	Est. Cost
(1) **Technology Costs***	
Computer	$719
Printer (Inkjet)*	$168
Printer (Laser Network Printer)	$2,301
Printer (LaserJet-Color Network Printer)	3,591
TV*	$549
VCR*	$80
Scanner	$82
Digital Video Camcorder	$699
Digital Camera	$366
Video Editing Complex	$1,499
Projector	$3,175
DVD-ROM Tower	$5,000*
Laptop	$1,572
Server	$3,460
Smart Board*	$1,599
Mobile Lab	$35,000
PDA (Palm)	$320
CD-ROMRW/DVD External	$274
CD-ROMRW/DVD Internal	$84

*Estimates, See**:** Dell URL: www.dell.com/us/e n/k12/default.htm;
Apple URL:www.apple.com/education; http://www.apple.com/educ ation/dvPalm URL: www.palm.com;
Smart Technologies: www. smarttech.com/products/smartboard/index.asp. *Education prices unless asterisk/Downloaded 1/15/03.

Panels were asked to identify additional resources or programs that would be used outside the school day or had not traditionally been offered in Kentucky. These are shown on Table 8. The expert panel brought consistency to this work. Any program that would seem to be necessary in one size district was reviewed and considered for other size districts as well. As shown on the table, universal preschool is available to all 3 and 4 year-olds for ½ day on a voluntary basis. Full day kindergarten is provided for all eligible students. Funding is allocated for Limited English Proficient students and gifted and talented students, in addition to low income and exceptional children (as under current law). Extended School Services (ESS) are available for a larger number of students, based on the number of students scoring “novice” on Statewide tests. All panels indicated the school year should be lengthened. It was concluded that: 1) the school year should be extended by an additional 10 days to total a minimum 185 days, with the equivalent of 6 hours of instruction each day; 2) the teacher contract year should be15 additional days beyond the student year, to total 200 days per year. Currently, forty States have a school year of at least 180 days in contrast to Kentucky’s school year of 175 days. Note 38

Table 8. Other Programs Included as Resource Needs of Prototype Schools Based on the Work of the Professional Judgment Panels

	District Size		
	Small	**Medium**	**Large**
(1) Pre-School			
All Students	X	X	X
Ages: 3, 4	3&4 (Voluntary)	3 & 4 (Voluntary)	3 & 4 (Voluntary)

Time:	M-F*		M-F*		M-F*
3 year-olds	½ day		½ day		½ day
4 year-olds	½ day		½ day		½ day
Class Size	10:1		11:1/aide		10:1
Wrap around services	Ages 3 & 4		--		--
(2) Full-Day Kindergarten					
All Students	X		X		X
At-Risk Students					
(3) Gifted & Talented					
All Students					
Eligible Students	X		X		X
(4) Limited English Proficient					
All Students					
Eligible Students	X		X		X
(5) Extended School Services*					
All Students			Optional for All		
At-Risk Students			X		
(6) Summer Programs					
All Students			Optional		X
Special Education			--		
At-Risk Students	X		--		
Transportation Provided	X		Optional (All)		
(7) Family & Youth Service Centers					
All Students			Optional		
Special Education			Optional		X
At-Risk Students*	>30% 1/district >60% 1/school		Optional		X
(8) Alternative Schools					
All Students			Available		
Students-Eligible	X		X/Gr.4-12		X /Gr 6-12
(9) Comprehensive Reform Models					
All Students (grades)	SFA/K-5		--		SFA/K-5 Comer/9-12
Students-Eligible					
(10) Drop Out Prevention					
All Students	X		X		X/Gr 6-12
Students-Eligible					
(11) Full Service Centers					
All Students	See FYSC	X			--
Special Education Students	See FYSC		--	X	
At Risk Students	See FYSC		--		X
(12) Free Breakfast Program					
All Students	--				--
Students-Eligible	--		Optional		--
(13) Summer Institutes					
Teachers	--		--	X	
Parent	--		--		X (required tchr)
(14) Differentiated Salary/High Poverty					
All Teachers	--		--		X-up to 20%
(15) Other: specify					
Free breakfast programs	--		Optional-All		--

* ESS includes extended day (2 hours before /after school), summer school, and Saturday school. Preschool classes are M-T/Friday teachers would make home visits. At Risk based on eligibility for free & reduced price lunch

Resource Prices

Salaries for school level personnel are displayed in Table 9A (2001-02). It shows weighted (FTE) average salaries for all school site classifications based on 185 days, except for principals and assistant principals where salaries are calculated based on 220 days. Attaching prices to the resource elements focused on personnel costs, including salary and benefits, and how costs and expenditures might differ. The Commonwealth of Kentucky collects certified and classified personnel expenditure data and FTEs (full time equivalents) for many types of school personnel, based on 185 days employment. This permits daily rate computations for personnel whose contract exceeds 185 days, such as principals and assistant principals (220 days) as well as weighted averages to be computed when one position includes multiple pay classifications (e.g., secretary I, secretary II). Weighted (FTE) average salary figures for 2001-02 are used in the study based on 185 days for all school site personnel except principals and assistant principals (220 days).

Table 9a. Prototype Salary Resource Elements Across School Districts

Certified & Classified Personnel	
Job Title	**Average Salary**
Guidance Counselor	$47,845
Media Librarian	$44,842
Classroom Instructor	$37,959
Preschool Instruction Supervisor	$47,278
Nurse	$19,999
Media Technician	$18,536
Secretary	$18,210
Clerk	$16,108
Law Enforcement Officer	$21,414
Social Worker	$25,773
School Principal	$68,154*
School Vice Principal	$61,992*

Source: KDE (2002). Funding types 1 (general fund) and 2 (grants) included. Weighted average, based on 185 contract days except for principals and assistant principals (220 days).
Benefits Rate: 23.85% (U.S. Census, 2002).
Substitutes: For substitutes, 5% days for all certified (excludes administration and guidance), converted to FTE and adjusted by average teacher's salary & benefits.

