E. D. HIRSCH, JR.

PROFESSOR EMERITUS,
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FOUNDER AND
CHAIRMAN OF THE BOARD,
CORE KNOWLEDGE
FOUNDATION

Brock International Prize in Education
Nominee:

E.D. Hirsch, Jr.
Professor Emeritus
University of Virginia
Founder and Chairman of the Board
Core Knowledge® Foundation

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Enclosed please find material in support of the nomination of Dr. E.D. Hirsch, Jr. for the Brock International Prize in Education. Dr. Hirsch is the author of many books, among them *Cultural Literacy* and *The Schools We Need and Why We Don't Have Them* .

Dr. Hirsch has dedicated years of research, practice, and implementation to the task of designing a curriculum for American schools that ensures that all children are exposed to the essential knowledge that establishes cultural literacy. The goal of providing every student with the tools to acquire a firm foundation for higher-level schooling begins with our youngest students. The Core Knowledge® Sequence teaches solid academic content and skills to all children, provides common curriculum for teachers, and helps avoid gaps or needless repetitions in schools across the country.

This packet contains examples of articles designed to give the reader a sense of the philosophy that drives Dr. Hirsch's work, an overview of the actual Core Knowledge sequence, and various research-based analyses of the results of Core Knowledge implementation in schools. Further information concerning the implementation of Core Knowledge can be obtained from their website, located at www.coreknowledge.org. His influence is vast and continues to grow. I believe there is no candidate more worthy of this prestigious recognition than Dr. E.D. Hirsch, Jr.

E. D. Hirsch, jr.

Born: 22 March 1928 in Memphis, Tennessee.

Degrees Held: B. A. Cornell University, 1950; M. A. Yale University, 1955; Ph. D. Yale University, 1957; D. Litt. (Hon) Williams College, 1989; D. Litt. (Hon) Rhodes College, 1993, D. Litt. (Hon) Marietta College, 1997.

Summary of Career: Cornell University 1946-50; University of Paris 1948-49 (Cours de la civilisation franc,aise); U. S. Navy 1950-52; Yale University 1953-57; University of Bonn 1955-56 (Post graduate study in German philosophy and literature); Instructor in English, Yale University 1957-61; Assistant Professor, Yale, 1961-64; Associate Professor, Yale 1964-66; Professor of English, University of Virginia, 1966 to present; Chairman, Department of English, University of Virginia, 1968-71, 1981-83; Director of Composition, University of Virginia 1971-80;William R. Kenan Professor of English, University of Virginia, 1973 to 1989; Linden Kent Memorial Professor of English, 1989 to present; University Professor of Education and Humanities, 1994 to present.

Professional Positions: Officer on boards of: The Modern Language Association, The American Council of Learned Societies, The National Endowment for the Humanities, Member, Advisory Board: Blake Studies, Critical Inquiry, Genre, Literature and Performance, New Literary History, PTL; Member, New York State Board of Regents Advisory Board for Competency Tests in Writing, 1979-85; Member College Board-ETS Advisory Panel for Advanced Placement Tests in English, 1982-86; Consultant, National Council on Educational Research (Governing Body of the National Institute of Education), 1983. President, Chairman, Core Knowledge Foundation, 1986-present.

Honors: Fulbright pre-doctoral fellow (University of Bonn) 1955- 56; Morse Fellow, Yale University, 1962-63; Award for "Best Book of Explication in 1964" for Innocence and Experience: An Introduction to Blake (The Explicator Award); Advisory Committee: Conference on Theory in Humanistic Studies, American Academy of Arts and Sciences, 1968-69; Senior Fellow, National Endowment for the Humanities, 1971-72, 1980-81; Fellow, Center for the Humanities, Wesleyan University, 1973, 1974; Short-Term Fellow of The Council of the Humanities, Princeton University, 1976; Elected to Membership in The American Academy of Arts and Sciences, 1977; Fellow, Center for Advanced Study in the Behavioral Sciences, Stanford, 1980-81; Fellow, Center for the Humanities, Australian National University, Canberra, 1982; Bateson Lecturer Oxford University, 1983; Fellow, Center for Advanced Study of the University of Virginia, 1984-87; Fellow, Netherlands Institute for Advanced Study in the Humanities and Social Sciences, 1984-85 (Deferred); Honorand, the Royal Dutch Academy of Sciences, 1988. American representative: "Critica e Ermeneutica" Accademia Nazionale dei Lincei, Rome, 1996. New York Times "Notable Books of 1996" for The Schools We Need. Fellow, International Academy of Education, 1997. The Biennial QuEST Award for Outastanding Contributions to Education, American Federation of Teachers, 1997.

Books:

Wordsworth and Schelling: A Typological Study of Romanticism (New Haven: Yale University Press, 1960).

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The Schools We Need. And Why We Don't Have Them (New York, Doubleday, 1996).

About Core Knowledge®

Fairness and Core Knowledge

by E. D. Hirsch, Jr.

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Overcoming educational injustice is the new frontier in the struggle for civil rights. But it is a more subtle and confusing struggle than the one involving sit-ins and freedom rides. It is a battle of experts and slogans in which ignorant armies clash by night, where it is hard to tell good from evil, true from false. Both the left and the right genuinely desire a good education for every child, and believe that our national well-being hinges on educating all children to their potentials. Yet as American children move from first grade to second, and onward, the academic gap between privileged and disadvantaged children grows wider.[1] In several other countries, the opposite occurs; the learning gap between haves and have-nots grows smaller and in some cases disappears as children move through school.[2] Is America really so different -- so "diverse" as compared with other countries -- that we cannot learn from them how to give all children an equal chance?

In France, disadvantaged children enter a school system that has explicit requirements for each grade. Each child's progress in meeting those requirements can be monitored in detail, so that extra help can be quickly provided when needed. Under these circumstances, disadvantaged children in France soon catch up. Why are our results so completely different? One plausible explanation is that our children enter a public school system which is so fragmented that, in effect, every school or even classroom follows its own sequence of study. Teachers and remedial specialists lack guidelines to the specific knowledge and skills that each child should acquire in each grade. The contrast with French specificity could hardly be more dramatic. The American vagueness about what a child needs to learn in a grade seems more than any other circumstance to cause the learning gap to widen.

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Apart from some thoughtful scholars like James Comer and Henry Louis Gates, experts concerned with helping disadvantaged and minority children have badly misunderstood my argument in Cultural Literacy (1987) that, in order to overcome unfairness in schooling, it is necessary to impart a universally shared core of knowledge.[3] Only by doing so, I argued, could we surmount the fundamental injustice of educating some children to their potentials while allowing others to stay mired in ignorance and semi-

literacy. Many experts jumped to the conclusion that my advocacy of a shared core of knowledge was really a plan to impose WASP culture on people who are entitled to their own. They proposed that multicultural education would be a more effective way to avoid educational unfairness. But their response did not really touch upon the fundamental issues that I raised concerning educational justice.

After all, it would be a simple matter to include multicultural school content as part of the specific knowledge that all children should share. The question of multiculturalism is a significant one, and I have written about it elsewhere in an accommodating spirit.[4] But I shall put aside entirely the question of multiculturalism for the space of this essay in order to explain in detail why fairness demands that elementary schools impart a core of shared knowledge -- however defined. In the years since 1987, the issue of fairness has become ever more pressing, and new evidence has appeared that strengthens the connection between core knowledge and educational justice.

Educational justice means equality of educational opportunity. It does not mean (since some children are apter and harder-working pupils than others) that all students should get high test scores. Nonetheless, you can tell whether a school offers its students an adequate educational opportunity by looking at its average level of achievement. This overall outcome is an accurate index to educational fairness, because the human potential of a schoolful of elementary-school children, whether in the inner city or in the suburbs, does not vary enormously from one school to another. A national school system that is fair will not exhibit huge variations in the average outcomes of its schools. (This observation suggests that fairness is strongly correlated with the overall quality of schools -- a point I shall touch on later.)

Adopting this reasoning about the significance of variations in school outcomes, the International Association for the Evaluation of Educational Achievement (IEA) has begun to report on the proportion of schools in a nation that fail to offer students adequate educational opportunity. The fairness of a nation's educational system can be correlated with the IEA's rating of the percentage of a nation's schools whose average outcomes fall below a minimal international standard. On this criterion, the United States, with some 30% of its elementary schools below the minimal standard, has, after Italy, the least fair educational system in the developed world.[5]

Sources of Unfairness in Public Schooling

On average, all children will learn relatively well in an effective school. Research data about how to make individual schools effective are inconsistent and complex, but the large-scale evidence about school effectiveness, covering entire school systems across many cultures, is quite unambiguous.[6] Systems that achieve across-the-board effectiveness in early schooling are systems that specify a core of knowledge which children should acquire in each grade of elementary school. All the national systems that are fair by the IEA standard do in fact use this core-knowledge approach. By contrast, no national system that fails to use a core knowledge approach has managed to achieve fairness. The cross-correlations between fairness and core knowledge are 100 per cent.

Most Americans know that our various school districts have diverse standards for the skills and knowledge that children should acquire in each grade. But few know that the

districts rarely mandate specific knowledge for any grade. Here is a typical set of district guidelines for history in first grade:

The child shall be able to identify and explain the significance of national symbols, major holidays, historical figures and events. Identify beliefs and value systems of specific groups. Recognize the effects of science and technology on yesterday's and today's societies.[7]

Let us focus on just one phrase in those guidelines:

Identify beliefs and value systems of specific groups.

Compare that highly general admonition with the following excerpt from a more specific guide to first-grade history:

Introduce ancient civilizations and the variety of religions in the world, using maps of the ancient world. Specifics: Egypt: King Tutankhamen; Nile; pyramids; mummies; animal gods; hieroglyphics. Babylonia: Tigris and Euphrates; Hammurabi. Judaism: Moses; Passover; Chanukah. Christianity: Jesus. Arabia: Mohammed; Allah; Islam. India: Indus River; Brahma, Hinduism; Buddha. China: Yellow River; Confucius; Chinese New Year.[8]

Detailed guidelines provide clarity where there is now confusion. They help by distinguishing between knowledge that is required and knowledge that is merely desirable. By privileging specific concepts and information, explicit guides reduce the total amount of concepts and information that a teacher needs to consider essential. They thereby encourage greater depth and coherence in teaching. On the debit side, detailed guides also tend to generate disagreement -- a fact that partly explains why school districts continue to issue vague guidelines. Why be specific when vagueness will avoid controversy?

But against this bureaucratic convenience stands the great value of highly detailed standards to disadvantaged students and those who try to remedy their educational deficiencies. Explicit guides enable tutors to focus on the specific knowledge that students need in order to attain grade level. Absent such specific guides, disadvantaged students and their tutors in this country play a game whose rules are never clearly defined. Soon the unlucky are consigned to slow tracks from which they can never enter the mainstream of learning or of society.

By contrast, tutors in West Germany, having the benefit of detailed guidelines, are able to bring the highly disadvantaged offspring of Turkish "guest workers" up to grade level, despite the enormous educational handicaps of Turkish children in Germany.[9] In all of the core-knowledge systems of the world, the standard method of remediation is to diagnose the knowledge and skills that each child lacks, according to detailed grade-by-grade standards, and then focus on those specifics. This process of remediation begins in first grade and continues at need in subsequent years, enabling every normal child to be kept at grade level.

The Widening Gap and the 4th-Grade Slump

While the IEA report discloses that the American system is unfair to the thirty percent of students who attend ineffective schools, additional evidence of another kind shows that our system is universally unfair to disadvantaged students. In the United States, the gap

between academic haves and have-nots grows wider in each successive early grade, until, by fourth grade, it is often unbridgeable.

This tragic process currently seems inexorable. The longitudinal researches of Loban in the 1960s (replicated by Chall in the 1980s) tracked the acquired learning abilities of cohorts of disadvantaged and advantaged students as they moved from grade one to grade four and beyond.[10] To grasp the results of this research, imagine a graph with the vertical representing learning ability and the horizontal representing time. The lines on the graph that represent the median abilities of the two groups over time will then look like a V that is turned about 45 degrees to the right, with the narrow end at kindergarten. Loban and Chall show that a small educational disadvantage in kindergarten normally becomes a huge learning gap by grade four, a result that unfortunately applies even to graduates of Head Start.[11]

But this disheartening characteristic of American schools seems less than inevitable when we look at the successes of Swedish, German and French schools in teaching third-world and other disadvantaged students.[12] As children progress through those systems, the gap between haves and have-nots grows narrower rather than expands. The main reason these other systems are fairer to disadvantaged students is that they are able to compensate for the snowball effect of background knowledge upon early learning -- a snowball effect that allows a small knowledge difference in kindergarten to become a huge gap in learning ability within a few years.

