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ABSTRACT

A review of research on the feasibility of extending the school day/year is the purpose of this report. The first section discusses the outcomes of such proposals since April 1983 and concludes that they have failed to generate widespread acceptance. The second part assesses the validity of international comparisons used to justify such proposals. It concludes that the comparisons ignore studies that have found no positive relationship between total hours of instruction and student achievement. The last section examines the longer school day/year from the perspective of time-on-task literature, and recommends: (1) more efficient use of existing instructional time; (2) the consideration of different schedules appropriate to different schools; and (3) implementation on an individual basis only after intensive collaborative evaluation. Appendices provide position statements and references in favor of the proposal. An extensive bibliography is included. (LMI)

EXTENDING THE SCHOOL DAY/YEAR: PROPOSALS AND RESULTS

Number 9

Foreword

This report examines proposals to extend the school day/year, especially the proposal put forward by the National Commission on Excellence in Education in April 1983:

> School districts and state legislatures should strongly consider 7-hour school days, as well as a 200- to 220-day school year.

It is the first comprehensive overview of the research on extending the school day/year. As such, it belongs in the hands of every policymaker even considering the extended school day/year as a solution to the challenges facing education. The extended school day/year, the research makes clear, is no solution, and this report can help NEA affiliates — at every level — make that reality plain to their communities, public officials, and media opinion-makers.

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EXECUTIVE SUMMARY

This report is divided into three parts. The first part discusses what has happened to proposals to extend the school day/year since April 1983. It concludes that such proposals have not been accepted virtually anywhere.

The second part addresses the validity of the "international comparisons" usually cited to justify proposals for extending the school day/year. It concludes that these "comparisons" — most recently cited by the U.S. Secretary of Education and the National Governors' Association — completely ignore the results of studies by the International Association for the Evaluation of Educational Achievement. These studies show that total hours of instruction are not related to differences in achievement and that, apart from foreign language instruction, raising hours of instruction for specific subjects is not likely to improve the relative educational attainment of American students.

The third and final part of this report considers the extended school day/year from the perspective of time-on-task literature. It concludes that from the standpoint of the literature:

- School improvement efforts that focus on making better use of *existing* instructional time are likely to be both more effective and more cost effective than increasing the quantity of instructional time.
- State or local mandates that force *all* schools to extend the school day/year by some flat amount fail to take account of the different resource needs and problems of individual schools.
- Recommendations to extend the school day/year should be considered only on a school-by-school basis where the staff of an individual school, after a process of collaborative research and decision making, makes a reasonable case that a given extension of the school day/year is the best way of producing a specific increase in achievement.

RECOMMENDATIONS FOR AN EXTENDED SCHOOL DAY/YEAR: THE POLITICAL HISTORY OF A LEAD BALLOON

Introduction

In April 1983, The National Commission on Educational Excellence issued a report entitled *A Nation at Risk*. This report recommended that school districts and state legislatures "strongly consider 7-hour school days, as well as a 200- to 220-day school year."[1]

In August 1983, the recommendation in *A Nation at Risk* was echoed in a report from the Education Commission of the States (ECS) Task Force on Education for Economic Growth. The Task Force report, entitled *Action for Excellence*, stated that, "Using the existing school year and school day to the fullest should be emphasized first. But the states and local school systems should also consider lengthening the school year and the school day and extending teachers' contracts."[2]

Since 1983 state legislatures have responded negatively to both these recommendations. Chris Pipho of ECS has described reaction to longer school year proposals as a "reform rebuff."[3] State legislatures have proved unwilling to spend or require school districts to spend substantial sums of money for measures that are not supported either by public opinion or by virtually any organized segment of the education community. In addition, neither the Reagan Administration nor the governors who have supported the idea of more time in school have advanced concrete policy recommendations capable of turning this idea into reality.

In the following pages we will take a closer look at how educators, the public, and political leaders have reacted to proposals for a longer school day/year.

State Legislative Reaction

Since April 1983, no state legislature has enacted any legislation that requires school districts to adopt more than a 180-day school year or a 6.5-hour instructional day.

According to the most recent survey data from ECS, as of November 1985, only two jurisdictions required more than a 180-day school year and two other jurisdictions required a 7-hour school day. The District of Columbia requires 184 instructional days under the current collective bargaining agreement, which extends the instructional year beyond the minimum 180 days required under school board regulations. In Ohio, the length of the required school year is 182 days. Tennessee requires school districts to provide either a 7-hour school day or a 6.5-hour instructional day. Texas requires a 7-hour school day.[4] However, these current state requirements for a school year beyond 180 days or a school day beyond 6 hours were all enacted *before* 1983 and were not a response to the recommendations of *A Nation at Risk*.

Since April 1983, 12 states have enacted legislation or regulations on either the school day or school year. These states include Arkansas, California, Colorado, Florida, Maryland, Michigan, Nebraska, New Hampshire, North Carolina, South Carolina, Tennessee, and Wisconsin. In most cases, the legislatures tended to require or give incentives to school districts to increase actual instructional time—and let individual school districts decide whether the increase could be accomplished within the existing school day/year or whether a longer school day/year would be required.[5]

The school year has been a subject of new legislation or regulation in nine states, including Arkansas, Colorado, California, Florida, Nebraska, New Hampshire, North Carolina, South Carolina, and Tennessee. In all of these states, except California, legislatures raised the minimum number of instructional days to 180, either by adding to the number of instructional days or by declaring that existing instructional days could not be used for noninstructional activities such as snow days or in-service programs. In California, the legislature provided financial incentives for school districts to raise the school year from 175 to 180 days, but did not require an increase.

The school day has been the subject of new legislation or regulation in five states, including California, Maryland, Michigan, South Carolina, and Wisconsin. In California, the state legislature provided

financial incentives for increasing instructional time in the school day up to 5 hours in grades 4-8 and 6 hours in grades 9-12. In Maryland, the state board of education increased the school day for secondary students from 6 to 6.5 hours. In Michigan, the legislature provided financial incentives to school districts that increased the instructional day up to 6 hours and had a minimum of 60 percent enrollment in each of the following: mathematics, science, English, and social studies. In South Carolina, the state legislature required that school districts provide an instructional day of 6 hours, including lunch, in elementary grades, and 6.5 hours, excluding lunch, in secondary grades. In Wisconsin, under legislation that becomes effective in 1988, school districts that operate with 175 instructional days will have to provide an instructional day of 6 hours in elementary grades and 6.5 hours in secondary grades.

In North Carolina, the legislature provided funding for a pilot study of the effects of a 200-day school year with 7-hour days. Two districts initially decided to participate in the study. One dropped out after community dissatisfaction elected a school board hostile to the program. The remaining district is in the process of writing an evaluation report to be submitted in December.

School District Reaction

If recommendations for a longer school day contained in *A Nation at Risk* had been implemented at the local level, we should see some increase in the required work day for teachers. But little change has occurred in the required work day as reported by teachers in NEA's *Status of the American Public School Teacher* for 1980-81 and 1985-86. The length of the teacher work day was reported as follows:[6]

Year	Mean length of work day	Median length of work day
	(hours)	(hours)
1980-81	7.29	7.25
1985-86	7.19	7.30

Little change has also occurred in the number of teaching days per school year as reported in NEA's *Status of the American Public School Teacher*, or in the mean length of work year reported by school districts surveyed by the Educational Research Service (ERS) for its *National Survey of Salaries and Wages in the Public Schools.*

The data reported for number of teaching days in NEA's *Status* are as follows:[7]

Year	Mean number of teaching days	Median number of teaching days	% of teachers with more than 181 teaching days
1980-81	180	180	21.4
1985-86	180	180	23.0

The data reported by the Educational Research Service for mean length of work year are as follows:[8]

Year	Mean length of work year for teachers
	(days)
1983-84	185
1985-86	185

Public Reaction

The Gallup/Phi Delta Kappan polls of the *Public's Attitude Towards the Public Schools* surveyed public opinion on extending the school day/year for three consecutive years between 1982 and 1984. The results indicate that public opinion toward the extended school day/year did not change appreciably after the 1983 release of *A Nation at Risk*. In 1984, as in 1982, the majority of those who had any opinion were opposed to extending the school day/year. Even if all of those who were undecided in 1984 decided to favor extending the school day/year in the future, there would still not be a majority in favor of extension.

The exact questions and the national totals are as follows:[9]

In some nations students attend school as many as 240 days a year as compared to 180 days in the U.S. How do you feel about extending the public school year in this community by 30 days, making the school year about 210 days or 10 months long? Do you favor or oppose this idea?

	1982	1983	1984
	%	%	%
Favor	37	40	44
Oppose	53	49	50
Don't know	10	11	6

How do you feel about extending the school day in the schools in this community by one hour? Do you favor or oppose this idea?

	1982	1983	1984
	%	%	%
Favor	37	41	42
Oppose	55	48	52
Don't know	8	11	6

Administrator and School Board Reaction

Administrator and school board reaction to extended school day/year proposals has been largely negative. It is possible to find a favorable comment by an individual administrator or board member. But no administrator organization has come out in support of extended school day/year proposals, and available data from polls are hostile to them.

The delegates to the 1983 National School Board Association (NSBA) convention took a look at the extended school day/year proposals contained in *A Nation at Risk*. Their reaction is described in NSBA's *A Blueprint for Educational Excellence* as follows: "A 'time on task' resolution urged boards to review the length of the school day and year, and to review the use of time spent on instruction. But the delegates stopped short of the Commission's recommendation to lengthen school days and the academic year. They suggested that boards seek 'practical ways to add instructional time.' "[10]

In the fall of 1983, the Educational Research Service conducted a poll of 661 superintendents who belong to the American Association of School Administrators (AASA). With respect to the school year, 55.6 percent felt that the current school year provided enough time, while 36.8 percent favored a 10 percent increase and 7.6 percent favored an increase of 20 percent or more. With respect to the school day, 64.3 percent felt that the current school day provided enough time, while 27.6 percent favored a 10 percent increase and 8.1 percent favored an increase of 20 percent or more.[11]

AASA has not formally taken a position on extended school year/day recommendations, but it has issued two related publications. One focused entirely on costs and concluded that an extended school day/year would represent an average 14 percent increase in school district budgets.[12] The other AASA publication highlighted the Educational Research Service polling results noted above.

