

# Results at Core Knowledge Schools:

## Improving Performance and Narrowing the Equity Gap

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### I. Introduction: Qualitative and Quantitative Evidence

The Core Knowledge Sequence, when comprehensively implemented in a school program, should produce two significant results: (1) because the Sequence presents a challenging body of specific content designed to build cumulatively throughout children's elementary and middle school years, children should steadily gain important knowledge widely shared by educated Americans (cultural literacy); and (2), especially for children whose circumstances preclude the extra learning that goes on outside school in advantaged families, the Sequence should help narrow the gap in academic performance between children from well-off and disadvantaged homes.

These expected results are borne out by data from an increasing number of qualitative and quantitative studies of Core Knowledge schools. These studies generally indicate that Core Knowledge has a positive effect both on overall student performance and on narrowing the equity gap.

Since Three Oaks Elementary in Ft. Myers, Florida, piloted the first Core Knowledge program in the Fall of 1990, letters from parents, reports from teachers, and articles in a variety of publications (including *Life*, *Newsweek*, *The Wall Street Journal*, *U. S. News & World Report*, *The Los Angeles Times*, *Teacher Magazine*, *Educational Leadership*, *The American School Board Journal*, and *Phi Delta Kappan*) have provided plentiful *qualitative* evidence of how schools improve when they implement Core Knowledge. Consistently these reports emphasize strong parental support; the children's enthusiasm for learning "grown-up" knowledge; and the teachers' new sense of community as they cooperate to teach challenging lessons, as well as their rekindled love of learning as they revisit or learn anew a variety of topics.

As part of an independent multi-year study of a national sample of Core Knowledge schools selected for geographic and demographic diversity, researchers at the Johns Hopkins University have issued an interim first-year Qualitative Report, which —based on school and classroom observations, focus groups, interviews, and questionnaires — affirms positive effects of Core Knowledge, including:

- "Children gain self-confidence."
- "Students connect to material learned previously."
- "Core Knowledge appears to lessen the need for reteaching concepts at the beginning of the school year."
- "Students are more interested in learning (and reading)."
- "[Core Knowledge] increases interaction among teachers [and] makes teachers' work lives more interesting."
- "Unlike some reforms where teacher enthusiasm wanes after the first two years, our data suggest that teacher support for Core Knowledge increases over time as teachers attain mastery of the curriculum."<sup>1</sup>

In addition to these qualitative reports, there is increasing quantitative evidence of improvement in Core Knowledge schools. The remainder of this report summarizes quantitative evidence from independent studies of Core Knowledge schools in Maryland, Texas, and Virginia, as well as results provided by a number of Core Knowledge schools.

## II. Independent Evaluations

### A. Maryland Core Knowledge Schools

An independent study by the Johns Hopkins University Center for Social Organization of Schools focuses on the progress of five diverse Maryland schools implementing Core Knowledge programs, as well as five demographically matched control schools. The study, funded by the Abell Foundation in Baltimore, uses two tests to measure student achievement outcomes: the Comprehensive Test of Basic Skills, Fourth Edition (CTBS/4), and the Maryland School Performance Assessment Program (MSPAP), a performance-based assessment requiring extensive writing, problem solving, and occasional teamwork among students.

In the third-year report (released February 1998),<sup>2</sup> Sam Stringfield, principal research scientist, and Barbara McHugh note that while "the relationship between the tests and the Core Knowledge curriculum is not tight, ...the majority of Core Knowledge schools posted three-year academic achievement gains in reading comprehension relative to their matched control peers as measured on the CTBS/4. In addition, during the three-year period of this study, third-grade students in Core schools showed greater gains in MSPAP than did their matched control schools or the mean of schools state-wide."

While the study began with six pairs of schools, the number was reduced to five when one of the control schools decided to adopt Core Knowledge. In the tabulation of results from the remaining five paired schools, results were further complicated when one of the Core Knowledge pilot schools encountered numerous difficulties and was threatened with takeover by the state. In response to state and district recommendations, the school focused its efforts on restructuring educational delivery, and in effect stopped implementing Core Knowledge.

**CTBS/4 Results:** Tests in Reading Comprehension and Mathematics Concepts and Applications were given in the fall and spring of the 1994-95 school year in grades one and three in both Core Knowledge and control schools. The fall administration provided a pre-test score and the spring a year-one measure. The CTBS/4 was again given to these same children in the spring of 1996 when they were in second and fourth grade, and in the spring of 1997 when they were third and fifth graders. The data reported here are based on the gains made by students from the fall 1994 test to the spring 1997 test.