Table 9b. Comparison of 2001-02 Statewide Average Teacher Salary in Kentucky to Seven Neighboring, Competing States

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	2000-2001 Average Teacher Salary	Relative Cost of Living (COL)*	Salary Adjusted for COL	1999-00 % Teachers with More Than BA	Education Adjustment Factor (EAF)**	Salary Adjusted for COL and EAF	1999-00 Teacher Average Yrs Exp	Exper. Adjust. Factor (XAF)***	Salary Adjusted COL,EAF and XAF
State									

Kentucky	**$37,959**	**91.0**	**$37,959**	**0.766**	**1.0766**	**$37,959**	**13.7**	**1.0137**	**$37,959**
Ohio	44,029	96.4	46,643	0.445	1.0445	48,075	15.3	1.0153	47,999
Indiana	44,195	92.4	44,875	0.680	1.0680	45,236	16.7	1.0167	45,103
Illinois	50,000	99.2	54,505	0.527	1.0527	55,743	15.7	1.0157	55,633
Missouri	37,904	93.0	38,737	0.510	1.0510	39,681	13.6	1.0136	39,685
Tennessee	38,554	91.5	38,766	0.491	1.0491	39,782	14.0	1.0140	39,770
Virginia	41,262	95.4	43,257	0.445	1.0445	44,586	14.3	1.0143	44,560
West Virginia	36,751	90.7	36,630	0.624	1.0624	37,119	19.4	1.0194	36,912

*Salary Adjusted for COL (col. 3) is calculated by multiplying the unadjusted salary (col. 1) by the ratio of Kentucky's COL (0.91) to each comparison State's COL
**The education adjustment factor (EAF) is calculated by expressing the proportion of teachers with more than a B.A. (column 4) as a decimal, dividing by 10, and adding the product to 1.00. Each state's adjusted salary (column 6) is the salary in column 3 multiplied by the ratio of Kentucky's EAF (1.0766) divided by each comparison State's EAF.
***The experience adjustment factor (XAF) is calculated like the EAF.
Source: National Center for Education Statistics, *Digest of Education Statistics*, 2002. Washington D.C., Table 78. National Education Association, *Rankings & Estimates-Update,* Fall 2002. [URL: www.nea.org]. Cost of Living Index 2000-AFT. *Survey Analysis and Salary Trends*, 2001, Washington D.C. Table I-7. *School & Staffing Survey*, U.S. Department of Education. Unpublished Data, 1999-00. Kentucky Salary Data-KDE, 2002. Method adopted from Myers et al., 2002.

Current benefits rates used in the study are shown at the bottom of Table 9A. Benefits are drawn from Kentucky data submitted to the Census Bureau for certified and classified personnel Note 39 and compared for consistency to SREB documents, Note 40 and State reports. Note 41 The benefit rate used in the study is 23.85 percent. It includes, on average (as an estimated percent of salary), retirement (13.105%), Medicare (1.45%-excludes social security), major medical benefits (9%), other (0.85%)--but not the recent or future increases in these costs. Note 42 Also shown at the bottom of the table, substitute costs calculations are based on 5 percent of contract days, computed as an FTE, and adjusted by teacher salary and benefits. Again, although these figures were used to determine costs for the study they do not dictate how funds would be used. For example, some school districts might estimate fewer (or more) than 5 percent of contract days for substitutes. A constant theme of all professional judgment panels was that resource configurations would drive costs but would not dictate how funds would be distributed or used in schools and in classrooms.

To compare salary costs to expenditures, the price of teachers in the same labor market for personnel is considered for the seven surrounding States. With adjustments to assure comparability, Kentucky teacher salaries are currently 81 percent of the *average* salary for the seven surrounding States (Table 9B). They are 85 percent of the national *average* teacher salary. Compared to Southern Regional Educational Board (SREB) States, Kentucky teacher salaries are 95.8 percent of the *average* teacher salary. Given the gap that Kentucky must fill to provide competitive salaries for teachers, a two-step strategy was considered by the professional judgment panel: First achieve better than the SREB average teacher salary. Second, move to the surrounding States' average teacher salary. For other positions, the current percentage difference between the average teacher salary and other personnel, such as guidance counselors, is then incorporated into salary calculations using new salary figures for teachers. An option to this approach would be to extend the school year, as

recommended by professional judgment panels, with additional pay for additional work computed on average daily rates and adjusted by additional contract days. The resulting average teacher salary in Kentucky would then be compared to the SREB State's average salary. This latter approach is employed in the final analysis of the study.

District level costs are shown in Table 10. The top portion of the table shows expenditures for district administration, including business services and central office. Also shown are plant maintenance and operations, transportation and other (i.e., school support services). It can be observed that central costs rise as district size increases. Professional judgment panels adopted current expenditures statewide for these costs with the exception of transportation. Note 43 Professional panels found current transportation funding to be inadequate. A State study of adequate student transportation costs is recommended.

Table 10. District Level Costs per Pupil for K-12 School Districts of Varying Size Based on the Work of the Prototype Panels

	District Level Spending*			
	Small to Moderate	**Moderate to Large**	**Large to Very Large**	**Combined**
(1) Administration Per pupil cost	$433	$355	$521	$437
(2) Plant M & O Per pupil cost	$588	$607	$664	$620
(3) Transportation Per pupil cost	$398	$421	$439	$419
(4) Other Per pupil cost	$233	$249	$261	$248
Total: Current Operations				**$1,724**
(1) Facilities and Debt Service Per pupil cost				$484
(2) Facilities: Unmet Need Per pupil cost				$3,472**
Total: Facilities				**$3,956**

*Note: End of Year ADA, 2002. Data Source: KDE-AFR02 by function; sub-function data unavailable.
**Unmet needs list certified by the School Facility Construction Commission.

Finally, determining adequacy for facilities is considered to be outside the scope of the current study. Current expenditures for facilities and debt service, as well as "unmet need" figures, certified by the School Construction and Facilities Commission, are reported in lower portion of Table 10 and summed.

Prototype Cost Estimates

School level costs that resulted from applying the prices discussed above to the resources specified in the study are summarized in Tables 11A, 11B, and 11 C. Per pupil figures are computed for general education students and special needs students by combining all resources and dividing by the number of students, respectively.