There are no hard data on the position of principals or their organizations. Principals have not been polled on their attitudes about the extended school day/year. Their professional organizations, the National Association of Elementary School Principals and the National Association of Secondary School Principals, have not taken any positions on these issues.[13]

Teacher Reaction

Teachers have responded negatively to the idea of extending the school year or school day. In May 1984, the Educational Research Service asked a nationwide sample of teachers the following question: "If a commensurate increase in salary were available, would you be willing to work a longer school day or school year"? A majority of 52.2 percent were unwilling to work a longer school day. A plurality of 46.6 percent (a majority of those who had an opinion) responded that they rejected a longer school year.[14]

Analysis of more detailed NEA Teacher Opinion Poll data from the 1970s suggests that, to some degree, the ERS poll may have understated teacher opposition to extending the school year. In the NEA polling, 51 percent of teachers said that they personally preferred working the regular school year, and 80.7 percent felt that if a school district initiated an extended school year, the Association should insist upon the right of individual teachers to choose to work a regular school year.[15]

The national organizations representing teachers have both rejected recommendations for extending the school day/school year.

As noted in its 1983 report, *A Guide from Teachers to A Nation at Risk and Other Studies*, the National Education Association holds that "teachers support the call for more effective use of time ... and applaud all of the implementing recommendations, except for the proposal for a 7-hour day and a longer school year."[16]

The American Federation of Teachers position was stated in December 1983 as follows: "Educators should take a serious look at how schools use existing time before they start rushing to add time to the school day or school year."[17]

Educational Reformers' and Researchers' Reaction

The table on page 10 summarizes the policy options and positions that noted educational reformers, researchers, or research organizations have taken since 1983 on the question of extending the school day/year. See Appendix A for direct quotes from the position statements in question.

The "reformers" in this table include authors of recent major "reform" reports. The "researchers" include prominent educational researchers, and the research organizations listed are organizations that have reviewed the extended school day/year question.

For the purposes of the table, "Extend the school year/day" means that the author supports considering that as an immediate policy option. "Use existing time more efficiently" means that the author feels that schools should attempt to cut down on non-instructional uses of school time and improve the time management skills of teachers. Some of those taking this position would be willing to consider extending the school day/year, but only as a last step and not as an immediate policy option. In addition, many of these authors believe that schools should focus on the quality as well as the quantity of instructional time. However, unlike those for whom "time is not the problem," they accept the need for increasing the quantity of instructional time or active learning time. "Time is not the problem" means that the author believes schools should concentrate on improving teaching or curriculum, which dictate the "quality" of instructional time, rather than focusing on the quantity of time.

As the table makes clear, only a minority of major reformers and researchers support considering the extension of the school day/year as an immediate policy option in the manner proposed in *A Nation at Risk*. The overwhelming majority recommend instead attempting to improve the use of existing school time.

In addition, those who are prepared to support extension of the school day/year only do so on the assumption that the schools will do something to make time use more efficient or change their curriculum. The notion that more of the same is better, or that academic achievement will improve if schools spend more time doing what they do now, has not been accepted by the research community.

Source	Policy Option/Position Taken: Extend school day/year	Use existing time more efficiently	Time is not the problem
Reformers			
Ernest L. Boyer			X
John Goodlad		X	
Researchers			
David C. Berliner & Charles W. Fisher		X	
Annegret Harnischfeger		X	
Nancy Karweit		X	
Henry M. Levin		X	
W. J. Smyth		X	
Jane Stallings		X	
Herbert J. Walberg	X		
Research Organizations			
Association of California School Administrators		X	
ERIC Clearinghouse on Educational Management		X	
Learn Inc., The Education Foundation		X	
Phi Delta Kappa Center for Evaluation Development & Research	X		

Gubernatorial and Reagan Administration Reaction

Reagan Administration appointees at the U.S. Department of Education and officials of the National Governors' Association have issued position statements on the extended school day/year. Both groups have given the extended school day/year general support. Yet each group has followed this general support with detailed recommendations for some sort of year-round school calendar that does not necessarily extend either the school day or school year for anyone, except on a voluntary basis.

In March 1984, Manuel J. Justiz, director of the National Institute of Education, put forward his position on the National Commission on Excellence in Education's *A Nation at Risk* as follows:

> I strongly agree with the Commission that we need to extend both the school day and the school year but I also think that the Commission considered the way we use time in education to be just as important as the amount of time that we allocate to instruction. If we are serious about academic learning, we must first find ways to use more effectively the time we already have for learning and teaching.
>
> A second way to increase the amount of time allotted for academic courses, suggested by the Commission, has received a great deal of attention: lengthening the school day, the school year or both. However, the Commission suggested that this more costly option should be considered if and only if more creative ways for increasing time for learning fail.[18]

This interpretation of what the Commission did or didn't say could be questioned. In any case, it is quite clear Mr. Justiz is not advocating a longer school year/day as an immediate policy option.

In September 1985, Chester E. Finn, Jr., assistant secretary for research in the Department of Education, coauthored an article, entitled "Now Is the Time for Year-Round Schools." In advocating a 48-week school year, Finn and coauthor Denis P. Doyle put forward the standard *A Nation at Risk* rationale for a longer school year:

> Also, a 48-week school year would bring the U.S. education syste. more into line with those of our major economic competitors. International education comparisons reveal that young Americans who go to school 180 days a year know less than their Japanese age-mates, who attend school for 240 days and less than other industrial democracies with longer school years.

Finn and Doyle go on to advocate a year-round school schedule:

> Operate the schools year-round. Put them on a four-quarter year, require all youngsters to attend three quarters, and allow them to attend a fourth. Give teachers the option of teaching year-round and make their pay commensurate with the extra time worked.

A quarter is then defined as 12 weeks. In reality, what Finn and Doyle are actually advocating is a mandatory school year of no more than 180 days (36 weeks x 5 days) for both students and teachers. While the quarter system per se may have different curriculum and scheduling patterns from the traditional schedule, it does not involve an extended school year so long as the fourth quarter is voluntary.[19]

More recently, in September 1986, U.S Secretary of Education William Bennett issued *First Lessons: A Report on Elementary Education in America*. In this report, Bennett indicates the need to enlarge the "total instructional program" and describes lengthening the school year as "the most obvious" solution. According to Bennett, " . . . for those schools wanting to create a truly complete curriculum for all their students, the school calendar must be addressed."[20]

But Secretary Bennett's examples of how the calendar might be addressed do not necessarily involve a mandatory extension of the school year for students or teachers. The most prominent example in *First Lessons* involves a 45-15 year-round school plan. In addition to this example, Bennett states: "There is considerable evidence a four-quarter system leads to increased achievement through greater student retention of learned information."[21]

Bennett does not define what he means by "quarter plan." The 45-15 plan described by Bennett is in a sense a quarter plan. Under this plan, each track "takes a 15 day vacation after approximately 45 days of school—or four good-sized vacations per year." According to the National Council on Year-Round Education, the term "quarter plan" refers precisely to the plan described by Finn and Doyle.[22]

Under either of the possible year-round plans referred to by Bennett, the mandatory school year for students is limited to 180 days.

In effect, despite continued statements of support for the extended school year, Reagan Administration officials have never really supported the recommendations of *A Nation at Risk* for a longer school day/year.

At the state level, a similar pattern exists. Governors have supported extended school day/year proposals only in rhetoric.

In August 1986, the National Governors' Association Center for Policy Research and Analysis published *Time for Results: The Governors' 1991 Report on Education*. In the introduction is the usual obeisance to *A Nation At Risk*:

> Many Western democracies require youngsters to attend school 200 to 220 days per year. One reason authorities give for higher test scores in those countries is simply that students spend more time in school.[23]

Yet the governors present recommendations on the school year only in the section written by the "Task Force on School Facilities." The task force recommends that:

> States should encourage school districts to make more efficient use of school buildings by adopting year-round school calendars.

Year round school calendars specifically can alleviate or at least postpone the need to build new schools during periods of temporary enrollment increases. In some communities, year-round use of schools may allow communities to absorb "baby boomlets" without overcrowding or new construction. Most important, educators to date have found that improved academic performance can result from a restructured calendar that shortens the vacation periods away from formal instruction.[24]

In this section, the governors are not advocating extending the school year beyond 180 days.

The governors' detailed proposals for incentives are even more restrictive. While the governors' report favors "providing funds to districts that are willing to offer summer programs," when it comes down to year-round schools, the report recommends only "planning grants."[25]

INTERNATIONAL COMPARISONS: THE EMPEROR HAS NO CLOTHES

International comparisons form the principal argument used to support proposals for extending the school day/year. Students in foreign countries know more or perform at a higher level on international achievement tests than American students, this argument maintains, partially because they spend more time in school. The initial version of the argument appeared in *A Nation at Risk*:

> Compared to other nations, American students spend a lot less time on school work. . . . In England and other industrialized countries, it is not unusual for academic high school students to spend 8 hours a day at school, 220 days per year.[26]

Later versions of this argument appear in *Action for Excellence*, *Time for Results*, *First Lessons*, and *Now Is the Time for Year-Round Schools*. The geography, the grade levels referred to, and the number of days in the school year vary in interesting ways from one source to another. England seems to have been abandoned permanently in favor of more exotic locales.[27]

In all of these international comparisons, however, there is one consistent feature: the absence of any serious data source. The studies of the International Association for the Evaluation of Educational Achievement (IEA) are never mentioned.

