

Speakers Committee Blurbs

CIVIL RIGHTS/HUMAN RIGHTS

This theme will explore the history and successes of the civil rights/human rights movements in the United States and abroad, as well as the challenges that remain for those movements in their efforts to protect the rights of historically and politically persecuted groups. In addition to providing excellent context for almost any international trip we chose, the topic will provide exciting insight into: the process of building and sustaining a social/political change movement; the national dialogue about the need for affirmative action policies taking place in every state across the country; the role of the census in parceling out social benefits; and the most effective strategies for combating hatred of every kind.

PRESS

This theme will examine the role of the media in shaping public discourse and influencing public understanding of social and political events. Sub-themes that could be explored in this area include political communication (i.e., political advertising and recent evidence that negative campaigning turns voters away); health communications (i.e., strategic efforts to use media to alter behavior that has unhealthy consequences); and media effects (i.e., the effect on children of exposure to violent media content).

DEMOCRACY-BUILDING

This theme will explore the ways in which political participation strengthens our system of democracy, and how many segments of society (including racial and ethnic minorities, as well as youth) are frequently left out. Sub-themes that could be explored in this area include voter apathy and innovative get-out-the-vote campaigns; districting rulings that increase the challenges of getting minority leaders elected to seats of influence; and the role of the NGO community in increasing Americans' interest in public life.

Standards and Accountability

President Clinton and Vice President Gore have led the movement for higher standards and accountability for all students. They have helped states set high education standards and are working for the right type of accountability that demands results and rewards progress.

Raising Standards for All Students

- In 1994, President Clinton and Vice President Gore fought for and won passage of Goals 2000 and the Improving America's Schools Act. The implementation of these acts has been crucial in helping states develop challenging curricula and set high performance standards. Today, 49 states require students to meet tough standards in core subjects, and 48 states test reading and mathematics skills in elementary, middle and high school to ensure students are meeting those standards. [1999 National Education Summit].
 - According to Republican Gov. Tommy Thompson, Goals 2000 "*changed the face of education as we know it.*" [letter to Michael Cohen, senior advisor to Secretary Riley, 9/18/95]
 - A comprehensive General Accounting Office survey found that, "Almost all state and local officials said Goals 2000 funds provided valuable assistance to education reform efforts at both the state and local levels and that, without this funding, some reform efforts either would not have been accomplished or would not have been accomplished as quickly." [GAO, Goals 2000 Flexible Funding Supports State and Local Education Reform, November 1998]
- The Clinton-Gore Administration also ended the practice of relegating poor children to a watered-down curriculum and remedial classes with significant education reforms that require states receiving Title I funds to ensure that all students are held to the same high standards,. [1994 ESEA Reauthorization]. Today, 11 million low-income students in 13,000 school districts benefit from higher expectations and a challenging curriculum geared to higher standards. [Dept. of Education, Challenging the Status Quo 1993-2000, 5/00, p. 4]

Working to End Social Promotion

- Ending social promotion and providing students with the knowledge and skills necessary to perform in college and the workforce will ensure that all students receive a world class education. In 1996, President Clinton challenged all states to end social promotion the right way, by giving all children the support they need to meet high standards. The Clinton-Gore Administration's proposed Education Accountability Act, would require all states to end social promotion, and their FY2001 Budget proposal would provide the tools necessary to make sure all students have the chance to meet high standards by significantly expanding after-school and summer school opportunities, investing in high quality teaching, reducing class sizes and increasing access to early childhood education. [Educational Accountability Act of 1999, FY 2001 Budget p.61]

Fixing Failing Schools

- President Clinton and Vice President Gore dedicated \$134 million in Title I money to an Accountability Fund that is giving districts the resources to improve low performing schools through a variety of approaches, including providing professional development and implementing research based curricula. The Administration has requested \$250 million for the fund next year. [Dept. of Education, Challenging the Status Quo 1993-2000, 5/00, p. 4; OMB, FY2001 Budget, p.42]
- The Clinton-Gore administration is now fighting for legislation that will require states and districts to

identify schools with the lowest achievement results and turn them around. If the district fails to achieve results, the school could be shut down and reopened under new leadership or students could be transferred to charter schools.

➤ *After having been identified as performing below expectations on state assessments, Audubon Elementary School in Owensboro, Kentucky today ranks 18th statewide in student performance among elementary schools. Since 1994, even with two-thirds of its students in poverty, Audubon has boosted the percentage of students scoring at a level of "proficient" and "distinguished" on state assessments from 12 percent to 57 percent in writing; 5 percent to 70 percent in reading; and 0 percent to 64 percent in science.*

How Standards and Accountability Transformed Head Start

- When President Clinton and Vice President Gore took office, Head Start served too few children, and programs were not required to meet quality or performance standards. Bipartisan legislation signed by President Clinton in 1994 not only expanded Head Start, but reformed it to guarantee that providers meet standards for facilities, teachers, class size and learning. Those programs that couldn't meet the standards would lose their funding. Since 1993, 150 grantees have been closed while more than 200 identified as seriously deficient have turned their programs around. Meanwhile, the Clinton-Gore Administration has dedicated \$800 million for quality improvements to make sure that Head Start programs meet basic standards. And the Head Start curriculum now stresses reading and math skill development. [HHS, Improving Head Start: A Success Story, 6/16/2000]

Investing in Proven Initiatives

President Clinton and Vice President Gore have not only doubled federal resources for education and training, but they have focused federal resources on proven initiatives that work.

Smaller Classes and Quality Teachers

- Research proves that smaller class size leads to significant lasting gains in academic achievement. The Administration's initiative to hire 100,000 high quality teachers in the early grades has added 29,000 teachers, providing smaller classes for 1.7 million children. Class size in grades 1-3 has dropped from 23 to 18 students in schools taking advantage of grants. This year the administration is requesting 1.75 billion to hire 49,000 teachers.need [Dept. of Education, Local Success Stories, Reducing Class Size, 11/99].

Public School Choice

- Public school choice increases parental involvement and accountability, and encourages innovation. Charter schools increase a parent's choice by offering alternative schools in the area. The number of charter schools in the country has increased from one to 1,700 during the Clinton-Gore Administration, with the federal government providing nearly \$400 million in total support. Today, more than 250,000 students are enrolled in charter schools in 39 states. [U.S. Dept. of Education, The State of Charter Schools, 2000]. The Administration has also expanded the Magnet schools program from 2,400 to 5,200 schools serving 1.5 million students, expanding access to high-quality programs in math, science, technology and arts. [Dept. of Education, Challenging the Status Quo 1993-2000, 5/00, p. 21]

After-School and Summer School

- Extended learning time is an essential strategy to improve reading and math scores and provide children a safe and productive environment in the after school hours, when most incidences of crime, alcohol and drug abuse occur. The 21st Century Community Learning Center initiative, launched by President Clinton and Vice President Gore in 1997, today provides after-school and summer school opportunities for 850,000 students. The Administration would expand this program to 10,000 schools and 2.5 million students, which would reduce the number of latch key kids by 25 percent. [Dept. of Education, Challenging the Status Quo 1993-2000, 5/00, pp. 12, 32; FY2001 Budget, p.61]

Technology in the Classroom

- Today 78 percent of teachers receive training in using technology in the classroom, up from 51 percent in 1994. Internet access has grown from 4 percent of classrooms in 1994 to 65 percent in 1999, with 100 percent of schools expected to be wired by the end of 2000. And the Vice-President's E-rate program has provided Internet access for 1 million classrooms and libraries. [National Center for Education Statistics; Education and Libraries Networks Coalition]

Preparing Students for College Early

- President Clinton and Vice President Gore created and expanded GEAR-UP, a nationwide mentoring initiative, to help over 750,000 low-income middle school children finish school and prepare for college. GEAR-UP expands mentoring efforts by states and provides new grants to partnerships of middle schools, institutions of higher education to prepare more than 750,000 students at high-poverty middle schools for college. [OMB, FY2001 Budget]

Expanding and Improving Head Start

- Thirty-five years of study and experience with Head Start has demonstrated that low-income children who participate are less likely to be held back in school or to be placed in special education classes and more likely to succeed in school and to graduate. [Council of Economic Advisers, *Educating America: An Investment in our Future*, 9/95] The Clinton-Gore Administration has enacted the largest expansion of Head Start ever, including expanding participation by over 200,000 children, extending Head Start to an all-day, full-year preschool program, and creating Early Head Start to support children under three and pregnant women. [HHS, *Improving Head Start: A Success Story*, 6/16/2000]

Student Achievement

President Clinton and Vice President Gore introduced a strategy of high standards for all student, accountability for results and investment in what works that is beginning to pay off. Reading and math scores are up at all levels, college entrance scores are up and more students are heading to college.

Higher Reading and Math Scores at All Levels

- Average reading scores on the National Assessment of Educational Progress (NAEP) increased for students in grades 4, 8, and 12 between 1994-98. The national average score in math for fourth graders increased 11 points, the average for eighth graders increased 9 points, and the average score for twelfth graders increased 10 points. [NAEP 1998 Reading Report Card and NAEP 1996 Mathematics Report Card]
- Reading and math scores of 9-year-olds in the highest-poverty schools, where over 75% of students qualify for free or reduced-price lunch, rose by nearly one grade level between 1992 and 1996.

Students Are Taking Tougher Classes And Aiming Higher

- In 1998, 55 percent of graduating high school seniors took a core curriculum (4 years of English, 3 years each of social studies, science and math). In 1990, just 38 percent did. [NCES High School Transcript Study, 1999]
- The number of students taking AP exams increased to 704,000 in 1999. In 1995 only 476,000 took AP tests. [The College Board, 8/31/99; 8/22/96] The Administration's Advanced Placement Initiative provides help to pay fees and provide classroom materials that has encouraged 92,000 low-income students to take AP exams since 1998 and will assist 80,000 more this year. [Dept. of Education, Challenging the Status Quo]

College Entrance Scores Are Up

- 2000 SAT math scores were the highest in 30 years. Verbal scores have increased 5 points since 1992. Combined SAT scores have increased by 18 points since '92. [The College Board, 9/1/98; 8/29/00].
- Average ACT scores have also increased over the past seven years after remaining virtually flat between 1980-92. [ACT, 8/17/00].
- Over the last 10 years, SAT test scores for college-bound African American students have increased by a total of 13 points. [The College Board, 8/29/00] The gaps in NAEP test scores between African American and white elementary and secondary students have also closed slightly in Math, Science and Reading. [NCES, The Condition of Education 1999, p.2]

Fewer Dropouts

- The percentage of students who drop out of high school fell from 5.3 percent in 1994 to 4.6 percent in 1997. The largest improvements came among African American and lower-income students. [NCES, The Condition of Education: 1999, p. 110].
- The percentage of young adults who have completed high school is the highest level ever reported. Today, 88.1 percent of 25-29 year olds graduated from high school. The number has increased from 86.3 percent in 1992. [NCES, The Condition of Education: 1998]

More Students Are Going To College

- Between 1992-97, the percentage of high school graduates going to college increased from 61.9 percent to 67.0 percent. The percentage of African American graduates going to college has increased by 12 points since 1992 and is now at its highest point ever. Low-income students are

also much more likely to attend college. Today 50.6 percent of low-income graduates go on to college. In 1992, just 43.6 percent did. [NCES, The Condition of Education: 1999, p. 128]

Dollars to Classrooms

President Clinton and Vice President Gore have taken successful steps to improve efficiency in the Department of Education. Today 99 percent of funds for major education programs are distributed to states, the Department is doing more with fewer personnel and thousands of pages of paperwork and regulations have been eliminated.

Over 90 Percent of Federal Dollars to Local Districts

- A 1999 GAO study found that 99 percent of appropriations for 10 major education programs are distributed to states. And 94 percent of these funds are distributed to local agencies. [GAO, Federal Education Funding, Allocation to State and Local Agencies for 10 Programs, 9/99]

Doing More With Less

- Despite the fact that President Clinton and Vice President Gore have doubled the federal government's investment in education, there are fewer Department of Education staff this year than there were in 1992. [Dept. of Education FY2001 Budget Summary]

Eliminating Regulations and Unnecessary Programs

- Since President Clinton and Vice President Gore took office, 65 programs totaling \$625 million have been eliminated or consolidated. The U.S. Department of Education has eliminated 39 percent of departmental regulations – totaling 923 pages. [Testimony of Under Secretary Marshall Smith, 4/9/97]

Reforms Saving Billions of Dollars

- In 1990, the student loan default rate was 22.4 percent. Under the Clinton-Gore administration, the default rate has been cut every year, and is now a record low 8.8 percent. [5-year Report Card on American Education, February 2000]
- Collection of defaulted student loans has tripled under the Clinton-Gore Administration, to \$3.0 billion in FY1999. [Dept of Education, FY2001 Budget Request, www.ed.gov]
- The Direct Student Loan Program has saved taxpayers an estimated \$4 billion since 1993. [Dept of Education, Challenging the Status Quo, p.41]
- Federal subsidies for banks and guaranty agencies have been pared down, saving taxpayers an additional \$1.6 billion. [Dept of Education, Challenging the Status Quo, p.41]

Easing the Paperwork Burden

- In 1994, President Clinton signed the ESEA Reauthorization Act, which eliminated two-thirds of regulations governing federal elementary and secondary education programs. As part of these reforms, states are allowed to submit a single form. This has resulted in elimination of 85 percent of the paperwork requirements. [Educational Excellence for all Children Act Overview]

More State Flexibility than Ever Before

- Since 1993, the Department has approved 478 waivers of regulations for states. [Waiver Fact Sheet, 5/2000, www.ed.gov] In 1999, President Clinton signed the Education Flexibility Partnership Act, which allows all states with strong accountability safeguards the opportunity to waive many federal requirements in order to achieve results of local improvement plans. [Ed-Flex Fact Sheet, 6/28/00, www.ed.gov]

Discipline and School Violence

From day one, President Clinton and Vice President Gore have taken a tough stance against youth violence. They have adopted a zero tolerance policy against weapons in schools, and challenged states to adopt policies to improve order and safety in classrooms, including adopting school uniforms, enforcing truancy laws and imposing curfews. Although serious problems still exist across the country, crime in schools has dropped by more than one-third under The Clinton-Gore Administration.

School Violence and Drug Use Drops

- School crime has decreased by more than one-third under President Clinton and Vice President Gore. In 1993, there were 155 school-related crimes per 1000 students. The rate had dropped to 102 per 1000 in 1997. [U.S. Dept of Justice, 1999 Annual Report on School Safety]
- The number of students carrying a weapon to school and students getting in fights at school has also dropped significantly since 1993. Serious crime dropped for the seventh year in a row, the longest continuous decline in nearly 40 years. [U.S. Dept of Justice, 1999 Annual Report on School Safety]
- Reversing the previous upward trend, illicit drug use among teenage students has dropped by 22 percent over the past three years. [Monitoring the Future Survey 1992-1999]

Zero Tolerance for Guns and Weapons

- President Clinton and Vice President Gore fought for passage of the Gun Free Schools Act, which requires the expulsion of students caught bringing weapons to schools. Nearly 10,000 students were expelled for bringing weapons to school in the first two years after the Act was passed. [U.S. Dept. of Education, Report on State Implementation of the Gun-Free Schools Act, 1997-98]
- The percentage of high school students who carried a weapon to school dropped from 12 to 9 percent between 1993-97. [Dept. of Education/ Dept. of Justice, Annual Report on School Safety 1999]

Encouraging Tougher Student Discipline Policies

- President Clinton has encouraged schools to adopt school uniform and dress code policies and urged communities to enforce truancy laws and impose curfews. [White House Release, 7/20/98; State of the Union Address, 1997]

More Police Officers in Schools

- President Clinton and Vice President Gore have designated \$250 million in community policing grants to fund over 2,250 police officers to work in schools. [Dept. of Justice, Community Oriented Policing Services, www.usdoj.gov/cops/]

After-School and Summer-School Opportunities Reduce Crime

- President Clinton and Vice President Gore have provided funding for 7,700 after school and summer programs that serve 2.5 million students. Not only do these programs give students a safe place to improve skills necessary to meet tough academic standards, but they also have lowered crime rates in some areas where after-school programs have been implemented. [Dept of Education, Challenging the Status Quo, p.32]

Promoting Character Education

- Since 1995, the Clinton-Gore Administration has awarded nearly \$9 million in character education partnership grants to states to integrate values into the school curriculum. [Department of Education,

Quality Teachers in Every Classroom

In addition to helping communities hire 100,000 quality teachers in school districts across the country, President Clinton and Vice President Gore have increased federal efforts to attract quality teachers to high-need school and improve teacher quality. They are working to expand professional development for teachers, increase the number of board certified teachers and ensure teachers are qualified and certified in the subjects they teach.