For most young children, new knowledge expands exponentially, as anyone can testify who has watched a three-year-old acquire new words and build new knowledge upon old. The words that children hear in school are like so many snowflakes falling on the school ground. Disadvantaged children may hear the words, but they do not pick up the meanings, whereas children who have already accumulated a covering of knowledge and vocabulary will be picking up knowledge rapidly. As their academic snowball grows, so does their ability to accumulate still more knowledge -- in strong contrast to disadvantaged students whose initially meager learning abilities get smaller and smaller by comparison, humiliating them still further and destroying their motivation. This continual widening of the learning gap cannot be halted unless schools make a systematic effort to build up the specific background knowledge that disadvantaged children need.

Being Unfair to Newcomers

What makes our schools unfair, then, is that some students are learning less than others because of systematic shortcomings in their schooling rather than because of their own innate lack of academic ability. This injustice arises from the systematic failure of our schools to teach all children the knowledge they need in order to understand what the next grade has to offer. How can any teacher be sure that a child is ready to learn the lessons of third grade, if we don't define explicitly what second-graders ought to know? How can a third-grade teacher reach all children in a class when some of them lack the necessary building blocks? Probably one of the most important tasks of early education is to insure that all children have the background knowledge they need at each stage of schooling. Yet our system currently leaves that supremely important job to the vagaries of individual districts, schools, and, very often, individual classrooms.

It is a fundamental injustice that what American children learn in school should be determined by whether their homes have given them the background knowledge they need for academic work. A nation's public schools have a duty to educate all students to their potentials. A disadvantaged child's initial lack of preparation is not a mere given that the school is powerless to change; it is a challenge that some schools in the world are meeting and which all our schools could rise to if we launched a serious effort to overcome the incoherence of our system regarding the content of elementary education.

As an illustration of that incoherence, consider the plight of Jane in Calhoun County. In school A, first-grade teachers have deferred all world history until grade four, but in school B, in the same district, first graders are learning about ancient Egypt. Leaving school A after first grade, Jane goes to school B where the other children had studied Egypt in the previous year. The new teacher's references to the Nile, the pyramids, and hieroglyphics simply mystify her, and fail to convey the new information that the allusions to ancient Egypt were meant to impart. Multiply that day's failure of comprehension by many others in Jane's new environment, and then multiply those by further comprehension failures that will accrue because of the initial failures of uptake, and we begin to see why Jane is not flourishing in her new school.

Still greater handicaps are inflicted on a newcomer who must go to a new school in a totally different part of the country. Some of the schools around metropolitan Washington and in parts of Florida, California, and elsewhere now report that forty percent of their students are newcomers.[13] When one of these new children happens to be a disadvantaged child (as is disproportionately the case in our society, because low wage earners are the most frequent movers), the inherent handicaps of being a newcomer in an American school are greatly exacerbated. It is again the disadvantaged who suffer most from the structural incoherences of the American educational system.

Resisting a Universal Core Sequence

It will not surprise the reader to be told that a necessary antidote to incoherence in school content is to reach agreement on a grade-by-grade core of content for elementary school. The core need not take up more than 50% of total classroom time, leaving plenty of room for local variation and imaginative approaches. But it is exceedingly difficult to reach agreement about school content in the United States. The practical hurdles are no doubt great, but the top priority in surmounting them must be to spread awareness of the problem itself and to resist attempts to deny its existence. The direct solution to the educational problem -- defining a specific and universally-accepted core of knowledge -- goes so much against the American grain that experts have developed astonishingly resourceful techniques of avoidance to resist the idea of core-knowledge standards. But the public needs to recognize these denials for the evasions they are.

Here, by way of example, are a few characteristic arguments or slogans that experts use to deny the need for a core of universal content standards.

- "We already have an informal core-knowledgesystem in the United States, determined by the widespread use of just a few textbooks."
- "We do not need to emphasize particular content at all. Knowledge is changing and increasing so rapidly that the best approach is to teach children how to learn."

- "There is a danger that standardization of content would be imposed by the federal government and would open the way to federal control of education."
- "We have educated children reasonably well in the past without using a core of universal content standards."
- "It is illegitimate to compare the United States with other countries, which are in every case far less diverse than we are."
- "A common core of knowledge would obliterate the distinctive characteristics of American localities, and make schools into cookie cutters which turned out the same product everywhere."

Elsewhere, I have responded to each of these highly dubious expressions of resistance to change, none of which can stand up to detailed examination.[14] I haven't the space to repeat that exercise here, and in any case, there are straws in the wind that indicate a growing recognition of the need to define core knowledge. Various professional groups such as the National Councils of Teachers of Mathematics, of Science, and of Social Studies have passed resolutions committing their organizations to develop guidelines for their particular subject matters. A few states have resolved to create grade-by-grade core curricula for their schools.

These recent moves by a few states are excellent first steps, because they will begin to define, however vaguely, a definite sequence for elementary-school content. With luck, all fifty states will someday agree with each other about a common core sequence. Until such time, however, which may be far-off, it is essential that at least at the school level, a core of shared knowledge be defined in a specific, sequenced way, if a school is to achieve excellence and fairness.

My co-workers and I at the Core Knowledge Foundation, while advocating the teaching of a sequence of specific knowledge, also realize that it is not feasible, nor necessarily desirable, to wait for a top-down consensus on what this knowledge should be. Accordingly, the Foundation has undertaken an effort that combines scholarly research with grassroots experience to develop a working consensus upon a specific sequence for the elementary grades. This working consensus, known as the *Core Knowledge Sequence*, is a planned progression of specific knowledge in history, geography, mathematics, science, language arts, and fine arts. The *Core Knowledge Sequence* does not presume to stipulate everything American schoolchildren should know. Rather, it represents a working agreement regarding the minimum knowledge that children should acquire in grades one through six. The Sequence is meant to comprise about 50% of a school's curriculum, thus leaving ample room for local requirements and emphases.

The content of the *Core Knowledge Sequence* is the result of four years of research, debate, and consultation with parents, teachers, scientists, professional curriculum organizations, experts on America's multicultural traditions, and the curricula of other countries with proven success in elementary education. The Sequence represents a consensus of many diverse groups and interests: it was debated, modified, and finally ratified by a group of about 100 persons representing diverse areas and constituencies at a conference in March 1990. The Sequence is part of an ongoing process that we keep democratic and grounded in experience by involving many teachers in schools around the nation. As these teachers use the Sequence, they are asked to draw upon their classroom experience to help determine revisions of the Sequence.[15] Other revisions of the Sequence are based upon suggestions from technical and multicultural advisors for the Core

Knowledge Series of resource books. These relatively brief books exemplify just one way of actualizing the specific knowledge in the *Core Knowledge Sequence*.[16] The Sequence is available for use by all schools.

The *Core Knowledge Sequence* and publication of the books in the Core Knowledge Series are the initial moves of a campaign to start a discussion of core knowledge for the early grades. Our hope is that even if the Foundation's core sequence is not the one that will be finally accepted nationwide, its mere existence will dramatize the need for a specific core in grade school. We also hope it will help insure that if ever there is any officially accepted core, it will be as effective as the *Core Knowledge Sequence* has already shown itself to be.

Conclusion: Fairness and Excellence

In this brief essay I have tried to show concisely how a lack of agreement on a specific core of content in early grades is an insuperable barrier to fairness in American schools. My arguments (generally accepted by educational experts outside the United States) have not depended on any particular conception of what that content should be. Any sensible version of core content would be about as effective as any other sensible one for developing a fair system. I want to conclude by observing that there is a strong connection between the use of core knowledge and the achievement of excellence in early education. It is highly significant that core- knowledge countries have the best fairness scores and the best achievement scores in early grades.

Some of the underlying reasons for these favorable results are similar to those I have already traced. An educational arrangement that enables all children to learn at grade level will cause classrooms to be more lively and conducive to learning. When all children have the background knowledge they need for understanding new material, the teacher need spend far less time in boring review and special treatment of those who are behind. In such a classroom everybody learns more.

And, just as specific guidelines help a tutor diagnose what a disadvantaged child needs, so do they help teachers diagnose an advantaged child's academic progress. A teacher who knows exactly what the essentials are is in a position to demand those essentials from all students. Students, in turn, are able to understand what is expected of them, knowing that the teacher will be able to find out whether they have met those expectations. In short, the guidelines that permit accurate diagnosis also permit genuine accountability for everyone -- the child, the teacher, the school, the district, the state. Definite expectations and clear accountability focus everyone's performance. They help concentrate the mind.

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In the last IEA report on science achievement (1988), two nations of Western Europe were still using the local- choice system for determining school content. These were England and Holland. The other developed nations of Europe and Asia that were analyzed in the report were all core- knowledge countries. The percentage of schools that fell below the minimal standard in the best core- knowledge countries ranged between one and five percent. By contrast, the fairness ratings for Holland and England were respectively 16% and 19%.[17] (Remember, the fairness score for the United States was 30% of schools

below standard.) Because of findings like these, England recently decided to switch to a core- knowledge system. That left Holland. Recently I learned that the Dutch have now decided to switch to a core- knowledge system.

To my mind, the only half- way persuasive argument left to American opponents of core knowledge is the idea that America is a much more diverse nation than all those other countries. But if the analyses of this essay are right, a diverse country has greater need of a core- knowledge system than does a homogeneous one - - for some of the same reasons that a disadvantaged child has greater need of it than an advantaged child. The tired idea of American exceptionalism seems increasingly outmoded in the modern world, where the educational needs of young children are everywhere very much the same. As I have learned from studying the curricula of Bavaria, France, Japan, and Sweden, there are far more similarities than differences in the most effective educational systems of the developed world.

Our persistence in following a purely local- choice arrangement for early education has created a conflict between traditional American attitudes and modern educational realities. Our sentimental attachment to American exceptionalism, our resistance to change when confronted with rising educational standards, are not different in principle from the resistance to change exhibited by Soviet and Chinese bureaucrats. Stubborn traditions may succeed in perpetuating themselves through powerful bureaucracies, but a persistence in old ways in the face of new circumstances cannot succeed in creating a better life for the people of a nation. In a conflict between outmoded theories and new historical realities, the reality principle may be tragically evaded, but it cannot be defeated.

Notes

1. W. Loban, Language Ability: Grades seven, eight, and nine, (Project No. 1131) University of California, Berkeley, March, 1964, as expanded and interpreted by Sticht, T.G., Beck, L.B., Hauke, R.N., Kleiman, G.M., & James, J.H., Auding and Reading: A Developmental Model, Alexandria, Virginia, Human Resources Research Organization, 1974; Chall, J.S., Families and Literacy, Final Report to the National Institute of Education, 1982, and especially, Chall, J. S., Jacobs, V.A., Baldwin. L.E., The Reading Crisis: Why Poor Children Fall Behind, Harvard University Press, Cambridge, MA, 1990.
2. Boulot, S. & Boyzon- Fradet, D., Les immigres et l'ecole: une course d'obstacles, Paris, 1988, pp. 54-58. Centre for Educational Research and Innovation, (CERI), Immigrants' Children At School, Paris, 1987, pp. 178- 259.
3. James Comer, "Ignorance is Not Bliss," Parents Magazine, March 1991, p. 193. Professor Gates is an advisor to our Core Knowledge project.
4. E. D. Hirsch, Jr., "Multiculturalism and a Centrist Curriculum," in press, typescript available from the Core Knowledge Foundation.
5. International Association for the Evaluation of Educational Achievement (IEA), Science Achievement in Seventeen Countries: A Preliminary Report, Pergamon Press, Elmsford, NY, 1988. (See p. 5, No. 7, comparative statistics for 14-year-olds.) Compare the superior equality of opportunity of the following countries (p. 42). The figures are the percentages of schools below par. Finland, 2%; Hungary, 0%; Japan, 1%; Korea, 5%; Norway 1%; Sweden, 1%. France and Germany, which rank well in fairness, were not in this IEA report.
6. R. Kyle, ed., Reaching for Excellence: An Effective Schools Sourcebook, Washington, D.C., U. S. Government Printing Office, May, 1985. Purkey, S.C., and Smith, M. S., "Effective Schools: A Review," The Elementary School Journal, Vol. 83, pp. 427- 542.