IEA studies are the standard data source for international comparisons of achievement. Wayne Riddle of the Congressional Research Service explains the significance of IEA data as follows:

> Only tests which are carefully and specifically designed for the purpose of international comparative testing, and which are administered to representative samples of comparable pupil populations in different countries, can be considered valid measures of international achievement levels.
>
> There is one organization which has been established to provide such comparative international achievement data for elementary and secondary pupils—the International Association for the Evaluation of Educational Achievement (IEA).
>
> . . . IEA examinations represent the only available, comparable, multi-nation achievement tests. . . .[28]

Since 1964, IEA has tested analyses of comparative achievement in a number of fields, including mathematics (1964, 1980-81), science (1970-71), and reading (1970-71). Analyses of results from these assessments have consistently concluded that the total of instructional hours during a school year has no significant relationship to achievement. The relationship was analyzed by Torsten Husen (1967) for mathematics and by A. Harry Passow et al. (1975).

Husen, in his report on the *International Study of Achievement in Mathematics* (1967), noted that:

> . . . achievement in mathematics has little relationship to the number of hours per week of schooling. . . . For all populations students with higher achievement scores actually tend to have fewer hours of schooling per week.[29]

In a later article (1972), Husen stated that those who advocate more time in school to improve standards or achievement were engaging in "pedagogical folklore."[30]

Passow and his colleagues, in their *The National Case Study: An Empirical Comparative Study of Twenty-One Educational Systems* (1975), reviewed international assessments in science and reading comprehension. Their conclusions:

> . . . country totals of hours of instruction . . . are poor predictors of average country levels of school achievement.
>
> It may be that efficiency of instruction varies widely among nations. Perhaps the pedagogically efficient countries tend to provide fewer hours of instruction, and the pedagogically less efficient tend to provide more. . . . It is indeed true that Japan and Hungary, two countries that rank high on school achievement, provide relatively few hours of instruction. . . . However, these are extreme cases and no identifiable relationship is exhibited consistently across countries.[31]

IEA studies indicate that there is no relationship between total hours of instruction during a school year and achievement in a specific subject. However, this still leaves open the possibility that providing more hours of instruction in a specific subject will increase achievement in that subject. As the Passow

study states, "total instructional hours may be a poor proxy for instructional hours in a specific subject."[32] From a policy point of view, lengthening the school day/year can be seen as one way of providing more instructional time for a specific subject.

IEA studies on the effect of providing more hours of instruction for a specific subject show different results for different subjects. John Carroll, in his review of the results from the international assessment of achievement in French as a foreign language (1977), reported that

> . . . to a large extent the variations in performance levels of different populations are accounted for by variations in average amounts of French instruction received up to the time of schooling.[33]

Passow et al. (1975) reported "positive . . . but low" correlations between hours devoted to reading or science and achievement. They concluded that:

> . . . there is some support afforded for the hypothesis that hours of instruction in specific subject areas are related to mean country achievement in those subjects.[34]

Husen (1967) reported that "achievement in mathematics bears a slight relationship to the number of hours per week devoted to mathematics instruction." He combined the effect of four time variables, including the total hours per week in school, hours per week allocated to mathematics teaching, hours per week of homework, and hours per week devoted to mathematics homework. He concluded that:

> At the 13-year-old level, only three percent of the assignable variation in total mathematics score was accounted for by these four variables, of which total homework made the largest contribution.[35]

Some data and analyses have been published from the Second International Mathematics Study (1981-1982). The data published so far are limited to the eighth-grade results. These results do not seem to show any reliable relationships between national mean scores and either length of school year or hours of mathematics instruction. The following table presents data for 9 out of the 21 countries that participated in the study. Countries are listed in rank order by national mean total score for "attained curriculum."[36]

Country	Mean total score	Number of days in school year	Hours of instruction in mathematics per year
Japan	62	243	101
France	58	185	130
Netherlands	57	200	112
Hungary	56	192	96
England	47	192	115
Finland	47	190	84
Israel	45	216	130
U.S.	45	180	144
Luxembourg	37	216	144

The significance of this data was discussed recently by Kenneth J. Travers, the chairman of the International Mathematics Committee of the Second International Study. In a 1985 article, "Eighth Grade Math: An International Study," Travers states that for U.S. schools,

> The study results suggest strongly that an important need is not more time to teach math, but better use of the time presently available. A more intense, focused curriculum is called for. In Japan . . . math topics receive focused attention and each must be mastered before students go on.[37]

In his 1983 review of IEA studies related to time in school, Henry M. Levin concluded that:

> A fair summary of the IEA findings would suggest that increasing time in learning is associated with strong effects for the teaching of foreign languages, with only modest or imperceptible effects for other subjects.[38]

Nothing published by IEA since 1983 provides any basis for changing this conclusion.

The most common argument for a longer school day/year, international comparisons, do not demonstrate the value of extending the school day/year. IEA studies, which have been the standard source for the past 20 years, show that:

- Total hours of instruction are not related to differences in achievement.
- Apart from foreign language instruction, raising hours of instruction for specific subjects is not

likely to improve the relative educational attainment of American students.

The failure of advocates of a longer school day/year to even mention IEA data is certainly not always the result of ignorance. The National Commission on Excellence in Education, which made international comparisons in *A Nation at Risk*, was certainly aware of IEA. The Commission authorized two separate studies of IEA data by Donald B. Helsinger and Torsten Husen.[39] Chester Finn and Secretary Bennett of the U.S. Department of Education should also be aware of IEA data. Some of the money that supported the Second International Study of Mathematics came from their budgets, and they have been publishing the results.

With the exception of Secretary Bennett's *First Lessons*, none of the reports that use international comparisons to advocate a longer school year supply any references whatever. In *First Lessons*, the U.S. Secretary of Education refers to the recent research of Harold Stevenson and a journal article by Thomas Rohlen. It is our judgment that neither of these sources constitutes a refutation of IEA data. (See Appendix B for a discussion of these sources.)

One of the most recent uses of international comparisons is found in the National Governors' Association report, *Time for Results* (1986). The argument is presented as follows:

> Many Western democracies require youngsters to attend school 200 to 220 days per year. One reason authorities give for higher test scores in those nations is simply that the students spend more time in school.[40]

Which "authorities" are never cited. If they do exist, it is the responsibility of advocates for the extended school day/year to bring them forward.

EXTENDED SCHOOL DAY/YEAR AND ACHIEVEMENT: THE PERSPECTIVE FROM TIME-ON-TASK LITERATURE

The literature on time-on-task deals with the relationship between time and learning. The literature generally takes a negative view toward the general proposition that extending the school day/year will by itself bring about improved learning. But the literature also sometimes holds that extending the school day/year might be productive if:

- Specific learning problems are caused by a simple lack of instructional time.
- Students will not respond to additional instructional time by reducing their effort to learn.
- Reasonable relationships exist between the costs required to extend the school day/year and the expected gains in achievement.

The following sections will discuss each of these conditions as presented in the literature.

Is Lack of Instructional Time Really the Problem?

Time-on-task literature views time as a necessary resource for learning to take place. As Annegret Harnischfeger puts it: "... if no time is spent, no learning is possible."[41] Moreover, John Carroll's classic model indicates that learning will not take place to the extent that "time actually spent" on instruction is less than "time needed."[42] A recent study by Dreeben and Gamoran found that pupils with low aptitude did poorly in learning words they were taught to the extent that teachers "covered too much in too little time."[43]

However, once the "time needed" is provided, we are in a situation of diminishing returns. Herbert J. Walberg has framed the issue as follows:

> Instructional time . . . appears to be a necessary ingredient but insufficient by itself to produce learning. . . . Time has shown diminishing returns. . . . Equal additions of time with other factors held fixed yield ever smaller gains in learning.
>
> Learning returns to time may not only diminish but also turn negative in which case increasing amounts of time beyond a turning or inflection point are associated with worsening achievement.[44]

As a result, providing more instructional time is not necessarily going to increase learning in a given situation. In "Time-On-Task Reconsidered" (1984), Nancy Karweit states:

> Learning takes time but providing time does not in itself ensure that learning will take place. More time may result in more learning—if adequate time was the major cause of the problem in the first place. If other factors were the real cause, then providing more time will not be an effective strategy.[45]

The "other factors" that must be considered involve student attentiveness and the "quality" or "appropriateness" of instruction.