On the Reading Comprehension test given to third graders, Core Knowledge schools showed mean school change of +4.7 NCEs (Normal Curve Equivalents, a unit similar to percentiles). The control school showed a gain of 7.0 NCEs, even though the Core Knowledge schools produced greater gains than their matched control schools in four out of five cases. But if results from the low-implementing pilot site threatened with state takeover and its control school are factored out, then the mean school change for the Core Knowledge schools increases to a gain of 8.0 NCEs, while the mean for the remaining pilot sites drops to a gain of 4.8 NCEs.

On the third-grade Mathematics Concepts and Applications test, the Core Knowledge schools produced a net mean gain of 1.1 NCEs. On average, Core Knowledge schools experienced less gain than control schools (+1.1 NCEs vs. +5.6 NCEs). Again, if results from the low-implementing pilot site and its control school are factored out, then the mean school change for the Core Knowledge schools increases to a gain of 6.4 NCEs, while the mean for the remaining pilot sites increases to a gain of 6.2 NCEs.

At grade five, Core Knowledge schools produced somewhat higher gains in reading than control schools (+0.4 NCEs vs. -2.2 NCEs). In math, scores rose about evenly for both pilot and control schools, averaging +4.0 and +4.2 NCEs respectively.

**MSPAP Results:** The Maryland School Performance Assessment Program reports school-level results, not those of individual students. For this study, MSPAP scores from 1994 — before the implementation of Core

Knowledge—provided a baseline from which to measure progress in 1997. The researchers report that, on average, in all six areas of the MSPAP, "the general Core Knowledge trend was one of gains that clearly exceeded those of the state and of the demographically and geographically matched control schools."

The largest gains relative to all state schools were in writing (+10.5 percentages), reading (+8.6), and language (+7.4). When all subtest areas are averaged together, Core Knowledge schools outperformed the control schools by +5.6 percentages and all Maryland schools by +7.1 percentages. The evaluators note that if the pilot school threatened with takeover and its matched control school (identified as Pair E in the table below) are dropped from the calculations, then the Core schools show even greater gains: +8.5 percentage over control schools and +12.1 over the average Maryland school.

Mean Change from 1994 to 1997 in Percentages of Third-Grade Students Obtaining Scores of "Satisfactory" or Higher on the Six Subtests of MSPAP: Five Core Knowledge Schools and Five Control Schools versus Maryland State Averages

Subtest	Changes from 1994 to 1997			Change Difference in Schools in Study and All Maryland Schools		
	All Maryland Schools	5 Control Schools	5 Core Schools	Control Gain Relative to All Maryland	Core Gain Relative to All Maryland	Core Gain Relative to Control
<b>Reading</b>	+6.2	+9.2	+14.8	+3.0	+8.6	+5.6
<b>Math</b>	+7.5	+8.6	+13.4	+1.1	+5.9	+4.8
<b>Social Studies</b>	+3.4	+3.3	+8.6	-0.1	+5.2	+5.3
<b>Science</b>	+3.4	+7.6	+8.5	+4.2	+5.1	+9.9
<b>Writing</b>	+4.8	+7.8	+15.3	+3.0	+10.5	+7.5
<b>Language</b>	+15.3	+13.5	+22.7	-1.8	+7.4	+9.2
<b>6 Subtest Mean</b>	+6.8	+8.3	+13.9	+1.6	+7.1	+5.6
<b>6 Subtest Mean without Pair E</b>		+10.5	+18.9	+3.7	+12.1	+8.4

The MSPAP results for fifth graders show that Core Knowledge schools surpassed the gains of the average state school in three out of the six areas. When the gains in all areas are averaged, there is no real difference between the Core schools and schools statewide. But if pair E is excluded, the Core Knowledge schools' gain exceeds that of both the control schools and the state average, as follows:

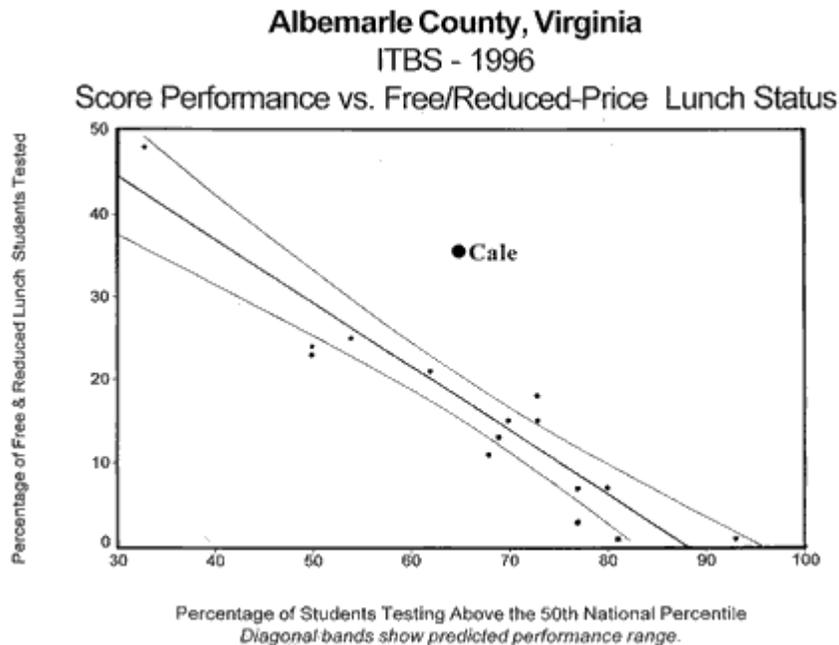
Mean Change from 1994 to 1997 in Percentages of Fifth-Grade Students Obtaining Scores of "Satisfactory" or Higher on the Six Subtests of MSPAP: Five Core Knowledge Schools and Five Control Schools versus Maryland State Averages