7. Quoted from the current district guidelines of Lee County, Florida.
8. Summarized from the *Core Knowledge Sequence*, available from the Core Knowledge Foundation. See below for more detailed discussion of the *Core Knowledge Sequence*.
9. The specificity of German core- knowledge guides can be seen in Amtsblatt des Bayerischen Staatministeriums fur Untericht und Kultur, Sondernummer 20, Einfuhrung des Lehrplans fur die bayerische Grundschulen, Munich, 1981.
10. W. Loban, Language Ability: Grades seven, eight, and nine, (Project No. 1131) University of California, Berkeley, March, 1964, as expanded and interpreted by Sticht, T.G., Beck, L.B., Hauke, R.N., Kleiman, G.M., & James, J.H., Auding and Reading: A Developmental Model, Alexandria, Virginia, Human Resources Research Organization, 1974; Chall, J.S., Families and literacy, Final Report to the National Institute of Education, 1982, and especially, Chall, J. S., Jacobs, V.A., Baldwin. L.E., The Reading Crisis: Why Poor Children Fall Behind, Harvard University Press, Cambridge, MA, 1990.
11. Constance Holden, "Head Start Enters Adulthood", Science, 247, March 23, 1990.
12. The best single source for a statistical data on Belgium, France, Germany, Luxembourg, the Netherlands, Sweden, and Switzerland may be found in the publication by Centre for Educational Research and Innovation (CERI), Immigrants' Children At School, Organization for Economic Co-operation and Development, Paris, 1987. The French studies have been the fullest. They show that, when all other factors are accounted for, the difference in performance between Third- World immigrant students and French students "decreased more or less markedly, although they did not disappear completely." This induced the authors to conclude that the French should try harder! And, according to news reports, that is exactly what they are doing with admirable success.
13. Marylou Tousignant, "Area Schools Struggle with Increasing Student Turnover," Washington Post, May 20, 1991, p.1.
14. E. D. Hirsch, Jr., "The Usual Objections to Core Knowledge," obtainable from the Core Knowledge Foundation.
15. Beginning in the 1990-91 school year, the Three Oaks School in Ft. Myers, Florida successfully integrated the *Core Knowledge Sequence* into the school's curriculum. Other schools have begun implementation in the 1991-92 school year, including the Mohegan School (P.S. 67) in the South Bronx, with a predominantly African-American and Hispanic population. The Core Knowledge Foundation is bringing together Three Oaks, Mohegan, and other pioneering schools as part of the Core Knowledge Coalition. More information on the Coalition is available from the Foundation. For reports on the success of the Three Oaks School, see Education Week (Nov. 20, 1991); Wall Street Journal (Sept. 6, 1991); and Life magazine (September 1991).
16. The first two of six books in the Core Knowledge Series are now available, under the titles What Your First [and Second] Grader Needs to Know (Doubleday, 1991). The third and fourth grade volumes are scheduled for publication in the summer of '92; fifth and sixth, in the summer of '93.
17. Science Achievement in Seventeen Countries, p.42.

The following papers of related interest are available from the Core Knowledge Foundation:

- Toward a Centrist Curriculum: Two Kinds of Multiculturalism in Elementary School
- Common Misconceptions About Core Knowledge

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About Core Knowledge®

Toward a Centrist Curriculum: Two Kinds of Multiculturalism in Elementary School

by E. D. Hirsch, Jr.

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I. Two Kinds of Multiculturalism

What are people of good will to think about the disputed topic of multiculturalism in elementary school? Most of us would agree that children in early grades should begin to acquire respect for each other. And we would probably agree that respect can in part be fostered by a curriculum that includes the study of diverse peoples and cultures.

We should also agree that, whatever the curriculum, children need to have basic foundations and share common points of reference that will enable further learning. Even if the teaching of such shared knowledge should take up only 50% of classroom time--which is the curriculum reform advocated by the Core Knowledge Foundation--it would enormously facilitate classroom learning as well as social cohesion. Classroom learning cannot go forward effectively unless all students in the class share some common points of reference. A consensus is building in the United States that this shared, school-based knowledge should be (especially in the areas of history and literature) far more multicultural than it has been in the past. But multiculturalism comes in different guises. There's a progressive form that will be helpful to all students, and a retrogressive kind that not only tends to set group against group but also hinders the educational excellence and fairness it was conceived to enhance.

The schools of a modern nation are the chief institutions through which children become members of a wider national community. Schools are the only channel that cannot be switched to another station. Children will become adults who cooperate and sustain one another only if the school-based culture they gain makes them feel that they truly belong to the larger society. To create this sense of belonging for all groups has been the hope and promise of the United States in its best and most generous moments. As the great American writer Herman Melville said in 1849:

There is something in the contemplation of the mode in which America has been settled that, in a noble breast, should forever extinguish the prejudices of national dislikes. Settled by the people of all nations, all nations may claim her for their own. You can not spill a drop of American blood without spilling the blood of the whole world. ... We are not a narrow tribe of men -- No: our blood is as the flood of the Amazon, made up of a thousand noble currents all pouring into one.

I learned about that Melville passage from a distinguished advocate of multiculturalism, Henry Louis Gates. We happened to find ourselves on a panel on multiculturalism, and were in total agreement. Gates turned out to be one of the few scholars who had actually read my book *Cultural Literacy* and he had concluded that the book was an attempt to open doors rather than close them. He became a valued member of the Core Knowledge Network.

A few months later, it happened that Gates and I were invited to participate in an exciting event -- a telephonic conference at a university in South Africa, which took place not long after the release of Nelson Mandela. The subject of the conference was "South African Cultural Literacy after the End of Apartheid," and the idea was to get opposing viewpoints. Gates was on one phone in New York; I was on another in Charlottesville, and our remarks were being amplified over loudspeakers in South Africa, as we answered questions put to us by a panel there. No one except Gates and myself, who by now were friends and allies, knew what would happen. The South Africans of course assumed that we would take opposite sides on the multicultural question. They couldn't know that Gates was not only an advocate of the reforms I've been proposing for the past eight years, but also a member of our advisory committee on multiculturalism.

Shortly after that event, I formed a friendship and an alliance with Dr. Neville Alexander, a black scholar who is leading the effort to amalgamate and standardize the various tribal languages of South Africa, and, in addition, to define the common multicultural core curriculum that all South Africans, black and white, will follow at school. He and other black leaders recognize that the schools of the new South African nation will have to teach a shared multiculturalism, so that each group will know something of the other through a core curriculum that is common to all. Alexander and his colleagues believe that only through teaching this centrist common core is there a chance for all citizens to attain equal economic opportunity and live in harmony.

What has drawn people like Neville Alexander, Gates and me together on the subject of multiculturalism is an understanding that the term multiculturalism covers two quite distinct conceptions, and that only one of them is the right one from an ethical and political point of view. I want to focus my remarks on the distinctions between these two conceptions of multiculturalism.

On the surface, they have a lot in common. Both seem to advocate pluralism, express admiration for diversity, and have a broad sympathy for the values to be found in all cultures. But in their philosophical and practical implications the two conceptions are polar opposites. One version is the universalistic view of Melville, which might be called "cosmopolitanism." The other is a particularistic vision that stresses loyalty to one's local culture. It could be called ethnocentrism, but one can also use the less pejorative term "ethnic loyalism."

For an ethnic loyalist, the very idea of ethnicity defines the essence of a person. To be

called a Korean- American or an African- American is to confer an essential definition of what that person is. But the advocate of cosmopolitanism takes a different view. Ethnicity is not one's essence, but an accident of history. As Albert Shanker has observed in defending the cosmopolitan view, not all Jewish- Americans or Asian- Americans or African- Americans have the same attitudes and values. While ethnicity may be an important defining part of an individual's identity, it is a presumption to insist that ethnicity defines one more essentially than do dozens of other social and temperamental determinants.

So the issue about multiculturalism that we need to decide is this: Do we define ourselves as belonging to a particular "ethnos" or do we define ourselves as belonging to a broad "cosmopolis"? Cosmopolis, as you know, comes from the Greek roots "cosmos" meaning world and "polis" meaning city or nation. Cosmopolitanism means being a citizen of the world, a member of humanity as a whole. It is possible, of course, to hold a kind of dual citizenship, to be part of both one's particular ethnos and the larger cosmopolis. The difficulty begins only when one asserts the mutual exclusivity of ethnos and cosmopolis.

When Melville said of America "we are a world," he was not the first to conceive the idea of a world- polis. The concept had been current in late antiquity in the great city of Alexandria, which was in fact the first place to be called a cosmopolis. There in Alexandria were people from every race, nation, and continent rubbing up against each other to form a microcosm of the world, just as Melville conceived of America, and as many including myself still do. The ethnic loyalist, on the other hand, feels that accommodating oneself to a larger cosmopolitan culture means giving way to cultural imperialism, and a consequent loss of identity. This view ignores the universal historical fact that every ethnic culture existing today is an assimilated product of earlier cultural imperialisms. As each group or tribe fuses with another, a new ethnicity is always created. This pattern of cultural imperialism was as characteristic of the Iroquois as of the Zulus or the United States of America.

Those who are familiar with the *Aeneid* will know that the theme of lost ethnicity is as old as antiquity. Virgil's tragic sense of history, expressed in his famous phrase "lacrymae rerum," the tears of things, arose from the sense of loss when one culture is transmuted by a larger one. Like Richard Rodriguez in *Hunger of Memory*, which is a modern American version of this theme, Virgil saw very clearly that the benefits conferred by Roman civilization entailed the pain of some cultural loss. But even as Virgil dramatized the poignancy of loss, he also foreshadowed a cosmopolitan future in which all of these diverse groups would come to live in peace and prosperity instead of living as before in conflict, poverty, and danger.

An ethnic loyalist holds that each culture has a duty to preserve its own identity against the larger cosmopolis. The acknowledged pain of cultural loss makes this desire for preservation understandable. The difficulty, again, occurs when preservation becomes separation -- and there are any number of ethnic groups in the modern world that define themselves in sometimes violent opposition to other ethnic groups and to the cosmopolis. If we assert the right of all peoples to their own ethnicity, do we also sanction the ethnic intolerance that characterizes many cultures? If we argue that all people have a right to their own ethnicity, do we thereby approve of an ethnicity that is characterized by intolerance of other ethnic groups? Knowledge of one's ethnic heritage, or pride in the

accomplishments of members of one's ethnic group may usefully bolster one's sense of self and self-esteem; but, clearly, the element of potential intolerance in ethnic self-identity must be sacrificed to the larger polis. In order to assert the right to ethnicity for all, we must all adopt the great Enlightenment principles of toleration and mutual respect.

II. Multiculturalism in the Schools

Let me leave intellectual history to discuss the place of multiculturalism in education. The debates over multiculturalism need to be placed in the larger contexts of education and civil rights. Today the new frontier in the civil rights struggle is the attempt to overcome educational injustice. But that is a much more subtle and confusing struggle than sit-ins and freedom rides. It's a battle of experts and slogans where what seems benign may be malignant, and where it's hard to tell right from wrong, true from false.

People of good will on both the left and the right genuinely desire a good education for every child. Everyone is now saying that our national well-being hinges on educating all children to their potentials. Yet in the United States the academic gap between privileged and disadvantaged children grows ever wider as children move onward through early grades, whereas in other developed countries, the opposite occurs: the learning gap between haves and have-nots grows smaller as children advance in school. How do other countries offer their children more equal educational opportunities? Why is our educational system the least equitable in the developed world?

By unfairness I do not refer to the great inequality of spending on pupils in different schools. That is an external unfairness that should be addressed in the political arena as soon as possible. I mean a more subtle, internal unfairness that affects students who are attending the very same schools. Within the very same classroom some students are learning while others are not, because of differences that are social and economic rather than innate.

The chief reason for such internal unfairness in our schools is that we adults have failed to set clear knowledge-goals for each grade of elementary school. Our children now enter an educational system in which each classroom follows its own sequence of study. The very notion that our elementary schools even *have* a curriculum that can be defined in terms of specific knowledge is a myth. A typical principal cannot tell you what all students at a grade level are learning in common. No teacher in our public schools can know with any certainty what specific knowledge incoming students have. Teachers must therefore engage in "review" for several weeks before going forward, and thereafter must constantly backtrack to fill in knowledge gaps that should not exist. This glacial slowness of academic progress in early grades immediately strikes foreign observers of our schools.

More than any other circumstance, this American vagueness about what children need to learn in each grade causes the learning gap to widen between haves and have nots. No teacher can bring a disadvantaged child's knowledge up to grade level, since no teacher can identify what that missing knowledge is. Advantaged children get needed background knowledge at home, but less fortunate children can only get such knowledge at school, and they do not. The thin broth of American elementary education creates unfairness both to disadvantaged students who become permanently handicapped, and also to informed students who become bored and alienated.

The obvious antidote to the thinness and incoherence of American early education is for us adults to reach agreement, as is done in other countries, on a core of content for each grade of elementary school. Let it be bluntly stated that unless we manage to reach such agreement, we cannot have a system of education that is both excellent and fair. The agreed-on core need not take up more than 50% of total classroom time, which would leave plenty of room for local variation. But even a 50% agreement would be exceedingly difficult to reach in the United States, as the heated arguments over multiculturalism attest.

The multicultural movement in the United States is at heart a demand for a redefinition of American school-based culture, in particular a demand to change the history and literature curriculum. This demand did not originate in our colleges and universities, where much of the debate about multiculturalism continues. It arose in the actual reconstitution of American society after the civil rights movement, and as a consequence of new waves of Asian and Latino immigration.

Those who have power in the present determine what shall be selected and interpreted from the infinite past. There is simply *too much* past to give students an endless history that is irrelevant to current realities. Events of recent years have redistributed power in the United States, and it is this change that lies behind the new multicultural redefinition of American history and literature. So long as Blacks and Asians and Latinos remained invisible in our present they also remained invisible in our past. But the present has changed, and henceforth so must the past. American history and literature are moving ever closer to Melville's vision.