Given that instruction is taking place, learning only occurs for those students who are in class and paying attention—"engaged" or "on-task." The most widely cited research on instructional time to date came out of the Beginning Teacher Evaluation Study that was conducted between 1972 and 1978. In his presentation of the results of that study in *Time to Learn* (1980), Walter Borg puts the matter as follows:

> Research evidence accumulated over the past 36 years shows consistent positive relationships between time-on-task and achievement. . . . The evidence on engaged time should not come as a surprise since it is clear that one cannot learn without devoting time to learning.[46]

Similarly, in her recent essay on the concept of "Active Learning Time," Annegret Harnischfeger notes:

> Key words and phrases that are typically used . . . to describe pupils' relations to the teaching-learning process include on- or off-task, engaged or unengaged, attentive or inattentive, active or inactive. These terms are attempts to invoke the psychological precept that in order to learn, an individual needs to respond actively.[47]

Given that instruction is taking place and that students are paying attention, the positive impact of increasing instructional time on achievement depends on the appropriateness and quality of instruction. In *Time on Task: A Research Review* (1982), Nancy Karweit states:

> The learning rate of an individual student, the primary determiner of the amount learned, varies during any lesson, depending upon the attentiveness of the student and the appropriateness of instruction for the learner. . . . Learning occurs when the student is listening to appropriate instruction. Engagement and appropriate instruction must simultaneously occur before learning can take place.[48]

Appropriateness of instruction partly refers to the match between the subject matter presented and the needs or readiness of students to learn it. Spending more time going over material that students have already mastered obviously does not increase learning. In his review on "Instructional Time and Learning," in the *Encyclopedia of Educational Research* (1982), Herbert J. Walberg states:

> Time devoted to school learning appears to be a modest predictor of achievement. . . . When material is familiar, often taught, or imprecisely measured then time may be a weak or insignificant predictor.[49]

By the same token, spending time teaching concepts or subjects that students are not ready to learn does not increase learning. In *Time to Learn*, the authors of the BTES study reported that:

> The classroom observers . . . rated the "appropriateness" of instruction . . . that is whether the instruction generally matched the needs and skill levels of individual children. This rating of appropriateness was positively related to student achievement . . . partly because of the relationship between appropriateness and Academic Learning Time. Appropriateness of prescription was related to the proportion of time students had low success on their work: higher ratings of appropriateness were always associated with less frequent occurrences of very hard material.
>
> The proportion of time that reading and mathematics are performed with low success is negatively *related to achievement*. . . . Students who were observed to spend time on excessively difficult materials generally learned less than other students.[50]

Taking this into account, the authors of the BTES study developed a concept called "academic learning time," which they defined as the amount of time a student is engaged in an academic task that s/he can perform with high success.[51]

In *Time on Task: A Research Review*, Nancy Karweit points out that presenting students with material they are not ready to handle can present a very serious problem in cumulative subjects such as mathematics. In these cases, according to Karweit:

> What is learned at one time is highly dependent upon what is mastered previously. In this case, the incomplete learning at one interval carries over to the next, reducing the learning rate at each succeeding interval. Thus the learning rate for a student who is experiencing difficulties declines over time, and at some point the student may stop accumulating knowledge altogether.[52]

Appropriateness of instruction also refers to the pace of instruction: the amount of material covered within a given time. Given that students are ready to learn material they have not previously covered, the amount of time that teachers take to cover material may be a problem. In *Time On Task: A Research Review*, Nancy Karweit notes:

> If the instructional pace is too fast the learner will not be able to cover the material. Similarly if the pace of instruction is too slow students will not learn at an optimal rate.[53]

While the BTES researchers define academic learning time in terms of high success rates, their conclusions indicate that they view appropriateness of instruction, and pacing in particular, as a more significant feature of learning time than high success rates. In practice they would expect learning time to progress from a period of "medium success" when students are learning new materials and therefore "will not understand completely and make some errors" through explanation and "guided practice" to a period of "consolidation" or "successful practice." They stress the importance of allowing enough time for "successful practice" when elementary students are learning basic skills. However, the BTES researchers are also aware that:

> . . . at some point further practice is of minimal value, it's time to move on to something new. . . . It would not be desirable for students to spend all of their time on tasks they can perform completely correctly "[54]

Quality of instruction, the final factor in learning time, refers to clarity of teacher presentation of materials. In *Time to Learn*, Walter Borg defines the term "quality of instruction" as follows:

> Quality of instruction—the degree to which instruction is presented so as not to require additional time for mastery beyond what is required by the aptitude of the learner.[55]

Prominent reviewers of the time-on-task research generally conclude that the quantity of instructional time is not by any means "the major variable producing school achievement." In her article, "Should We Lengthen the School Term?", Nancy Karweit

states that studies that relate achievement to engaged time (time during which students are paying attention) indicate that the quantity of engaged time accounts for between 1 and 10 percent of achievement outcomes.[56]

In his article on "Scientific Literacy and Economic Productivity in International Perspective," Herbert J. Walberg estimates that, on a scale of 135 percent (used in place of 100 to take account of collinearity), "amount of instruction, including self instruction" accounts for 16 percent of achievement outcomes, whereas "quality of instruction" accounts for 27 percent, and "the psychological climate of the classroom group" accounts for 36 percent.[57]

Results from the IEA Second International Mathematics Study and recent work by Robert Dreeben also indicate that inappropriate instruction is much more likely to account for learning problems than total instructional time.

In reviewing the results of the Second International Mathematics Study for U.S. eighth graders, F. Joe Crosswhite stated in 1985:

> . . . the eighth grade curriculum was typically a "low intensity presentation." That is to say, many topics were dealt with only briefly—for perhaps a period or two. As a result, insufficient provision may have been made for developing a solid conceptual base upon which subsequent mathematics is to be learned.[58]

In another review of the Second International Mathematics Study, Kenneth J. Travers added:

> The results suggest strongly that an important need is not more time to teach math, but better use of the time presently available. In Japan where scores were 10-20 points above those of the United States, math topics receive more focused attention and each must be mastered before the students move on.[59]

In their recent study entitled "Race, Instruction and Learning" (1985), Robert Dreeben and Adam Gamoran found that differences in *time use* within districts, schools, and classes played a very significant role in explaining differences in first-grade word learning and reading achievement. According to Dreeben and Gamoran, inferior achievement levels in one district came about when

> . . . basal materials and inferior materials employed in a whole class arrangement competed for time in a mixed program that did not allocate much time to reading in the first place.[60]

Dreeben and Gamoran also found that a role was played by teachers who used inappropriate instructional pacing. Achievement deficits occurred in one class

> . . . because of *equality* in instructional treatment— . . . covering almost as much material with low as with high aptitude children over an abbreviated time span— . . . Lower aptitude children who were paced more appropriately learned more words and earned higher achievement scores.[61]

As one might expect, current literature advocating specific measures to improve achievement tends to focus on measures designed to improve the appropriateness or quality of instruction rather than increasing instructional time. Herbert J. Walberg, for instance, in his 1983 article "Scientific Literacy and Economic Productivity" wrote that:

> Instruction in school, however, can be made much more effective; the quality of the 180 six-hour days . . . might double or triple without increase in time itself. The major problem of ordinary instruction . . . is suiting the content pace and difficulty of the lesson to each child individually; aiming towards the middle third for example may mean that two thirds of the class are either incapable of learning or already knowledgeable.
>
> Several innovations have increased the effectiveness of instruction for diverse as well as more uniform groups.

Walberg goes on to discuss specific methods such as mastery learning, "teams-games-tournaments," open education, and computer-assisted instruction.[62]

In their study *Cost-Effectiveness of Four Educational Interventions* (1984), Henry Levin and associates compared "effect size per $100 cost per student on achievement in reading and mathematics of specific versions of four innovations including cross-age tutoring, computer-assisted instruction, reducing class size, and increasing instructional time by 30 minutes per subject.[63] In a subsequent publication on "The Economics of Student Time" (1984), Levin summarized the results of this study:

> Among the four alternatives, increasing instructional time and reducing class size showed the lowest cost effective-

ness; cross-age tutoring showed the highest cost effectiveness, and computer-assisted instruction was in the middle. . . . The use of peer tutors showed about four times the cost effectiveness of increases in instructional time. Accordingly . . . results suggest extreme caution in viewing increased instructional time as an efficient method for increasing student achievement.[64]

One of the central conclusions of time-on-task literature is that specific teaching skills and behaviors have a significant impact on student achievement. In *Time to Learn* (1980), the authors of the BTES study entitled the overview of their results as "Teaching Behaviors, Academic Learning Time [ALT], and Student Achievement," indicating that in their "ALT model":

. . . teaching behaviors have an impact on student achievement by influencing the facets of academic learning time (time allocation, engagement rates and success rates). . . . In the model, teaching behaviors are categorized by the functions they fulfill—diagnosis, prescription, presentation, modeling, or feedback.[65]

In his "Syntheses of Research on Teaching" (1986), Herbert J. Walberg noted the mean effect sizes of specific teaching behaviors on achievement reported in 95 studies. The mean effect sizes for teaching behaviors such as reinforcement (1.17), cues, and corrective feedback (.97) are between two and three times the median size (.40) of effects reported for quantity of instruction, and exceed even the highest size of effects reported for quantity of instruction.[66]

A number of reviewers have concluded that staff development programs can produce necessary changes in teacher behavior. For example, in "Time and School Learning" (1985), W. J. Smyth explains why the findings of the BTES researchers are encouraging:

. . . research . . . has isolated alterable teaching behavior and classroom variables that enhance pupil engagement. Research in the areas of teacher development and training has also demonstrated that teachers can, without too much trauma, change their teaching style to obtain these ends.[67]

It should not, as a result, be surprising that recommendations for staff development/school improvement programs receive a great deal of emphasis in time-on-task or related literature.[68]

In an 1985 essay, Charles W. Fisher and David C. Berliner, the editors of *Perspectives on Instructional Time*, raise the question, "Can we use the results of research on instructional time to improve schools?" They conclude:

The answer to this question must be a resounding yes. School improvement efforts incorporating instructional time components have ranged from small-scale relatively informal interventions through well controlled training studies, to systematic district wide improvement efforts. . . . The research on instructional time has heavily influenced large-scale development of staff-development materials. . . . The impact that instructional-time data and procedures will have depends not only on the utility of the information itself but on the implementation and training strategies employed.[69]

In the same essay Fisher and Berliner note that:

. . . we believe that increases in the amount of instructional time without efforts to improve the quality of instruction are likely to be disappointing. The primary reasons for our pessimism stem from the fact that increases in quantity of time alone will fail to provide useful impact to teachers, to provide student learning tasks that are more relevant to outcome measures or to enhance in any way the skills and knowledge of teachers.[70]

From a policy point of view, nothing in the time-on-task literature suggests that what every school needs is a longer day/year. In *Cost-Effectiveness of Four Educational Interventions*, Henry M. Levin and colleagues conclude their analysis with some very sound precautions:

. . . one should not use the results of our analysis to make an all time generalization about all possible versions of each of the interventions. Second, our results apply to mathematics and reading achievement, so they should not be applied to other outcomes.