Subtest	Changes from 1994 to 1997			Change Difference in Schools in Study and All Maryland Schools		
	All Maryland Schools	5 Control Schools	5 Core Schools	Control Gain Relative to All Maryland	Core Gain Relative to All Maryland	Core Gain Relative to Control
Reading	+5.4	-3.6	+4.2	-9.0	-1.2	+7.8
Math	+6.1	0.0	+9.9	-6.1	+3.8	+9.9
Social Studies	+11.0	+1.0	+13.7	-10.0	+2.7	+12.7
Science	+7.6	+4.6	+8.9	-3.0	+1.3	+4.3

Writing	+6.1	+5.2	+3.8	-0.9	-2.3	-1.4
Language	+11.8	+1.9	+7.6	-9.9	-4.2	+9.5
6 Subtest Mean	+8.0	+1.5	+8.0	-6.5	0.0	+7.1
6 Subtest Mean without Pair E		+2.6	+12.1	-5.4	+4.1	+9.5

## B. Albemarle County Schools (Virginia)

A statistical analysis commissioned by the Albemarle County Schools reported results that support the Core Knowledge idea that a strong core curriculum can help narrow the performance gap between students of low socioeconomic status and others. At Cale Elementary, the only Core Knowledge school in the Albemarle County district, about 35% of the students receive free or reduced-price lunch. In the graph below, the diagonal lines represent the best prediction of the percentage of low-income students who would score above the 50<sup>th</sup> national percentile on standardized tests (in this case, the Iowa Test of Basic Skills). As the dots on the graph indicate, most of the district's elementary schools performed within their predicted range. Only one school — Cale Elementary — performed significantly above what would be predicted by the socioeconomic composition of its students.



## C. Hawthorne Elementary, San Antonio, Texas

A study published in the *Journal of Education for Students Placed at Risk*<sup>3</sup> examined how students at Hawthorne Elementary compared to students in the other 65 elementary schools in the San Antonio Independent School District on the Reading Performance section of the Texas Assessment of Academic Skills (TAAS). Hawthorne is an urban school with a predominantly Hispanic student population; 96% of the approximately 500 students receive free or reduced-price lunches, while 28% are designated as limited-English proficient. Hawthorne began implementing Core Knowledge in 1992.

The *JESPAR* study includes the following graphs:

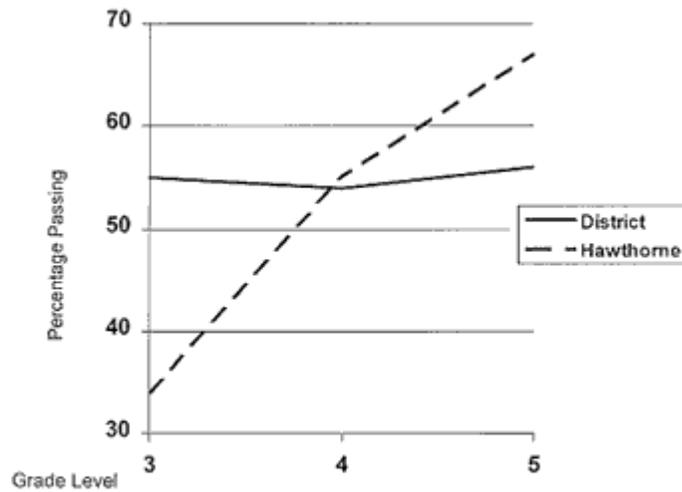


Figure 1: Texas Assessment of Academic Skills Reading Performance.