Largest teacher training and recruitment effort ever

- President Clinton and Vice President Gore have launched **the largest federal investment in teacher hiring and training ever**. In 1998, the administration won funding to start hiring 100,000 new quality teachers over six years, and since then they have secured a total of \$2.5 billion toward their goal. These funds are targeted to high-poverty communities, where the need for high-quality teachers is the greatest. [Dept of Education, Challenging the Status Quo, p.32; Dept. of Education, FY2001 Budget Summary, www.ed.gov, Dept. of Education, Local Success Stories: Reducing Class Size, 11/99]
- President Clinton and Vice President Gore have nearly **doubled funding for teacher quality and recruitment programs**. In 1993, the federal government spent just \$435 million to train and recruit quality teachers. In 1999, President Clinton fought for and secured \$793 million. The administration's 2001 budget proposal would increase this to \$1 billion annually. [FY2001 Budget]
- The Clinton-Gore Administration implemented the **Troops to Teachers** program to encourage former military personnel to become teachers. So far 3,600 teachers in schools in all 50 states and almost 2,000 school districts. President Clinton and Vice President Gore have requested \$25 million in funding for 2001 to substantially increase this proven pool of teaching talent and expand the successful concept to other mid-career professionals. [DANTES, Troops to Teachers Program Status Report, 3/30/2000, OMB, FY2001 Budget]
- President Clinton and Vice President Gore have launched the **American Indian Teacher Corps** to attract 1,000 new, high quality teachers to American Indian and Alaska native schools. They have nearly doubled funding for bilingual and English as a Second Language education and have requested funds to train 8,000 tutors to help students with limited English skills excel academically. [OMB, FY 2001 Budget, pp. 43, 236]

Improving Teacher Quality

- The Clinton-Gore Administration is working to enact laws that would reduce the number of teachers who teach outside their area of expertise. Today, 88 percent of science and 82 percent of math teachers in secondary schools had a major or minor in the area they taught. In 1993, 18 percent of science teachers and 23 percent of math teachers were teaching outside of their field of expertise. [NCES, Teacher Quality: A Report on the Preparations and Qualifications of Public School Teachers 1/99].
- President Clinton and Vice President Gore have promoted the National Board for Professional Teaching Standards, and encouraged rigorous processes to certify and license teachers. [Higher Education Amendments of 1998]. There are currently 4,804 teachers certified by the National Board for Professional Teaching Standards, and another 9,000 candidates are currently seeking certification. Thirty-eight states and 169 local school districts offer a variety of incentives, including fee support for candidates and salary increases for certified teachers. [NBPTS Release, 6/1/2000, www.nbpts.org].
- In order to educate students for the digital economy, teachers need to be computer literate and trained to integrate technology into the classroom. President Clinton and Vice President Gore have launched grants that are training 400,000 teachers to use technology in the classroom. [OMB, FY2001 Budget, p.46]

- The 1998 Higher Education Act signed by President Clinton holds states and teacher education programs accountable for preparing skilled teachers, and encouraging alternate ways for qualified professionals to enter the teaching profession. President Clinton and Vice President Gore have also introduced annual report cards on teacher training, licensing and certification in each state. [Dept. of Education, Improving Teacher Quality, Recruitment, and Preparation, www.ed.gov/offices/OPE/heatqp/tqp.sum.html]

Expanding College Opportunity

Recognizing that a college education is more important to success in today's economy than ever before. President Clinton and Vice President Gore have enacted the largest expansion of college opportunity since the GI Bill was passed in 1944. They have drastically increased the federal investment in student aid, resulting in an increase in the number of students receiving aid, enrolling in college, and the number of students preparing for college.

Opening the Doors of College to All Americans

- President Clinton and Vice President Gore have enacted the largest expansion of college opportunity for Americans since the GI Bill. The Clinton-Gore Administration proposed and initiated the HOPE Scholarship and Lifetime Learning Tax Credits. These two programs provide tax credits worth a total of \$6.8 billion to 10 million families. The Administration has expanded participation in the work study program, so that 1 million students can work their way through school. They also created AmeriCorps, which has helped 150,000 students earn money for college through community service. [OMB, FY2001 Budget]
- The Clinton-Gore Administration created the Direct Lending program, which has made borrowing money for college cheaper and easier, saving students and their families over \$8 billion and saving taxpayers more than \$5 billion since 1993. Direct lending has reduced paperwork and fees for students and costs to the federal government. The Administration has also cut student loan interest rates and origination fees for all students, saving students more than \$8 billion. And Clinton-Gore economic policies have kept interest rates low, reducing college costs for students taking out loans by an estimated \$200 per year. [Dept of Education, Challenging the Status Quo; White House Fact Sheet, 1/27/00]
- President Clinton and Vice President Gore have increased the maximum Pell Grant award by \$1,000, and proposed an additional \$200 increase next year. Between 1993 and 1999, the maximum Pell Grant award has increased slightly faster than the rate of college tuition and fees. During the previous administration, college tuition and fees increased much quicker than the maximum Pell Grant. [Dept. of Education, Pell Grant Year-End Report, 1998-99; OMB, FY 2001 Budget; Dept. of Education, Digest of Education Statistics, Table 317]
- This Administration has greatly expanded the availability of student aid. More than 2.5 million more students receive some sort of federal grant, loan or work-study assistance today than in 1992, and this number does not include the 10 million families taking advantage of HOPE Scholarships and Lifetime Learning Tax Credits. [OMB, FY2001 Budget Appendix, p. 369; FY1994 Budget Appendix]

More Students Going to College

- As a result of President Clinton and Vice President Gore's efforts, more high school graduates are going directly to college today than ever before. In 1998, 66 percent of high school graduates went directly to college. This translates into an estimated 1.6 million students, or more than 200,000 more than went directly to college in 1992. [Condition of Education 2000 Table 32-1]
- Particularly impressive gains have been made among low-income students and African-Americans. The percentage of high school graduates going directly to college has increased from 44 percent in 1992 to more than 50 percent in 1997 among low-income families and from 50 percent in 1992 to

62 percent in 1998 among African American students. [Condition of Education 2000 Tables 32-1, 32-3]

Preparing Students for College Early

- In 1998, President Clinton and Vice President Gore created GEAR-UP to encourage students to begin planning for college as early as sixth grade. Research shows that students taking challenging courses in middle school are much more likely to succeed in high school and go on to college. The program will benefit more than 750,000 students. [Dept. of Education, GEAR-UP FY2001 Funding Information, www.ed.gov/gearup]
- The Administration has also expanded the TRIO programs, a network of eight initiatives designed to help low-income, first-generation college, and disabled individuals achieve academic success beginning in middle school, throughout college, and into graduate school. Since 1993, funding for the programs has increased from \$388 million to \$645 million, and TRIO programs now offer services to 730,000 students. [Dept of Education, Challenging the Status Quo]
- The number of students taking Advanced Placement exams increased to 704,000 in 1999. In 1995 only 476,000 took AP tests. [The College Board, 8/31/99; 8/22/96] The Administration's Advanced Placement Initiative provides help to pay fees and provide classroom materials that has encouraged 92,000 low-income students to take AP exams since 1998 and will assist 80,000 more this year. [Dept. of Education, Challenging the Status Quo]

Edits

Throughout these documents, you switch between using 1992 as a baseline and 1993. We would suggest that you use a consistent base year. FY 1993 is the standard usually used, since that was the last policy Budget of the Bush Administration.

Standards and Accountability

- Nowhere in these documents do you mention special education, including the 1997 IDEA reauthorization. While you understandably may want to avoid discussing special education funding, you might want to include the following bullet in the standards and accountability section.

In 1997, President Clinton signed the Individuals with Disabilities Education Act Amendments of 1997, which made it clear that the education of students with disabilities should be based on the same challenging standards as applied to nondisabled students, with appropriate modifications and supports for their disabilities. It also required students with disabilities to be included in State and district-wide assessments, and that schools must also be held accountable for the educational outcomes of students with disabilities.

Text in Box

- "...21st Century Community Learning Center after and summer school programs..." should spell "Center" as "Centers", from the official name of the program.

Raising Standards for all Students

- The inclusion of a Thompson quote from 1995, one year after the passage of Goals 2000, may not be the most timely or accurate measure of the program's worth. Could we perhaps include a more recent quote?

Working to End Social Promotion

- This year, the Administration has really downplayed this. Last year it was part of the rhetoric around 21st Century Community Learning Centers; this year it is not. In addition, we haven't been fighting for this aspect of the Education Accountability Act. Given that, we aren't going to have accomplishments to show in this category. If the audience for this piece is looking for results, I would take this paragraph out.
- If this paragraph remains, the following changes should be made:
 - It should define social promotion and why it is important.

- "their FY2001 Budget proposal" should be rephrased to read "...and its FY2001 Budget proposal" because the quote refers to the Administration, not Clinton and Gore. Also, delete the comma after "Accountability Act."

Fixing Failing Schools

- In the last bullet in this section, it says that "The Clinton-Gore administration is now fighting for legislation that will require States and districts to identify low performing schools..." If this is referring to the Education Accountability Act, we're not really fighting for it now, but the Administration did propose it. So, "propose" could be substituted for "is fighting for". Second, add "tougher" between "for" and "legislation" since States and districts can already do this under IASA.

Investing in Proven Initiatives

Public School Choice

- Just a note on magnet schools -- even if the number of schools has increased, funding for the program has remained flat, if not decreased. In 1990, funding was \$114 million, in 1992 it was \$110 million, and the proposed level in the FY 2001 Budget is \$110 million.
- Please substitute the following paragraph for the existing text on Public School Choice:

"Public school choice promotes accountability and innovation while providing parents with the alternatives they deserve. The success of charter schools shows that excellence and education reform are very much at home in our nation's public schools. During the Clinton-Gore administration, the number of charter schools has increased from one to 2,069. Today, over 500,000 students in 34 states are enrolled in charter schools [Center for Education Reform]. Since 1994, the Clinton-Gore administration has helped fuel the charter school movement with nearly \$400 million in total support [The State of Charter Schools, 2000]. The administration has also provided consistent support for magnet schools. The magnet schools program is designed as seed money to help magnet schools foster academic excellence and student diversity. This year, the program supported nearly 140,000 students in 292 schools [U.S. Department of Education]."

Preparing Students for College Early

- President Clinton and Vice President Gore created and expanded GEAR-UP, a nationwide ~~mentoring~~ early intervention and college awareness initiative, to help over ~~750,000~~ 710,000 low-income middle school children ~~finish~~ succeed in school and prepare for college in FY 2000. GEAR-UP expands ~~mentoring~~ college preparation efforts by

states and provides new grants to partnerships of middle schools, institutions of higher education, and community organizations. The President's FY 2001 request of \$325 million would help to prepare 1.3 million ~~more than 750,000~~ students at high-poverty middle schools for college. [OMB, FY2001 Budget]

Student Achievement

College Entrance Scores Are Up

- Have these SAT scores been adjusted for the recalibration?
- NAEP is not a college entrance exam. It seems as if the NAEP sentence was included in this paragraph to mislead the reader, since the white/black gap in SAT scores has actually increased, according to the first and third bullets. The NAEP sentence should be moved to the first section, on reading and math scores.

Fewer Dropouts

- The second bullet says that "today, 88.1% of 25-29 year olds graduated from high school.." Unless this fact is about GEDs, it's referring to people who graduated 7-10 years ago, before the Clinton Administration was in office. The fact should be taken out.

More Students Are Going to College

- Please use the 1998 figures instead of 1997 where appropriate. The overall rate was 65.6% and the increase for African-Americans was 14 points. In the penultimate sentence, replace "Today" with "In 1997."

Dollars to the Classroom

Doing More With Less

- You may also want to note that ED's administrative costs make up only about 2 percent of its total budget. [Source: <http://www.ed.gov/offices/OUS/fedrole.html>]

Reforms Saving Billions of Dollars

- The third bullet says that Direct Loans have saved taxpayers \$4 billion since 1993, while the “Expanding College Opportunity” paper says \$5 billion. \$5 billion is the more recent figure and should be used in both papers.

Eliminating Regulations and Unnecessary Programs

- You may want to remove this bullet. While we may have eliminated or consolidated 65 ED programs, we've also probably **proposed** more than 65 new programs in various President's Budgets, several of which were funded by Congress. Moreover, the regulation data is outdated; since 4/97, ED has issued new IDEA regulations (which many people believe are proscriptive), and is working on other regs in rehab., HEA, etc. This bullet opens the Administration up to criticism.

Discipline and School Violence

School Violence and Drug Use Drops

- The second sentence of the second bullet cannot be supported by the accompanying citation. I advise striking it or qualifying it with information from the *1999 Annual Report on School Safety*.
- The following bullet, which covers trends in drug use, cannot be substantiated in the Monitoring the Future Study. If it is from the Monitoring the Future study, it should have additional information on the grade-level, types of drugs involved, and incidence of use.

Zero Tolerance for Guns and Weapons

- In the first bullet, the second sentence should be modified to read: “Nearly 4,000 students were expelled for bringing weapons to school in the 1997-98 school year.”
- The next bullet should be modified to read: “The percentage of high school students who carried a weapon to school dropped between 1993-97.” I could not confirm the rates from the Annual Report, but according to the citation, the numbers may have been estimated from

a graph.

More Police Officers in Schools

- I could not find the statistic on the web page cited. The funding level for the number of new police officers seems high. If the stat is OK, perhaps more elaboration is necessary.

After-School and Summer-School Opportunities Reduce Crime

- I could match the numbers with those in the cite provided, but I could not find text that made certain claims about the efficacy (in crime reduction) of the 21st Century Community Learning Centers program.

Promoting Character Education

- This bullet should read: "This year, the Clinton-Gore Administration has requested over \$9 million for character education partnership grants that help states integrate values into the school curriculum."

Quality Teachers in Every Classroom

Largest teacher training and recruitment effort ever

- The Clinton-Gore Administration implemented the **Troops to Teachers** program to encourage former military personnel to become teachers. So far this program has placed 3,600 teachers in schools in all 50 states and almost 2,000 school districts. President Clinton and Vice President Gore have requested \$25 million in funding for 2001 to ~~substantially increase this proven pool of teaching talent~~ and continue to recruit former military personnel to become teachers and to expand ~~the~~ this successful concept to other mid-career professionals.
- President Clinton and Vice President Gore have launched the **American Indian Teacher Corps** initiative to attract and recruit 1,000 new, high quality teachers to work in schools with significant concentrations of American Indian students. ~~and Alaska native schools~~ They have also ~~nearly~~ more than doubled funding for ~~Bilingual and English as a Second Language~~ Education Professional Development and have requested funds in FY 2001 to ~~train~~ support the training and certification of 8,000 ~~tutors~~ bilingual education and English as a second language (ESL) teachers to help students with limited English skills excel academically.

Improving Teacher Quality

- "The Clinton-Gore Administration is working to enact laws that would reduce the number of teachers who teach outside their area of expertise. Today, 88 percent of science and 82 percent of math teachers in secondary schools had a major or minor in the area they taught. In 1993, 18 percent of science teachers and 23 percent of math teachers were teaching outside of their field of expertise." This bullet seems to take credit for the improvement since 1993, even as it says that the Administration is just now proposing programs focused on this issue. Can we link an enacted POTUS initiative to any of this improvement? Also, if the sentence does remain, please revise it to clarify that it is a six percent increase in science and a five percent increase in math, rather than listing 2 separate sets of numbers in different formats.

Expanding College Opportunity

Text in Box

- The period after the first clause should be a comma.
- Delete the second appearance of "the number of students" in the sentence beginning, "They have drastically increased."
- After "prepare for college early," add ", and a \$200 increase in the Pell Grant maximum award."
- In the last sentence, delete the clause about Advanced Placement – as a \$20 million program, we don't believe it should be mentioned before Work Study (\$1.1 billion), SEOG (\$691 million), etc. Delete reference to Pell Grants in last sentence, since they're mentioned in the previous sentence now.

Opening the Doors of College to All Americans

- Please edit the first bullet in the section as shown below. Noting "eligible" is important, because many people who could claim Hope/Lifetime Learning are not doing so.

President Clinton and Vice President Gore have enacted the largest expansion of college opportunity for Americans since the GI Bill. The Clinton-Gore Administration proposed and initiated the HOPE Scholarship and Lifetime Learning Tax Credits. ~~These two programs provide tax credits worth a total of \$6.8 billion to 10 million families.~~ Under these two programs, nearly 13 million families are eligible for a total of about \$8 billion in tax credits. The FY 2001 Budget proposes to expand the Lifetime Learning Tax Credit

with a 10-year, \$36 billion College Opportunity Tax Cut that will, when fully phased in, provide up to \$2,800 in tax relief for millions of families struggling to pay for college. The Administration has expanded participation in the work study program, so that 1 million students can work their way through school. They also created AmeriCorps, which has helped 150,000 students earn money for college through community service. [OMB, FY2001 Budget, **Midsession Review**]

- In the second bullet, do we want to mention anything about the Student Loan interest deduction, which was part of the BBA of 1997?
- At the end of the second bullet, typo: “by and estimated \$200...”
- In FYs 1999, 2000, and soon 2001, Congress increased the Pell maximum by more than the President requested. Please change the third bullet as follows:

Under the leadership of President Clinton and Vice President Gore, ~~have increased~~ the maximum Pell Grant award has increased by \$1,000 from FY 1993 to FY 2000. ~~and~~ The President has proposed an additional \$200 increase next year. Between 1993 and 1999, the maximum Pell Grant award has increased slightly faster than the rate of college tuition and fees. During the previous administration, college tuition and fees increased much quicker than the maximum Pell Grant. [Dept. of Education, Pell Grant Year-End Report, 1998-99; OMB, FY 2001 Budget; Dept. of Education, Digest of Education Statistics, Table 317]

More Students Going to College

- In the second bullet, the statistics on African American students mix the annual average with the three-year average. The change is either from 50% in 1992 to 59% in 1997 (three-year); or 48% in 1992 to 62% in 1998 (annual).