Third, both the costs and effects of interventions may vary from one school to the next depending on variations in conditions that were not studied here.[71]

In any situation where a defined learning problem exists, the time-on-task literature suggests that the problem may be caused by simple lack of instructional time, or it may be the result of how existing instructional time is used. The remedy for problems caused by shortages of instructional time is to increase instructional time. But increasing instructional

time is not a remedy for solving problems related to how instructional time is used. In her article, "Should We Lengthen the School Term?", Nancy Karweit sums up the situation neatly:

> If time spent and achievement are highly related, then instruction as practiced is probably efficient and adding more time may be a reasonable strategy. If time spent and learning are not so related then a strategy of improving the quality and appropriateness of time may be more beneficial.[72]

According to a study by the American Association of School Administrators, adopting a 7-hour day/200-day school year would increase the annual costs of school district budgets by at least 14 percent. On a nationwide scale, Alan Odden of the Educational Commission of the States estimated that it would cost $20 billion dollars simply to move from a 180- to a 200-day school year.[73] Before committing to this type of investment, policymakers should insist on concrete proof that they could expect to get something for their money, or that out of all the possible uses of available educational funds, buying more instructional time is the best option. The problem is exactly as Nancy Karweit put it in "Time-On-Task Reconsidered":

> Learning takes time but providing time does not in itself ensure that learning will take place. More time may result in more learning—if adequate time was the major cause of the problem in the first place. If other factors were the real cause, then providing more time will not be an effective strategy.[74]

Will Students Reduce Their Efforts If Instructional Time Is Increased?

> . . . if we want to talk seriously about education, about showing students that learning is enjoyable, about creating lifelong learners, then more simply isn't the answer. In fact, it might be just the opposite. You might force me to do four hours of math a night—and the minute I'm free, I'll never do math again. For me that's the opposite of excellence in education.[75]

Kenneth Haskins, Director of the Principals' Center, Harvard University Graduate School of Education, wrote these words about the long-run impact of extending the time for school work. In the short run, potential gains from increasing instructional time might be eliminated by student fatigue or decisions by students to compensate for increased demands on their time by reducing their efforts—or by dropping out of school altogether.

In "Time-On-Task Reconsidered" (1984), Nancy Karweit points out that achievement results obtained by increasing instructional time within the current school day may not necessarily occur within a longer school day:

> . . . present conditions might not necessarily hold with a longer school day. For example, longer school days may require additional recess or other break time, thus reducing the time available. With or without breaks, students and teachers might find fatigue a problem so that additional time is not used effectively.[76]

It is logical to expect learning fatigue to vary with student and instructional characteristics. Children who are ill or hungry will have more problems paying attention. Children with lower ability or aptitude for specific subjects are more likely to feel fatigue, since they must spend more effort than others to learn. Instructional characteristics, including appropriateness and quality of instruction, will also affect fatigue. It takes more effort for students to follow material that is not well organized or that they are not ready to learn. In learning, as in other work efforts, success energizes and failure enervates.

Without improvements in instruction, simply adding more instructional time increases fatigue and might not have any benefit for low achievers, or low-achieving schools. In *Clocking Instruction: A Reform Whose Time Has Come?* (1984), Henry M. Levin points out that:

> Effort is also a matter of motivation, a factor which can be affected by quality instruction. It is conceivable that extending the time allotted to schooling may actually reduce the level of effort substantially if the quality of other learning resources is poor. Effort may also be reduced by sheer fatigue associated with additional time.[77]

In the secondary grades, increasing instructional time may increase the dropout rate. In *Raising Standards and Retaining Students: The Impact of the Reform Recommendations on Potential Dropouts* (1985), Edward L. McDill and his associates point out that recent studies have found that as many as 25

percent of 14-year-olds and up to 50 percent of 17-year-olds are employed at least part time. They conclude that:

> If the amount of time required for school work is increased, even modest amounts of working may have negative consequences for educational performance and persistence. A great deal would depend upon how youngsters' propensity to work might respond to increased time demands. Youngsters who are working to help support their families, for instance, are unlikely to stop in response to increased school demands.[78]

With respect to extracurricular activities, the McDill work states that:

> Participation in extracurricular activities builds a normative attachment to the school, and also provides an avenue for success for students who do not perform well in the classroom. It is precisely those students who are most at risk of dropping out. Cutbacks in extracurricular activities due to increased school time deprive the school of the only holding power it has for these high risk students.[79]

In addition, Henry M. Levin points out the illogic of asking students to accept the burden of more time in school at a time when returns to schooling are declining. In *About Time for Educational Reform* (1983), Levin writes:

> . . . if expected income associated with a particular educational credential falls, it would hardly be surprising to find students reducing their time and effort to pursue that credential. Indeed the poor employment and earning prospects for high school graduates have reduced the incentives for high school completion. . . . Likewise the economic returns to college completion have fallen as college graduates compete for poorer job prospects.[80]

Is There a Reasonable Relationship Between the Costs of a Longer School Day/Year and Achievement Gains?

Instructional time can be increased in some situations by making more efficient use of existing school time. It can also be increased by extending the school day/year. But the time-on-task literature indicates that extending the school day/year will not produce acceptable cost/benefit ratios unless schools can learn to use time more efficiently than they do at present.

In "Should We Lengthen the School Term?" (1985), Nancy Karweit poses the problem as follows:

> The addition of raw number of hours obviously does not guarantee that the additional time will be used to any better purpose than present time is used. Because resources for schools and for school improvement are limited, decisions to act in one direction often foreclose pursuit of other actions. In this case, other options—such as implementing what we already know about effective instruction and classroom management—seem to have a greater potential payoff than simply keeping the school doors open for a longer period of time.[81]

Estimates of how school time is actually used have been presented by Richard B. Rossmiller in "Time On Task: A Look at What Erodes Time for Instruction" (1983) and Nancy Karweit in *Time on Task: A Research Review* (1982).[82] Their estimates are presented below in a table, using the following categories from Richard Rossmiller:

Gross School Year: the typical school year of 1,080 hours, derived by multiplying the number of days per year (180) by the number of hours per day (6).

Net School Year: the number of hours left after deducting time when either teachers or students are not in school, including student absenteeism, inclement weather, in-service days, and strikes.

Net Instructional Time: the time that students are actually receiving instruction after deducting time spent on noninstructional activities out of class or in class. Out-of-class time includes time used for recess, lunch, passing time between classes, assemblies, field trips, and standardized testing. In-class time includes time taken up by activities such as grouping/regrouping of students, discipline, transitions between activities, answering miscellaneous questions from students, announcements over the intercom, and collecting money.

Time-on-Task: the time that students are actually paying attention to instruction or really working at their seats.

The table includes Rossmiller's estimate and the minimum and maximum estimates provided by Karweit. The terms minimum and maximum refer to the amount of time-on-task available.

Estimates of Hours of Instructional/Learning Time Provided in a Typical School Year

Time use category	Karweit minimum		Rossmiller		Karweit maximum	
	Hours	%	Hours	%	Hours	%
Gross school year	1,080	100	1,080	100	1,080	100
Net school year	840	77	918	85	1,020	94
Net instructional time	420	38.8	485	44.9	680	62.9
Time-on-task	310	28	364	33.7	612	56

The above table leaves out some interesting details from Rossmiller's estimates in order to provide direct comparability with Karweit. Rossmiller indicates that student absenteeism accounts for two-thirds of the difference between the gross and net school year. He also indicates that use of time out of class for noninstructional activities accounts for three-quarters of the difference between the net school year and net instructional time.[83]

Karweit does not directly provide estimates of hours or percent of time lost to these factors in her breakout of time use. But her conclusions regarding the importance of time used out of class for noninstructional activities seem to support Rossmiller's. Karweit cites BTES as indicating that:

> . . . of the typical six-hour school day, four hours are scheduled for instruction with the remaining time scheduled for lunch, recess, breaks and other non-instructional activities.[84]

This would leave no more than 66 percent of the school day available for instructional activities. Karweit concludes that when all time used for noninstructional activity is taken into account, the literature indicates that "instruction may occupy at most 60 percent of the school day."[85]

Thus, when even the more efficient schools are using only 62.9 percent (Karweit's maximum) of school time for instruction, the efficient use of time is a serious barrier to obtaining reasonable results at an affordable cost by extending the school day/year.

The following analyses are presented as examples to illustrate the issue.

Example I. How Much Time Must Be Added to the School Year to Produce a Significant Gain in Achievement?

In "Time on Task: A Research Review" (1982), Nancy Karweit analyzes BTES data to show the number of extra minutes of instruction required to produce a .25 standard deviation increase on a standardized achievement test in various aspects of reading and math for students in grade 2 and grade 5. The results were as follows:[86]

Grade/Subject	Extra minutes of instruction needed for .25 standard deviation increase on achievement test
Grade 2	
Math (overall)	264
Reading (overall)	147
Grade 5	
Math (overall)	65
Reading (overall)	163

These data indicate that one hour of extra instructional time per day would have produced a significant increase in achievement in mathematics for the fifth graders who were involved in the BTES study.

An increase of .25 of a standard deviation is significant but not spectacular for fifth-grade math. In *Cost-Effectiveness of Four Educational Interventions* (1984), Henry M. Levin and colleagues reported effects ranging from .68 to .04 standard deviation increases in achievement test scores for different interventions in fifth grade math. An increase of .25 is equal to the effect reported by Levin et al. for computer-assisted instruction and less than one-half of the effect reported for cross-age tutoring.[87]

On this basis, we have defined a goal for which we would need one extra hour per day of instructional time or 180 extra hours per year. The table below indicates the number of hours that would have to be added to the school year to create this amount of time to total school time reported by Karweit and Rossmiller.