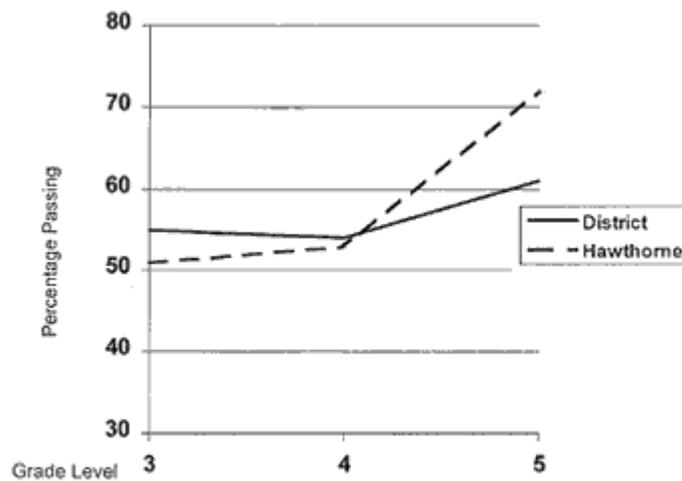


Figure 2: Texas Assessment of Academic Skills Reading Performance.

According to the evaluator, "Figure 1 illustrates that although district reading performance is generally consistent across grade levels with a student pass rate of about 55%, Hawthorne's results show a steep increase in the reading pass rate at consecutive grade levels. At Grade 3, Hawthorne's pass rate of 34% is well below that of the district. By Grade 5, however, Hawthorne's 67% pass rate far exceeds the district's 56% pass rate. The TAAS reading results illustrated in Figure 2 show that Hawthorne's third graders achieved a much higher pass rate of 51% in 1995... . The performance of Hawthorne's fifth graders exceeded the district's pass rate in reading by about 11% in 1994 and 1995... . Although Hawthorne students tend to be more at risk of failing academically than are students in the district as a whole, because of larger percentages of economically disadvantaged and LEP students, snapshots indicate that the school has succeeded in raising achievement levels beyond the aggregate performance of all other elementary schools in the district." The evaluator goes on to conclude:

A central assumption of Hirsch's Core Knowledge theory is that a sequenced curriculum will lead to steady increases in achievement, grade level by grade level. These findings do support that claim because at least with respect to reading performance, the successive grade-level increases for Hawthorne in general show stronger upward trends than are evident in SAISD elementary schools in the aggregate.

The findings in this article are suggestive of a curriculum-sequencing effect — that is, that achievement builds upon itself at successive grade levels. If "schooling over time" at Hawthorne Elementary is viewed as a

constant, then the data reported in this article appear to indicate that despite the early deprivation that makes itself apparent to the teachers of children who enter school far below the academic standing of more advantaged peers, potential failure to thrive over time can be ameliorated for children of teachers committed to the principle put simply by Hirsch that knowledge does, in fact, build on knowledge in rather dramatic ways.

### III. Results at Core Knowledge Schools: Brief Profiles

The best kind of evidence by which to evaluate the effectiveness of a school reform initiative is long-term data based on a large and diverse sampling of schools and students. While long-term, large-scale results are the most reliable, one- or two-year "snapshots" of a school's performance can also provide helpful indications of the effectiveness of Core Knowledge.

On the following pages, we present brief profiles of Core Knowledge schools, based on results sent to us by the schools.

- [Jefferson Academy, Broomfield, CO \(1997\)](#)
- [Washington Core Knowledge School, Ft. Collins, CO \(1997\)](#)
- [Calvert County School District, MD \(1997\)](#)
- [Washington Elementary School, Rochester, MN \(1997\)](#)
- [Morse Elementary, Cambridge, MA \(1996\)](#)
- [Paul H. Cale Elementary, Albemarle County, VA \(1996\)](#)
- [Vista, Eastgate, Washington, Ridge View Elementary Schools, Kennewick, WA \(1996\)](#)
- [Ridge View Elementary, Kennewick, WA \(1996\)](#)
- [Three Oaks Elementary, Ft. Myers, FL \(1993\)](#)

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1. [\*First-Year Evaluation of the Implementation of the Core Knowledge Sequence: Qualitative Report\*](#), Sam Stringfield, Amanda Datnow et al, Baltimore: Center for Social Organization of Schools, Johns Hopkins University (1996).
  2. *Implementation and Effects of the Maryland Core Knowledge Project: Third-Year Evaluation Report*, Sam Stringfield and Barbara McHugh, Baltimore: Center for Social Organization of Schools, Johns Hopkins University (1998). For a copy of the complete report, contact CSOS at 3003 N. Charles St., Suite 200, Baltimore, MD 21218; (410) 516-8834.
  3. ["Hawthorne Elementary School: The Evaluator's Perspective."](#) Gail Owen Schubnell, *Journal of Education for Students Placed at Risk (JESPAR)*, Vol. 1, No. 1, 1996.
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