That Melvillian, cosmopolitan approach to history and literature is the one we have adopted in the curriculum recently developed by the Core Knowledge Foundation. For the past five years, working with hundred of experts, teachers and parents across the country, the Core Knowledge Foundation has been dedicated to developing a specific core curriculum for the early grades. We have consulted dozens of professionals of all sorts including experts in subject matters and in multiculturalism. A provisional curriculum was debated and ratified by about one-hundred persons attending a national conference held in March 1990. The result of our consensus-building efforts is a very specific sequence of knowledge for the elementary grades, called the *Core Knowledge Sequence*. It is meant to constitute about 50% of a school's curriculum, thereby allowing for local variation, including integration with more ethnically-centered curricula. The Sequence is available for use by all schools and publishers. Currently, it is the only elementary curriculum having enough specificity to provide fully definite knowledge goals for each grade.

In order to be accepted, the *Core Knowledge Sequence* had to be ratified by persons of good will from many ethnic groups. Such people are a lot easier to find than publicized disputes suggest, and fortunately there are more centrists than there are extremists. Because people of good will from many ethnic groups participated in its formation, the curriculum is a consensus document that is multicultural in flavor. As any centrist curriculum must, it exhibits the following characteristics: 1) It encourages knowledge of and sympathy towards the diverse cultures of the world. 2) It fosters respect for every child's home culture as well as for the cosmopolitan school- based culture. 3) It gives all children competence in the current system of language and allusion that is dominant in the nation's economic and intellectual discourse.

This third requirement raises a question about including a strong element of the so- called "dominant" culture. Common sense and experience both dictate caution in trying to revolutionize American culture through the school curriculum by neglecting or even rejecting the currently dominant culture. That would simply harm children who are in most need of help. In order to get a good job a young person must be able to communicate in speech and writing in the standard language and allusion- system of the marketplace. Since this system of intellectual currency is in broad use by millions of adults, it is a highly stable system that is slow to change. Hence, in order not to penalize students, schools must include as part of the curriculum the system of language and allusion that is currently in place.

This means that a cosmopolitan, centrist curriculum will initiate evolutionary rather than revolutionary change in American culture. Nonetheless, wherever there *is* an opportunity for fostering greater cosmopolitanism, it should be encouraged as insistently as is feasible without injuring any child's practical chances in life.

As earnestly as I welcome this movement towards a multicultural redefinition of American culture, I must quickly add that the issue of multicultural redefinition must not distract us from the issue of educational excellence and fairness in areas beyond the history and literature curriculum. For even after our curricula have included many more elements of African, African-American, Native American, Asian, and Latino culture, we still face the task of giving all children a good education.

It will do black American children little good, for example, to learn a lot about their African and African- American past if they still cannot read and write effectively, do not understand natural science, and cannot solve basic mathematical problems. In the information age, such educational defects simply prolong victimization by keeping people in menial jobs, if there happen to be enough menial jobs to go around. The only kind of multiculturalism that can overcome this victimization is the kind that invites all children to become active, effective members of the larger cosmopolis. Every child should be able to read a serious book or training manual. Every child should be able to communicate with strangers in the larger society, give a talk to unknown fellow citizens, and to understand what is being said in such communications.

Cosmopolitanism is a true friend of diversity. It is the only valid multiculturalism for the modern era. Only a cosmopolitan, centrist core curriculum can enable all children to be well educated. The great ethnic diversity of America is not going to disappear just because we adults decide to empower children with a core of commonly shared knowledge -- a common school-based culture in addition to their home culture. If we Americans are to choose between the narrow ideal of ethnic loyalty and the broad ideal of social fairness, let us without hesitation choose fairness.

The following papers of related interest are available from the Core Knowledge Foundation:

- Common Misconceptions About Core Knowledge
- Fairness and Core Knowledge

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Core Knowledge at a Glance: Major Topic Headings, K-2

	Kindergarten	First Grade	Second Grade
Language Art/English	I. Reading and Writing II. Poetry III. Fiction IV. Sayings and Phrases	I. Reading and Writing II. Poetry III. Fiction IV. Sayings and Phrases	I. Reading and Writing II. Poetry III. Fiction (Stories; Greek Myths; Greek and Roman Myths) IV. Sayings and Phrases
History and Geography	**World** I. Spatial Sense II. Overview of the Seven Continents **American** I. Geography II. Native Americans III. Early Exploration and Settlement (Columbus, Pilgrims, Independence Day) IV. Presidents, Past and Present V. Symbols and Figures	**World** I. Geography II. Early Civilizations (Mesopotamia, Ancient Egypt, History of World Religions) **American** I. Early People and Civilizations (Maya, Inca, Aztec) II. Early Exploration and Settlement III. American Revolution IV. Early Exploration of the American West V. Symbols and Figures	**World** I. Geography II. Early Civilizations: Asia (India, China) III. Modern Civilization and Culture: Japan IV. Ancient Greece **American** I. American Government: The Constitution II. War of 1812 III. Westward Expansion IV. Civil War V. Immigration and Citizenship VI. Civil Rights VII. Geography of the Americas VIII. Symbols and Figures
Visual Arts	I. Elements of Art II. Sculpture III. Looking at and Talking About Art	I. Art from Long Ago II. Elements of Art III. Kinds of Pictures: Portrait and Still Life	I. Elements of Art II. Sculpture III. Kinds of Pictures: Landscapes IV. Abstract Art V. Architecture
Music	I. Elements of Music II. Listening and Understanding III. Songs	I. Elements of Music II. Listening and Understanding (Composers; Orchestra; Opera; Ballet; Jazz) III. Songs	I. Elements of Music II. Listening and Understanding (Orchestra; Keyboards; Composers) III. Songs
Mathematics	I. Patterns and Classification II. Numbers and Number Sense III. Money IV. Computation V. Measurement VI. Geometry	I. Patterns and Classification II. Numbers and Number Sense III. Money IV. Computation V. Measurement VI. Geometry	I. Numbers and Number Sense II. Fractions III. Money IV. Computation V. Measurement VI. Geometry
Science	I. Plants and Plant Growth II. Animals and Their Needs	I. Living Things and Their Environments	I. Cycles in Nature (Seasonal Cycles; Life Cycles; Water Cycles)

	III. Human Body (Five Senses) IV. Introduction to Magnetism V. Seasons and Weather VI. Taking Care of the Earth VI. Science Biographies	II. Human Body (Body Systems) III. Matter IV. Properties of Matter: Measurement V. Introduction to Electricity VI. Astronomy VII. The Earth VIII. Science Biographies	II. Insects III. Human Body (Cells; Digestive and Excretory Systems) IV. Magnetism V. Seasons and Weather VI. Simple Machines VII. Science Biographies

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Core Knowledge at a Glance: Major Topic Headings, 3-5

	Third Grade	Fourth Grade	Fifth Grade
Language Art/English	I. Reading and Writing II. Poetry III. Fiction (Stories; Norse Myths; Greek and Roman Myths) IV. Sayings and Phrases	I. Writing, Grammar, and Usage II. Poetry III. Fiction (Stories; Legends of King Arthur) IV. Sayings and Phrases	I. Writing, Grammar and Usage II. Poetry III. Fiction (Stories; Shakespeare; Myths and Legends) IV. Sayings and Phrases
History and Geography	**World** I. World Geography (Spatial Sense; Canada; Important Rivers) II. Ancient Rome (Geography of Mediterranean Region; Roman Empire, "Decline and Fall") **American** I. The Earliest Americans II. Early Exploration of North America III. The Thirteen Colonies: Life and Times Before the Revolution	**World** I. World Geography (Spatial Sense; Mountains) II. Europe in the Middle Ages III. Spread of Islam and "Holy Wars" IV. Early and Medieval African Kingdoms V. China: Dynasties and Conquerors **American** I. American Revolution II. Making a Constitutional Government III. Early Presidents and Politics IV. Reformers V. Symbols and Figures	**World** I. World Geography (Spatial Sense; Lakes) II. Meso-American Civilizations III. European Exploration, Trade, and Clash of Cultures IV. Renaissance and Reformation V. England from the Golden Age to the Glorious Revolution VI. Russia: Early Growth and Expansion VII. Feudal Japan **American** I. Westward Expansion II. Civil War III. Native Americans: Cultures and Conflicts IV. U.S. Geography
Visual Arts	I. Elements of Art II. American Indian Art III. Art of Ancient Rome and Byzantine Civilization	I. Art of the Middle Ages II. Islamic Art and Architecture III. Art of Africa IV. Art of China V. Art of a New Nation: The United States	I. Art of the Renaissance II. American Art: Nineteenth-Century United States III. Art of Japan
Music	I. Elements of Music II. Listening and Understanding (Orchestra; Composers) III. Songs	I. Elements of Music II. Listening and Understanding (Orchestra; Vocal Ranges; Composers) III. Songs	I. Elements of Music II. Listening and Understanding (Composers; Connections) III. American Musical Traditions (Spirituals) IV. Songs
Mathematics	I. Numbers and Number Sense II. Fractions and Decimals III. Money IV. Computation V. Measurement VI. Geometry	I. Numbers and Number Sense II. Fractions and Decimals III. Money IV. Computation V. Measurement VI. Geometry	I. Numbers and Number Sense II. Ratio and Percent III. Fractions and Decimals IV. Computation V. Measurement VI. Geometry

			VII. Probability and Statistics VIII. Pre-Algebra
Science	I. Introduction to Classification of Animals II. Human Body (Muscular, Skeletal, and Nervous Systems; Vision and Hearing) III. Light and Optics IV. Sound V. Ecology VI. Astronomy VII. Science Biographies	I. Human Body (Circulatory and Respiratory Systems) II. Chemistry (Atoms; Matter; Elements; Solutions III. Electricity IV. Geology: Earth and Its Changes V. Meteorology VI. Science Biographies	I. Classifying Living Things II. Cells: Structures and Processes III. Plant Structures and Processes IV. Life Cycles and Reproduction V. Human Body (Endocrine and Reproductive Systems) VI. Chemistry: Matter and Change VII. Science Biographies

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Core Knowledge at a Glance: Major Topic Headings, 6-8

	Sixth Grade	Seventh Grade	Eighth Grade
Language Art/English	I. Writing, Grammar, and Usage II. Poetry III. Fiction and Drama (Stories; Shakespeare; Classical Myths) IV. Sayings and Phrases	I. Writing, Grammar, and Usage II. Poetry III. Fiction, Nonfiction, and Drama IV. Foreign Phrases Commonly Used in English	I. Writing, Grammar and Usage II. Poetry III. Fiction, Nonfiction, and Drama IV. Foreign Phrases Commonly Used in English
History and Geography	**World** I. World Geography (Spatial Sense; Deserts) II. Lasting Ideas from Ancient Civilizations (Judaism, Christianity; Greece and Rome) III. Enlightenment IV. French Revolution V. Romanticism VI. Industrialism, Capitalism, and Socialism VI. Latin American Independence Movements **American** I. Immigration, Industrialization, and Urbanization II. Reform	**World** I. America Becomes a World Power II. World War I, "The Great War" III. Russian Revolution IV. America from the Twenties to the New Deal V. World War II VI. Geography of the United States	**World** I. Decline of European Colonialism II. Cold War III. Civil Rights Movement IV. Vietnam War and the Rose of Social Activism V. Middle East and Oil Politics VI. End of the Cold War: Expansion of Democracy and Continuing Challenges VII. Civics: The Constitution – Principles and Structure of American Democracy VIII. Geography of Canada and Mexico
Visual Arts	I. Art History: Periods and Schools (Classical; Gothic; Renaissance; Baroque; Rococo; Neoclassical; Romantic; Realism)	I. Art History: Periods and Schools (Impressionism; Post-Impressionism; Expressionism and Abstraction; Modern American Painting)	I. Art History: Periods and Schools (Painting Since World War II; Photography; 20th-Century Sculpture) II. Architecture Since the Industrial Revolution
Music	I. Elements of Music II. Classical Music: From Baroque to Romantic (Bach, Handel, Haydn, Mozart, Beethoven, Schubert, Chopin, Schumann)	I. Elements of Music II. Classical Music (Romantics and Nationalists (Brahms, Berlioz, Liszt, Wagner, Dvorak, Grieg, Tchaikovsky) III. American Musical Traditions (Blues and Jazz)	I. Elements of Music II. Non-Western Music III. Classical Music: Nationalists and Moderns (Sibelius, Bartok, Rodrigo, Copland, Debussy, Stravinsky) IV. Vocal Music (Opera; American Musical Theater)
Mathematics	I. Numbers and Number Sense II. Ratio and Percent	I. Pre-Algebra (Properties of the Real Numbers; Polynomial Arithmetic;	I. Algebra (Properties of the Real Numbers; Relations, Functions, and Graphs; Linear

	III. Computation IV. Measurement V. Geometry VI. Probability and Statistics VII. Pre-Algebra	Equivalent Equations and Inequalities; Integer Exponents) II. Geometry (Three-Dimensional Objects; Angle Pairs; Triangles; Measurement) III. Probability and Statistics	Equations and Functions; Arithmetic of Rational Expression; Quadratic Equations and Functions) II. Geometry (Analytic Geometry; Introduction to Trigonometry; Triangles and Proofs)
Science	I. Plate Tectonics II. Oceans III. Astronomy: Gravity, Starts, and Galaxies IV. Energy, Heat, and Energy Transfer V. Human Body (Lymphatic an Immune Systems) VI. Science Biographies	I. Atomic Structure II. Chemical Bonds and Reactions III. Cell Division and Genetics IV. History of the Earth and Life Forms V. Evolution VI. Science Biographies	I. Physics II. Electricity and Magnetism III. Electromagnetic Radiation and Light IV. Sound Waves V. Chemistry of Food and Respiration VI. Science Biographies

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About Core Knowledge®

Three-Year National Study Confirms Effectiveness of *Core Knowledge Sequence*

by Michael Marshall, *Associate Director of Research and Communications, Core Knowledge Foundation* from *Common Knowledge,* Volume 12, No. 1, Winter 1999

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This article is a synopsis of the 148-page report, National Evaluation of Core Knowledge Sequence Implementation: Final Report *by Sam Stringfield, Amanda Datnow, Geoffrey Borman, and Laura Rachuba of the Center for Social Organization o, Schools, Johns Hopkins University, 3003 N. Charles Street, Suite 200 Baltimore, Maryland 21218. The full report is available in electronic format only. To receive one, send your e-mail address to coreknow@coreknowledge.org. (This document is very large and takes approximately five minutes to download.)*

A three-year study of Core Knowledge schools across the country reports that when the Core Knowledge Sequence is really implemented, it really works. Researchers found that students at schools where more than 50 percent of classrooms used the Sequence had higher scores on norm-referenced tests and on criterion-referenced tests of Core Knowledge topics than students at comparison schools. Their report calls the academic gains "educationally meaningful."