Preparing for College Early

- First bullet: change to “...will benefit 710,000 students in FY 2000.”
- Second bullet: TRIO programs have been around since 1965, and probably don’t qualify as initiatives any more. Also, Congress usually provides more funding for TRIO than the Administration requests, so we might not want to seem to be taking credit for TRIO increases.

EMBARGOED FOR RELEASE

UNTIL:

Tuesday, September 5th,

10:00 a.m. EST

The Brown Center Report
on American Education

HOW WELL
ARE AMERICAN
STUDENTS
LEARNING?

Focus on Math
Achievement

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The Brown Center Report
on American Education:

HOW WELL ARE AMERICAN STUDENTS LEARNING?

Focus on Math Achievement

September 2000
Volume I, Number 1

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Education Policy

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THE BROWN CENTER REPORT ON AMERICAN EDUCATION

There was a time when student test scores primarily concerned two groups: individual parents, as they received reports on their children's progress, and real estate agents, as they helped home buyers compare schools in different neighborhoods. Test scores were difficult to obtain and rarely discussed in public. But now measures of student achievement are splashed across the front page of major newspapers, widely available on the Internet, and the subject of intense scrutiny and furious spin. Politicians closely watch test scores. From the race to the White House to the thousands of contests for local school boards, candidates stretch and bend scores to make them look as good or as bad as possible. Teachers unions and other organizations cite data to defend public schools and assure the public that all is well—or at least not as bad as everyone thinks. On the other side, critics of public schools publish voluminous studies documenting a steady decline in student performance.

What should the average citizen believe?

The purpose of this report is fourfold: to report on the direction of achievement in U.S. public schools, that is, to determine whether it's going up, down, or sideways; to figure out whether any change that is detected is big, small, or insignificant; to dig under the numbers and uncover the policies and practices influencing the direction of student achievement; and, finally, to figure out whether the public is getting the full story on student learning. Americans spend \$350 billion each year on elementary and secondary education. They deserve an accurate,

nonpartisan, no-holds-barred, data-driven account of what they're getting for their money.

The Brown Center Report will appear annually, this being the first edition. Although varying in content from year to year, the report will be presented in the same three sections. The first section will use the latest and best evidence available to evaluate student achievement in America's schools. The second section will go into greater depth on a theme related to student learning. This year's theme is mathematics achievement. The third section will evaluate the impact of policies and practices on student learning. This year's topics are the use of calculators in math instruction and state and federal programs that single out exemplary schools for special recognition.

Part

I

**THE NATIONAL
ACHIEVEMENT TEST**



FOR THE LONG-TERM PICTURE OF THE NATION'S PROGRESS, the best measure of student achievement is the National Assessment of Educational Progress (NAEP). The NAEP gauges learning in several academic areas by testing students of three different ages: nine, thirteen, and seventeen. For the sake of simplicity, and because these subjects are both foundational and of greatest interest to the American public, this report focuses solely on achievement in reading and math.

All three age groups made small gains in reading from 1971 to 1996 (see Figure 1). Nine year olds gained four scale score points, up from 208 to 212 on a scale that ranges from 0 to 500 points. But their 1996 scores were below those of 1980. Thirteen year olds also gained four points, from 255 to 259, scoring the same in 1996 as they had in 1980. Seventeen year olds gained the least (two points), inching forward from 285 to 287. Seventeen year olds' scores peaked in 1988 and suffered a small decline in the 1990s.¹

In math, the picture is much brighter for all three age groups (see Figure 2). From 1973 to 1996, nine year olds gained twelve points, improving from 219 to 231, followed by thirteen year olds, with a gain of eight points, moving from 266 to 274; and seventeen year olds, a gain of three points, up from 304 to 307. The math scores registered

in 1996 were the highest on record for all three ages. In both subjects, achievement gains were greatest at age nine and shrank for older students.

Clearly, the story is not one of disastrous decline. Slow and steady gains are being made. Nor is it cause for national celebration.

Today's nine year olds are better at reading and math than nine year olds in the early 1970s. But when older students are compared with their peers from the past, about two-thirds of the improvement has evaporated before the end of high school. The size of the gains and the pace of improvement are both important. This kind of analysis is best understood by expressing growth in standard deviations (SDs), a unit of measure commonly used by statisticians (see Table 1). The reading gain at age nine (+0.12) holds up through age thirteen (+0.10), then fades to

Clearly, the story is not one of disastrous decline. Slow and steady gains are being made. Nor is it cause for national celebration.

[In math] it would take a little more than seventy-seven years before American eighth graders were performing at a level equal to their Japanese counterparts.

Introduction to NAEP

The National Assessment of Educational Progress (NAEP) is commonly referred to as the Nation's Report Card. Since 1969, it has been the only nationally representative and continuing assessment of what America's students know and can do in academic subject areas. The number of students selected for a NAEP national sample for any particular grade and subject is 7,000 or more.

There are three NAEP test types:

(1) the main NAEP gauges national achievement while also reflecting current practices in curriculum and assessment

(2) the long-term trend NAEP allows reliable measurement of change in national achievement over time, and (3) the state NAEP measures achievement of students in participating states. These assessments use distinct data collection procedures and separate samples of students.

Since 1990, the main and state math tests have been governed by a framework reflecting recommendations of the National Council of Teachers of Mathematics (NCTM). The long-term trend test consists of the same items and test procedures used in 1973.

a trace, +0.05, for seventeen year olds. The math gain also drops off steadily as students get older, from +0.35 to +0.25 to +0.09.

Are the gains big or small? Is progress fast or slow?

The gains are small to modest. In experiments designed to discover if particular practices affect academic achievement, statisticians generally regard SD gains greater than +0.50 as large, from +0.20 to +0.50 as modest, and less than +0.20 as insignificant. How big are these gains in the real world? Here's one illustration. The difference between the average height of fifteen and sixteen year old girls in the United States is 0.20 SD, barely noticeable to the naked eye. The difference between thirteen- and eighteen-year-old girls is 0.80 SD, which no one could miss.² None of the NAEP gains are even close to 0.80. The largest gain, +0.35 SD for the math achievement of nine year olds, is only modest in size.

Evaluated by another method, the math gains for nine and thirteen year olds appear larger. Since the scale score difference between nine and thirteen year olds has

averaged about forty-five points, an eleven point NAEP gain represents approximately one year's worth of learning for ages nine to thirteen. A twelve point gain was registered by nine year olds, meaning that they have gained a little more than a year's worth of learning and probably know as much mathematics as a ten year old in 1973. Impressive. The difference between thirteen and seventeen year olds has averaged about thirty-four points, so eight and one-half points represent one year's worth of learning for this age group. By the same metric, thirteen year olds have also gained about one year's worth of learning in mathematics since 1973. Also impressive. In contrast, seventeen year olds have only gained a few months of math learning.³

Growth flattened out in the 1990s. In math, only one point gains were registered by nine year olds from 1990 to 1996 and thirteen year olds from 1992 to 1996. Is the rate of progress as slow as it seems? Consider how long it would take to close the gap between Singapore and the United States in eighth grade mathematics. According to the Third International Math and Science Study

(TIMSS), which included a math test given in several countries in the mid-1990s, thirteen year olds in Singapore score approximately 1.50 SDs higher than thirteen year olds in the United States. Let's assume that the United States starts closing this gap at a rate of 0.13 SD per decade, which happens to be the average rate of progress for thirteen year olds during the history of NAEP math testing. At this speed, it would take about 115 years to catch Singapore. The gap with Japan is about one full SD, so it would take a little more than seventy-seven years before American eighth graders were performing at a level equal to their Japanese counterparts. These estimates assume that for the next century students in Singapore and Japan continue performing at the same level as they are now. If they were to raise their math skills, it would take even longer for American students to match them in achievement.⁴

What about recent progress?

The 1990s do not stand out as a time of great strides forward in academic achievement. Although achievement continued to improve, it did not accelerate in the century's final decade. After several years of national debate over the quality of American schooling, critics question whether the tens of billions of dollars spent on educational reform have been worth it. Others point out that changing social conditions—sharp increases in child poverty, single-parent families, non-English speaking students, and incarcerated parents—have made schooling more difficult.

A shortcoming of the NAEP tests is that they are only given intermittently. Both subjects were tested in 2000, but results won't be available until 2001. Most states have begun administering their own achievement tests, however, and many are posting

Change in Achievement
(SD Units and Years of
Learning)

Table
1

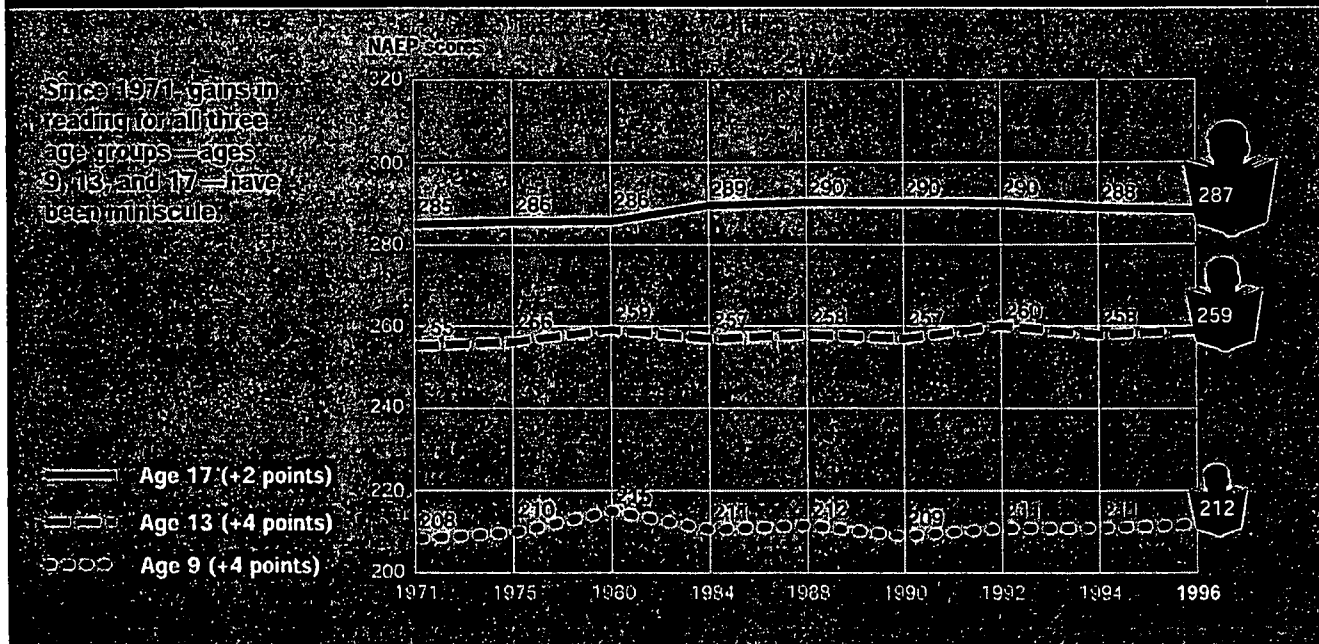
Reading (1971–1996)		
	SDs	Years
Age 9	+0.12	+0.34
Age 13	+0.10	+0.53
Age 17	+0.05	+0.27

Math (1973–1996)		
	SDs	Years
Age 9	+0.35	+1.07
Age 13	+0.25	+0.94
Age 17	+0.09	+0.35

Reading scores are flat

Reading scores as measured by the National Assessment of Educational Progress (NAEP), 1971–1996. NAEP data are expressed as scale scores, ranging from 0 to 500.

Fig
1



State Test Results (1998–1999)

Table
2

Reading

Grade 4		
Improvement	↑	14 (67%)
No Change	↔	4 (19%)
Decline	↓	3 (14%)
Total		21 states
Grade 8		
Improvement	↑	13 (48%)
No Change	↔	7 (26%)
Decline	↓	7 (26%)
Total		27 states
Grade 10		
Improvement	↑	12 (57%)
No Change	↔	4 (19%)
Decline	↓	5 (24%)
Total		21 states

NOTE: Data obtained from 35 states (and the District of Columbia) that administered the same achievement test in 4th grade, 8th grade, or 10th grade, in either math or reading.

scores on the Internet, offering researchers a chance to gauge student achievement since the last NAEP.

What are state tests saying?

We are not in the position to judge the validity of state tests. They are too new, extremely diverse in content, and employ different approaches to assessing student knowledge. However, what states are reporting to constituents about the direction of student achievement can be evaluated. State test results are tied increasingly to important outcomes. Based on test scores, schools may receive monetary rewards or states may impose sanctions. Students may be either promoted to the next grade or forced to repeat the same grade. Unlike the NAEP, the state tests really count.

From public data available on websites maintained by the fifty states and the District

of Columbia, we found thirty-six states that posted reading and math scores in 1998 and 1999, allowing us to compare achievement in these two years.⁵ Did scores go up, down, or remain the same? Do the states confirm or contradict the latest NAEP scores?

State tests suggest that achievement was still heading up at the end of the decade. More states reported gains than losses in both reading and math. In reading, 67 percent of the states that tested fourth graders reported a gain (see Table 2). The percentage was lower for eighth and tenth graders. In math, an overwhelming 86 percent of states showed a gain at fourth grade (see Table 3). Although these data are reporting on states, not students, the pattern of decline across grade levels in math is remarkably similar to that found in NAEP. A slump begins sometime after fourth grade and extends into high school.⁶ It is more difficult for states to

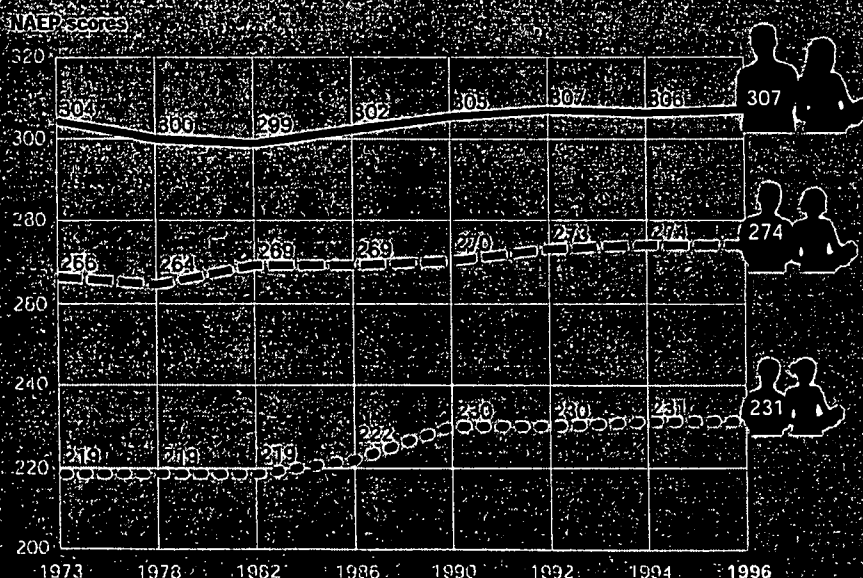
Math scores are rising slowly

Mathematics scores as measured by the National Assessment of Educational Progress (NAEP), 1973–1996. NAEP data are expressed as scale scores, ranging from 0 to 500.

Fig
2

In 1996, youth in all three age groups—ages 9, 13, and 17—registered their highest scores on record, but gains were greatest at age 9 and least among the older student groups.

- Age 17 (+3 points)
- - - Age 13 (+8 points)
- o o o Age 9 (+12 points)



demonstrate growth in the middle and high school grades than the elementary grades. Possible explanations for the middle-grade slump are discussed below.

Does the type of state test matter?