Number of Extra Hours That Must Be Added to the School Year to Produce 180 Extra Hours of Instructional Time Under Various Estimates of the Ratio of Net Instructional Time to Total School Time

Source of estimate	Estimated ratio of net instructional time to total school time	Extra hours of school time required to add 180 hours of instruction
Karweit (minimum)	.388	464
Rossmiller	.449	401
Karweit (maximum)	.629	286

The next table shows the actual and potential increased school time that results from adding the extra hours required to obtain the additional 180 hours of instruction. It shows the new gross school year in hours, the percent of increase over the typical gross school year of 1,080, and the potential maximum school day or year that could result if the increase was provided by extending either day alone, or year alone.

Increased School Time Resulting from Adding the Extra Hours Required to the Gross School Year

Extra hours added	New gross school year		Maximum length of school	
	Hours	% Increase	Day	Year
464	1,544	43%	8.57 hrs	257.3 days
401	1,481	37%	8.22 hrs	246.8 days
286	1,366	26%	7.58 hrs	227.6 days

The inescapable conclusion: Given the way schools currently use time, the increase in school day/year proposed by the National Commission on Excellence is not large enough to reach defined achievement goals in most schools.

This exercise sheds some light on the benefits of the initial proposal of the National Commission on Excellence in Education. The Commission's proposal called for a school year of 200 days of 7 hours each. This amounts to adding 320 hours to the typical school year of 1,080 hours and would provide a gross school year of 1,400 hours. The Commission's proposed increase seems substantial on the surface. In reality, the Commission's proposed increase is inadequate to meet any achievement gain objective in our example outside of fifth-grade mathematics. Furthermore, given the way in which time is currently used in school, the proposed increase would not be enough to produce a significant gain in fifth-grade math achievement except in the most efficient schools. In the majority of schools, the Commission's proposed increase would not be enough to accomplish any of the objectives defined in our example.

Example II. Is the Prospective Achievement Gain from the Proposal of the National Commission on Excellence in Education Less Than What Might Be Obtained Through Other Means?

In *Cost-Effectiveness of Four Educational Interventions*, Henry M. Levin et al. compared the effects on achievement of extending the school day by one hour with the effects of cross-age tutoring, computer-assisted instruction, and reductions in class size. The authors very generously assumed that a 180-hour increase in school time would produce 150 hours of instructional time, and that the instructional time would be allocated to provide one half-hour more in reading and one half-hour more in math.[88] The following table reports the resulting mean effect across grades per intervention. To simplify comparisons we are reporting the range of mean effects found for any of the variations in either tutoring or class size reductions.[89]

Intervention	Effect on achievement	
	Reading	Math
Cross-age tutoring	.38-.48	.67-.97
Computer-assisted instruction	.23	.12
Class size reduction	.03-.11	.06-.22
Increasing instructional time	.07	.03

Increasing instructional time by one half-hour per subject was a relatively ineffective means of increasing achievement. When costs were brought into the picture to establish cost-effectiveness comparisons, the relative positions of each intervention remained the same. Increasing instructional time by one half-hour per subject was both the least effective and the least cost-effective measure in the study.[90]

The Commission on Excellence proposed a much larger increase than that considered by Levin et al. The Commission proposed to add 320 hours to the school year as compared to the Levin study's 180. In the most efficient schools, where 62.9 percent of school time is used for instructional time, this would amount to 201.28 more instructional hours or 34 percent more than provided by Levin et al. However, straightforward linear projections of the achievement gains for instructional time show that the relative effectiveness of the Commission's proposal is really no greater than Levin's. If we generously assume that a 34 percent increase in instructional time produces a 34 percent increase in achievement, then the reading achievement effect for instructional time will increase from .07 to .09. The math achievement effect will increase from .03 to .04. While the achievement effect of the 320-hour increase in school time proposed by the Commission is greater than the effect of the 180-hour increase examined by Levin et al., it is still relatively the least effective means of obtaining achievement and beyond doubt the least cost effective.

The previous examples indicate the pointlessness of generalized proposals to increase school time in order to increase achievement.

Time-on-task literature indicates that extending the school day/year to improve achievement is like trying to make a needle visible in a haystack by making the whole haystack bigger. The literature suggests that there is no point to more time, unless the amount of instructional time already provided is really less than the amount of time needed. In general, school improvement efforts or innovations that focus on making better use of existing instructional time are likely to be more educationally effective and more cost effective than efforts to increase the quantity of instructional time.

A state or local mandate that forces all schools to extend the school day/year by some flat amount, at best, by sheer luck, might give some schools what they need. For other schools, however, such a mandate would amount to simply throwing money down the tube. These schools include:

- Schools where the increase might not be enough to accomplish any objective.
- Schools where the increase wouldn't produce anything because the staff has no real plan to use the increased time.

- Schools where more time was not needed, schools that were deprived of other resources that might have been available if the decision had not been made to spend money on more time.

The challenge before educational policymakers is to identify problems or improvement goals at each school, and then consider the types of programs or resources needed for each school to meet those goals. The ideal way of solving a problem that varies from one school to the next is to have collaborative research and decision making by the administrators and staff of each school, assisted by consultants. The role of the state or local school district should be confined to funding consultant costs and eventual program costs.

At the end of this process, if the staff of a school can make a reasonable case that, in their school, a given extension of the school day/year is the best way of producing a specific increase in achievement, state and local policymakers should seriously consider funding the extension. In this case, the decision to spend money would be an investment based on informed study, not legislative fiat.

Conclusions

From the standpoint of the literature on extending the school day/year, six basic conclusions are fully warranted:

1. There is no point to adding more instructional time to the school day, unless the amount of instructional time already provided is less than needed.
2. School improvement efforts or innovations that focus on making better use of existing instructional time are likely to be both more educationally effective and more cost effective than increasing the quantity of instructional time.
3. Today, in even the most efficient schools, only 56 percent of school time can be counted as active learning time—time when students are receiving instruction. Increasing that percentage is a precondition to gaining any benefits from extending the school day/year.
4. Potential gains in achievement from an increase in the school day/year might be eliminated by student fatigue, or by students' decisions to reduce their effort or even to drop out of school.
5. State or local mandates that force all schools to extend the school day/year by some flat amount are unwise since they fail to take account of individual school resources and problems.
6. Recommendations to extend the school day/year should be considered *only* on a school-by-school basis where the staff of an individual school, after a process of collaborative research and decision making, makes a reasonable case that a given extension of the school day/year is the best way of producing a specific increase in achievement.

APPENDIX A: POSITION STATEMENTS ON THE VALUE OF AN EXTENDED SCHOOL DAY/YEAR

I. Reformers

"During the past two years, we have heard much talk about raising academic standards, improving test scores, lengthening the school year. Many school people seem more concerned about how long students stay in school than what they should know when they depart.... More substance, not more time, is our most urgent problem."

Ernest L. Boyer, *High School* (New York: Harper & Row, 1983), pp. 83-84.

"Increasing annual attendance from 175 to 185 days appears to enhance achievement. This suggests that states should not reduce the length of the school year even for good purposes such as teachers' in-service education.

"I suggested in Chapter 5 that 25 hours of instructional time per week, compared with 22.5 hours in the elementary schools studied might be a reasonable target. However, establishing a uniform time utilization target probably would be less constructive than initiating a process of improvement in each school.... The effort might involve such things as the following: a collaboration between home and school in getting children to school on time each morning; more efficient procedures for getting children in and out of classrooms first thing in the morning, at recess, and at lunchtime; and less time for opening exercises and for final clean-up. There is some variation across the country in regard to the length of the school day. Some schools may find it necessary to increase the length, but the step should only be taken after adjustments such as those suggested have been made.

"State and local mandates in this area should be avoided.

"If our interest is in quality educational experiences, we must stop with providing only time. I would always choose fewer hours well used over more hours engaged with sterile activities. Increasing the days and hours in school settings will in fact be counterproductive unless there is simultaneously marked improvement in how this time is used."

John I. Goodlad, *A Place Called School* (New York: McGraw-Hill, 1984), pp. 96, 281-283.

II. Researchers

"Although increases in the length of the school day or the number of school days per year have often been suggested in recent proposals for school improvement, we believe that increases in the amount of instructional time without substantial efforts to improve the quality of instruction are likely to be disappointing.... The primary reasons for our pessimism stem from the fact that increases in quantity of time alone will fail to provide useful feedback to teachers, to provide student learning tasks that are more relevant to outcome measures, or to enhance in any way the skills and knowledge of teachers."

David C. Berliner and Charles W. Fisher, "One More Time," in *Perspectives on Instructional Time*, David C. Berliner and Charles W. Fisher, eds. (New York: Longman, 1985), p. 340.

"I would like to caution legislators and school boards not to take the second step before the first. Although from a conceptual point of view, extending the school day/year provides great *opportunity* to improve student achievement, this opportunity is no *guarantee* of significant increases in student achievement.

"Let us take the current amount of schooling and make it productive for all students. That entails increasing expectations for course work and standards for performance. It is also necessary to make school learning have consequences for employment.

"The report of the Commission on Excellence contains many potent recommendations on how to increase active learning time and its efficient use. These include increased homework, early teaching of study skills, increasing teachers' classroom management skills and more generally the quality of teaching as well as attendance.

"Only after we have increased the cost-benefit of the current time frame should we consider the costly extension proposal."

Annegret Harnischfeger, "Findings and Recommendations Regarding Lengths of School Day and Year" in *A Nation at Risk...: Some Reflections* (unpublished, November 1986), pp. 1-3.

"For a theory of classroom organization it is of considerable importance that time-on-task is not so strongly associated with learning after ability is partialled out. . . . In other words if time-on-task in and of itself is not a strong predictor of achievement, we need to seriously question the wisdom of enacting policies aimed at school improvement by sheer increases in instructional time. A wiser policy would aim first at increasing the use of available opportunity time and at increasing the appropriateness of instructional time.