The independent study was commissioned in 1995 by the Brown and Walton Foundations to learn the effects of using the Sequence in a variety of school contexts and to determine the conditions under which Core Knowledge is likely to achieve reasonably full implementation.

How It Was Done

The study was conducted by Sam Stringfield, Amanda Datnow, Geoffrey Borman, and other researcher at the Center for Social Organization of Schools at Johns Hopkins University, as well as researchers at the College of Education at University of Memphis. It followed six schools considered promising new Core Knowledge sites and six schools regarded as advanced implementers. All were matched with demographically similar schools in their districts that served as controls. Subject schools were identifie in Colorado, Florida, Ohio, Maryland, Tennessee, Texas, and Washington, and reflected various community and socio-economic contexts. Approximately half serve a majority population of students eligible for the federal free lunch program.

At the end of three years, nine of the 12 schools had reached moderate or high levels of implementation Core implementation improved and increased at four of the six new sites and at five of the six advance sites. Implementation waned at one new site and at one advanced site, leading the researchers to conclude that although all 12 study schools claimed to be using Core Knowledge, 10 schools "were authentically doing so."

A two-person research team visited each of the schools a total of five times. Visits lasted two to three

days. The teams recorded notes of classroom activities and also used an instrument called the Classroor Observation Measure, which has been validated in other studies of elementary classroom instruction. Researchers also surveyed teachers in grades one through five in all 12 schools in 1997. In 1998, only teachers in grades three through five were surveyed as these were the cohorts followed during the perio of the study. The survey questionnaire included general questions on Core Knowledge implementation and also asked whether teachers had taught or intended to teach particular core knowledge topics durin the school year. An average of 43 percent of teachers returned their surveys in 1997 and 84 percent returned the surveys in 1998.

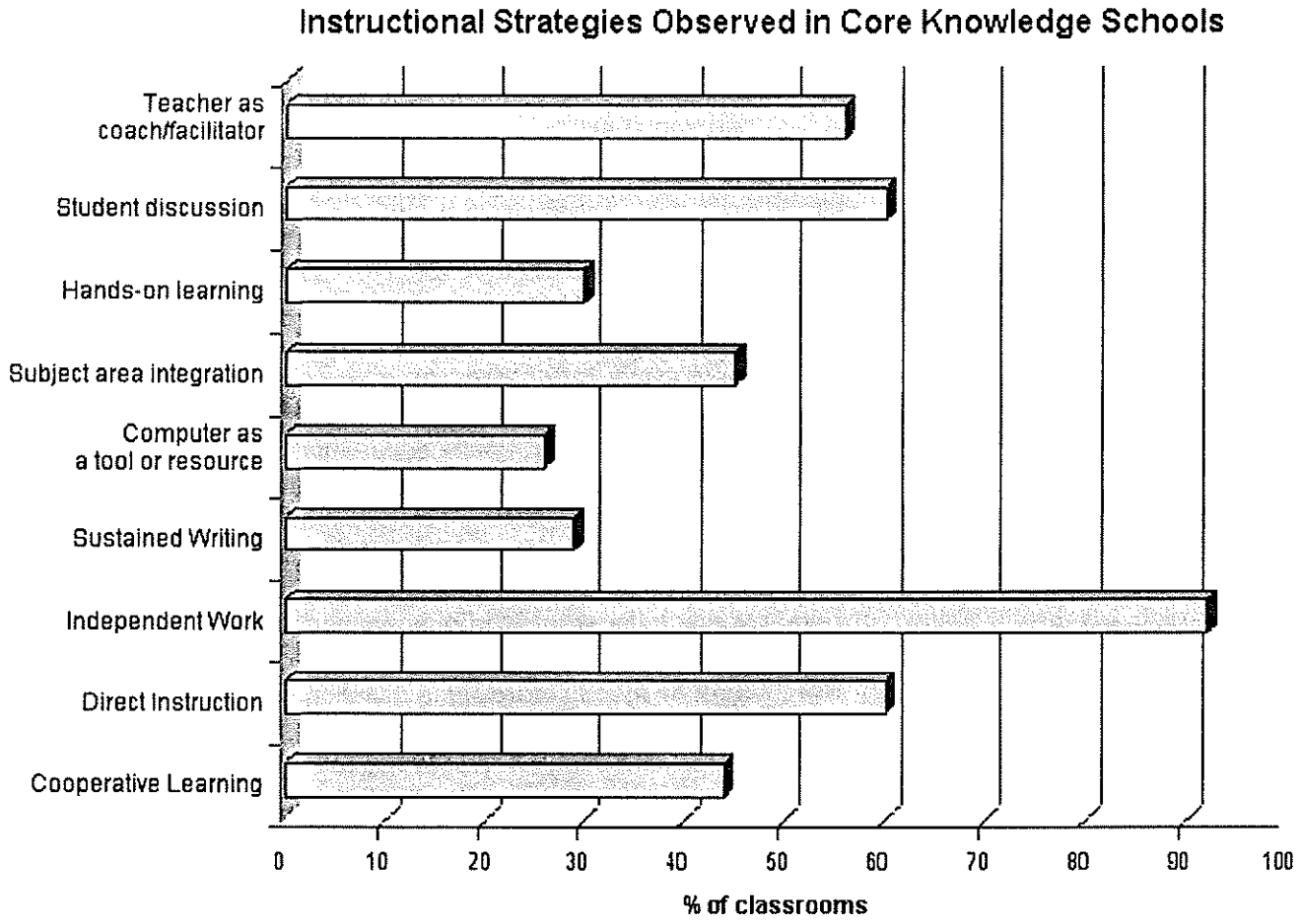
Researchers examined experimental-control differences in achievement gains over three years, the relationships between level of implementation and academic gains, and differences in gain by cohort (first-through-third-grades and third-through-fifth-grades).

Factors Influencing Successful Implementation

The Johns Hopkins team found that the degree to which Core Knowledge was implemented was a significant predictor of student achievement gain. Researchers concluded that successful implementation of Core Knowledge required leadership from the principal, teacher willingness to change, and support from the district, or at least non-interference from the district. Full implementation was also more likely if money was available for the purchase of Core-related materials and paid teacher planning time, and if schedules, classrooms and professional development programs were arranged to support Core. Implementation was hindered by resistance from principals or teachers, and by strong pressures to comply with state standards and accountability systems that were not aligned with Core.

Since the Core Knowledge Foundation does not prescribe teaching strategies, methods for teaching Core are chosen by local schools and their teachers. According to the report, implementing Core Knowledge "consistently contributed to making instruction more interesting and content rich for students, provided coherence to the curriculum, and contributed to increased teacher collaboration and professionalism. Core Knowledge was also associated with more hands-on, activity-based instruction, and . . . was associated with greater academic engaged time in schools. One side effect, often viewed negatively, was that planning for Core Knowledge teaching is very work intensive."

Independent work by students was the most prevalent instructional strategy observed "We can infer tha much of the independent work was skill-oriented, as sustained writing/composition (either self-directed or on teacher-generated topics) was observed in only 29 percent of classrooms," according to the report "Direct instruction of the material was also commonly observed. Interdisciplinary instruction characterized almost half of classrooms. Thirty percent of classrooms had some experiential or hands-o learning activities, and cooperative learning was observed in 44 percent of classrooms."



Time spent teaching Core Knowledge varied. Between 60 and 75 percent of teachers at advanced sites said they spent more than 50 percent of their time teaching Core material. Teachers at new sites generally estimated the time they spent teaching Core units at less than 50 percent. The greatest differences in content coverage between the schools appeared to be in third grade mythology, fifth grad literature and fifth grade American civilization topics.

The absence of an official Core Knowledge implementation plan led to "substantial variability over the schools in how they chose to implement the curriculum," the report states. Many teachers at the strongest implementation sites said the lack of specific implementation instructions was "one of the reform's chief positive attributes. . . . Clearly, it allowed for local variation in organization and implementation strategies, and in diverse contexts unique strategies appeared to be succeeding. Still, there were schools in which a more concrete plan with well-described steps . . . might have led to a higher level of implementation," the authors conclude. [Before 1996, the Core Knowledge Foundation did not offer or require professional development. There are now more than 130 Core Knowledge trainers working with schools across the country.]

The researchers also investigated the schools' decision to adopt Core. "The first pattern was that none o: the educators mentioned Core Knowledge content as a motivating factor," they report. "Rather, educators were seeking sequential, content-rich curriculum and the Core Knowledge Sequence met this demand." Second, in none of the schools did the impetus for teaching Core arise from teachers. However, those schools where educators either participated in choosing the reform implemented with much greater success than schools where teachers felt Core Knowledge was imposed against their will.

"What appears to make Core Knowledge different from some other reform efforts is that there appears to be less teacher resistance overall, especially as teachers begin to implement the program. This may b because teachers are generally more resistant to changes in instructional approaches (the "how") than changes in curriculum (the "what")," the report states.

Although most teachers said the time and work required for preparation lessened over time, especially after the first two years, the considerable and even burdensome amount of time required by teachers in planning constituted a hindrance to implementation in some schools. In addition, almost every teacher interviewed expressed difficulty in finding age-appropriate materials for various units.

The absence of prepackaged materials for teachers and students produced a great diversity of teaching strategies. Three techniques used most often were teacher-made units, thematic units and trade books. Particularly at advanced sites, "the majority of teachers spoke positively about the absence of materials, Stringfield and colleagues note. One principal said: "I would hate to see us formalize [Core Knowledge to a point that it's almost a textbook approach. Because once we start having a Core Knowledge textbook, then Core is going to be just like everything else. It's not going to be a real change process; it' just going to be another series you adopt." Some teachers also agreed that prescribed lesson plans and materials for Core Knowledge would reduce the possibility of positive collaborative relationships among teachers that were created through joint planning. Many teachers also enjoyed researching and developing lesson plans that fit with their own style of teaching. A teacher at an advanced site explained: "I think when you get into how to teach, that's when you meet resistance . . . .When you bring in a new package that says this is the stuff we want you to teach and this is how to teach it,' I thinl a wall comes up immediately."

The report summarizes the key factors in implementation as:

- Decision-making autonomy was helpful.
- Arranging common planning time for teachers greatly aided implementation.
- Schools that implemented fastest had grant money to purchase resources.
- District support helped; its absence did not necessarily hurt
- State and district demands related to standards and accountability (more specifically, standardize tests) constrained implementation at most sites.