Some states administer off-the-shelf tests purchased from publishers. Others have developed their own tests or give a commercial test that has been customized for their use. Does the type of test make a difference in the results? Yes, but only in reading (see Figure 3). States that developed their own reading tests were more likely to report improvement from 1998 to 1999. At the fourth grade, the difference is large. About 90 percent of the states with custom tests reported gains, compared to only 45 percent with an off-the-shelf test. Bear in mind that this comparison involves a small number of

states—ten use custom tests and eleven use commercial tests to assess fourth grade reading—so the data are merely suggestive, not conclusive.⁷

Nevertheless, the fact that different kinds of state tests produce different results in reading is intriguing. It is too early to say why this is happening or to predict that it will continue, but there are several plausible explanations. It could be that when states develop their own tests, they make them easier. That would make a strong case for using tests created by external authorities, experts outside the system being tested. But easier tests should have produced higher scores in both 1998 and 1999—not affecting the gain over time. Perhaps customized tests are more engaging and have a stronger “comfort factor,” the growth students may exhibit after becoming accustomed to a test’s protocols. Or it could be that state-developed

**State Test Results
(1998–1999)**

**Table
3**

Math

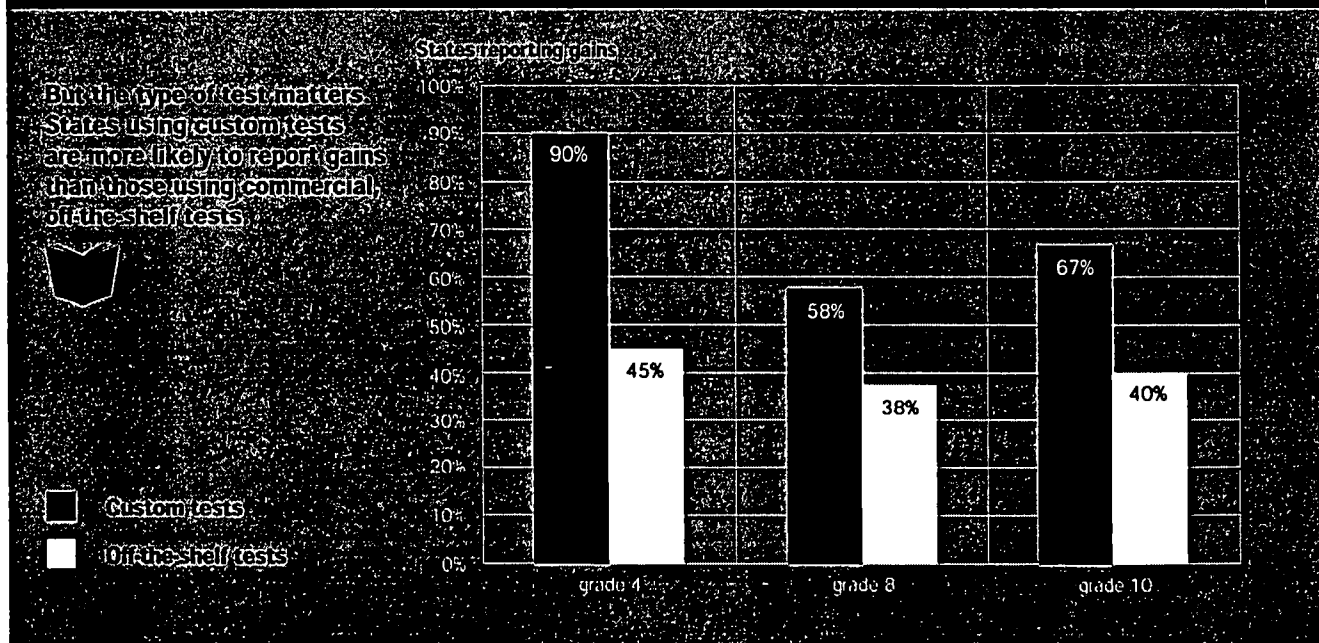
Grade 4		
Improvement	↑	18 (86%)
No Change	↔	1 (5%)
Decline	↓	2 (10%)
Total		21 states
Grade 8		
Improvement	↑	17 (61%)
No Change	↔	6 (21%)
Decline	↓	5 (18%)
Total		28 states
Grade 10		
Improvement	↑	12 (52%)
No Change	↔	3 (13%)
Decline	↓	8 (35%)
Total		23 states

NOTE: Data obtained from 35 states (and the District of Columbia) that administered the same achievement test in 4th grade, 8th grade, or 10th grade, in either math or reading.

States are reporting gains in reading . . .

Percentage of states reporting gains in reading in 1998–1999

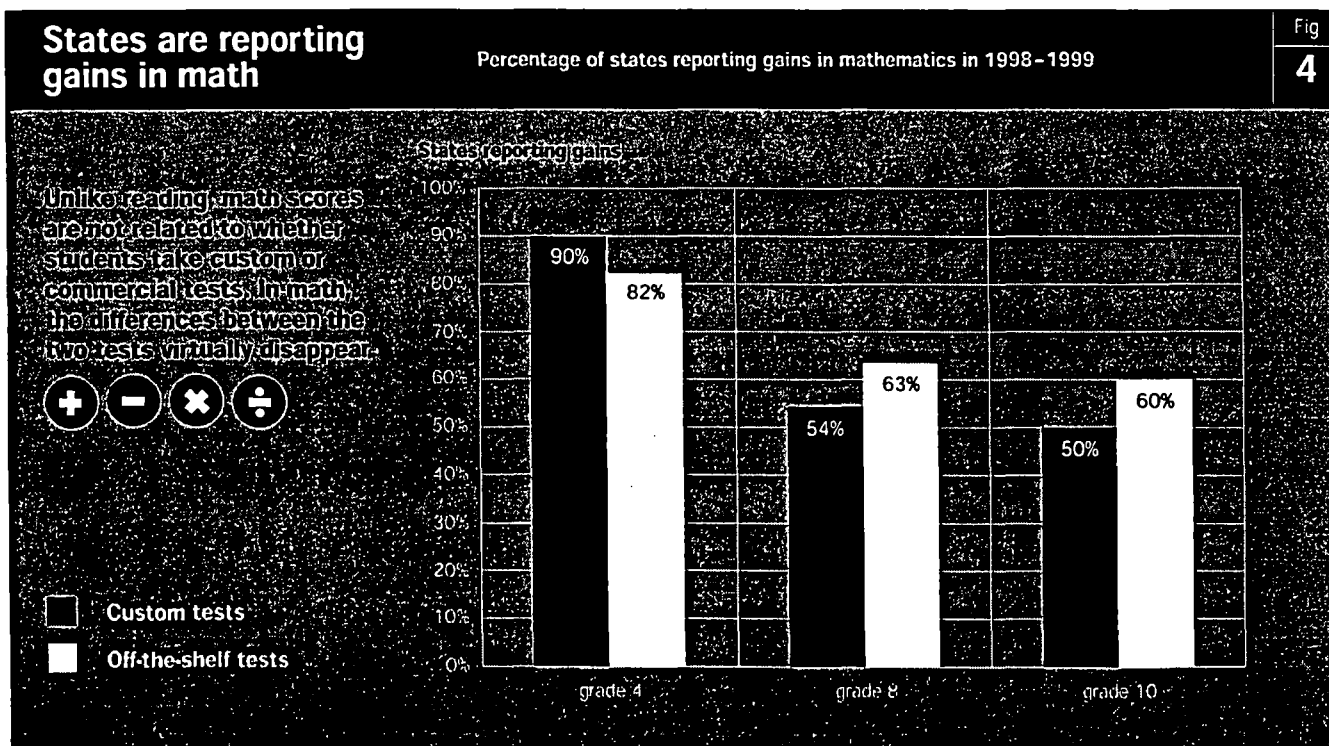
**Fig
3**



The fact that different kinds of state tests produce different results in reading is intriguing.

tests are more in synch with the curriculum taught in classrooms ("alignment" is the buzzword), allowing low-performing schools in one year to pinpoint areas of deficiency and improve in the following year. If that were true, however, one would also expect math scores to be related to the type of test. But they are not (see Figure 4).⁸

Achievement tests are growing in importance. Parents surely want to know if their children are likely to bring home improving test scores merely because of the type of test that is given instead of true improvement in reading skills. Teachers, principals, and policymakers would like to know too. In future years, with more state test data to analyze, researchers should be able to look into this issue in greater depth and confirm or deny whether custom tests hold an advantage over off-the-shelf achievement tests.



Part

II

A CLOSER LOOK AT MATHEMATICS ACHIEVEMENT



A SLUMP IN MATH GAINS BEGINS AFTER FOURTH GRADE and extends through high school on both national and state tests. The middle-grade slump also appears on the most prominent international test, TIMSS, as the relative ranking of American students falls precipitously after fourth grade. No other country has a sharper drop in math ranking than the United States. A British publication, *The Economist*, concluded, "The longer children stay in American schools, the worse they seem to get."⁹ This overstates the case. Older students have made gains in learning. The slump is not in absolute achievement, but in the pace of improvement. It decelerates after fourth grade.

No other country
has a sharper drop
in math ranking than
the United States.

Why the middle-grade slump?

Researchers who have studied TIMSS data offer several theories for why this is happening. One argument is that the slump is an artifact of the TIMSS test. Many of the European countries in the TIMSS high school sample include students who are in their thirteenth or fourteenth year of schooling, the equivalent of the freshman and sophomore year of college in the United States.¹⁰ This clearly is an unfair comparison. But it doesn't explain why the slump is also apparent on national and state tests in the United States, nor why it exists between fourth and eighth grades.

Another theory is that student motivation plays a role in performance. In the words of Mark Reckase of Michigan State University, the NAEP is a "drop from the sky test."¹¹ Students are given the test without warning or preparation, unlike the SAT or Advanced Placement tests. The NAEPs are also low stakes tests, meaning that students don't pay a price for poor performance or receive rewards for doing well. The slump may reflect young children's intrinsic motivation to do well on any test that their teacher happens to give them—and the inevitable waning of this innocent impulse in the teenage years. An analysis of extended response items on the 1996 NAEP revealed that six percent of fourth graders,

thirteen percent of eighth graders, and twenty-five to thirty percent of twelfth graders left items blank or gave "off-task" answers (for example, used the test sheet for art work).¹²

A falling dropout rate since the early 1970s could also be depressing scores of older students. If students who would have left school two decades ago are now part of the NAEP sample of seventeen year olds—and if these students are also low achievers—their presence in school would hold down more recent scores. Like questions about the validity of TIMSS high school samples, however, this argument does not explain the portion of the slump that appears before high school.

Are tracking and ability grouping to blame?

A group of TIMSS researchers speculate that tracking and ability grouping are the culprits, pulling down U.S. performance by exposing too few students to advanced math.¹³ Tracking is when schools group students by ability or prior achievement into separate classes and offer them a different curriculum. It is usually found in high schools and middle schools. Ability grouping refers to the same practice, but the groups are taught a different curriculum *within* the same class. Ability grouping is primarily an elementary school practice.

Although high-scoring Asian and European countries typically do not differentiate curriculum before high school, the case against tracking and ability grouping is weak. Meta-analyses, which combine the findings of many studies on the same topic, calculate that tracking has zero effect on achievement. Ability grouping's effect is consistently positive, especially in math.¹⁴ In the United States tracking in mathematics isn't commonplace until students are split off for algebra or pre-algebra, usually no earlier than seventh grade—and too late to be held responsible for an achievement decline that begins after fourth grade. In 1996, for example, about 40 percent of fourth grade teachers in NAEP said they form ability groups for math, but only 18 percent said students were assigned to their class based on ability (tracking). At the eighth grade, the figures were 24 percent for ability grouped math and about 60 percent for tracked math. At both grade levels, students in the tracked classes registered higher math scores than the untracked students.¹⁵

Other evidence from abroad casts doubt on the tracking indictment. Germany begins tracking in all subjects at age eleven, but it doesn't have the slump. The United States decline in international ranking is steeper in science than math.¹⁶ But science is rarely tracked in American middle schools; 82 percent of the eighth grade science teachers in NAEP say they teach untracked classes.¹⁷ In American primary grade classrooms, ability grouping is a near universal practice in the teaching of reading, unparalleled in other countries. Yet American fourth graders score near the top in reading, higher than any other American age group on an international assessment.¹⁸ And when high-scoring European and Asian countries begin tracking—in high school—they track far more severely, separating students by school, not by classroom as in the United States.

Yet they continue to outdistance American achievement in the high school grades.¹⁹

What about curriculum and instruction?

Other explanations point to particular aspects of curriculum and instruction, though some of the reasons offered for the poor U.S. results are contradictory. For example, some researchers have worried that the American math curriculum in grades five to eight covers so many topics that it is fragmented and shallow, "a mile wide and an inch deep." But researchers also complain that it focuses too narrowly on arithmetic (suggesting it may not be so fragmented after all) and recommend that geometry and statistics receive more attention (thereby adding to the diffuse nature of the curriculum).²⁰

The TIMSS data do not include measures of students' previous learning. As a result, it is not possible to see how classroom practice affects changes in test scores. Whether curriculum and instruction affect achievement or vice versa is difficult to determine. For example, studies of Japanese and American math books show that eighth grade textbooks in the United States devote time to arithmetic. Japan's eighth grade books don't include arithmetic.²¹ Are the books causing differences in math proficiency or responding to pre-existing differences? Can Japanese texts drop arithmetic in eighth grade because it's safe to assume that students have mastered it by then, whereas American texts can't make that assumption? Or are U.S. middle school textbooks holding students back by presenting mathematics that students have already learned?

Studies of instruction suffer from similar problems. TIMSS videotape studies of Japanese and American classrooms have detected national differences in teachers' instructional styles.²² A thumbnail description: American teachers show students how

It is not teachers' instructional choices, per se, that are impeding United States achievement, but a cultural "system" of teaching that defines what teachers and students should be doing in classrooms.

to complete a particular procedure, then assign lots of practice problems that students complete while working alone. Japanese teachers pose a problem, work through alternative solutions that students generate, often with students meeting in small groups, then engage the entire class in additional problems that delve deeply into the topic.

A plausible hypothesis is that Japanese teachers employ strategies that are more effective and American teachers, less effective. An equally plausible position is that Japanese and American teaching styles are largely irrelevant to the two nations' achievement differences. Achievement data were not collected as part of the videotape study, so researchers are unable to link the observed teaching strategies to how much students learned. In the TIMSS data that allow for research on achievement, variables depicting teaching methods possess weak explanatory power, for example, accounting for less than 5 percent of the TIMSS score difference between a consortium of high-achieving school districts in the United States and the United States as a whole (the socioeconomic composition of classrooms explains 50 percent).²³ This is not surprising considering the vast literature on instructional methods that preceded TIMSS. Decades of studies, many with higher quality data than TIMSS, some even with randomized assignment of subjects to experimental conditions, have failed to single out the instructional approaches attributed to Japanese teachers as exceptional.²⁴

Then what causes the slump?

James Stigler and James Hiebert, researchers who have studied the TIMSS videotapes, stress that it is not teachers' instructional choices, per se, that are impeding United States achievement, but a cultural "system" of teaching that defines what teachers and students should be doing in classrooms.²⁵ Classrooms are not hermetically sealed off from the national culture.

Indeed, persuasive explanations for the middle-grade slump point to facets of American culture that discourage academic achievement in adolescence.

Differences in teaching could be reflecting differences in the importance of academic study at age thirteen in Japan and the United States. Almost two-thirds of Japanese eighth graders attend *juku*, special schools offering intensive after-school instruction in basic skills so that students may do well on high school entrance exams, given near the end of ninth grade.²⁶ This shifts the burden of teaching basic skills and reinforcing skills through constant review out of the regular classroom and onto the *juku*. Cultural incentives are geared toward achievement. Japanese students labor to get into the most prestigious high schools because the high school of attendance is highly predictive of the college and career that follow. The entrance exams loom immediately ahead for eighth graders. The Japanese exams touch each student's future in a way that no American thirteen year old can begin to comprehend, motivating the Japanese student to take the academic demands of eighth grade very seriously. Would instruction in American math classes be different in such an environment?

Other studies suggest that American schools could demand much more of students. A recent analysis from the University of Pennsylvania shows that students in the TIMSS countries that slump from fourth to eighth grade aren't assigned as many minutes of homework as students in the other countries.²⁷ In addition, countries that succeed in maintaining adolescents' achievement require students to demonstrate mastery of the curriculum before graduating. Working hard in school is reinforced by both school practice and education policy.²⁸

Other aspects of teen culture also must assume some responsibility for the slump. The way American adolescents spend their

time—especially the huge number of hours working in part-time jobs, hanging out with friends, and participating in sports and other extracurricular activities—is unique in the world. Two-thirds of high school students hold down part-time jobs; one in six works more than twenty-five hours each week. In European and Asian countries, this is unthinkable. Teens already have a job: going to school. The American teenager's time is organized around activities that undermine the value of academic accomplishment.²⁹

It is unlikely that the middle-grade slump is a mirage. American schools, teachers, parents, employers, and policymakers all contribute to making academic achievement more difficult to accomplish after fourth grade.