"The addition of raw number of hours obviously does not guarantee that the additional time will be used to any better purpose than the present time is used. Because resources for schools and for school improvement are limited, decisions to act in one direction often foreclose pursuit of other directions. In this case, other options—such as implementing what we already know about effective instruction and classroom management—seem to have a much greater potential payoff than simply keeping the school doors open for a longer period of time."

Nancy Karweit, "Should We Lengthen the School Term?" *Educational Researcher*, June/July 1985, pp. 13-14.

"The effectiveness of increasing time available for instruction and learning seems to be crucially dependent on how that time is used. Simple mechanical increases in the use of time may not have a significant impact on achievement or other school outputs, and they are likely to be costly relative to their effectiveness.

"Individual teachers ought to explore how time can be used more efficiently to provide instruction. Schools should seek to determine in which subjects and for which students more time is required for learning as well as how to provide that time most efficiently. All participants should focus on how existing time can be used more effectively by engaging students more fully and making school a much more vital and exciting experience than it presently is. But each of these policies must be a sensitive and selective one rather than a broad brush approach to reform."

Henry M. Levin, "Clocking Instruction: A Reform Whose Time Has Come?" ED 245 318 (Stanford, CA: Stanford University Institute for Research on Educational Finance and Governance, 1984), p. 4.

"In summary, while macro measurements of time such as length of school year, term and week, appeal to a sense of logic as being related to achievement, the available research does not bear out this proposition. It may be an illustration of where 'more of the same' makes little difference...What really matters, in the final analysis, is how effectively teachers are able to bring individual pupils into contact with learning materials and sustain that engagement.

"Coupled with the pupil engagement-achievement research has been that which has isolated alterable teaching behavior and classroom variables that enhance pupil engagement. Research in the areas of teacher development and training has also demonstrated that teachers can, without too much trauma, change their teaching styles to obtain these ends."

W. J. Smyth, "Time and School Learning," in *The International Encyclopedia of Education*, Torsten Husen and T. Neville Postlethwaite, eds. (Oxford: Pergamon Press, 1985), pp. 5266, 5271.

"What have we learned from the classroom research of the 1970s that can be useful to guide instructional practice in the 1980s? The most potentially used variable to emerge from the past decade of research was time. However Phillip Jackson (1977) wisely noted:

> There has been a lot of talk about the importance of time in the determination of educational outcomes. . . . Certainly we should take a look at how time is being used or misused . . . let us not seize too quickly at remedies that call for adding days or hours to our present efforts. The real key lies in making better use of the time we already have."

Jane A. Stallings, "Instructional Time and Staff Development: How Useful Is the Research on Time to Teachers?", in *Perspectives on Instructional Time*, David C. Berliner and Charles W. Fisher, eds. (New York: Longman, 1985), p. 284.

"...the National Commission on Excellence (1983) seems right in emphasizing the need for more time in school. But students should also be employing more time in academic pursuits outside the school and using in-school and out-of-school time more efficiently."

Herbert J. Walberg, "Improving the Productivity of America's Schools," *Educational Leadership*, May 1984, p. 26.

III. Research Organizations

"The research indicates that time related to student achievement becomes stronger as the measure of time reflects what students do in the classroom. However quality of time bears a significant relationship to achievement.... Research indicates that increasing time in school will not automatically increase student achievement."

Bob Quartorola, *A Research Paper on Time on Task and the Extended School Day/Year and Their Relationship to Improving Student Achievement*, ED 245 347 (Association of California School Administrators, May 1984), p. 6.

"Arguments for lengthening the school day and/or school year are predicated on the notion that more time devoted to learning will yield proportionally higher achievement scores. Research data reveal, however, that the correlation between time and achievement is far slighter than the quantity; moreover, the costs of extending school time are disproportionate to any resulting instructional gains.

"Administrators should strive to reduce the amount of school time that is either lost or diverted to noninstructional activities before extending the school day or year.

"...To increase opportunity to learn, teachers should begin and end lessons precisely on time, reduce transition time between tasks, minimize waste time, and closely monitor student learning."

Thomas I. Ellis, *Extending the School Year and Day* (Eugene, OR: ERIC Clearinghouse on Educational Management, 1984), p. 2.

"Should kids spend more time in school? Perhaps. Spending more time in the classroom probably will result in some gains in achievement, especially for low achievers. Yet research suggests that achievement gains will not be dramatic and they will be expensive.

"Whether we increase time in school or not, everyone—including the members of the Gardiner Commission—agrees that we should accomplish something else first: better use of that time."

Jo Ann Mazzarella, "Longer Day, Longer Year: Will They Make a Difference?", *Principal*, May 1984, pp. 19-20. (This article is identified as an ERIC CEM product.)

"The view that time spent is equivalent to learning gained has become the newest myth to cloud our understanding of education."

"If we look, we can find hundreds of schools, both public and private which have escaped the 'rising tide of mediocrity' by holding fast to certain fundamental truths, from which other schools can learn. One of those truths is that 'more' and 'better' are not always the same."

Edward C. Smith, *Longer School Years: Reform or Illusion*? Policy Studies in Education, ED 247 661 (Washington, DC: Learn Inc., The Education Foundation, 1983), pp. 6, 8.

"Lengthening the school day or the school year or increasing the number of years of schooling is the most expensive method of increasing learning time.... If educators insure that the additional time is used for learning, this approach may prove to be very effective."

Deborah Burnett Strother, "Another Look at Time on Task," *Phi Delta Kappan*, June 1984, p. 715. (Strother is identified as managing editor in the Phi Delta Kappan Center for Evaluation, Development & Research.)

APPENDIX B: REFERENCES USED BY SECRETARY BENNETT IN "FIRST LESSONS" TO SUPPORT LONGER SCHOOL DAY/YEAR

In *First Lessons*, Secretary of Education William Bennett cites the following publications involving international comparisons in support of a longer school day/year:

1. Rohlen, Thomas P. "Japanese Education: If They Can Do It, Should We?" *The American Scholar* 55 (1), Winter 1985-86.
2. Stevenson, Harold W., "Classroom Behavior and Achievement of Japanese, Chinese, and American Children," in *Advances in Instructional Psychology*. Hillsdale, NJ: Erlbaum, in press.

The exact passages in which they are used are as follows:

> One reason that overseas elementary schools outpace ours in international comparisons may be that other countries' children simply get in more learning time than ours do. Harold Stevenson's cross-cultural studies found American fifth graders spending 64.5 percent of their school time on academic activities. By contrast, Chinese children spend 91.5 percent of their school hours on academics and Japanese children 87.4 percent. (Keep in mind that the Chinese and Japanese also put in more hours).
>
> Consider that while most American children attend school for 180 days per year, Japanese children put in 240 days.
>
> Harvard professor Thomas Rohlen says: "By high school graduation, Japanese children have been in school somewhere between three and four more years than their counterparts."

Rohlen's article is a description of several features of the Japanese educational system, including the length of school term, that Rohlen feels are responsible for Japan's recent achievements. None of the factors mentioned is assigned any particular weight. The article does not contain any comparative data on achievement test scores. It concludes with the following advice not mentioned by Bennett:

> We would be foolish to see Japanese education as a model for our own efforts. We can not allow ourselves to either ignore or to imitate its approach. Rather it is possible to look periodically into the Japanese mirror while we independently set out to strengthen our schools and our system within our own cultural and social context. Japan's achievements should become the source of our ambitions and the measure of our progress.

In sum, then, Rohlen's work cannot be used to replace the conclusions and data from IEA studies. It is also doubtful whether Rohlen himself would support following the Japanese example with respect to a longer school day/year.

In the case of Stevenson's research, we did not have access to the article in press. However, Stevenson and his coworkers have published the results of their research elsewhere. We have relied on the following version:

Stevenson, Harold W., et al. "Mathematics Achievement of Chinese, Japanese and American Children." *Science* 231 (1986): 693-699.

Stevenson studied comparative achievement in mathematics and reading in three cities, including Minneapolis, Sendai (Japan), and Taipei (Republic of China). Irrespective of what Stevenson's results were, it is questionable whether his sample is representative of the countries in question. The sample ultimately consisted of 240 children from both the first and fifth grades from 20 classrooms in 10 schools in each of these three cities. Stevenson explains that the Chinese and Japanese cities were selected for comparability to Minneapolis. The children tested were a representative sample of each of those cities.

In discussing the generalizability of his findings, Stevenson himself states that:

> The data we have presented here are from a single set of studies conducted in particular locales and with particular methods. Nevertheless, the findings are directly in line with those from other cross-national studies of achievement.

Stevenson cites the Second International Mathematics Study of 1981-82.

Unfortunately, some of Stevenson's findings are clearly not in line with the findings of IEA mathematics assessments. In Stevenson's study, Japanese children had more hours of instruction in mathematics than American children. Stevenson found that this was partially the result of a longer school year. In the Second International Mathematics Study, however, it turned out that Japanese students received substantially fewer hours of mathematics instruction than U.S. students in spite of their longer school year. These differences may have resulted from differences in grade levels studied: Stevenson sampled elementary school students, while IEA sampled sec-

ondary school students. On the other hand, the differences may result from differences in sampling validity. IEA's comparisons are always based on nationwide samples of each country. In Stevenson's case, the samples are not initially designed as nationwide samples.

In addition, Stevenson concludes that instructional time variables may account for differences in achievement. In IEA assessments, there is typically an absence of any substantial relationship between instructional time and achievement, except in the area of foreign language learning. This may reflect both the differences in findings on instructional time provided and differences in interpretation and emphasis. Stevenson focuses on the differences in achievement in mathematics between American children and the others as a group. His research also revealed differences in reading achievement and some differences in achievement between Chinese and Japanese children, which cannot be explained on the basis of instructional time per week or per year.

