

ED360221 1993-05-00 Achievement of Goal Three of the Six National Education Goals. ERIC Digest.

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ERIC Identifier: ED360221

Publication Date: 1993-05-00

Author: Patrick, John J.

Source: ERIC Clearinghouse for Social Studies/Social Science Education Bloomington IN.

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In February 1990, the President and state governors proclaimed a set of six national education goals to prompt profound improvements in schools and student achievement by the year 2000. These six goals reflect widely held concerns that most Americans have not been receiving the kind of education they need to meet the challenges of twenty-first century life. This Digest addresses Goal Three of the six national goals: "By the year 2000, American students will leave grades four, eight, and twelve having demonstrated competency in challenging subject matter including English, mathematics, science, history, and geography; and every school in America will ensure that all students learn to use their minds well, so that they may be prepared for responsible citizenship, further learning, and productive employment in our modern economy."

PROGRESS TOWARD ACHIEVEMENT OF GOAL THREE: HOW FAR DO WE

HAVE TO GO? The academic achievement of secondary school students in the United States tends not to meet the high expectations of Goal Three of the National Education Goals. Summaries of student achievement in core subjects, measured by the National Assessment of Education Progress (NAEP), reveal that a majority of students are NOT developing intellectual capacities necessary for democratic citizenship, lifelong learning, and productive employment in the economic system (Mullis, Owen, and Phillips 1990 and U.S. Department of Education 1991).

The recently issued summaries of NAEP studies on various core subjects reveal important findings relevant to Goal Three. Most students, for example, lack ability to perform high-level cognitive operations in core subjects.

* Only seven percent of 17-year-old mathematics students are able to solve multiple-step problems involving variables and solve linear equations.

* Only nine percent of 17-year-old students can use scientific knowledge to infer relationships and draw conclusions.

* Only five to seven percent of 17-year-old students can synthesize data from a variety of reading materials and read analytically or critically.

* Only five percent of U.S. history students can interpret detailed information and related ideas from multiple sources to make connections between various events and factors. The NAEP studies also reveal serious gaps in students' knowledge of core subjects.

* Mullis, Owen, and Phillips (1990, 9) report that "only small proportions of students appear to develop specialized knowledge needed to address science-based problems, and the pattern of falling behind begins in elementary school."

* Less than 10 percent of 17-year-old students appear to have developed both an understanding of key ideas in core subjects (e.g., mathematics, science, literature, history, geography, and civics) and the ability to apply these ideas to completion of high-level cognitive tasks.

* Less than half of 17-year-old students (41 percent) can locate, comprehend, summarize, and explain complex information in text.

* High school students did "significantly less well" in civics in the 1988 national assessment than their 1982 counterparts (NAEP, 1990, 13). Large numbers of students appear to lack knowledge and skills usually associated with responsible citizenship in a constitutional democracy.

The United States ranks near the bottom among economically developed countries on international assessments of students' knowledge of mathematics and science. The gap in achievement between American students and their counterparts in other countries increases as students move through the grades in school. Fifth-grade students in the United States score near the median among their counterparts in the international assessments; eighth-grade students fall markedly below the median; and twelfth-grade students rank near the bottom in comparison to students from the other countries (Darling-Hammond 1990, 287-288).

American respondents also ranked near the bottom in a recent international assessment of geographical knowledge (Salter 1990, 8). These results are consistent with various other reports of geographic illiteracy among large numbers of American students (Stoltman 1990, 39-46).

If by the year 2000 American students are to leave school "having demonstrated competency in challenging subject matter"--the core subjects of the school curriculum--then large improvements in teaching and learning must be accomplished. The current levels of student achievement fall far short of the standard implied by National Education Goal Three.

FACTORS ASSOCIATED WITH HIGHER LEVELS OF STUDENT ACHIEVEMENT

The various NAEP surveys of achievement in the 1980s included information on background variables related to education. These data can be related to student performances on the NAEP instruments to reveal factors that are associated with higher levels of student achievement. For example, better performances in the NAEP surveys

of achievement have been associated with the following factors: high educational attainment of parents, a home environment where reading and discussions of ideas are valued, limited television viewing, significant amounts of time spent on homework assignments, and a stable family structure.

The NAEP reports also suggest relationships between systematic, substantial, and stimulating exposure to core subjects and higher scores on tests of achievement in these academic disciplines. Students who reported more opportunities to study key topics and ideas in core subjects made higher scores on the NAEP tests of achievement. Further, students who reported an early start in studying core subjects, through substantial exposure to these content areas in elementary school, tended to perform better in the NAEP surveys.