Two different NAEPs, two different scores

Let's return to NAEP test scores. The NAEP statistics that have been cited up to this point in the report are known as "long-term trend" scores. There are in fact two sets of national scores in NAEP, produced from two different samples. (There are also state scores, but they aren't relevant to the following discussion.) The "main" NAEP test, first administered in 1990, is given to a random sample of students across the nation. It is governed by a framework that may be altered from time to time to reflect changes in curriculum or testing practices. The long-term trend test (hereafter called the "trend") consists of a set of items that are given to a separate random sample. The trend sample always takes the exact same test under the exact same conditions, making it possible, in math, to monitor the nation's progress since 1973. The stable conditions and consistent test items serve as an anchor for measuring achievement over time. Otherwise, we wouldn't know if a score increase was because students had learned more or because of changes in the test.³⁰

Press coverage rarely notes the bifurcated nature of NAEP, treating scores from the two tests as if they simply come from different pages of "the nation's report card," the nickname for NAEP. In February, 1997, when scores from the 1996 main NAEP were released, the headline in the *New York Times* declared, "National Tests Show Students Have Improved in Math." The main NAEP scores did indeed show improvement. But not the trend. When the trend scores were released later in the year, *Education Week* accurately reported, "None of the 1996 scores was different enough from the 1994 scores to be considered statistically significant." How confusing. Two NAEP tests testing the same subject in the same year produced different results.³¹

Can the same test report different results?

The following analysis compares the gains in math on the main and long-term trend assessments. Both samples are nationally representative. If the tests encompass the same mathematics, they should produce similar scores. If the scores are different, then a divergence in either test content or protocol may have caused the discrepancy. Keep in mind that the trend NAEP tests students at certain ages (nine, thirteen, and seventeen) while the main NAEP tests at certain grades (four, eight, and twelve).

Results from the two tests have diverged (see Figures 5, 6, and 7). From 1990 to 1996, fourth graders gained eleven points on the main test. In the same time period, the math performance of nine-year-old fourth graders declined by one point on the trend test, opening a twelve point scale score gap between the two tests. Eighth graders gained nine points on the main, but on the trend scores for thirteen-year-old eighth graders were unchanged, opening a nine point gap. Twelfth graders improved by ten points on the main, whereas seventeen year olds in

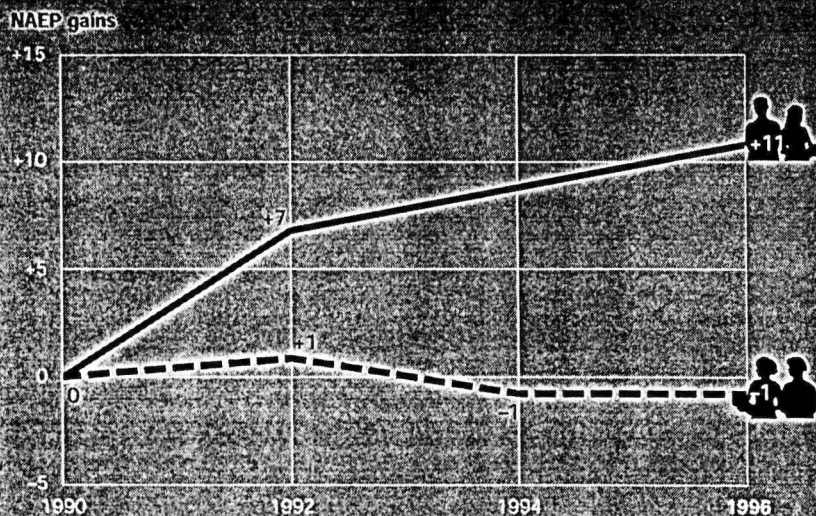
One test, the main NAEP, is telling us that students are getting better at math, while the other, the long-term trend NAEP, is saying that math achievement remains flat.

Two national tests give sharply different impressions of math performance

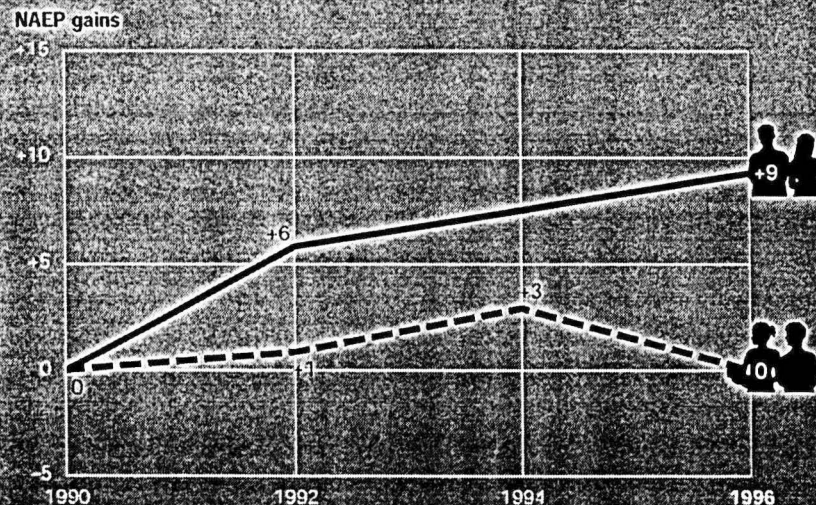
Math scores as measured by the National Assessment of Educational Progress (NAEP) for age 9/grade 4, age 13/grade 8, and age 17/grade 12

The main NAEP test shows substantial gains in math scores between 1990 and 1996. The trend test shows very slight to no gains.

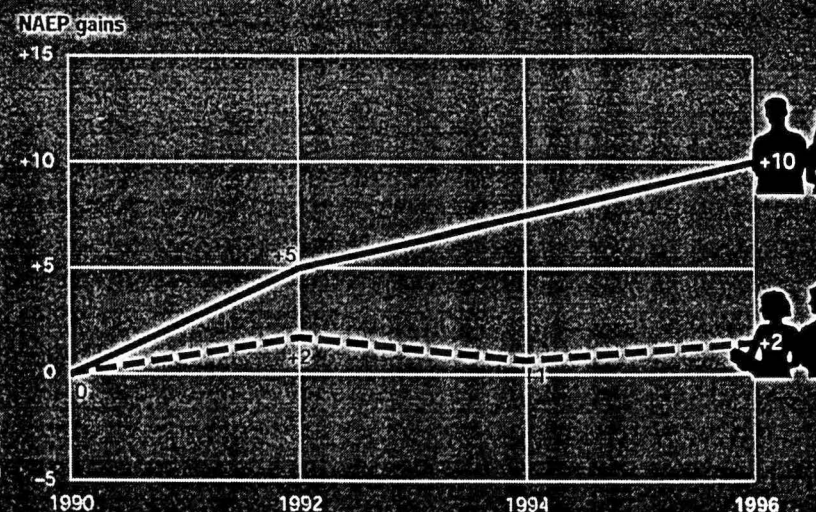
— Main (grade 4)
- - - Trend (age 9 in grade 4)



— Main (grade 8)
- - - Trend (age 13 in grade 8)



— Main (grade 12)
- - - Trend (age 17 in grade 12)



twelfth grade gained only two points on the trend, an eight point difference.³²

The two tests give sharply different impressions of math performance. One test, the main NAEP, is telling us that students are getting better at math, while the other, the long-term trend NAEP, is saying that math achievement remains flat. To put the issue in a proper context, one can refer back to Figure 2 and see that—at all three grade levels—the gulf that developed between the two tests between 1990 and 1996 is as large, and sometimes larger, than the gains registered in nearly three decades of NAEP testing.

Why the discrepancy?

As pointed out above, the main NAEP was designed to keep abreast of changes in math curriculum. The innovations include short-answer and extended-response items on which students may receive partial credit. The main NAEP appears to contain a larger proportion of geometry problems than the trend, at least based on the items available to the public on the NAEP website (at fourth grade, 22 percent of items from the main are on geometry versus 6 percent of items from the trend; at 8th grade, 26 percent versus 12 percent; and at twelfth grade, 23 percent versus 15 percent).³³ Since 1990, calculators have been provided for some items on the main NAEP, and geometric shapes are given to students for questions that ask them to determine the relationship between simple and complex figures.

The changes were made to bring NAEP in line with standards issued by the National Council of Teachers of Mathematics (NCTM) in 1989. The NCTM standards have been controversial, triggering what the media has dubbed “the math wars” between NCTM’s advocates and critics across the country. The changes in NAEP mirror many of the flash points in the math wars—the increased

emphasis on new topics at the expense of computation, the use of calculators, the reliance on manipulative materials to convey mathematical concepts. These elements have been especially controversial as NCTM prescriptions have been adopted into classrooms.

Regardless of the position one takes in the NCTM debate, it is important to know that “the nation’s report card” consists of two tests that are apparently measuring two different kinds of mathematics. One can argue that both tests are doing their jobs. The main NAEP reflects the latest thinking in math education; the long-term trend anchors the test so that today’s student performance can be compared to students of the past. There is still a lot of overlap in the tests, but no one should again read a headline about NAEP math scores going up or down without asking which NAEP scores are being reported.³⁴

What are kids learning in math?

What kinds of math are students learning?

To answer this question, we gathered data on how students performed on various items on the long-term trend. For each item, the trend reports the math topic assessed and the percentage of students answering the item correctly. What kinds of math problems are students missing and answering correctly? If students were performing relatively better on NCTM-endorsed topics in 1996, this would add to the evidence that differences in content distinguished the two tests after 1990.

The analysis suggests that the main test is more oriented toward NCTM-like topics (geometry and problem solving) and the trend more toward pre-NCTM topics (arithmetic).

We clustered items by math topic and computed correct response rates for each cluster. Geometry and problem solving stand out as areas in which all three age groups improved (see Table 4). From 1990–

Change in Student Achievement on Math Clusters (1990–1996)

Table
4

Age 9		
Cluster Type	Gain	Loss
Geometry (4 items)	+6	
Problem Solving (3 items)	+3	
Data Analysis (13 items)	+2	
Addition of Whole Numbers (7 items)	+2	
Division of Whole Numbers (4 items)	+2	
Multiplication of Whole Numbers (4 items)		-1
Subtraction of Whole Numbers (6 items)		-1
Age 13		
Cluster Type	Gain	Loss
Integers (3 items)	+8	
Percents (14 items)	+7	
Problem Solving (2 items)	+7	
Algebra (6 items)	+6	
Decimals (7 items)	+3	
Geometry (12 items)	+3	
Data Analysis (10 items)	+2	
Addition of Whole Numbers (6 items)		-1
Subtraction of Whole Numbers (6 items)		-2
Fractions (4 items)		-3
Age 17		
Cluster Type	Gain	Loss
Geometry (14 items)	+5	
Square Roots (2 items)	+5	
Problem Solving (2 items)	+4	
Integers (7 items)	+3	
Data Analysis (6 items)	+2	
Percents (15 items)	+1	
Algebra (7 items)	+1	
Decimals (9 items)		-1
Convert Decimals to Fractions (2 items)		-2
Multi-Step Problem Solving (3 items)		-5
Fractions (3 items)		-13

**Percent of Students
Correct on Math
Clusters (1990–1996)**

**Table
5**

<i>Age 9</i>		
Cluster Type	1990	1996
Addition of Whole Numbers (7 items)	79%	81%
Subtraction of Whole Numbers (6 items)	76%	75%
Application (7 items)	69%	69%
Data Analysis (13 items)	67%	69%
Multiplication of Whole Numbers (4 items)	65%	64%
Division of Whole Numbers (4 items)	61%	63%
Problem Solving (3 items)	50%	53%
Geometry (4 items)	22%	28%

<i>Age 13</i>		
Cluster Type	1990	1996
Addition of Whole Numbers (6 items)	94%	93%
Subtraction of Whole Numbers (6 items)	91%	89%
Data Analysis (10 items)	84%	86%
Decimals (7 items)	61%	64%
Geometry (12 items)	55%	58%
Algebra (6 items)	51%	57%
Fractions (4 items)	57%	54%
Problem Solving (2 items)	47%	54%
Integers (3 items)	36%	44%
Percents (14 items)	36%	43%

<i>Age 17</i>		
Cluster Type	1990	1996
Addition of Whole Numbers (3 items)	97%	97%
Integers (7 items)	76%	79%
Decimals (9 items)	78%	77%
Data Analysis (6 items)	73%	75%
Problem Solving (2 items)	68%	72%
Geometry (14 items)	62%	67%
Percents (15 items)	64%	65%
Fractions (3 items)	76%	63%
Square Roots (2 items)	53%	58%
Algebra (7 items)	46%	47%
Convert Decimals to Fractions (2 items)	39%	37%
Multi-step Problem Solving (3 items)	30%	25%

1996, nine year olds made their greatest gains in geometry and problem solving and notched small increases in data analysis and addition and division of whole numbers. Thirteen year olds racked up impressive gains in several areas: integers, percents, problem solving, algebra, decimals, geometry, and data analysis. Troubling, however, is a drop in thirteen year olds' performance with fractions, which should be learned by fifth grade. Seventeen year olds scored solid gains in geometry, square roots, problem solving, integers, and data analysis. But the decline that thirteen year olds evidenced with fractions shows up as even more severe with seventeen year olds.

Areas of greatest gain are also students' weakest areas of performance, most notably with the two youngest age groups (see Table 5). Nine year olds registered impressive gains on geometry items, for example. But their knowledge of geometry remains abysmal. On the four items tapping knowledge of geometry, the correct response rate in 1996 was 28 percent. The four areas of greatest gain for thirteen year olds (integers, percents, problem solving, and algebra) are four out of their five weakest areas.

Table 5 delivers some discouraging news about American students' knowledge of arithmetic, the most fundamental branch of mathematics. Addition and subtraction with whole numbers appear to be under control by age thirteen. But those are the only areas of arithmetic where mastery is indicated at thirteen, just as students stand at the threshold of high school. The percentage of students correctly answering items is disappointingly low for decimals (64 percent), fractions (54 percent), integers (44 percent), and percents (43 percent). The cluster called "algebra" (57 percent) tests such rudimentary skills as adding monomials (e.g., $6n + 9n = ?$), a concept usually covered in a pre-algebra class.

On this test, the average thirteen year old performs at about a 50 percent proficiency level on fractions, decimals, percents, and integers. Seventeen year olds score about 70 percent on the same content. That isn't good. About one-fourth of students take algebra in eighth grade. Many people now call for *all* eighth graders to take algebra. But students must first learn arithmetic, including a thorough mastery of fractions, decimals, integers, and percents. The mastery of arithmetic is non-negotiable. This is not because those who insist upon it are pre-historic thinkers. It's simply the way math works. In math, if you don't learn arithmetic, you are not only incapable of using mathematics in everyday life, but you also can't possibly move on to learn algebra and other advanced mathematics. Students who try to learn higher math without a solid grounding in arithmetic might be able to memorize formulas—they might even be able to go through the motions on some mathematical procedures—but they'll never gain a deep conceptual understanding of the subject.

What are the policy implications?

The policy implications are crystal clear. Calling for all eighth graders to take an algebra course is putting the cart before the horse. A more sensible goal is for all students to master arithmetic by the end of eighth grade, if not before. National goals should focus on learning. The courses students take are merely means to that end. President Clinton's recent call for all students to be able to read by the end of third grade has moved the nation. Thank goodness he didn't declare a goal of enrolling all students in a reading course by the end of third grade. It is time for a national commitment to all students learning arithmetic. Only if students master arithmetic, can learning algebra follow.

Part



TEACHERS AND
PRACTICE
AFFECTING
ACHIEVEMENT

*Commission on
the Teacher Workday*



CALCULATORS: DO THEY HELP OR HURT MATH ACHIEVEMENT? The use of calculators in elementary school classrooms generates intense debate. The National Council of Teachers of Mathematics (NCTM) first expressed its support for calculators in 1974. It reissued the endorsement in 1980, calling for schools to “introduce calculators and computers into the classroom at the earliest grade practicable.”³⁵ In 1989, the NCTM recommended that calculators be used in grades K–4, admonishing schools, “clearly, paper and pencil computations cannot continue to dominate the curriculum.” In 1990, the National Research Council issued “Reshaping School Mathematics,” a report that urged “the replacement of most paper-and-pencil drills with calculator-based instruction” starting in kindergarten. Because calculators “diminish the role of routine computations,” the report advised, “young children can instead be given activities with calculators that emphasize discovery and exploration.”³⁶

Critics of calculators believe they may impede learning, especially when used by students who haven’t memorized basic facts (for example, $2+2$, 6×7 , $14-9$) or learned how to add, subtract, multiply, and divide on paper. The risk is that calculators will become a crutch for students. Worse yet, young children may never acquire a deep understanding of how numbers work if, on first exposure to mathematical operations, they merely push buttons to arrive at answers.³⁷ Surveys show that professors in schools of education believe calculators should be used more often in teaching math. But teachers want them used less, and a large majority of the public thinks that they shouldn’t be used at all with young children.³⁸

What does the research say?