The information on the tables is divided into three categories. The first category,

basic spending, includes personnel salaries and benefits, substitute costs, materials, supplies, technology, equipment and other costs. Professional development, based on five days for certified personnel, is listed separately, as are technology costs (excluding infrastructure costs). Other programs, such as full-day kindergarten add-on costs and ESS (Extended School Services) are shown next in part two of the table. For special needs students, shown in the bottom portion of the table, prices are based on funding averages. Note 44 Current State funding weights for special education and low-income students are adopted by the panels. However, both free and reduced price lunch students are included in the "low income" student count. Currently low-income students are targeted through Federal free lunch eligibility. The inclusion of reduced price lunch students adds, on average, 10.83 percent in additional students (ADA) ranging from none to 22 percent among school districts. Limited English Proficient student funding, weighted at 15 percent, is based on current practice in other States. Note 45 Given the lack of research on costs for gifted and talented students, an additional $15 per student is included, mainly for special supplies and materials.

As shown in Tables 11A, 11B, and 11C, for schools in small districts, basic costs are highest for grades 6-8 ($6,002), and lowest for high school ($4,867). In the moderate to large size district, basic costs are lowest for middle school ($4,174) and highest for elementary schools ($5,726), with high school costs between the two. For large to very large school districts, basic costs are highest for elementary school ($5,227), and lowest for middle school ($4,248), with high school costs between the two. Elementary schools, with full day kindergarten, are relatively more costly. Middle school costs, based on staffing in the moderate to large district based on teacher "teams", appears relatively less costly. High school costs vary. The cost of full day kindergarten, distributed among all students in the school, adds $207 on average to these figures, professional development adds $105 per pupil and technology adds $300 per pupil. The cost of special education adds between $6,937 and $9,687 per student, with similar variations for at-risk and Limited English Proficient pupils, but with smaller diversity among schools in different size districts.

Table 11a. School Level Costs for K-12 School Districts of Different Sizes Based on the Work of the Prototype Panels

Small to Moderate District

	Primary & Grades 4, 5	Middle School	High School	Combined
(1) Base Spending*				
Basic**	$5,274	$6002	$4,867	$5,320
Prof. Devel.	109	114	92	105
Technology	300	300	300	300
(2) Other Programs*				
Full-Day Kindergarten	443	--	--	207
ESS***	187	187	187	187
(3) Additional Spending***				
Special Educ. (16.1%)				
Base	8,562	9,687	7,941	8,635
At-Risk (59.29%)				

Base	851	962	789	858
Limited English Proficient (0.42%)				
Base	851	962	789	858
Gifted & Talented (14.65%)				
Base	15	15	15	15

Note: Combined figures are based on Statewide proportions of students: grades K-5, 47%; grades 6-8, 23.5%; and grades 9-12, 29.4%* Costs are shown per all pupils in school.
**Basic spending includes school level personnel salaries and benefits, supplies and materials, equipment, assessment, technology, professional development and other expenditures.
***Costs are shown per pupil with the indicated need (special education or at-risk). ESS=Extended School Services.
****Rounding results in no cost appearing although the service is provided.

Table 11b. School Level Costs for K-12 School Districts of Different Sizes Based on the Work of the Prototype Panels

Moderate to Large District

	Primary & Grades 4,5	Middle School	High School	Combined
(1) Base Spending*				
Basic**	$5,726	4,248	5,185	$5,213
Prof. Devel.	107	79	99	98
Technology	267	267	267	267
(2) Other Programs*				
Full-Day Kindergarten	505	--	--	207
ESS***	187	187	187	187
(3) Additional Spending***				
Special Educ. (16.0%)				
Base	9,136	6,937	8,381	8,388
At-Risk (55.22%)				
Base	908	689	833	834
Limited English Proficient (0.54%)				
Base	908	847	689	832
Gifted & Talented (14.32%)				
Base	15	15	15	15

Note: Combined figures are based on Statewide proportions of students: grades K-5, 47%; grades 6-8, 23.5%; and grades 9-12, 29.4%. ESS=Extended School Services.
*Costs are shown per all pupils in school.
**Basic base spending includes school level personnel salaries and benefits, supplies and materials, assessment, technology, professional development and other expenditures.
***Costs are shown per pupil with the indicated need (special education or at-risk), ESS=Extended School Services.
****Rounding results in no cost appearing although the service is provided.

Table 11c. School Level Costs for K-12 School Districts of Different Size Based on the Work of the Prototype Panels

Large to Very Large District

School District Size	Primary & Grades 4, 5	Middle School	High School	Combined
(1) Base Spending*				
Basic**	$5,227	4,174	4,302	$4,702
Prof. Devel.	98	80	102	95
Technology	308	308	308	308

(2) Other Programs*				
Full-Day Kindergarten	764	--	--	359
ESS***	187	187	187	187
(3) Additional Spending***				
Special Educ. (14.4%)				
Base	9,678	6,767	7,114	8,230
At-Risk (49.35%)				
Base	961	672	707	817
Limited English Proficient (2.19%)				
Base	961	672	707	817
Gifted & Talented (11.66%)				
Base	15	15	15	15

Note: Combined figures are based on Statewide proportions of students: grades K-5, 47%; grades 6-8, 23.5%; and grades 9-12, 29.4%. ESS=Extended School Services.
*Costs are shown per all pupils in school.
**Basic base spending includes school level personnel salaries and benefits, supplies and materials, assessment, technology, professional development and other expenditures.
***Costs are shown per pupil with the indicated need (special education or at-risk).
****Rounding results in cost appearing although the service is provided.

For each category of school district shown in Tables 11A, 11B, and 11C, costs have been combined based on the average percentage of students in Kentucky attending schools in these grade levels (see note on table). When costs are combined across grade levels for different size districts, clear patterns emerge. Basic costs per pupil are highest in the small district, as would be expected due to diseconomies of scale and other considerations ($5,320). The moderate size district has slightly lower costs ($5,213), and the large district has the lowest per pupil cost ($4,702). The small district also has higher professional development costs. Technology costs and the cost of special needs students vary little across different size districts.

Districtwide costs and total costs are shown in Table 12 by district size. The table is divided into three sections: (1) district level costs, (2) total costs for school site and district level items, and (3) added costs for special needs students and transportation. District level costs are displayed in the top portion of the table and show that, for administration, funding is lowest for moderate size districts; plant maintenance and operations is lowest for small districts; and other programs (e.g. student support, hospital and homebound programs and KETS technology transfer funding) is lowest in large districts--although funding varies only slightly among different size categories. These costs are summed and shown in section 2 of the table under district level costs. Combined school level base costs (discussed earlier) are also listed and both figures are totaled.