Another factor associated with higher achievement was active learning. Students who said that their teachers required them to interpret and apply knowledge to the completion of tasks tended to score much higher on these assessments than did respondents who reported that their lessons were limited mostly to passive reception of knowledge through lectures and textbooks. For example, students in civics classes who reported participation in mock trials or simulated congressional hearings tended to perform at a higher level on the assessment of knowledge in civics than did students who were not involved in these kinds of active learning experiences (NAEP 1990, 83-85).

A final factor associated with higher achievement levels in the NAEP surveys was use of electronic technology in teaching and learning the core subjects. For example, students with access to computers for problem solving tended to achieve a higher proficiency in mathematics than those who did not use computers.

WHAT CAN SCHOOLS DO TO IMPROVE STUDENT ACHIEVEMENT IN CORE

SUBJECTS? Several widely accepted ideas about what can be done to improve student achievement are presented in the following short list. These ideas are prominent examples, among many others, in the growing literature on reform and restructuring of education in schools.

- * Increase the quantity and quality of challenging subject matter that all students are required to study in elementary and secondary schools, and encourage more students to pursue advanced coursework in the core subjects (e.g., English, mathematics, science, history, geography, and civics).

- * Increase the amount of time in which all students, at all levels of schooling, are systematically engaged in studying and learning the core subjects.

- * Provide regular opportunities for in-depth investigations of key topics and problems as an alternative to typical superficial surveys of subject matter.
- * Emphasize active learning, thinking and doing in response to challenging assignments, in contrast to passive reception of knowledge transmitted via lectures and textbooks.
- * Develop cognitive skills and processes, such as writing, by frequent and systematic practice that involves teaching and learning of underlying processes, such as the dynamics of written composition.
- * Use multiple resources and media for teaching and learning--such as electronic technology, primary documents, classic works of literature, and science laboratories--instead of relying upon textbooks as the primary or exclusive tool of instruction.
- * Establish high expectations and common standards for student performance based on the assumption that virtually all students can learn at high levels.
- * Create a school climate that is conducive to student achievement through the exercise of strong instructional leadership and maintenance of a safe, stable educational environment.
- * Involve parents in the process of education as monitors of homework assignments, encouragers of academic achievement, and reinforcers of school rules.
- * Develop instruments for assessing student achievement that require performance of high-level cognitive skills and processes--the application of knowledge to complex problems and issues--instead of testing that merely emphasizes recall of discrete information.

WHAT CAN PARENTS DO TO IMPROVE STUDENT ACHIEVEMENT IN CORE

SUBJECTS? Parents and guardians can help their children to learn core subjects by doing certain things at home.

- * Monitor homework assignments to make certain that they are completed satisfactorily.
- * View national and international news at least twice a week with children and use a map to locate and discuss the places in the news.
- * Encourage family viewing of television programs with academic content and participate with children in post-program discussions of themes and issues.

- * Provide learning resources in the home--books, magazines, and maps--and read and discuss them with children.
- * Guide children in productive use of free time, which should include monitoring and limiting their viewing of television.
- * Seek opportunities to examine and discuss school curriculum-related ideas with children.
- * Encourage school teachers and administrators to establish clear and challenging standards about what all students should know and be able to do in all core subjects of the school curriculum. Note: This ERIC Digest is a modified and up-dated version of ERIC Digest EDO-SO-91-2, which was issued in April 1991.

REFERENCES AND ERIC RESOURCES

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This publication was prepared with funding from the Office of Educational Research and Improvement, U.S. Department of Education, under contract no. RI88062009. The opinions expressed do not necessarily reflect the positions or policies of OERI or ED.

John J. Patrick is Director of the ERIC Clearinghouse for Social Studies/Social Science Education, Director of the Social Studies Development Center, and a Professor of Education at Indiana University.

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Title: Achievement of Goal Three of the Six National Education Goals. ERIC Digest.

Note: An update of ED 332 930.

Document Type: Information Analyses---ERIC Information Analysis Products (IAPs) (071); Reports---Descriptive (141); Information Analyses---ERIC Digests (Selected) in Full Text (073);

Target Audience: Teachers, Administrators, Practitioners

Descriptors: Academic Achievement, Citizenship Education, Core Curriculum, Educational Change, Educational Policy, Elementary Secondary Education, Student Educational Objectives

Identifiers: ERIC Digests, National Assessment of Educational Progress, National Education Goals 1990

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