Qualitative Outcomes

Researchers confirmed that the following predicted benefits "were in fact associated with Core Knowledge implementation":

For students, Core does:

- Provide a broad base of knowledge and a rich vocabulary
- Motivate students to learn and create a strong desire to learn more
- Promote the knowledge necessary for higher learning

For the school, Core does:

- Provide an academic focus and encourage consistency in instruction

- Provide a plan for coherent, sequenced learning from grade to grade
- Promote a community of learners-- adults and children
- Become an effective tool for lesson planning and communication among teachers and with parents
- Guide thoughtful purchases of school resources

Beyond these, the study identified unexpected benefits:

- Core Knowledge created coordination in the curriculum.
- Implementing Core improves the professional lives of teachers. "Core Knowledge was viewed very favorably by teachers and seen as an enhancement to their lives. Overwhelmingly, teachers enthusiastically encouraged their teacher friends to implement Core Knowledge. This is a very important finding."
- Implementing Core Knowledge led to increased teacher collaboration. Such "genuine collaborative work among teachers that has a focus on the curriculum and instruction is all too rare in education," the researchers note.
- Core Knowledge enriched students' classroom experience. "Teachers reported that it was not just certain students who were excited by Core, but all students. . . . The benefits are great for teachin those children who would normally not be exposed to such subjects at home."
- Core Knowledge challenged conventional assumptions about student ability. "Many teachers reported being initially skeptical that Core Knowledge content was not developmentally appropriate for elementary students. However almost all teachers interviewed found that no matter what students' starting points were -- low achieving, average or high achieving -- they wer able to grasp and gain from learning the Core material."
- Students built on what they learned previously in Core Knowledge. "Teachers find that in fact students make connections to Core topics they learned in previous grades. Students make lasting academic connections because of the integration of the curriculum and [its] spiraling structure."
- Core Knowledge increased students' interest in reading. Teachers report that "students are learning to read bigger words sooner. There's an interest to read and to learn." At a number of schools, "educators cited the fact that students are more interested in reading non-fiction as one o the main benefits of Core Knowledge."
- Core Knowledge increased parent satisfaction. "Parents are thrilled, thrilled, thrilled," according to one teacher, another of whom said, "Our parents are elated with the results of Core." Researchers found "no obvious negative outcomes for students, though teacher planning effort was reported to be 'intensive' and 'tiring.'"

Testing Outcomes

The study analyzed student-level effects, and made three preliminary observations:

First, 10 of 12 Core Knowledge schools were obtaining measures of student engagement in the "highly effective" range.

Second, the two schools with the highest mean student engagement ratings were also schools that had been deemed "highly implementing" and the two schools with the lowest engagement rating were the two schools rated as the lowest implementers.

Third, data indicate that in several of the more highly implementing schools, teachers were able to sustain student interest in each period's academic content. Data suggest that "students find Core content stimulating and would contradict any assertion that students are 'turned off' in schools that strongly implement Core Knowledge."

Only students for whom both pre- and post-testing data was available were included in gain-over-time analyses. One cohort of 1,093 students began the 1995-96 school year as first grade students, and the other cohort of 1,011 students began the same year as third grade students.

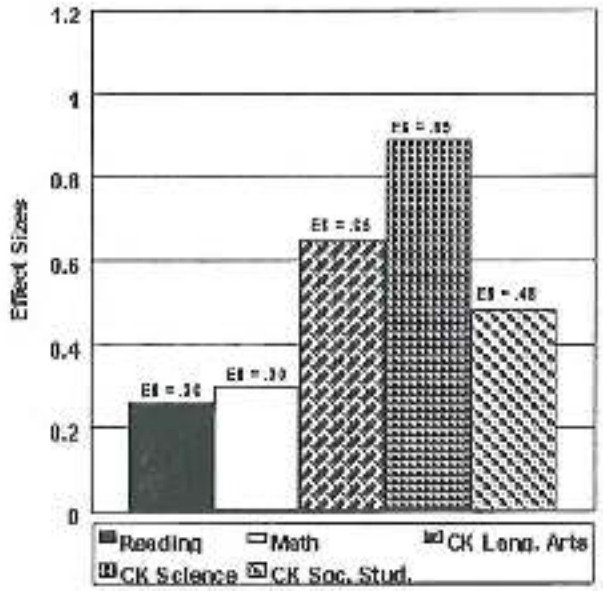
The researchers administered two subtests from the Comprehensive Test of Basic Skills, Fourth Edition (CTBS/4), to the cohorts at three stages. They derived Normal Curve Equivalent Scores (NCEs) from the CTBS/4 Math Concepts and Applications subtest and the Reading Comprehension subtest.

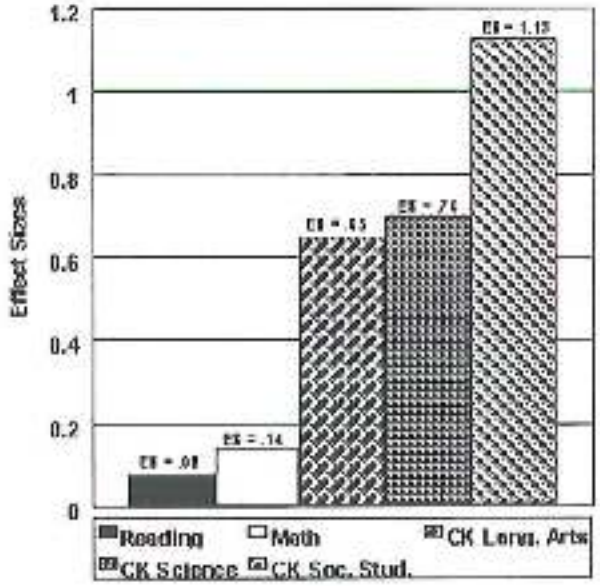
In spring 1998, data collection on reading and math achievement yielded CTBS/4 data on 663 students, or 61 percent, of the 1,093-cohort baseline sample, and on 653, or 65 percent, of the 1,011-cohort baseline sample. When low and high implementing sites taken together, the effect of Core Knowledge on reading and math achievement was not statistically significant. However, on further analysis, the effects on normed tests became statistically significant when schools with moderate to high implementation were contrasted with low-implementing sites as controls. The Johns Hopkins statisticia reports that the the gain difference on standardized tests between low and high implementing schools varied from 8.83 NCEs to 16.28 NCEs. That is an average rise of about 12 NCEs (similar to percentile points) over the controls, more than half a standard deviation -- a very significant gain.

The researchers give the following explanation of the two last figures in the following tables: "One figure is the relationship between a one-quartile increase in level of implementation (i.e., 25% more classrooms reliably implementing Core). The other represents the expected difference between the lowest-implementing Core school and the highest-implementing Core school in our samples. The NCE metric is very similar to the percentile metric".

Core Knowledge Effect Sizes by Test for Schools with Implementation Rates Greater than 50%.

First-through-Third-Grade-Cohort Third-through-Fifth-Grade-Cohort





Grade 1-3 Math

Coefficient = .121

Quartile increase (25 X .121) = 3.03 NCES

Low vs. High implementation ((100 - 27) X .121) = 8.83 NCEs

Grade 1-3 Reading

Coefficient = .199

Quartile increase (25 X .199) = 4.98 NCEs

Low vs. High implementation ((100 - 27) X .199) = 14.53 NCEs

Grade 3-5 Math

Coefficient = .223

Quartile increase (25 X .223) = 5.58 NCEs

Low vs. High implementation ((100 - 27) X .223) = 16.28 NCEs

Grade 3-5 Reading

Coefficient = .143

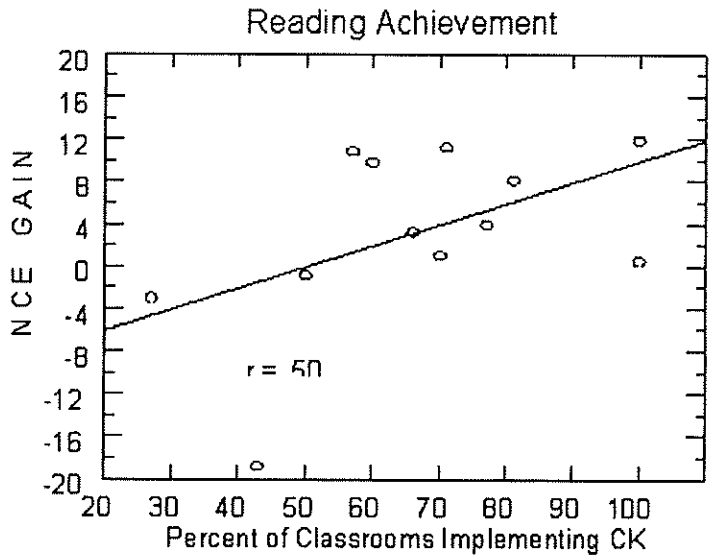
Quartile increase (25 X .143) = 3.58 NCEs

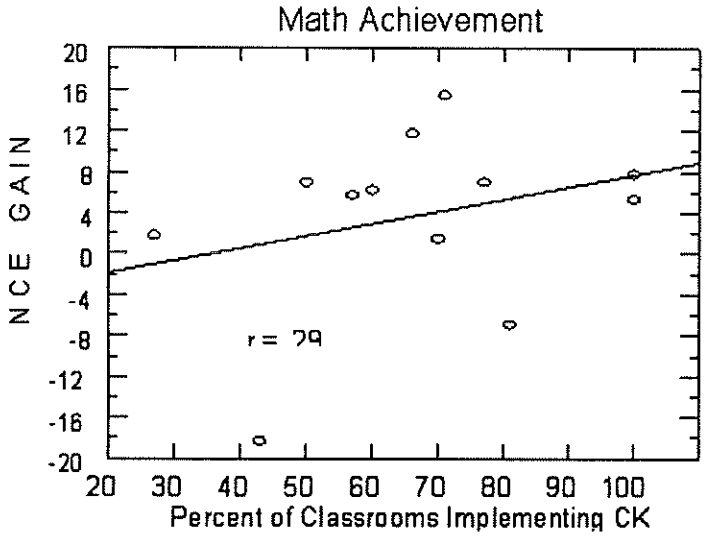
Low vs. High implementation ((100 - 27) X .143) = 10.44 NCEs

The researchers also created Core Knowledge Achievement Tests in science, language arts, and geography/world civilization/American civilization. Naturally, on these tests Core schools outperforme their "comparison" schools where Core was not being taught. But the test results show that students retained the Core Knowledge content they were taught, and, since this knowledge is carefully chosen and cumulative, what they learned is predicted (by E. D. Hirsch, Jr.) to enhance students' vocabulary, reading skill, and learning ability in later grades. The tests were given to all third and fifth graders in th study. Each test had 20 multiple-choice questions; the history and geography test had one item needing a written answer. Statistically significant, "educationally meaningful," achievement gain was found in every subject for both cohorts.

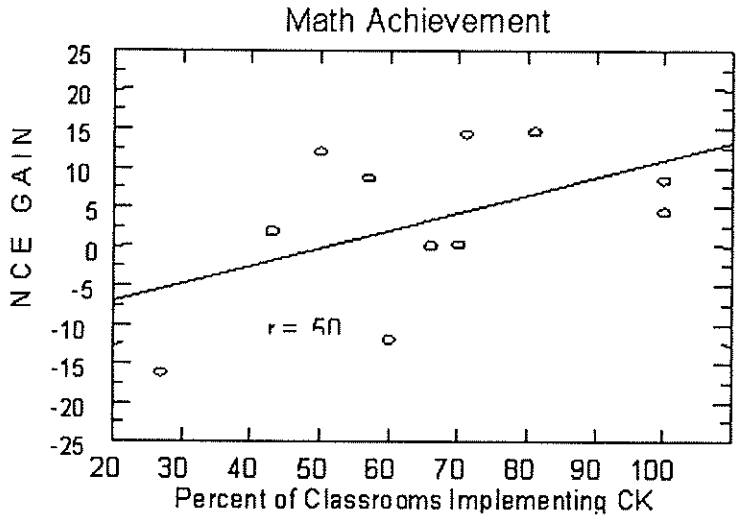
In sum, when scores are analyzed according to the degree that a school has implemented Core, data show academic improvement was accelerated at sites that were implementing strongly. As the argumen for Core Knowledge predicts, the growth of the general knowledge base showed cumulative effects. "The third-through-fifth grade results contrast the findings for first graders, in that higher levels of Core Knowledge implementation in the later elementary grades appear to have a more profound influence on students'" reading and math tests, the report confirms. "If this trend, predicted by theory, were to continue in later grades, the gains in reading comprehension would accelerate -- a subject to be investigated further."

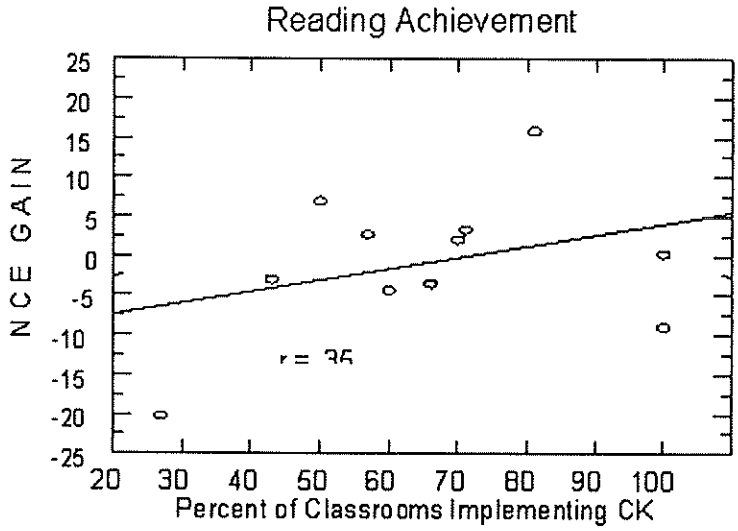
Effect Size by Level of Implementation for the First-through-Third-Grade Cohort.





Effect Size by Level of Implementation for the Third-through-Fifth-Grade Cohort.





Why the Positive Effects?