Table 12. District Level Costs and Total Costs for K-12 School Districts Based on the Work of Prototype Panels

	Size of School District		
	Small	**Moderate**	**Large**
(1) District Level Spending			
Administration*	$432	$355	$521
Plant M&O*	588	607	664
Other*	233	249	261

(2) Total Spending			
Base Spending**			
School Level	$5,932	$5,578	$5,105
District Level	1,254	1,210	1,445
Total Base Cost	**$7,186**	**$6,788**	**$6,551**
(3) Added Costs			
Transportation**	$398	$420	$438
ESS***	187	187	187
Special Needs Students***			
Special Education	$8,635	$8,388	$8,230
At-Risk	858	834	817
Limited English Proficient	858	834	817
Gifted and Talented	15	15	15
Average Total Expenditures	**$9,582**	**$9,112**	**$8,438**

*Costs are shown per all pupils in school.
**Basic spending includes school level personnel salaries and benefits, supplies and materials, assessment, technology, professional development and other expenditures.
***Costs are shown per pupil with the indicated need (special education or at-risk). Debt and Facilities not included.

The base cost figures show the highest cost for the small school district ($7,186) followed by the moderate size district ($6,788) with lowest costs for the large to very large district ($6,551). Excluding federal aid, base costs are $6,460 for the small district, $6,102 for the medium district, and $5,889 for the large district. Note 46 These figures compare to Kentucky's SEEK base guarantee of $3,066 per pupil (2001-02). The differences among districts might be expected based on economies of scale considerations and clearly are captured through the professional judgment approach to cost calculations.

As shown in Part II of Table 12, added to the total base cost of education in each of the district categories (small, moderate and large), are costs for transportation, extended school services (ESS) and special need students. In addition to base costs, districts would need to spend on average: over $419 per pupil for transportation costs, $187 per pupil receiving extended school services, Note 47 between $8,230 and $8,635 per special education student, between $817 and $858 per Limited English Proficient student or student at-risk, and $15 per gifted and talented student. Unmet facility needs, certified by the School Construction and Facility Commission, add $3,472 per pupil to these figures. With these additions (excluding facilities), average total costs per pupil are highest for the small district ($9,582), followed by the moderate district ($9,112) and lowest for large to very large district ($8,438). These figures can be compared to Kentucky's current expenditure per pupil of $7,271 in 2001-02 (Federal, State and local sources). Note 48

Overall, a total of about $5.199 billion would be needed to address State standards and objectives. Note 49 In fact, in 2001-02, about $4.102 billion was available to pay for current operating expenses from Federal, State and local revenue. Therefore, the funding gap between existing revenue and the revenue needed for current operations is $1.097 billion per year (2001-02).

Additional key resource requirements, identified by professional judgment panels, include: (1) extending the school year for students and teachers, Note

50 (2) adding voluntary half-day preschool for three and four year olds, and (3) raising teacher salaries. The cost of extending the school year ten days for students (185 days total) and teachers (195 total) would raise teacher salaries above the SREB State average Note 51 and substantially increase instructional time for students, while increasing the annual funding gap to $1.230 billion (2001-02). Note 52 This suggests that significant new funding is required over time if the Commonwealth of Kentucky is to provide an adequate and equitable education of high quality for all children and youth.

About the Author

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Deborah Verstegen is Professor of Education Policy and Finance at the University of Virginia's Curry School of Education. She earned her Ph.D. at the University of Wisconsin-Madison, where she received a Alumni Achievement Award in 1997. Dr. Verstegen has served as a consultant to local, state and national organizations/governments, has twice been a member of the Board of Directors of the American Educational Finance Association and has served as editor of the Journal of Education Finance. She has published extensively in the areas of equal educational opportunity and education finance policy--including adequacy and equity--and is co-editor (with James Ward) *of Spheres of Justice in Education* and (with Julie Underwood) of The Impacts of Litigation and Legislation on Public School Finance. She is currently on numerous editorial boards, policy editor of the *Journal of Education Finance*, President of the AAUP-VA, Chair of the AERA SIG on Fiscal Issues, Policy and Education Finance, and Founder of Women Education Leaders in Virginia.

Appendix A

Table A-1. The Commonwealth of Kentucky Standards & Objectives for Public Schools

Kentucky Constitution

…to provide an efficient system of common schools throughout the state…(Ky. Const. Sec. 183).

Capacities required of students in public education system

1. Communication skills necessary to function in a complex and changing civilization;
2. Knowledge to make economic, social and political choices;
3. Core values and qualities of good character to make moral and ethical decisions throughout his or her life;
4. Understanding of governmental processes as they affect the community;

the state, and the nation;
5. Sufficient self-knowledge and knowledge of his mental and physical wellness,
6. Sufficient grounding in the arts to enable each student to appreciate his or her cultural and historical heritage;
7. Sufficient preparation to choose and pursue his life's work intelligently; and
8. Skills to enable him to compete favorably with students in other states. (Kentucky School Laws, Sec. 158.645).

Legislative declaration on goals for Commonwealth's schools—[KERA Goals].

1. The General Assembly finds, declares, and establishes that:
    a. Schools shall expect a high level of achievement of all students.
    b. Schools shall develop their students' ability to:
        1. Use basic communication and mathematics skills for purposes and situations they will encounter throughout their lives;
        2. Apply core concepts and principles from mathematics, the sciences, the arts, the humanities, social studies, and practical living studies to situations they will encounter throughout their lives;
        3. Become self-sufficient individuals of good character exhibiting the qualities of altruism, citizenship, courtesy, honesty, human worth, justice, knowledge, respect, responsibility, and self-discipline;
        4. Become responsible members of a family, work group, or community, including demonstrating effectiveness in community service;
        5. Think and solve problems in school situations and in a variety of situations they will encounter in life; and
        6. Connect and integrate experiences and new knowledge from all subject matter fields with what they have previously learned and build on past learning experiences to acquire new information through various media sources
    c. Schools shall increase their student's rate of school attendance.
    d. Schools shall reduce their students' dropout and retention rates.
    e. Schools shall reduce physical and mental health barriers to learning.
    f. Schools shall be measured on the proportion of students who make a successful transition to work, post-secondary education, and the military. (Kentucky School Laws, Sec. 158.6451).