Research thus far hasn’t resolved the dispute. Suydam’s 1979 review of the literature concluded that calculators do not undermine basic skills. Two meta-analyses of the research give

qualified support for calculators. Hembree and Dessart (1985) studied 79 research reports from programs implemented in grades K–12. They found that using calculators had neither a positive nor negative effect on the paper-and-pencil skills of low- and high-ability students. For average students, the effect was positive in most grades, but negative for fourth graders. Hembree and Dessart concluded that for grades other than fourth, calculators positively affect math achievement.³⁹

Brian A. Smith (1997) reviewed twenty-four studies published from 1984 to 1995 and also found a positive effect for calculators. Few of the studies involved students at the fourth grade or lower, however, and none of these examined calculators’ effect on the acquisition of computation skills. Smith limits his recommendations accordingly. He cautions that calculators should only be used “on a limited basis” in the elementary grades, for exploratory purposes and problem-solving activities.⁴⁰

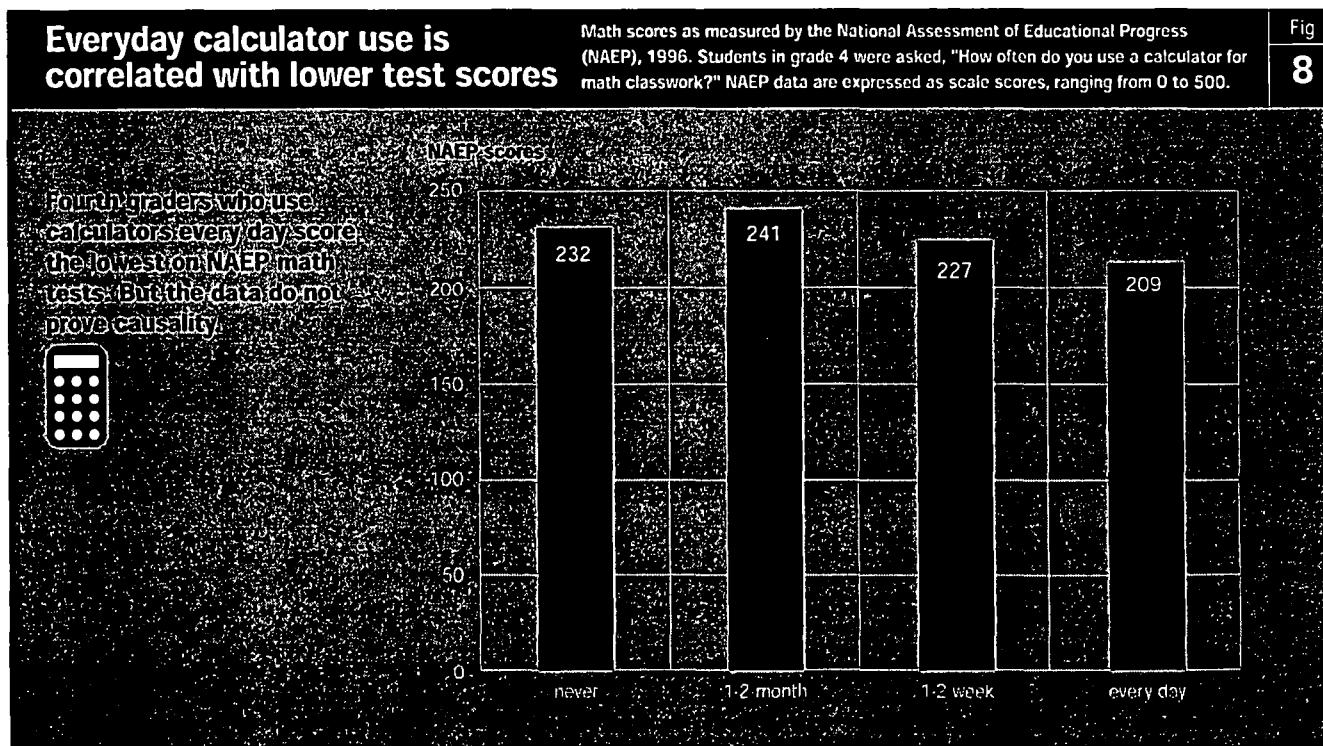
Meta-analysis is excellent for summarizing research findings but is limited by the quality of original studies. The literature on calculators supports their use. Advocates of calculators would be more persuasive, however, if the calculator studies were of higher quality. Most of the studies were short in duration, lasting only a few weeks, and lacked sufficient controls to equalize comparison groups or to screen out other influences on student outcomes. Some of the studies trained teachers in the experimental groups (those with calculators) but not in the controls. Others allowed students in the non-calculator group to be aware that students in other classrooms were using calculators during the experiment. Letter grades or scores on teacher-made tests sometime served as outcome variables. This does not instill confidence in the studies' findings.

Are test scores related to calculator use?

The test results cited in this report, from NAEP and TIMSS, provide an interesting perspective on the calculator issue. On both tests, students are asked how often they use calculators in class. And on both tests, calculator use is correlated with lower math scores. Nine year olds who report that they use calculators in class every day have the lowest NAEP scores of any response category (see Figure 8). Students who use calculators only once or twice per month have the highest scores. A similar pattern is evident on TIMSS (see Table 6). Frequent calculator use is negatively correlated with math achievement in several countries. A vast majority of students in the highest-scoring nations (Japan, Singapore, Korea) report that they never use calculators in math class.

Causality cannot be inferred from these data. Low student achievement may just as

Advocates of calculators would be more persuasive if the calculator studies were of higher quality.



Low student achievement may just as easily “cause” calculator use as the other way around.

easily “cause” calculator use as the other way around. Imagine a teacher facing mandates that students know how to convert fractions to decimals and solve multi-step problems using percents. But on the first day of school, the teacher finds that students can’t even add or subtract whole numbers. Out come the calculators.

Great care must be taken when interpreting studies that try to gauge the effects of an educational practice without taking into account students’ initial test scores. Evaluated inappropriately, classroom practices intended to be compensatory can appear harmful. Teachers may use a computer drill and practice program with low-achieving students, for example, but when these students’ low test scores are compared to those of students using computers for different purposes, it does not mean that the drill and practice software “caused” the low achievement.

Two more important statistics are found in the NAEP data. First, the negative correlation

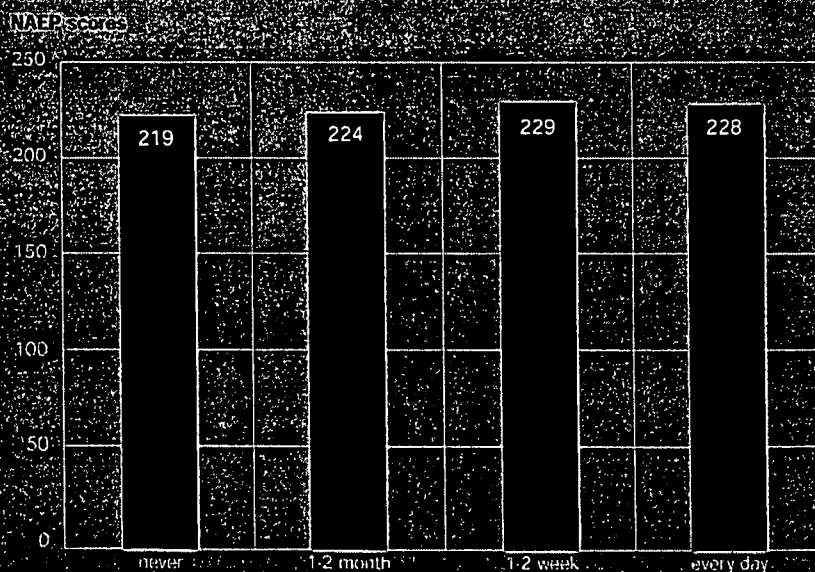
between calculator use and NAEP scores evaporates when teachers are asked about the frequency of calculator use (see Figure 9). Teachers who say that their students use calculators every day have students with high test scores. What’s going on? Doesn’t this contradict the student data in Figure 8? Not necessarily. Teachers were asked, “How often do your students use calculators in class?” Only about 5 percent of teachers responded “every day.” Teachers may have estimated how often the class as a whole uses calculators in a lesson. But 33 percent of students answered “every day” to the question, “How often do you use a calculator for math classwork,” which could include independent seat work, group activities, or even games. Also consider that if a teacher reports a frequency of once or twice per month, all of the students are coded that way, even though a significant portion of the class might use calculators more often.

Teacher reports of calculator use show a different story

Math scores as measured by the National Assessment of Educational Progress (NAEP), 1996. Fourth grade teachers were asked, “How often do students use a calculator?” NAEP data are expressed as scale scores, ranging from 0 to 500.

Fig
9

Teachers who say that their fourth grade students use calculators every day have students with high test scores. This contrasts with the trend in the student-reported data (Figure 8).



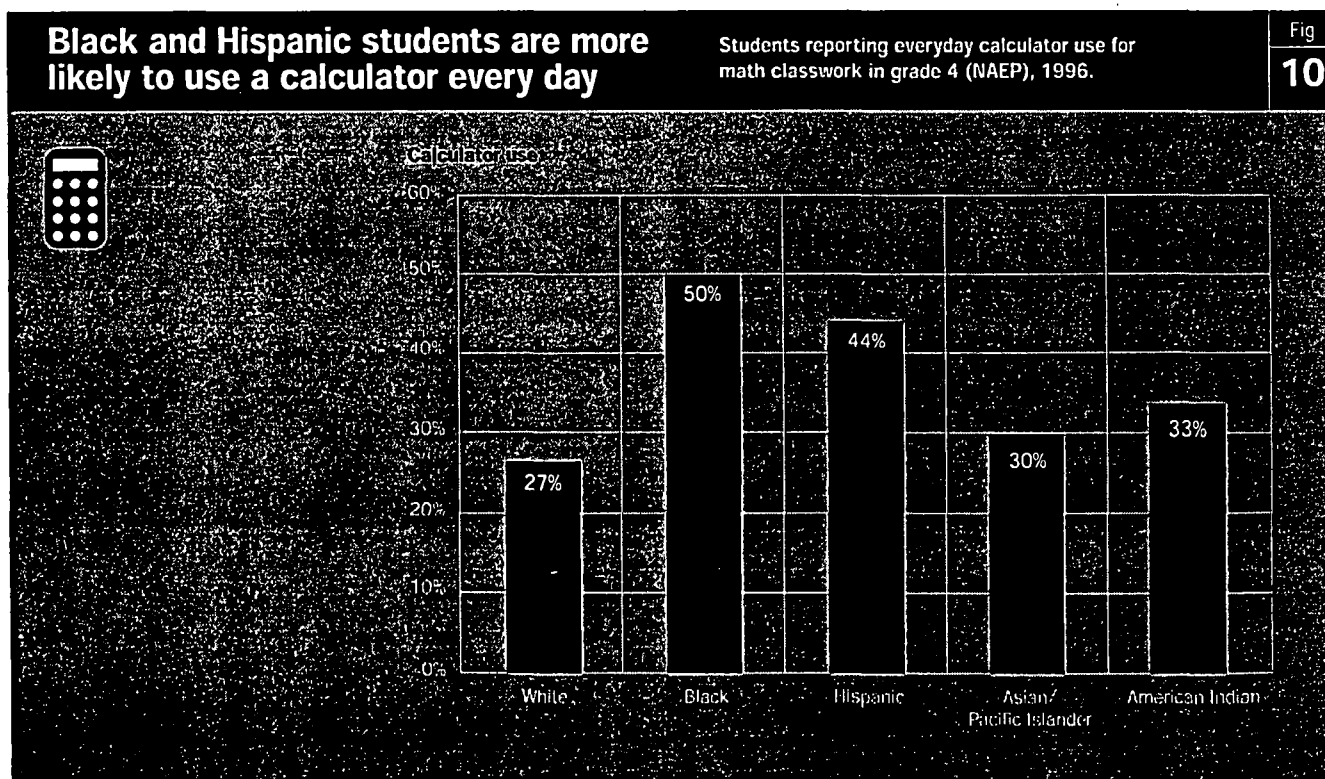
A second statistic pertains to equity. African American and Hispanic students are about twice as likely as white students to report that they use calculators every day (see Figure 10). With daily calculator use also associated with lower math scores on the NAEP, this raises a troubling new perspective on the "digital divide" that deserves serious attention. We need to test and verify the benefit of new technologies before they become central elements of classroom practice. Providing access to new technologies, only to learn later that they hinder learning, does not advance the cause of educational equity.

What are the policy implications?

More information is needed to sort out the cross-currents in the NAEP data on calculator use. And, as already pointed out, more

high-quality research needs to be conducted on this topic before anyone can declare with much confidence that calculators are helpful or harmful in learning mathematics. The National Science Foundation has financed the creation of math programs, later endorsed by the Department of Education, that promote calculator use in the early grades. Little is known about the impact of calculators on the basic computation skills of children below fourth grade. Both agencies should officially adopt a neutral stance on the question and support the kind of scientifically sound research that could objectively evaluate the claims of both calculator advocates and their critics.

The NAEP testing procedures warrant an additional comment. As mentioned in the second section of this report, calculators are provided to students for a portion of the



Frequency of Calculator Use in Math Classwork
(Student Responses, TIMSS 1994–95, Grade 4)

Table
6

Never

Country	% Students	Mean Score
Australia	25	545
Canada	51	532
England	15	510
Hong Kong	95	593
Israel	24	522
Japan	89	602
Korea	93	616
Netherlands	90	579
New Zealand	18	495
Norway	89	510
Singapore	96	634
United States	34	534

Some Lessons

Country	% Students	Mean Score
Australia	67	556
Canada	43	546
England	74	524
Hong Kong	3	492
Israel	60	541
Japan	11	561
Korea	5	579
Netherlands	10	592
New Zealand	61	512
Norway	8	498
Singapore	3	511
United States	53	565

Most Lessons

Country	% Students	Mean Score
Australia	8	512
Canada	6	493
England	11	474
Hong Kong	2	-
Israel	16	525
Japan	1	-
Korea	2	-
Netherlands	0	-
New Zealand	21	475
Norway	3	429
Singapore	1	-
United States	13	507

main and state NAEP tests. The NAEP website posts sample items, and a few that fourth graders take are listed below. They are startling in their simplicity. Research is needed to address the following questions: Why do fourth graders need to use calculators on these items? What skills or knowledge are being measured when students are allowed to use calculators on such simple math problems? How are main NAEP scores affected by calculator use, and have calculators contributed to the main NAEP scores' divergence from the long-term trend scores? ⁴¹

1. Kitty is taking a trip on which she plans to drive 300 miles each day. Her trip is 1,723 miles long. She has already driven 849 miles. How much farther must she drive?
(A) 574 miles (C) 1,423 miles
(B) 874 miles (D) 2,872 miles

Did you use the calculator on this question?

☐ Yes ☐ No

2. A whole number is multiplied by 5. Which of these could be the result?
(A) 652 (C) 526
(B) 562 (D) 265

Did you use the calculator on this question?

☐ Yes ☐ No

3. Every hour, a company makes 8,400 paper plates and puts them in packages of 15 plates each. How many packages are made in one hour?
(A) 560 (C) 17,857
(B) 8,385 (D) 126,000

Did you use the calculator on this question?

☐ Yes ☐ No

4. Martha planted 32 seeds. She put 8 seeds in each row. How many rows did she plant? Which of the following could Martha use to solve the problem correctly?
(A) $32 + 8$ (C) 32×8
(B) $32 - 8$ (D) $32 / 8$

Did you use the calculator on this question?

☐ Yes ☐ No

ARE “EXEMPLARY SCHOOLS” TRULY EXEMPLARY? The federal government’s Blue Ribbon Schools Program (BRSP) was launched in 1982. Secretary of Education Terrence Bell explained in *Education Week*, “We are not setting out to find the best schools in America. We are simply looking for distinguished schools that are doing an exceptionally fine job.”⁴²

Since then nearly 4,000 schools have been selected, receiving a flag that they proudly wave as a sign of national recognition. The awards alternate—elementary schools one year, middle and high schools the next.

The selection process has several stages. Public schools apply to their state education agency, private schools to The Council for American Private Education. These agencies then screen applicants and forward nominations to the U.S. Department of Education. The Bureau of Indian Affairs and Department of Defense also nominate schools under their authority. Some states nominate candidates for the national award in conjunction with their own school recognition program. The Department of Education convenes the National Review Panel to evaluate the quality of the schools as represented in the application packets. About half of the applicants are selected for site visits to confirm information in the application. For the 2000 Blue Ribbons, 198 out of 202 visited schools won an award.⁴³

In recent years, the Department of Education has characterized the BRSP as a catalyst for self reflection, planning, and goal setting, all in an effort to support local school reform. The Department also advertises the program as encouraging schools to follow “best practices,” educational strategies that are solidly grounded in research. These objectives are blended with the notion of

educational excellence to produce an identity for the program that is summarized on the BRSP website (www.ed.gov/offices/OERI/BlueRibbonSchools) as follows:

Since 1982 the Blue Ribbon Schools Program has celebrated many of America’s most successful schools. A Blue Ribbon flag waving overhead has become a trademark of excellence, a symbol of quality recognized by everyone from parents to policy-makers in thousands of communities.