Core Knowledge implementation "produced clarity of goals, less repetitiveness in the curriculum and more content rich instruction for students," the report concludes. "It might be inferred that the better relative performance by the later Core Knowledge cohort could be explained by the cumulative effect o a content-focused curriculum on general academic skills. Since normed tests are not tied to a particular sequence, the cumulative effects of carefully sequenced content would be more likely to exhibit themselves in the later grades, as a gradual result over time."

Likewise, the schools' improved implementation during the period of the study also showed a cumulative effect. "The correlation between level of implementation and effect size indicates that when schools implemented the Core Knowledge Sequence with greater reliability and consistency, students achieved improved scores on all tests. Considering only those schools in which the research staff observed Core Knowledge curriculum and instruction in more than 50 percent of classrooms, one sees marked increases in the effect size favoring Core Knowledge. Among first-through-third grade students improved implementation was related to substantially higher Core Knowledge test outcomes. The results for third-through-fifth-grade students suggest that higher levels of implementation were

associated with larger, educationally meaningful effects on the norm-referenced test, and on the Core Knowledge tests."

What appears to have mattered most, the report suggests, was "the fact that the curriculum was specified, and less so that it was the Core Knowledge content. This led us to the conclusion that the benefits associated with a specific curriculum may not be limited to Core Knowledge per se, but instead may be applicable to other specified curricula, even a fully articulated curricular sequence developed by schools themselves-- so long as the content covered is broad, sequential and well-grounded in theory and research."

Send questions and comments to the Core Knowledge Foundation.
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About Core Knowledge®

Core Knowledge Schools Outperform State Test Averages in Maryland Study

by Michael Marshall, *Associate Director of Research and Communications,* from *Common Knowledge,* Volume 11, Nos. 1/2, Winter/Spring, 1998

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Five Maryland Core Knowledge schools being tracked as part of Johns Hopkins University study outgained average Maryland schools on mandated state performance assessment tests, leading researchers to conclude that the thesis underlying the Core Knowledge Sequence is valid.

"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 Comprehensive Test of Basic Skills. In addition, during the three year period of the study third grade students in Core schools showed greater gains on the Maryland School Performance Assessment Program than did their control schools or the mean of schools statewide," said Sam Stringfield, principal research scientist at the Center for Social Organization of Schools at JHU, who was joined by Barbara McHugh of Johns Hopkins in conducting the study. The report is the third of five due on a multi-school, multi-district implementation of the Core Knowledge Sequence in Maryland.

"The general Core Knowledge trend was one of gains that clearly exceeded those of the state and of the demographically and gepographically matched schools controls," the report states.

In the spring of 1994, the Abell Foundation of Baltimore, with the cooperation of Nancy Grasmick, the Maryland State Superintendent of Schools, organized an experiment in which six Maryland public schools would implement the Core Knowledge Sequence. The first two years of the implementation included grants from the Foundation, which were phased out by 1997. Each of the six pilot schools was matched with a demographically similar, within-district school, as a "control" against which it could be compared. One of the six original pilot schools was dropped from the study in the second year because its control school also adopted Core Knowledge. The study continues to monitor the remaining five.

Achievement outcomes are being measured through two tests: the Comprehensive Test of Basic Skills (fourth edition) [CTBS] and the Maryland School Performance Assessment Program [MSPAP]. Neither test is designed for, nor deliberately aligned with, the Core Knowledge Sequence. However, the general knowledge theory behind Core Knowledge predicts that students should do increasingly well on any sort of test as their knowledge

base grows.

The MSPAP is performance-based assessment requiring extensive writing, problem solving and occasional teamwork among students. The state administers the test every spring to all third-, fifth- and eighth-grade public school students. The CTBS is a norm-referenced, multiple-choice test that has been shown by a variety of studies to have reasonable psychometric properties. The Maryland Core Knowledge Study used two CTBS subtests, Reading Comprehension and Mathematical Concepts and Applications, considered "higher order" tests of basic skills, which were administered each year.

Two cohorts of students in each school have been tracked. The CTBS was administered to all first- and third-graders in each pilot and control school in the fall of 1994. These students were retested with the CTBS in the spring of 1995, in the spring of 1996 (when they were second- and fourth-graders) and again in the spring of 1997 as third- and fifth-graders.

The degree to which the Sequence had been successfully implemented by pilot schools was examined and the study identified four relevant factors. Foremost were challenges in training non-Core-Knowledge-trained teachers. Second were problems associated with teaching split-grade classes in the face of Core Knowledge's grade-specific curricula. Third was a shortage of joint planning time, and fourth was a need for additional or replacement materials. These factors compounded two pre-existing ones: the conflicts between Core Knowledge topics and those required locally, which made it hard to teach all the Core topics, and the state's mandate to prepare students for the MSPAP.

"The availability and use of common planning time and the care taken to introduce new teachers to the curriculum emerged as the clearest markers of the likelihood of a successful implementation," said Mr. Stringfield.

"The most important lesson to take from the study is the need for thorough, careful, and ongoing implementation," he said. "When implementation is done well, Core Knowledge can clearly have a positive impact on student achievement, but it's tempting for schools to underfund longterm implementation."

By the third year, two pilot schools were well on their way to institutionalizing Core Knowledge, according to Mr. Stringfield, one showed signs of weakening implementation (when a large number of teachers retired), and two faced circumstances that threatened their ability to integrate Core Knowledge. One of these latter two had embarked on a second reform program as well and was spending less time on Core, and the other school was floundering under numerous difficulties and threatened with direct state control, known in Maryland as "reconstitution."

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	Change 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
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
Reading	+6.2	+9.2	+14.8	+3.0	+8.6	+5.6
Math	+7.5	+8.6	+13.4	+1.1	+5.9	+4.8
Social Studies	+3.4	+3.3	+8.6	-0.1	+5.2	+5.3
Science	+3.4	+7.6	+8.5	+4.2	+5.1	+.9
Writing	+4.8	+7.8	+15.3	+3.0	+10.5	+7.5
Language	+15.3	+13.5	+22.7	-1.8	+7.4	+9.2
6 Subtest Mean	+6.8	+8.3	+13.9	+1.6	+7.1	+5.6
6 Subtest Mean without Pair E		+10.5	+18.9	+3.7	+12.1	+8.4

On the reading comprehension test given to third graders, school level changes from the fall of first grade to the spring of third grade showed a net mean gain of 4.7 NCEs*. The Core schools produced greater gains than their match control schools in four out of five cases.

On the mathematics test, Core schools produced a net mean gain of 1.1 NCEs. As on the reading comprehension test, the control matched to the lowest implementing pilot school so outscored the pilot that, on average, Core Knowledge schools experienced less gain than control schools (+1.1 NCEs vs. +5.6 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.

In 1997, both cohorts being followed were in grades tested by MSPAP, which reports school-level results, but not those of individual students. The Johns Hopkins researchers assumed that students who came to pilot schools after the study started did not choose to enroll their children specifically because of Core Knowledge.

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	Change 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
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
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

"Our observations over three years consistently have been that virtually all new-to-the-school parents did not know their children's new schools were or were not Core Knowledge schools until after they had enrolled," Mr. Stringfield said. "In this context, MSPAP becomes a conservative test of the effects of the Core curriculum, because it presumably would be more difficult to show effects on measures that include students who did not receive the full treatment."

MSPAP scores from 1994 were used as the pre-Core-implementation baseline. On average, the five Core Knowledge schools achieved higher gains in 1997 tests than the state did the state average school in all six test areas. The largest gains relative to all schools in the state were in writing, at +10.5 percentages, reading, at +8.6 percentages, and language, at +7.4 percentages. When all subtest areas are averaged together, Core schools outperformed the control schools by +5.6 percentages and all Maryland schools by +7.1 percentages. If the fifth pair of schools, pair E, the one containing the pilot school threatened with reconstitution, was dropped from the calculations, the Core schools show even greater gains: +8.5 percentages over control schools and +12.1 percentages over the average Maryland school.

Looking at the MSPAP results of fifth graders, Core schools outgained the average state school in three out of the six areas. When the gains in all areas are averaged, however, there is no real difference between the Core schools and schools statewide. But if pair E is excluded, the Core schools produced a gain of +4.1 NCEs over the state average.

"The Core Knowledge schools' more uniform gains in the first-through-third grade cohort would appear consistent with Hirsch's thesis that knowledge must build coherently over time," according to the report. "The younger cohort had experienced Core Knowledge curricula since first grade and in Hirsch's model would be expected to achieve the benefits

of cumulative gains.

"Because implementation is clearly possible and was associated with mean academic gains in most areas (and not associated with lowered mean performance in any area) Core Knowledge is a viable alternative for elementary schools considering options for school improvement," the report concludes.

**Normal Curve Equivalents: The NCE scale is an equal distribution scale with a mean of 50 and a standard deviation of 21.06. NCE scores are equal to percentiles at the first, fiftieth, and ninety-nine percentiles.*

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About Core Knowledge®

In Oklahoma City, A Rigorous Scientific Study Shows The Positive Equity Effects of Core Knowledge

May, 2000

Gracy Taylor and George Kimball of the Oklahoma Public Schools have completed a study of the effects of Core Knowledge in Oklahoma City, in one of the very few carefully controlled, independent studies of "whole-school" reforms.

The Oklahoma City analysis studied the effects of implementing one year of Core Knowledge in grades 3, 4, and 5 using the well- validated Iowa Test of Basic Skills. The study paired some 300 Core Knowledge students with 300 students having the same characteristics on seven variables:

(1) Grade level
(2) Pre- score
(3) Sex
(4) Race/ethnicity
(5) Free-lunch eligibility
(6) Title-1 eligibility
(7) Special-education eligibility

The computer randomly selected the control students on these variables.

Given the precise matching of these 300 pairs of students, the expectation would be that the end-of-year results of both groups would continue to be similar on the Iowa Test of Basic Skills. But, in fact, the Core Knowledge students made significantly greater one-year gains in reading comprehension, vocabulary, science, math concepts and social studies.

The greatest gains -- in reading, vocabulary, and social studies -- were computed to be statistically "highly significant." The vocabulary gain was especially notable, since vocabulary is the single best predictor of academic achievement, and the area where the gap between ethnic and racial groups has proved to be especially difficult to overcome. The comparative vocabulary gain of Core Knowledge students was computed as "statistically highly significant" with a p-value of .001.

To quote from the report:

> **"It is interesting to note that the statistically significant between-group results in Reading Comprehension, Reading Vocabulary, and Social Studies**

was the a-priori hypothesis as to where the significant "educational treatment effects" would occur. According to the literature and personal conversations with Dr. Hirsch prior to the analyses, the impact on student achievement related to Core Knowledge instruction should be most pronounced in vocabulary and comprehension. The implementation of the Core Knowledge scope and sequence is intended to provide and develop a broad base of background knowledge that children utilize in their reading. According to Dr. Hirsch's cultural literacy theory, the more background knowledge a child has, the greater facility in reading the child will have. The initial results of this study do appear to support that notion."

Since vocabulary gain tends to be cumulative, it is expected that the magnitudes of these gains in equity and achievement will grow larger as the Core Knowledge students move through the grades. Further analyses and longitudinal studies are to be conducted by researchers from Oklahoma City and RAND during the next months.
Contact person: **Gracy Taylor, Oklahoma City Public Schools 405-297-6753**

Send questions and comments to the Core Knowledge Foundation.
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Education

Study Finds "Core Knowledge" Curriculum A Real Success

A rigorous study of Oklahoma City school children found that those taught using the Core Knowledge curriculum made strong one-year academic gains compared with other pupils. Core Knowledge exposes children in each grade to a specific, challenging curriculum -- materials which in the past many teachers would have considered "developmentally inappropriate," or too advanced for their age group.

The study involved 300 pairs of pupils who were matched by race, sex, reading scores and who registered the same scores on the Iowa Test of Basic Skills -- and then compared their performance after just one year.

- School officials report "highly significant" test differences between children taught through Core Knowledge and a comparison group taught using other methods.
- Almost every child in the Core Knowledge group scored higher -- not just on the average, according to the findings.
- What makes the results striking, they say, is that the advantages held for all pupils -- with gains being registered across racial and ethnic lines.

Under Core Knowledge, kindergartners are taught the seven continents of the world, and the plants in the solar system in order of their distance from the sun. Second-graders learn about ancient Greece and China and present-day Japan. Spelling lessons include such words as "pheromones" and "magnetism."

One teacher reports enthusiastically that children "enjoy learning things their parents don't necessarily know."

Source: Richard Whitmire (Gannett News Service), "Core Knowledge Boosts Scores, *USA Today*, May 30, 2000.