Maximum Number of Pupils Enrolled in a Class:

157.360 (4) a. Except for those schools which have implemented school-based decision-making, the chief state school officer shall enforce maximum class sizes for every academic course requirement in all grades except in vocal and instrumental music, and physical education classes. Except as provided in subsection (5) of this section [relating to combined grades 4-6], the maximum number of pupils enrolled in a class shall be as follows:

1. Twenty-four (24) in primary grades (kindergarten through third grade);
2. Twenty-eight (28) in grade four (4);
3. Twenty-nine (29) in grades five (5) and six (6);
4. Thirty-one (31) in grades seven (7) to twelve (12);

(4)b. …class size loads for middle and secondary school classroom teachers shall not exceed the equivalent of one hundred fifty (150) pupil hours a day.

158.070 School Term, Professional Development, Continuing Education

(1)The minimum school term shall be one hundred eighty-five (185) days, including no less than the equivalent of one hundred seventy-five (175) six (6) hour instructional days...

(4)Each local board of education shall use four (4) days of the minimum school term for professional development and collegial planning activities for the professional staff without the presence of pupils….up to a maximum of four (4) days of the minimum school term for holidays and two (2) days for planning activities without the presence of pupils….

(9)>Schools shall provide continuing education for those students who are determined to need additional time to achieve the outcomes defined in KRS 158.6451, and school shall not be limited to the minimum school term in providing this education. Continuing education time may include extended days, extended weeks, or extended years….

Requirement for library media center—Employment of Librarian

(1) The board of education for each local school division shall establish and maintain a library media center in every elementary and secondary school….

(2)(a) Schools shall employ a school media librarian to organize, equip, and manage the operations of the school media library…[who] may be employed to serve two (2) or more schools in a school district with the consent of the school councils.

Establishment of a strategy to address school dropout problem

The Kentucky Department of Education shall establish and implement a comprehensive statewide strategy to provide assistance to local districts and schools to address the student dropout problem in Kentucky public schools…. [Using] State and federal resources and programs, including but not limited to, extended school services; early learning centers; family resource and youth service centers; alternative education services, preschool; service learning; drug and alcohol prevention programs; School-to-Careers; High Schools That Work; school safety grants; and other relevant programs and services that could be used in a multidimensional strategy…. [Comprising] student programs and services that include, but are not limited to, identification, counseling, mentoring, and other educational strategies for elementary, middle, and high school students who are demonstrating little or success in school, who have poor school attendance, or who possess other risk factors that contribute to the

likelihood of their dropping out of school. (Kentucky School Laws, Section 158.146)

Minimum High School Graduation Requirements for the Class of 2002

[Program of Studies]

Subject	Credits	Courses
Language Arts	4	English I, II, III, IV
Social Studies	3	Credits to incorporate U.S. History, Economics, Government, World Geography and World Civilization
Mathematics	3	Algebra I, Geometry, and one elective
Science	3	Credits to include life science, physical science, and earth
Health	1/2	
Physical Education	1/2	
History and Appreciation of Visual and Performing Arts	1	History and appreciation of visual and performing arts or another arts course which incorporates such content

TOTAL: 15 required credits plus 7 electives (22 credits)

(704 KAR 3:305)

Requirements for the Commonwealth Diploma

Meet the State's (or district's) minimum graduation requirements, complete the State's pre-college preparatory curriculum (specific courses in Language Arts 4 units, Mathematics 3 units, science 2 units, social studies two units), earn a grade of "C" or better in four Advanced Placement or International Baccalaureate courses in the subjects of English, Mathematics or Science, Foreign Language, Elective, and complete advanced placement exams in three subjects. (704 KAR 3:340)

Table A-2. Academic Index by Area
Kentucky Statewide Results

	2000-2001	2001-2002	Goal*
Elementary			
Reading	80.69	81.90	100
Math	63.91	66.07	100
Science	77.03	77.32	100
Social Studies	68.48	71.04	100
Arts & Humanities	44.56	49.25	100
Practical Living/Voc. Std.	72.08	73.77	100
Writing Total	58.67	62.05	100
Total	68.80	70.80	100
Middle School			
Reading	80.48	81.34	100
Math	62.26	61.26	100
Science	64.45	67.41	100
Social Studies	67.28	67.72	100
Arts & Humanities	64.15	64.24	100
Practical Living / Voc. Std.	67.81	67.62	100
Writing Total	43.51	46.33	100
Total	64.00	65.00	100

High School			
Reading	68.85	67.75	100
Math	60.68	62.29	100
Science	62.07	64.49	100
Social Studies	64.80	68.12	100
Arts & Humanities	56.83	62.55	100
Practical Living/Voc. Std.	73.60	72.72	100
Writing Total	59.03	60.12	100
Total	63.40	65.10	100

* Represents for schools where student achievement needs to be to achieve proficiency.

Table A-3. Non-Academic Index by Area
Kentucky Statewide Results

	2000-2001	2001-2002	Goal*
Elementary			
Attendance Rate		95.08	
Dropout Rate	n/a	n/a	5.3 - <6.0*
Retention Rate	1.11	0.93	
Successful Trans-Adult Life	n/a	n/a	
Total	95.87	95.88	
Middle School			
Attendance Rate	94.47	94.34	
Dropout Rate	0.32	0.27	5.3 - < 6.0*
Retention Rate	2.04	1.91	
Successful Trans-Adult Life	n/a	n/a	
Total	96.91	96.92	
High School			
Attendance Rate	92.51	92.51	
Dropout Rate	5.10	4.79	5.3 - < 6.0*
Retention Rate	7.14	6.73	
Successful Trans-Adult Life	95.32	95.08	
Total	94.48	94.52	

*Note: Non-academic indicators are lagged one year. By 2006 the statewide annual average school dropout rate will be cut by fifty percent (50%) of what it was in the year 2000; no school will have a drop out rate that exceeds five percent (5%); and each county will have thirty percent (30%) fewer adults between the ages of sixteen (16) and twenty-four (24) without a high school diploma or GED than the county had in the year 2000. (Kentucky School Laws, Section 158.145). To be eligible for rewards, novice reduction and drop out criteria apply. For the drop out rate, high schools must have a dropout rate less than or equal to 5.3 percent or reduce their percent of dropouts by 0.5 percent, but still have a dropout rate less than or equal to 6 percent. School must reduce their percent of novices on a schedule so that by 2014, the school has 5 percent or less of its students scoring novice. See “Kentucky Performance Report” for more information on these indicators.