The emerging secret of the Blue Ribbon Schools Program is its power to stimulate and focus school improvement initiatives. “The Blue Ribbon nomination package pulls together what is cutting edge in education today,” says one educator. “The school that goes through the process is examining itself in terms of what works in the best schools in the country.”

“Regardless of the direction you’re going with in school improvement, the Blue Ribbon program gives you a vehicle to get on track. It gives you a framework and standards so you know where you stand,” says one principal. Schools are finding that the richness and scope of the Blue Ribbon nomination process allows them to reflect, “not just on the surface level, but down deep.” One educator says, “If you want a tool for

The bottom line is this: about one-fourth of these schools can honestly claim that their Blue Ribbon stands for academic excellence.

Achievement of 1999 Blue Ribbon Elementary Schools (Number of Schools)

Table
7

State	Total	Top 10%	Bottom 50%
California	39	12	9
Pennsylvania	10	4	0
Michigan	9	1	3
Indiana	4	0	2
Washington	4	1	1
Illinois	3	1	1
New Mexico	1	0	1
Total	70	19	17

NOTE: *Test scores from 1998–99 school year, adjusted for socioeconomic status (SES). Public schools only. Blue Ribbon awards given in 1999.

Achievement of Federal Blue Ribbon Schools in Pennsylvania (Number of Schools by Decile)

Table
8

Decile	Elementary Schools	Middle Schools	High Schools
10th	4	2	2
9th	5	1	1
8th	1	0	1
7th	0	0	0
6th	0	0	0
5th	0	0	0
4th	0	0	1
3rd	0	0	0
2nd	0	0	1
1st	0	0	0
Total	10	3	6

NOTE: Adjusted test scores (PSSA) from 1998-99 school year, which state officials compute to compare schools of similar socioeconomic status (SES). Public schools only. Blue Ribbon awards given in 1998 (middle schools and high schools) and 1999 (elementary schools).

school improvement, there's nothing out there better than the Blue Ribbon Schools Program. It's the best you can find."

How do Blue Ribbon Schools stack up?

Notwithstanding the fact that Blue Ribbon Schools are selected on criteria that include but are not restricted to achievement, how do they compare on state tests in reading and math? One would not expect winners to be the highest achieving schools, perhaps, but certainly schools waving the BRSP's "trademark of excellence" should be near the top in academic achievement.

The following analysis examines the academic performance of Blue Ribbon schools in seven states, using the results from each state's test of reading and math achievement. To put everyone on an equal playing field, we statistically adjusted scores to com-

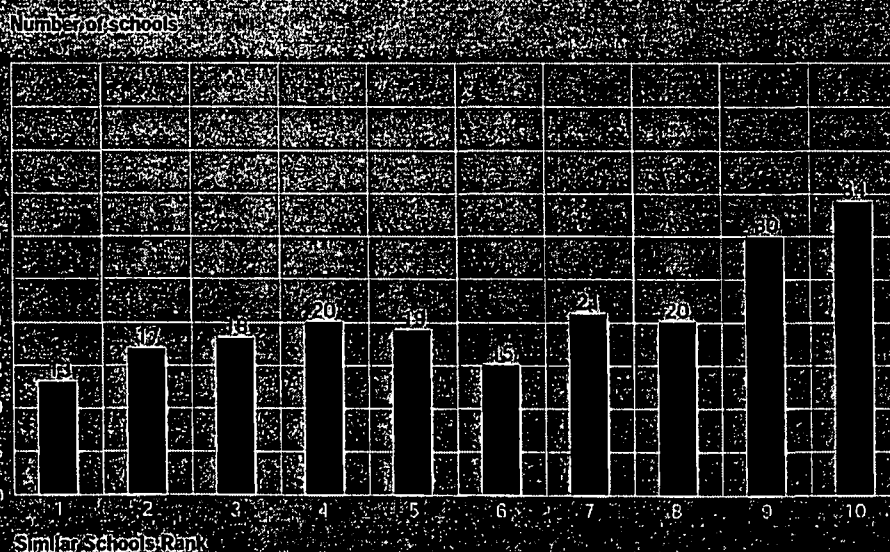
pare schools serving students of similar income levels (that is, we used an SES-adjusted score). This is standard practice when comparing school test scores. Finding out that Blue Ribbon schools in poor neighborhoods score lower than the average school in wealthy neighborhoods is hardly surprising. In the analysis, if the state had already computed SES-adjusted scores for schools, we used the state's adjusted score. If it hadn't, we computed our own using the percentage of each school's students participating in the free and reduced lunch program (an income-based program). The important thing to know is that the following analysis compares Blue Ribbon schools to schools that serve students of similar socioeconomic levels.⁴⁴

The results are striking (see Table 7). Only nineteen of these seventy Blue Ribbon elementary schools score in the top 10 percent

California's Distinguished Schools aren't necessarily high achievers

Fig
11

More than a third of California's 1998 award-winning elementary schools scored below average for schools of similar demographic characteristics.



California compares State Schools with similar schools of similar demographic characteristics and achievement. (Source: California Department of Education, 1999)

of similar schools in their respective states. Seventeen schools score in the bottom 50 percent, meaning their students score lower on reading and math tests than the average school with a similar population. And the remaining thirty-four schools score somewhere between these two groups, from the sixth to the eighth deciles, above average but not particularly outstanding. The bottom line is this: about one-fourth of these schools can honestly claim that their Blue Ribbon stands for academic excellence. Half of the schools can claim above-average academic standing, but not at the highest levels of performance. For the final one-fourth of schools, the Blue Ribbon may stand for an educational quality that is deserving of honor, but it is a quality quite distinct from superior academic achievement.

Let's look more closely at a few states' award winners, with an eye toward discerning the priority state officials give to achievement

before they send nominees on to the federal level. Pennsylvania's selection process appears tilted toward high achievement, as its Blue Ribbon Schools are concentrated in the top two deciles of performance (see Table 8). Nine out of ten Blue Ribbon elementary schools, all three middle schools, and three out of the six honored high schools rank among the top 20 percent of similar schools in the state.⁴⁵ Michigan's award winners, on the other hand, include three elementary schools that score slightly below average, in the fourth and fifth deciles (see Table 9). These schools are located in relatively wealthy neighborhoods. Fewer than 10 percent of their students are on free lunch. Even though the schools' scores aren't bad—72 percent, 73 percent, and 77 percent of students score at a satisfactory level on Michigan's test—there are other Michigan schools with the same socioeconomic profile, with 95 percent or more

Achievement of Federal Blue Ribbon Schools in Michigan (Number of Schools by Decile)

Table
9

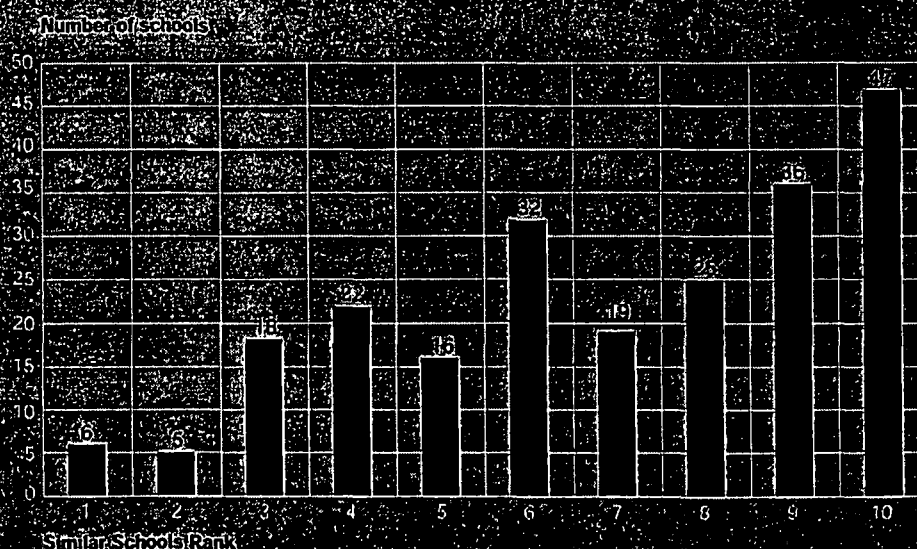
Decile	Elementary Schools	Middle Schools	High Schools
10th	1	0	0
9th	1	1	1
8th	1	0	0
7th	1	0	0
6th	2	0	0
5th	1	0	0
4th	2	0	0
3rd	0	0	0
2nd	0	0	0
1st	0	0	0
Total	9	1	1

NOTE: Adjusted test scores (MEAP HSPT) from 1998-99 school year, which we computed to compare schools of similar socioeconomic status (SES). Public schools only. Blue Ribbon awards given in 1998 (middle schools and high schools) and 1999 (elementary schools).

In 2000, high achievement still wasn't necessary in California's program

Fig
12

California's 2000 award-winning elementary schools are slightly higher achievers than the 1998 Distinguished Schools.



California's 2000 award-winning elementary schools are slightly higher achievers than the 1998 Distinguished Schools. Data from the California Department of Education, 1998-99 school year.

Achievement of Federal Blue Ribbon Schools in California (Number of Schools by Similar Schools Rank)

Table
10

Similar Rank	Elementary Schools	Middle Schools	High Schools
10th	12	0	4
9th	10	0	2
8th	5	1	2
7th	1	2	2
6th	2	0	3
5th	4	1	1
4th	4	1	0
3rd	1	0	1
2nd	0	0	0
1st	0	0	1
Total	39	5	16

NOTE: California's Similar Schools Rank ranges from 1 (lowest performing) to 10 (highest performing). Public schools only. Blue Ribbon awards given in 1998 (middle schools and high schools) and 1999 (elementary schools). Rank based on SAT-9 scores for 1998-99 school year.

of students performing at the satisfactory level, and with no Blue Ribbon.⁴⁶

How about state recognition programs?

California runs its own exemplary school program in coordination with the BRSP. The state annually identifies 5 to 10 percent of schools as Distinguished Schools and presents each school with a special flag and plaque at a statewide awards ceremony. Governor Gray Davis recently proposed tying the awards to performance on the state's testing program, with scores adjusted for student background (comparable to the analysis here). The process that selected the 2000 winners dates back to 1985. It relies on a rubric of preferred practices, "designed to reflect the consensus of the education community regarding quality education." Using the rubric, a panel of experts screened applicants on criteria that

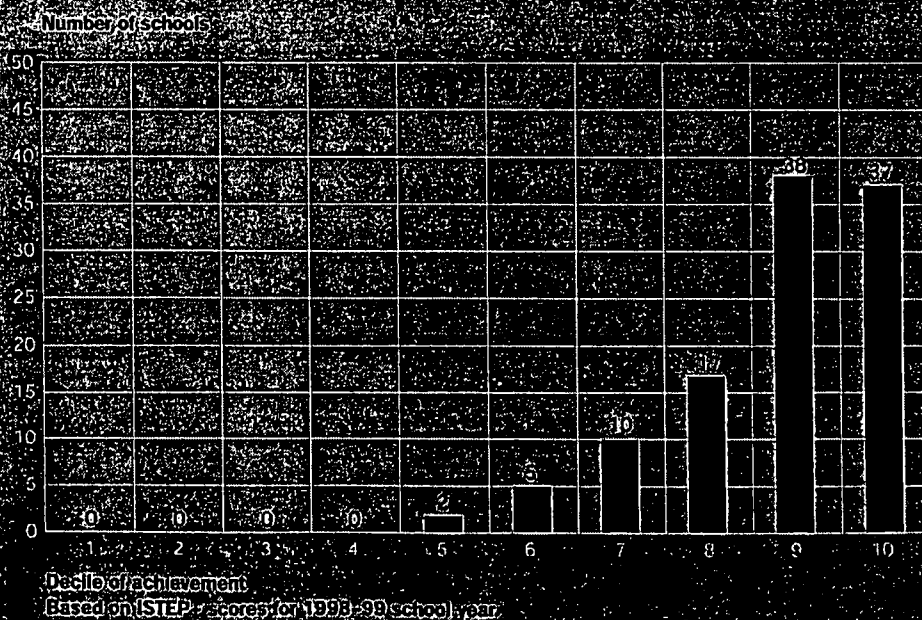
included: standards and graduation requirements, leadership, curriculum and instructional practices, support services, technology, professional development, parent and community involvement, and school safety.⁴⁷

Rewarding schools based on a rubric inevitably favors what schools do over what schools accomplish. The academic performance of the 1998 California Distinguished Schools (elementary schools) illustrates the point (see Figure 11). The winning schools were all over the map on the state's 1999 tests. California uses its own ranking system, from one to ten and called the "Similar Schools Rank," that compares schools of similar demographic characteristics. Almost one-third fell in the top two deciles of achievement, but a surprising thirty schools placed in the lowest two deciles. High achievement was obviously not a strict qualification for becoming a Distinguished School. This policy carried

Indiana's Four Star Schools are overwhelmingly high achievers

Fig
13

About 70% of Indiana's Four Star Schools in 2000 scored in the top two deciles of academic performance. In contrast to California, only 2 of 109 schools scored below the average for schools of similar demographic characteristics.



over to the state's Blue Ribbon schools as well (see Table 10).

The intent of Governor Davis to emphasize achievement in California's new state program should change this pattern. The 2000 Distinguished Schools still include a large number of low achievers, but the group as a whole has slightly higher test scores than the 1998 winners (see Figure 12). Contrast California's award winners to Indiana's, which seems to stress high academic achievement in its school recognition program. Almost 70 percent of its Four Star Schools achieved in the top two deciles of academic performance on the state's 1999 test of academic skills (see Figure 13).

What are the policy implications?

As pointed out earlier in this report, many states are now rewarding and sanctioning schools based on test scores in academic subjects. School recognition programs, whether at the federal, state, or local levels, should be changed to acknowledge the era of high standards and strong academic emphasis that American education has entered. Under current procedures it is theoretically possible for a school to receive a Blue Ribbon Schools award from the federal government at the same time it is placed on academic probation by state authorities. To become a model for states to follow, the federal Blue Ribbon Schools Program should be reformed along the following lines:

1. Eliminate the self-selecting application process, which encourages self-promotion and all-out campaigns for the award. Federal officials should collect achievement data from the states, objectively screen for the best nominees using

technically valid procedures, and make the appropriate statistical adjustments to ensure that schools serving different student populations are treated fairly. The current system gives schools with high inputs (schools in wealthier communities whose students are high scoring from day one) an advantage.

2. Drop the rubrics. The practices included in the Blue Ribbon application packet are indeed "cutting edge," but that can be a problem. Many have not been rigorously tested or verified by high-quality research as contributing to student achievement. Schools that use unpopular or out-of-fashion approaches but manage to teach children how to read and to do mathematics well should receive a Blue Ribbon award before cutting-edge schools with mediocre levels of student learning. Judge schools by their accomplishments, not their practices.
3. Place high academic achievement front and center as the defining characteristic of an excellent school. In the current BRSP application packet for elementary schools, academic achievement is the last criterion discussed, eighth on the list of eight characteristics. Officials may want to award schools for other accomplishments—most improved in math, excellent professional development, increased attendance, effective parent outreach. But these awards should be labeled for the specific quality they are applauding. When the public hears of a group of schools being designated "exemplary" by a government program, people should be able to assume that those schools have attained levels of excellence in reading and mathematics.⁴⁸

When the public hears of a group of schools being designated "exemplary" by a government program, people should be able to assume that those schools have attained levels of excellence in reading and mathematics.

SUMMARY AND CONCLUSION

THIS REPORT HAS ASSESSED THE DIRECTION of student achievement in the United States, evaluated the size and significance of gains and losses in achievement test scores, explored questions about the quality of information the American public is receiving on academic progress from state and federal testing programs, and analyzed two policies and practices associated with student achievement. The report reaches seven major conclusions:

- The academic achievement of American students has risen since the 1970s but only at a snail's pace. Gains in reading are exceedingly small; gains in mathematics are significant. Younger students, ages nine and thirteen, have made greater progress than seventeen year olds in both subjects.
- State tests indicate that achievement continued to rise from 1998 to 1999. States that write their own tests were more likely to report reading gains than those using commercial, off-the-shelf tests. The sample of states is very small, however, so more data are needed to reach any meaningful conclusions.
- It is unclear why test score gains are more difficult to accomplish with older students. Arguments that the middle-grade slump is an artifact of testing, caused by tracking, or exacerbated by a particular style of classroom instruction lack supporting evidence. The diminished status of academic achievement among American teenagers is the most persuasive explanation, and, unfortunately, subordinating achievement to other aspects of teen life is reinforced by schools, families, business, and public policy.
- A clear picture of national achievement in mathematics is complicated by the divergence of the two national NAEP tests—the long-term trend and the main—in the 1990s. The two tests appear to assess different mathematics, with the long-term trend NAEP placing greater emphasis on arithmetic and the main NAEP on geometry and problem solving.
- Student performance in geometry and problem solving improved in the 1990s. Performance in arithmetic remained static or declined slightly. Results for thirteen year olds suggest large numbers of students have not mastered the basic arithmetic skills that are necessary before moving on to algebra.
- Research generally favors the use of calculators in classroom instruction. However, little is known about the impact of calculator use on young children's learning of basic skills. More high-quality studies are needed in fourth grade and earlier. Fourth graders who say they use calculators every day score significantly lower on the NAEP math test than other fourth graders. The Department of Education and the National Science Foundation should adopt a neutral stance on the issue, especially given the cautionary signals in the federal government's own NAEP data.
- Schools designated as exemplary by federal and state awards programs are not always exemplary in academic achievement. High achievement should be the distinguishing characteristic of schools receiving such awards. Awards for other accomplishments should be labeled for the quality deserving honor.