For text http://www.usatoday.com/life/lds002.htm

For more on Theory & Methods http://www.ncpa.org/pi/edu/edu4.html

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About Core Knowledge®

Results at Core Knowledge Schools: Improving Performance and Narrowing the Equity Gap

A report prepared by the Core Knowledge Foundation (May 1998)
801 East High Street, Charlottesville, VA 22902 (434) 977-7550

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."[1]

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),[2] 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	5 Control Schools	5 Core Schools	Control Gain	Core Gain	Core Gain Relative to

	Maryland Schools			Relative to All Maryland	Relative to All Maryland	Control
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
Reading	+6.2	+9.2	+14.8	+3.0	+8.6	+5.6
Math	+7.5	+8.6	+13.4	+1.1	+5.9	+4.8
Social Studies	+3.4	+3.3	+8.6	-0.1	+5.2	+5.3
Science	+3.4	+7.6	+8.5	+4.2	+5.1	+.9
Writing	+4.8	+7.8	+15.3	+3.0	+10.5	+7.5
Language	+15.3	+13.5	+22.7	-1.8	+7.4	+9.2
6 Subtest Mean	+6.8	+8.3	+13.9	+1.6	+7.1	+5.6
6 Subtest Mean without Pair E		+10.5	+18.9	+3.7	+12.1	+8.4

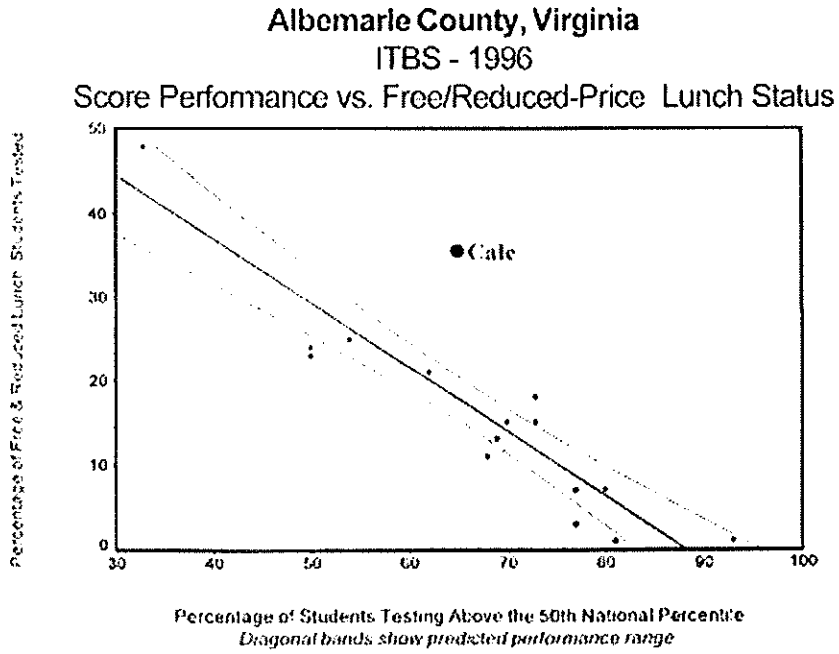
The MSPAP results for fifth graders show that Core Knowledge schools surpassed the gains of the average state school in three out of the six areas. When the gains in all areas are averaged, there is no real difference between the Core schools and schools statewide. But if pair E is excluded, the Core 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
Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7
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 50th 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*[3] 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:

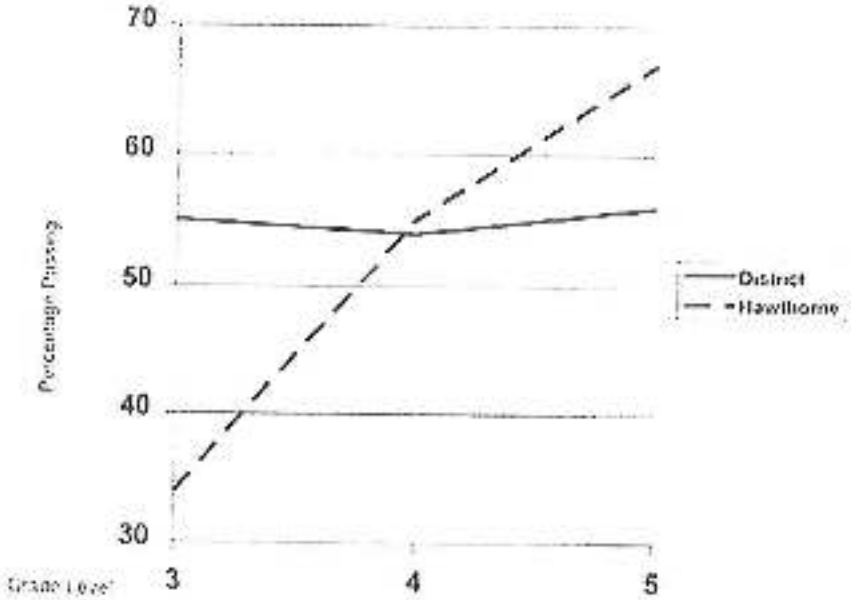


Figure 1: Texas Assessment of Academic Skills Reading Performance

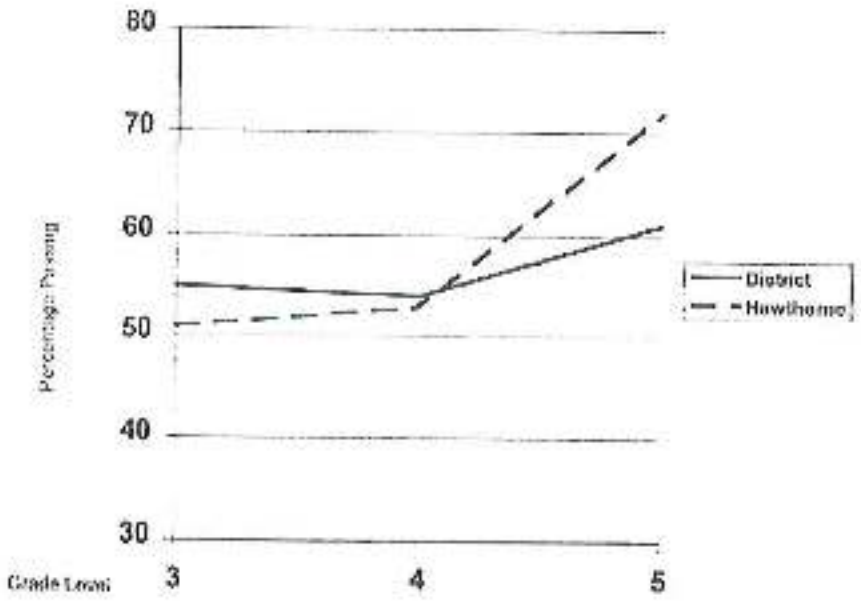


Figure 2: Texas Assessment of Academic Skills Reading Performance

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 Schoosls, Kennewick, WA (1996)
- Ridge View Elementary, Kennewick, WA (1996)
- Three Oaks Elementary, Ft. Myers, FL (1993)

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.

Send questions and comments to the Core Knowledge Foundation.

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About Core Knowledge®

Summary of Recent Evaluation Data (Fall, 2000)

Studies of the effects of implementation of Core Knowledge have been very favorable. The evidence suggests that Core Knowledge fosters both excellence and equity. The curriculum fosters excellence by improving academic performance and laying the groundwork for future learning. It fosters equity by helping to narrow the achievement gap between academic "haves" and "have nots" and lifting low-achieving students up toward the mean.

Both qualitative and quantitative data indicate that schools using the Core Knowledge curriculum experience a number of improvements, including the following: (1) students are more motivated to learn, (2) students show improvement on achievement scores, (3) disadvantaged students often make particularly impressive gains, (4) teachers cooperate more effectively and share ideas and plans, and (5) parents become more aware of what is happening at school and consequently more involved.

A number of careful scientific studies indicate that Core Knowledge is effective in achieving these goals.

In May of 2000 administrators completed the first stage of a carefully controlled, independent study of the effects of Core Knowledge in public schools in Oklahoma City, where 32 of 67 elementary schools have implemented the curriculum.

The Oklahoma City study examined the effects of implementing one year of Core Knowledge in grades 3, 4, and 5 using the well-validated Iowa Test of Basic Skills. The study paired some 300 Core Knowledge students with 300 students having the same characteristics on seven variables: grade level, pre-score, sex, race/ethnicity, free-lunch eligibility, Title-1 eligibility, and special-education eligibility.

The computer randomly selected the control students on these variables. Given the precise matching of these 300 pairs of students, the expectation would be that the end-of-year results of both groups would continue to be similar on the Iowa Test of Basic Skills. In fact, however, the Core Knowledge students made significantly greater one-year gains in reading comprehension, vocabulary, science, math concepts, and social studies.

The greatest gains -- in reading, vocabulary, and social studies -- were computed to be statistically "highly significant." The vocabulary gain was especially notable, since vocabulary is the single best predictor of academic achievement, and the area where the gap between ethnic and racial groups has proved to be especially difficult to overcome. Since vocabulary gain tends to be cumulative, it is expected that the magnitudes of these

gains in equity and achievement will grow larger as the Core Knowledge students move through the grades. Researchers plan to conduct further analyses and longitudinal studies in the future.

In 1999 a three-year study of Core Knowledge schools across the country conducted by researchers at Johns Hopkins University and the University of Memphis concluded that, when the Core Knowledge Sequence is fully implemented, it really works. Researchers found that students at schools where more than 50 percent of classrooms used the Sequence had higher scores on norm-referenced tests and on criterion-referenced tests of Core Knowledge topics than students at comparison schools. Their report calls these academic gains "educationally meaningful."

The Hopkins study concluded that Core Knowledge provides students with a broad base of knowledge and a rich vocabulary, gives students the knowledge necessary for higher learning, and creates in many students a strong desire to learn more. Ten of 12 Core Knowledge schools examined were obtaining measures of student engagement in the "highly effective" range. Moreover, the two schools with the highest mean student engagement ratings were schools that had been deemed "highly implementing," while the two schools with the lowest engagement rating were the two schools rated as the lowest implementers.

Researchers noted that Core Knowledge challenged conventional assumptions about student ability: "Many teachers reported being initially skeptical that Core Knowledge content was not developmentally appropriate for elementary students. However almost all teachers interviewed found that no matter what students' starting points were — low-achieving, average, or high-achieving -- they were able to grasp and gain from learning the Core material." Students retained the Core Knowledge content they were taught and were able to build on this content by making relevant connections. They also began to exhibit increased interest in reading.

Core Knowledge also appears to improve the professional lives of teachers. Planning connected with Core Knowledge implementation can be "intensive" and "tiring," and almost every teacher interviewed encountered at least some difficulty in finding age-appropriate materials for various units. Nevertheless, "Core Knowledge was viewed very favorably by teachers and seen as an enhancement to their lives. Overwhelmingly, teachers enthusiastically encouraged their teacher friends to implement Core Knowledge."

Finally, Core Knowledge was credited with increased parent satisfaction. According to one teacher quoted in the report, "Parents are thrilled, thrilled, thrilled." Another teacher confirms this reaction: "Our parents are elated with the results of Core."

A separate study by some of the same Johns Hopkins researchers looked at student performances in Maryland Core Knowledge schools. This study found that third graders in Core Knowledge schools made significantly greater three-year gains than students in control schools and students throughout the state. Core Knowledge students outperformed statewide averages in all six areas of the Maryland School Performance Assessment Program. The largest gains against the state average on the MSPAP were in writing (+10.5%), reading (+8.6%), and language (+7.4%), but gains were also reported in math (+5.9%), and social studies (+5.2%), and science (+5.1%).

Smaller studies and reports from individual schools indicate the same type of results in widely varied settings.

• *Cale Elementary School (Charlottesville, VA),* a public school where 34% of students get free or reduced-price lunches, has significantly outperformed local schools with a similar demographic profile since it adopted Core Knowledge. Principal Gerald Terrell explains, "Since we implemented Core Knowledge, our scores for all students have consistently gone up, especially in social studies, science, and math. The scores surprise us because they constantly go up. We are scoring well above the national norms in social studies, above the 75th percentile. That is very good for our diverse population. These are not all middle-class kids. Half of our students taking the Iowa Test of Basic Skills each year come from low-income homes. Our scores defy what you might expect."

• *Three Oaks Elementary (Fort Meyers, FL)*, a mixed blue-collar/white-collar suburban school with a minority population of 18%, where 40% of students receive free or reduced-price lunch, also made impressive progress. In an analysis comparing test scores from Three Oaks and a control school with approximately the same demographic mix, Three Oaks, after using Core Knowledge for three years, reported higher scores than the control school in every category tested. The test used was the California Test of Basic Skills (CTBS). The standard deviation -- measuring the spread of scores, from the highest to the lowest -- also narrowed, indicating that Three Oaks and Core Knowledge had succeeded in lifting low achievers up toward the mean.

• *Hawthorne Elementary (San Antonio, Texas),* has led its mostly Hispanic student body to increased cultural literacy and improved reading skills. Hawthorne is an urban school where 28% of the students have limited English proficiency and 96% receive free or reduced-price lunches. In the lower grades many Hawthorne students have difficulty passing reading proficiency tests, and the school's passing rates rank below the state average. However, Hawthorne's results improve dramatically as students move through the Core Knowledge curriculum. By fifth grade, Hawthorne's passing rates are substantially better than the state average.

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