Table A-4. Accountability Index, Combined Academic and Non-Academic Index by School Level
Kentucky Statewide Results

	2000-2001	2001-2002	Goal
ACCOUNTABILITY INDEX			
Elementary	70.9	72.8	100
Middle School	67.8	68.7	100

High School	66.9	68.4	100
NON-ACADEMIC INDEX			
Elementary	95.87	95.88	*
Middle School	96.91	96.92	*
High School	94.48	94.52	*
ACADEMIC INDEX			
Elementary School	68.8	70.8	100*
Middle School	64.0	65.0	100*
High School	63.4	65.1	100*

Note: * = Proficiency. The Accountability Index target is 100 by the year 2013-2014. Academic index: target represents for school districts where student achievement needs to be to achieve proficiency (100). Non-academic Index: Targets vary--see Kentucky Performance Report for more information.

Appendix B

Prototype School Site Panel Members
November 15, 2002
Lexington, KY

Name of Individual	Position	School District
LuAnn Asbury	Elementary Teacher	Mason County
Ellen Blevins	High School Teacher	Barren County
John Beisel	Executive Director ASBO	Davies County
Nancy Toombs	Custodial Supervisor	Henderson County
Eleanor Mills	Elementary Principal	Murray Ind.
Carol Daniels	Elementary Principal	Mercer County
Pam Stephens	Special Ed. Director	West Point Ind.
Bill Woolridge	Elementary Teacher	Hardin County
Arletta Kennedy	Middle School Teacher	McCracken County
Sharron Oxendine	High School Teacher	Clark County
Darrell Wilson	Elementary Principal	Henderson County
Retha Wilcoxin	Middle School Principal	Nelson County
Ray Read	Curriculum Supervisor	Madison County
Dottie Miller	Middle School Teacher	Kenton County
Mattie Katz	Elementary Teacher	Fayette County
Ann Walls	Elementary Teacher	Jefferson (Louisville) County
Teddy Taylor	High School Teacher	Madison (Alternative High)
Mariann Stopher	Clerk/Business Manager	Scott County
Mike Byers	Elementary/HS Principal	Hardin County
Denise Woodard	Elementary Teacher-Alternative	Jefferson County
Debbie Wooton	Middle School Teacher	Boone County
Leslie Dunn	Elementary Counselor	Jefferson County
William Day	Director of Finance	Hardin County
Tim Hitzfield	Teacher	Boone County (Owen County)
Ed McNeel	Superintendent	Corbin Independent
Bill Lovell	Board of Education	McLean County
Bob Rogers	Superintendent	Caldwell County
Mark Cleveland	Superintendent	Owen County
Chuck Holiday	Superintendent	Fulton County
Gary Jackson	Superintendent	Trimble County
Terry Brooks	Principal	Anchorage Independent

Sabrina Olds	Business Manager	Owen County
James Francis	Superintendent	Hazard Independent
Fred Bassett	Superintendent	Beechwood Independent
Jan Vance	Superintendent	Nelson County
Larry Holloway	Board of Education	Ft. Thomas
Jack Moreland	Superintendent	Covington County
Joe Dan Gold	Superintendent	Williamstown/Mason Co/Morgan Co
Brenda Jackson	Board of Education	Shelby County
Tim Hockensmith	Chief Financial Officer	Nelson County
Austin Moss	Board of Education	Christian County
Walter Hulett	Superintendent	Laurel County
Frank Welch	Superintendent	Pike County
Dale Brown	Superintendent	Warren County
Chuck Littrell	Business Manager	Oldham County
Cheryl Chedester	Program Coordinator	Laurel County
Faurest Coogle	Kentucky School Boards Association.	State of Kentucky
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Tom Willis	Office of State Budget Director	Kentucky State Government

Notes

1. This article is based on the report: Verstegen, D. A. (February 2003). The Calculation of the Cost of An Adequate Education in Kentucky." Oldham, KY: Council for Better Education, Inc. The author gratefully acknowledges the Kentucky Department of Education for information, data, and other assistance throughout the study; the dedicated and knowledgeable individuals who participated in the prototype panels; and the scholars who have contributed to thinking and research in this area, and upon whose prior work this study draws: Myers, J. & Silverstein, J. "Calculation of the Cost of A Suitable Education in Montana in 2001-2002 Using the Professional Judgment Approach". Mimeo. (August 2002).; Verstegen, D.A., "Financing the New Adequacy: Towards New Models of State Education Finance Systems That Support Standards-Based Reform." *Journal of Education Finance* (Winter 2002)749-782). Guthrie, J. W. & Rothstein, R. "Enabling "Adequacy" to Achieve Reality: Translating Adequacy into State School Finance Distribution Arrangements." (pp. 209-259). In Ladd, H. F., Chalk, R. & Hansen, J. S., Eds. *Equity and Adequacy in Education Finance: Issues and Perspectives*. Washington, D. C.: National Academy Press (1999). Management Analysis & Planning, Inc. "Wyoming Education Funding Adequacy Study." Sacramento, CA: Author, (May 18, 1998). Ohio Coalition for Equity & Adequacy of School Funding. "Basket of Essential Learning Resources for the 21st Century." Columbus, OH: Author (n.d.). Note: All data are for 2001-02; End of year ADA is used throughout (564,198)
2. The high court called for an education system that is "uniform, adequate, and unitary". *Rose v. Council for Better Educ. Inc*. 790 S.W.2d 186 (Ky. 1989), at 212