ENDNOTES

1. Rounding to the nearest whole number was performed in the final step of calculations.
2. Frederick Mosteller, Richard J. Light, and Jason A. Sachs. "Sustained Inquiry in Education: Lessons from Skill Grouping and Class Size." *Harvard Educational Review*, vol. 66, no. 4 (Winter, 1996), pp. 797-842.
3. Neal and Johnson estimate one year's worth of schooling to be equivalent to 0.22 to 0.25 standard deviation on the Armed Forces Qualification Test, about the same as 13-17 year olds on the NAEP. See Derek A. Neal and William R. Johnson, "The Role of Premarket Factors in Black-White Wage Differences," *Journal of Political Economy*, vol. 104, no. 51 (1996), pp. 869-895.
4. Alan Krueger estimates the average rate of gain on all NAEP tests to be about 0.07 SD per decade. This is the same as the average rate of gain on the six math and reading tests that we analyze. Alan B. Krueger, "Reassessing the View that American Schools Are Broken," *Federal Reserve Board of New York Economic Policy Review* (March, 1998), pp. 29-43.
5. To be included, states had to use the same test in the same subject area and grade level in 1998 and 1999.
6. We looked at 5th grade scores in the states testing that grade and found evidence of the slump already underway. Data posted on the Brown Center website at www.brookings.edu/browncenter.
7. Indiana reported custom and off-the-shelf scores. Indiana scores are reported for each test type in Figures 3 & 4. However, Indiana is counted only once in Tables 2 & 3.
8. Another argument is that off-the-shelf tests tend to be norm-referenced, whereas custom tests tend to be criterion-referenced. Since norm-referenced tests mathematically constrain the distribution of scores, they may cause the discrepancy in Figure 3. If that were the case, however, the same pattern should appear for mathematics scores. It doesn't.
9. "America's Education Choice," *The Economist*, (April 1, 2000), p. 17.
10. Gerald Bracey, "The TIMSS 'Final Year' Study and Report: A Critique," *Educational Researcher*, vol. 29, no. 4 (May, 2000), pp. 4-10.
11. Mark Reckase, "The Controversy over the National Standards Set by the National Assessment Governing Board," Paper presented at The Brookings Papers in Education Policy Conference, Brookings Institution, Washington, May 16, 2000, p. 27.
12. Linda Dager Wilson and Rolf K. Blank, *Improving Mathematics Education Using Results from NAEP and TIMSS*, (Council of Chief State School Officers, 1999).
13. William H. Schmidt, et al., *A Summary of Facing the Consequences: Using TIMSS for a Closer Look at United States Mathematics and Science Education*, (Kluwer Academic Publishers, 1998).
14. Robert E. Slavin, "Ability Grouping and Student Achievement in Elementary Schools: A Best Evidence Synthesis," *Review of Educational Research*, vol. 57 no. 3 (1987), pp. 293-336.
15. Data obtained from the following page on the NAEP website: www.nces.ed.gov/nationsreportcard/TABLES/index.shtml. For the 4th grade, refer to "NAEP 1996, 1992, and 1990 National Mathematics Results—Data Almanacs; Grade 4 Teacher Data," pp. 499, 511. For the 8th grade, refer to "NAEP 1996, 1992, and 1990 National Mathematics Results—Data Almanacs; Grade 8 Teacher Data," pp. 439, 445, 448, 451. Note that these scores are unadjusted for other factors that may influence achievement. My own study of two states tracking policies found detracking more prevalent in low income schools. If true nationally, this could produce a spurious correlation of higher test scores and tracked classes. See Tom Loveless, *The Tracking Wars*, (The Brookings Institution Press, 1999).
16. Ina V. S. Mullis, Michael O. Martin, Albert E. Beaton, Eugenio J. Gonzales, Dana L. Kelly, and Teresa A. Smith, *Mathematics and Science Achievement in the Final Year of Secondary School: IEA's Third International Mathematics and Science Study (TIMSS)*, Center for the Study of Testing, Evaluation, and Educational Policy, Boston College (1998), pp. 53-56; Schmidt, et al.
17. Obtained from the following link on the NAEP website: www.nces.ed.gov/nationsreportcard/TABLES/index.shtml. For the 8th grade, refer to "NAEP 1996 National Science Results—Data Almanacs; Grade 8 Teacher Data," p. 499.
18. Marilyn Binkley, Keith Rust, and Trevor Williams, eds., *Reading Literacy in an International Perspective*, U.S. Department of Education, (National Center for Educational Statistics, 1996).
19. Malis, et al.
20. Schmidt, et al.
21. Geoffrey Howson, *Mathematics Textbooks: A Comparative Study of Grade 8 Texts*, TIMSS Monograph series, (Pacific Educational Press, 1995).
22. James W. Stigler and James Hiebert, *The Teaching Gap*, (Free Press, 1999).
23. Blase Masini, et al., "An HLM Estimation of School Productivity Effects in The First in the World Consortium," Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA, April, 2000.
24. The effects of instructional methods are reviewed in Herbert J. Walberg and Jin-Shei Lai, "Meta-Analytic Effects for Policy," *Handbook of Educational Policy*, (Academic Press, 1998), pp. 419-453. Also see Herbert J. Walberg, "Syntheses of Research on Teaching," *Handbook of Research on Teaching*, 3d ed., (Macmillan Publishing Company, 1986), pp. 214-229.
25. Stigler and Hiebert, *The Teaching Gap*.
26. U.S. Department of Education, National Center for Education Statistics, *Pursuing Excellence*, (NCES 97-198, U.S. Government Printing Office, 1996).
27. Erling E. Boe, Henry May, Christine S. Leow, and Gema Barkanic, "The Rise and Fall of National Performance in Mathematics and Science: Changes in Relative Standing from the Fourth Grade to the Final Year of Secondary School," Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA, April 2000.
28. Boe, et al., "The Rise and Fall of National Performance in Mathematics and Science: Changes in Relative Standing from the Fourth Grade to the Final Year of Secondary School." Also see John Bishop, "The Effect of National Standards and Curriculum-Based Exams on Achievement," Working Paper #97-01 (Center for Advanced Human Resource Studies, Cornell University, 1997).
29. Laurence Steinberg, *Beyond the Classroom*, (Simon and Schuster, 1996).
30. National Assessment Governing Board (NAGB), *Mathematics Framework for the 1996 National Assessment of Educational Progress*, U.S. Department of Education, 1996.
31. Peter Applebome, "National Tests Show Students Have Improved in Math," *New York Times*, February 28, 1997, p. 15. Linda Jacobson, *Education Week*, September 3, 1997, *Education Week* online archives: www.edweek.com/edsearch.cfm.
32. Finding appropriate comparison groups is a challenge because the main test is given to students of a particular grade and the trend test to students of a particular age. About 33 percent of nine year olds are below the fourth grade and have never been exposed to fourth grade material. If below-grade-level students are included in the comparisons, the gap between the two tests shrinks at all three grade levels, but the report's substantive conclusions remain the same.
33. Refer to the following NAEP website: nces.ed.gov/nationsreportcard/TABLES/index.shtml. Follow the link to "Test Question Data" for the 1996 NAEP main and 1996 NAEP long-term trend.
34. A move to eliminate the trend test was recently defeated by NAGB. See David J. Hoff, "Test-Governing Panel Contemplates Halting Trend-Data Collection," *Education Week*, March 31, 1999, *Education Week* online archives.
35. Susan Walton, "Add Understanding, Subtract Drill," *Education Week*, July 27, 1983, *Education Week* online archives.
36. Quoted in Robert Rothman, "Guide for Implementing New Math 'Vision' Issued," *Education Week*, February 21, 1990, *Education Week* online archives.
37. Mark Clayton, "Calculators in Class: Freedom from Scratch Paper or 'Crutch,'" *Christian Science Monitor*, May 23, 2000, available online in the *Christian Science Monitor* archives: <http://www.csmonitor.com/>.
38. Only 38 percent of education professors think calculators will hamper the learning of basic arithmetic, Steve Farkas and Jean Johnson, *Different Drummers: How Teachers of Teachers View Public Education* (New York: Public Agenda, 1997), p. 11. But 86 percent of the public rejects the use of calculators in early grades, and 73 percent of teachers want students to memorize the multiplication tables and learn pencil-and-paper arithmetic before using calculators. See Steve Farkas and Jean Johnson, *Given the Circumstances: Teachers Talk about Public Education Today*, (New York: Public Agenda, 1996), p. 19.
39. M. N. Sudyam, "The Use of Calculators in Pre-College Education: A State-of-the-Art Review," Columbus, OH: Calculator Information Center, 1979, (ERIC Document Reproduction Service No. ED 171 573). Ray Hembree and Donald J. Dessart, "Effects of Hand-Held Calculators in Pre-College Mathematics Education: A Meta-Analysis," *Journal for Research in Mathematics Education*, vol. 17, no. 2, (1986), pp. 83-99.
40. Brian A. Smith, *A Meta-Analysis of Outcomes from the Use of Calculators in Mathematics Education*, Texas A & M doctoral dissertation, December, 1996, p. 101.
41. Some of the questions may be designed to find out if students know when it is appropriate to use calculators.
42. "National News Roundup," *Education Week*, January 19, 1983, *Education Week* online archives.
43. Alan Richmond, "In the Age of Accountability, a Blue Ribbon Means a Lot," *Education Week*, May 24, 2000, *Education Week* online archives.
44. For each school, we first computed a composite achievement score by averaging math and reading scores. We then regressed each state's SES variable (usually the percentage of students in the free/reduced lunch program) on the composite score and used the residuals (the amount each school scored below or above the expected value for a school of similar SES) as our SES-adjusted score. The adjustment lowers the relative ranking of Blue Ribbon Schools with SESs above the state mean (those serving students from wealthier families) and raises it for schools with SESs below the mean (those serving students from poorer families). Some states do not release scores of schools serving small numbers of students (fewer than 10) or schools where an inadequate percentage of total enrollment took the test. We dropped these schools from the analysis, as well as those schools on which we didn't have SES data.
45. Three schools serving grades K-4 were dropped from the analysis. Pennsylvania does not give the PSSA test in the 4th grade.
46. One elementary school was dropped from the analysis because there was no data on the Michigan Department of Education website.
47. See "1998 California School Recognition Program: Distinguished Elementary School Application Scoring Rubric," www.cde.ca.gov/ope/csrp.
48. Under current policy, schools qualify by accomplishing any of the following on a nationally-normed test: 1) scoring two-thirds of a standard deviation above the mean (about the 75th percentile); gaining one-third of a standard deviation in the previous five years (about 13 percentile points around the mean); the school's "majority" group scoring two-thirds of a standard deviation above the mean. See "National Review Panel: Elementary Scoring Guidelines, 2000-2001," Blue Ribbon Schools Program, Office of Educational Research and Improvement, U.S. Department of Education (June, 1999).

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Education Q&A
September 5, 2000

Q: On Tuesday, the Brookings Institution released a new *Brown Center Report on Education* which concluded that the results of the National Assessment of Educational Progress (NAEP) show “slow and steady gains are being made,” but are not “cause for national celebration.” The report also found that “the 1990s do not stand out as a time of great strides forward in academic achievement. Although achievement continued to improve, it did not accelerate in the century’s final decade,” with the scores of some age groups lower now than in 1980. Does this report validate the criticism of George W. Bush and others that the Clinton-Gore Administration has allowed education to stagnate and has not made the reforms necessary to improve student achievement?

A: The “slow but steady gains” cited in the report show that the reforms and investments made under the Clinton-Gore Administration are moving the country in the right direction. For example, the report states that “President Clinton’s recent call for all students to be able to read by the end of third grade has moved the nation.” As a result of insisting on high standards and accountability and investing in what works, student performance as measured by test scores, rigorous coursework, high school graduation, and college enrollment has improved, especially for students in our most disadvantaged schools. For example:

- In 1992, only 14 states had academic standards; today, 49 states have them and 48 have assessments to measure student progress.
- Math SAT scores are at a thirty-year high. The average SAT math score has gone from 501 in 1992 to 514 in 2000, and the average verbal score has gone from 500 to 505. These changes are particularly notable because more disadvantaged and minority students are taking the SAT than ever before.
- Since 1992, reading and math scores on the National Assessment of Educational Progress (NAEP) have increased for fourth, eighth, and twelfth graders, including those students in the highest poverty schools. For example, since 1992, reading and math scores for nine-year-olds in our highest poverty schools have improved by nearly one grade level.
- The percent of African American high school graduates taking a core curriculum (4 years of English, and 3 years each of Math, Science and Social Studies) went from 39% in 1990 to 56% in 1998, and over the same period, the number of Hispanic graduates taking a core curriculum went from 30% to 40%.
- More high school graduates than ever before are going directly to college – from 61.9% in 1992 to 65.6% in 1998.
- Under the Clinton-Gore Administration, we’ve nearly doubled the federal investment in education and training, and student aid has doubled to nearly \$60 billion, the largest investment in higher education since the G.I. Bill. More students are benefiting from federal student grants and loans – from 43% in 1992 to 59% in 1999 – and the maximum Pell Grant has increased by \$1,000, from \$2,300 in 1992 to \$3,300 in 2000.

Q: The report points out that “critics question whether the tens of billions of dollars spent on educational reforms have been worth it.” As Congress comes back into session, will President Clinton press for more education spending in the FY ’01 budget? Is the President concerned that this money is being wasted on ineffective programs?

A: The gains cited in the report make it clear that not only have we been investing in the right priorities, but also that the Clinton-Gore reform policies of investing more in our schools, while also demanding more from them are working. As the report points out, scores for the 2000 NAEP exams are not yet available, however “state tests indicate that achievement continued to rise from 1998 to 1999.” Through their leadership, President Clinton and Vice President Gore have raised expectations for all students, required states to develop rigorous standards and systems of assessment and accountability aligned with those standards, and invested in proven strategies to increase the educational achievement of all students. According to Republican Governor Tommy Thompson, the Administration’s Goals 2000 initiative “changed the face of education as we know it.” In addition to funding state efforts to develop these standards and accountability systems, this Administration has invested in what works to help students succeed, including smaller classes, after school programs, early childhood education and high-quality teachers. In fact, nowhere does the report itself question the validity of the Administration’s investment in these programs, which research has shown to be effective. Indeed, it is by increasing our investment in proven reform strategies that we will speed up the pace of improvement. Federal funds are more targeted to low-income and minority students than either state or local funds, and these funds are making a difference for kids. The President and Vice President will continue to fight for our children’s education and insist on a budget that pays down the debt, and does not shortchange our children in order to provide irresponsible tax cuts that give 3,000 wealthy people another \$7 million each.

Q: The report also comes to some disturbing conclusions regarding student achievement in mathematics. In addition to finding that “a slump in math gains begins after fourth grade and extends through high school,” and that on international comparisons (specifically the TIMSS) “no other country has a sharper drop in math ranking than the United States,” the Brown Center report concluded that at the current pace of improvement in math achievement “it would take a little more than seventy-seven years before American eighth graders were performing at a level equal to their Japanese counterparts.” Is the Clinton-Gore Administration doing anything to help improve student achievement in math? The report recommends that the Department of Education and the National Science Foundation abandon their advocacy of math programs that promote calculator use in the early grades and adopt a neutral stance on the issue. How will the President respond?

A:

Q: The Brown Center report also harshly criticized the federal government's Blue Ribbon Schools program as recognizing many schools that were less than exemplary

A: The Blue Ribbon Schools program rewards schools whose students show sustained high achievement across the board for five years or significant improvement over the past five years. The program is a positive way to encourage student improvement and reward schools that are helping our most disadvantaged students by giving formerly low-performing schools the recognition they deserve for significantly increasing achievement levels over five years. Approximately 80 percent of the schools being recognized this year are receiving the award based on sustained high academic achievement, and 20 percent based on significant improvement over five years. Twice in the past five years, the Department of Education has conducted thorough reviews of the program, including evaluation by an outside entity, and raised the achievement standard schools must meet in order to qualify for a Blue Ribbon Award. The Department is currently evaluating the program, and may raise the standard yet again. Although high achievement is the goal, Blue Ribbon Schools also meet other research-based criteria that contribute to success. If the other areas included -- such as teacher professional development, a strong curriculum, family and community involvement, and effective leadership -- are ignored, eventually achievement will suffer.