3. The Kentucky Department of Education URL: http://www.kde.state.ky.us/ . According to Jacovitch, D. et al. the agency request was $3,041. See: Jacovitch, D., Otto, S., Upton, C. & Hager, G. "The SEEK Formula for Funding Kentucky's School Districts: An Evaluation of Data, Procedures and Budgets (DRAFT)." Frankfurt, Kentucky: Legislative Research Commission. (2003), p. 84.
4. Verstegen, D. A. "The New Finance." *American School Board Journal* (October 2002), 24-26.
5. Myers et al. "Calculation of the Cost of a Suitable Education." *Ibid*.
6. See: Jacovitch et al. "The SEEK Formula." *Ibid*.
7. See: Verstegen, D.A., "Financing the New Adequacy." *Ibid*. R. Rothstein, "What Does Education Cost?" *The American School Board Journal*, (September 1998). J. W. Guthrie & R. Rothstein "Enabling 'Adequacy' to Achieve Reality" *Ibid*. Reschovsky, A & Imazeki, J. *Reforming State Aid to Achieve Educational Adequacy: Lessons from Texas and Wisconsin*. Paper presented at the Symposium on Education Funding Adequacy & Equity in the Next Millennium. Nashville, TN: Center of Excellence for Research and Policy on Basic Skills, (1999). Verstegen, D. A. "What is Adequacy? How is It Defined? What Does it Cost?" Paper presented at the Symposium on Education Funding Adequacy & Equity in the Next Millennium. Nashville, TN: Center of Excellence for Research and Policy on Basic Skills (1999)
8. See, for example, Levin, H. M. *Cost-Effectiveness: A Primer*. (Newbury Park, CA: Sage Publications, 1983).
9. This review relies on published research studies and manuscripts available in the field and on-line, c.f., Verstegen, D. A. "Financing the New Adequacy." *Ibid*. Guthrie, J. W. & Rothstein, R. (1999). "Enabling Adequacy" *Ibid*. Myers et al. "Calculation of the Cost." *Ibid*.
10. Verstegen, D. A. "Financing the New Adequacy." *Ibid*.
11. Management Analysis & Planning, Inc. "Wyoming Education Funding," *Ibid*. Guthrie & Rothstein. "Enabling Adequacy," *Ibid*.
12. Day long meetings over a one week period of time were convened; experts were asked "What in your judgment are key components required to provide effective instruction, to enable students to acquire the prerequisites to enter the University of Wyoming, or to have access to other attractive post-secondary endeavors"? Responses varied and no effort was made to reach consensus nor were systematic procedures used to identify and utilize professional viewpoints. See, Management Planning and Analysis Associates, "Wyoming Educational Adequacy." *Ibid*.
13. Guthrie & Rothstein, "Enabling Adequacy", *Ibid*. pp. 231.
14. Augenblick, J., Alexander, K. &. Guthrie, J.W. "Report of the Panel of Experts: Proposals for the Elimination of Wealth Based Disparities in Education." Report submitted by Ohio Chief State School Officer T. Sanders to the Ohio State Legislature." Mimeo (1995).
15. Augenblick, J. , J. Silverstein, J. "Alternative Approaches for Determining a Base Figure and Pupil-Weighted Adjustments for Use in a School Finance System in New Hampshire." Mimeo. (November 30, 1998). See also: Augenblick, J., & Silverstein, J. "Determining An Adequate Per Pupil Funding Level for Public Education in South Carolina in Relation to Pupil Performance Objectives." Mimeo (July 2000).

16. Duncombe, W. D. & Yinger, J. M. “Performance Standards and Educational Cost Indexes: You Can't Have One Without the Other.” (pp. 260-297). In Ladd, H. F., Chalk, R. & Hansen, J. S., Eds. “Equity and Adequacy,” *Ibid*, (1999). See also, Duncombe, W. Lukemeyer, A. “Estimating the Cost of Educational Adequacy: A Comparison of Approaches.” Paper presented at the American Education Finance Association Annual Conference. Albuquerque, New Mexico (March 2002).
17. A district was found to be inefficient if it spent more on education than other districts with the same performance and the same educational costs. Duncombe & Yinger, “Performance Standards,” *Ibid.*
18. See, for example, A. Odden and Busch, C. *Financing Schools for High Performance*. San Francisco: Jossey-Bass Publishers, (1998).
19. American Institutes for Research, URL: http://www.air.org/projects (12/8/00). See also, Borman, G. D., Hewes, G. M & Overman, L. T. and Brown, “Comprehensive School Reform and Achievement: A Meta-Analysis. Review of Educational Research, vol. 73, no. 2 (Summer 2003), 125-230.
20. Myers et al. “Calculation of the Cost of A Suitable Education,” *Ibid*. p. 6.
21. http://www.kde.state.ky.us/
22. See: *Rose v. Council for Better Educ. Inc*. 790 S.W.2d 186 (Ky. 1989), at 212.
23. http://www.kde.state.ky.us/
24. Jacovitch et al. *Ibid.*
25. This number includes alternative schools but not early childhood schools, vocational schools or extension centers.
26. See, for example: Schweinhart, L.J., Barnes, H.V., & Weikart, D. P. *Significant Benefits: The High/Scope Perry Preschool Study Through Age 27*. Ypsilanti, Michigan: High/Scope Educational Research Foundation (1993). Campbell, F. A., Helms, R. Sparling, J. J. & Ramsey. “Early-Childhood Programs and Success in School: The Abecedarian Study.” (pp. 145-166). In Barnet, W. S. & Boocock, S. S. (Eds.) *Early Care and Education for Children in Poverty: Promises, Programs and Long-Term Results*. Albany, N. Y.: State University Press (1998).
27. See: Alber-Kelsay, K. “Full-Day Kindergarten vs. Half-Day Kindergarten: The Outcome of First Grade Reading Achievement.” ERIC: ED 417 380; McClinton, S. L. and C. Topping. “Extended Day Kindergarten: Are the Effects Tangible?” *Journal of Educational Research* 75, 39-40. Fusaro, J. A.. “The Effect of Full-Day Kindergarten on Student Achievement: A Meta-Analysis.” *Child Study Journal* 27(4) (1997)269-277.
28. See, for example: Achilles, C. M. *Let’s Put Kids First, Finally: Getting Class Size Right*. Thousand Oakes, CA: Corwin (1999). Word, E., Johnston, H., Baln, H. P., Fulton, B. E., Zaharias, J. B., Lintz, M. N., Achilles, C. M., Folger, J., Breda, C. (n.d.). “Student/Teacher Ratio (STAR), Tennessee's K-3 Class Size Study, Final Summary Report (1985-1990)”, 32 pp.; Nye, B.A. et al. “The Lasting Benefits Study: A Continuing Analysis of the Effects of Small Class Size in K-3 on Student Achievement Test Scores in Subsequent Grade Levels, Seventh Grade Technical Report, 1992-1993”, 23 pp (n.d.).
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30. See for example, National Education Commission on Time and Learning. *Prisoners of Time*. Washington, D.C. (September 1994).
31. Rossmiller, R. A., Hale, J. A., & Frohreich, L. E. *Educational Programs for Exceptional Children: Resource Configurations and Costs*. (Special Study No. 2). Madison, Wisconsin: National Education Finance Project(1970). Walker, L. J., & Holland, R. P. *Finetuning Special Education (1982)*; Kakalik, J. S., Furry, W. S., Thomas, M. A. & Carney, M. F. "The Cost of Special Education" (Rand Note). Santa Monica, CA: Rand Corp.(1981). Moore, M. T., *Finance: A Guide for State Policymakers*. N.J.: Educational Testing Service; Moore, M. T., Strang, E. W., Schwartz, M. & Braddock, M. *Patterns in Special Education Service Delivery and Cost*. Contract No. 3000-84-0257. Washington, D.C.: Decision Resources Corporation (1988). Chaikind, S., Danielson, L.C. and Baven, M. L. (1993). "What Do We Know About the Costs of Special Education? A Selected Review." *Journal of Special Education*, *26*(4), 344-370; Parrish, T. B. & Verstegen, D. A. *Fiscal Provisions of the Individuals with Disabilities Education Act: Policy Issues and Alternatives*. (Policy Paper Number 3). Palo Alto, CA: Center for Special Education Finance, American Institutes for Research (June 1994).
32. Parrish, T. B. & Matsumoto, C. S. "Disparities in Public School District Spending, 1989-90". *NCES 95-300. Washington, D. C.: U.S. Department of Education: National Center for Education Statistics* (1989*)*. Parrish, T. B. "A Cost Analysis of Alternative Models for Limited English Students in California". *Journal of Education Finance*, 19(3), (1994)256-278. See also, *The Costs of Educating Arizona's English Learners* Study Submitted in Response to Judge Alfredo Marquez's October 12, 2000 Order (January 2001).
33. See, for example: Parrish, T., Matsumoto, C. S. & Fowler, W. *Disparities in Public School District Spending, 1989-90.* (NCES 95-300). Washington, D.C.: National Center for Education Statistics, U.S. Department of Education (February 1989). Allgood, W. & Rothstein, R. *Adequate Education for At-Risk Youths*. Washington, D. C.: Economic Policy Institute. Mimeo (2000). Rothstein, R. Equalizing Education Resources on Behalf of Disadvantaged Children. (p. 31-92). In, Kahlenberg, R. D. Ed., *A Notion At Risk.* N.Y.: Century Foundation Book (2000). Clune, W. H. "The Shift From Equity to Adequacy in School Finance."*Educational Policy*, *8*(4), (1994)376-394. Reschovsky, A. & Imazeki, J. "The Development of School Finance Formulas to Guarantee the Provision of Adequate Education to Low Income Students." In, U.S. Department of Education, *Developments in School Finance 1997*. Washington, D.C.: National Center for Education Statistics (1998).
34. Figures were included to support specialized materials and equipment, until research cost estimates become available.
35. See for example, Achilles, "Let's Put Kids First Finally," *Ibid*.
36. Other teachers include, for example, art, music, physical education, technology and foreign language. Teachers were allotted a planning period each day and duty free lunch.
37. See ftnt. #27-28.

38. National Center for Education Statistics. *Digest of Education Statistics*. Washington, D.C.: Author (2002). Data year, 1999-2000, Table 129.
39. U.S. Census Bureau. *Public Education Finances*. Table 6, "Current Spending of Public Elementary-Secondary School Systems by State: 1999-00." Washington, D.C.: Bureau of the Census, Government Division, Data Tabulations (2002). Employee benefits in the tabulations include amounts paid by the school system for fringe benefits and payments made on behalf of the local education agency by the state. These amounts are not included in salaries and wages paid directly to employees. They include contributions on behalf of employees for retirement coverage, social security, group health and life insurance, tuition reimbursements, workmen's compensation and unemployment compensation. Mead, S. (Sept. 6, 2002). Personal communication. URL: http://www.censu s.gov/ govs/www/school.html
40. Southern Regional Education Board. "Beyond Salaries: Employee Benefits for Teachers in the SREB States." SREB: Atlanta, GA (n.d.).
41. Legislative Research Commission. "Compensation and Benefits of Kentucky Public School Employees." Research Report 306. Frankfurt, KY (June 2002).
42. Southern Regional Education Board. "Beyond Salaries." *Ibid*. Data are reported from State Education Departments for 2000-01.
43. Data Source: Kentucky Department of Education. Annual Financial Report 2002 (AFR02). For subfunctions, district costs are rolled up to a higher level and not available. It is estimated that Home and Hospital expenditures add about $6-$8 per pupil; technology transfer funding (KETS) would add between $16-$22 per pupil.
44. Resource elements related to these funds are shown in Tables 4A, 4B, and 4C.
45. This is an average of weights used by Texas and Florida for LEP (2000).
46. NEA, Rankings and Estimates. <URL: www.nea.org.>
47. This calculation is based on 200,000 eligible students; the number of students scoring novice on statewide tests is currently unavailable.
48. Data source: Kentucky Department of Education. Personal communication (2002).
49. For comparability to current spending, this figure includes the FY 2002 preschool grant ($46,300,000) and the Family and Youth Center grant ($51,800,000).
50. Panels recommended increasing the school year ten days for students and fifteen days for teachers.
51. Extending the school year 10 days, and increasing teacher salaries to account for the additional 10 days (at an average daily rate), would raise teacher salaries: above the SREB State average (101%), from 85% to 90% of the national average teacher salary and from 81% to 86% of the surrounding, competing seven-State average teacher salary.
52. The total funding gap includes preschool expenditures under current law; current elementary school costs are 66.7% of the cost per preschool pupil based on FTE; total costs would vary depending on the projected participation rate.

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