In fifth grade reading and mathematics both, the Japanese children come out first, followed by the Chinese, with the Americans last. If rank order were determined primarily by hours of instruction, Chinese children should come out first in mathematics and at least ahead of the Japanese in reading. It is possible, but not certain, from the limited data Stevenson presents, that, compared with the Japanese children in the samples, the American children may have received as much or more instruction in reading.

Irrespective of the significance of the data above, the real issue is the ability to draw conclusions regarding the importance of instructional time or any other factor from a single comparison between two or three countries. IEA data allow users to examine the consistency or inconsistency of relationships between various factors and achievement over several subjects in as many as 21 countries.

Stevenson's research definitely points to some important attitudinal and behavioral factors that might be related to international differences in achievement. However, an attempt to use Stevenson's research to substitute for or refute IEA data is not legitimate.

NOTES

1. David P. Gardiner et al., *A Nation at Risk: The Imperative for Educational Reform*, p. 29.
2. Education Commission of the States, Task Force on Education for Economic Growth. *Action for Excellence*. Denver: Education Commission of the States, 1983, p. 38.
3. Chris Pipho, *Tracking the Reforms. Part 7: A Longer School Year—A Reform Rebuff?*
4. Education Commission of the States, *Minimum Length of Instruction Day/ Instruction Year as of November 1985*.
5. Information on recent legislation was obtained from print sources, which were followed up by phone calls where the print sources indicated that significant changes may have occurred or clarification was required. The print sources in question include the following:
   a. Education Commission of the States, *op. cit.*
   b. "Changing Course: A 50-State Survey of Reform Measures." *Education Week*, February 6, 1985.
   c. Chris Pipho, *op. cit.*
   d. U.S. Department of Education, *The Nation Responds: Recent Efforts to Improve Education*.
6. NEA Professional and Organizational Development/ Research Division, *Status of the American Public School Teacher 1980-1981*, p. 150. NEA Professional and Organizational Development/Research Division, *Status of the American Public School Teacher 1985-1986*, Table 26, p. 3.
7. NEA Research Division, *Status, 1980-1981*, p. 151. NEA Research Division, *Status, 1985-86*, Table 27, p. 23.
8. Educational Research Service, *Scheduled Salaries for Professional Personnel in Public Schools, 1983-84*, 1984, p. 36. Educational Research Service, *Scheduled Salaries for Professional Personnel in Public Schools, 1985-86*, 1986, p. 36.
9. NEA Professional and Organizational Development/ Research Division, *A Longer School Day and Year: Over Three Decades of Public Opinion Polling*, pp. 16-17.
10. Jim Van Loozen, *A Blueprint for Educational Excellence: A School Board Member's Guide*, p. 14.
11. Educational Research Service and American Association of School Administrators, "Lengthening the School Day and the School Year: Superintendents' Opinions."
12. American Association of School Administrators, *The Cost of Reform: Fiscal Implications of A Nation at Risk*, p. 8.
13. The absence of a position was established through telephone conversations with staff of both organizations.
14. Educational Research Service, *ERS Educator Opinion Poll: Teachers and Principals, May 1984*, p. 33.
15. NEA Professional and Organizational Development/ Research Division, "Teacher Opinion Poll File 1960-1982" (unpublished), pp. 1-3.
16. NEA Professional and Organizational Development/ Instruction and Professional Development, *A Guide from Teachers to A Nation at Risk and Other Studies*, p. 4.
17. Eugenia Kemble, untitled statement in ASCD Update, "Issue: A longer school day and year?", p. 4.
18. Manuel J. Justiz, "It's Time to Make Every Minute Count."
19. Denis P. Doyle and Chester E. Finn, Jr., "Now Is the Time for Year-Round Schools."
20. William J. Bennett, *First Lessons: A Report on Elementary Education in America*, pp. 40-42.
21. Ibid.
22. National Council on Year-Round Education, *Thirteenth Annual National Reference Directory of Year-Round Education Programs*, p. 37.
23. Lamar Alexander et al., *Time for Results: The Governors' 1991 Report on Education*, p. 141.
24. Ibid., pp. 147-148.
25. Ibid.
26. Gardiner et al., *A Nation at Risk*, p. 21.
27. Bennett, *First Lessons*, pp. 40-41; Doyle and Finn, "Now Is the Time," p. 30; ECS, *Action for Excellence*, p. 24.
28. Wayne Riddle, *Comparison of the Achievement of American Elementary and Secondary Pupils with Those Abroad—The Examinations Sponsored by the International Association for the Evaluation of Educational Achievement (IEA)*, pp. 1, 4.
29. Torsten Husen, *International Study of Achievement in Mathematics: A Comparison of Twelve Countries*, Vol. 2, p. 186.
30. Torsten Husen, "Does More Time in School Make a Difference?", p. 32.

31. Harry A. Passow et al., *The National Case Study: An Empirical Comparative Study of Twenty-One Educational Systems*, p. 267.
32. Ibid.
33. Donald B. Holsinger, *Time, Content and Expectations as Predictors of School Achievement in the USA and Other Developed Countries: A Review of IEA Evidence*, p. 27.
34. Passow et al., *National Case Study*, p. 269.
35. Husen, "Does More Time in School Make a Difference?", p. 33; *International Study in Mathematics Achievement*, Vol. 2, p. 186.
36. U. S. Department of Education, National Center for Education Statistics, *The Condition of Education: 1985 Edition*, p. 45 (for number of days and hours of instruction); Ian D. Livingstone, Neville T. Postlethwaite, and Kenneth J. Travers, *Second International Mathematics Study: Perceptions of the Intended Implemented Mathematics Curriculum*, pp. 39-45 (for mean total scores).
37. Kenneth J. Travers, "Eighth Grade Math: An International Study," pp. 39-40.
38. Henry M. Levin, *About Time for Educational Reform*, p. 22.
39. Holsinger, *Time, Content and Expectations*. Torsten Husen, *A Cross-National Perpective on Assessing the Quality of Learning*, ED 225 992 (Washington, DC: National Commission on Excellence in Education, 1982).
40. Alexander et al., *Time for Results*, p. 141.
41. Annegret Harnischfeger, "Active Learning Time," p. 44.
42. Carolyn Denham and Ann Lieberman, eds. *Time to Learn. A Review of the Beginning Teacher Evaluation Study*, pp. 34-35.
43. Robert Dreeben and Adam Gamoran, "Race, Instruction and Learning," p. 19.
44. Herbert J. Walberg, "Improving the Productivity of America's Schools," pp. 23-24. Herbert J. Walberg and Shiow-ling Tsai, "Reading Achievement and Diminishing Returns to Time," p. 443.
45. Nancy Karweit, "Time-On-Task Reconsidered: Synthesis of Research on Time and Learning," p. 33.
46. Denham and Lieberman, *Time to Learn*, p. 63.
47. Harnischfeger, "Active Learning Time," p. 42.
48. Nancy Karweit, *Time on Task: A Research Review*, pp. 43-44.
49. Herbert J. Walberg and Wayne C. Frederick, "Instructional Time and Learning," p. 923
50. Denham and Lieberman, *Time to Learn*, pp. 17-19.
51. Ibid., p. 8
52. Karweit, *Time on Task*, pp. 39-40.
53. Ibid., p. 40.
54. Denham and Lieberman, *Time to Learn*, pp. 17, 41.
55. Ibid., p. 35.
56. Nancy Karweit, "Should We Lengthen School Term?", p. 13.
57. Herbert J. Walberg, "Scientific Literacy and Economic Productivity in International Perspective," pp. 15-16.
58. F. Joe Crosswhite et al., *Second International Mathematics Study*, p. 83.
59. Travers, "Eighth-Grade Math," pp. 39-40.
60. Dreeben and Gamoran, "Race, Instruction and Learning," p. 23.
61. Ibid.
62. Herbert J. Walberg, "Scientific Literacy and Economic Productivity in International Perspective," pp. 17-20.
63. Henry M. Levin, Gene V. Glass, and Gail R. Meister, *Cost-Effectiveness of Four Educational Interventions*, pp. 13-16.
64. Henry M. Levin and Mun C. Tsang, *The Economics of Student Time*, p. 19.
65. Denham and Lieberman, *Time to Learn*, pp. 1, 12.
66. Herbert J. Walberg, "Syntheses of Research on Teaching," p 223.
67. W. J. Smyth, "Time and School Learning," p. 5271.
68. Denham and Lieberman, *Time to Learn*, pp. 29-30. Robert L. Egbert and Mary M. Kluender, *Time as an Element of School Success*, pp. 102-103. Misty Kuceris, *Time on Task: Using Instructional Time More Effectively*, p. 53. Jane A. Stallings, "Instructional Time and Staff Development: How Useful Is the Research on Time to Teachers?", pp. 283-298.
69. David C. Berliner and Charles W. Fisher, "One More Time," pp. 339-340.
70. Ibid., p. 334.

71. Levin, Glass, and Meister, *Cost-Effectiveness of Four Educational Interventions*, p. 31.
72. Karweit, "Should We Lengthen the School Term?", p. 11.
73. Jo Ann Mazzarella, "Longer Day Longer Year: Will They Make a Difference?", p. 17.
74. Karweit, "Time-On-Task Reconsidered," p. 33.
75. Kenneth Haskins, "More Isn't Necessarily Better," p. 17.
76. Karweit, "Time-On-Task Reconsidered," p. 34.
77. Henry M. Levin, *Clocking Instruction: A Reform Whose Time Has Come?*, p. 2.
78. Edward L. McDill, Gary Natariello, and Aron M. Pallas, *Raising Standards and Retaining Students: The Impact of the Reform Recommendations on Potential Dropouts*, p. 17.
79. Ibid.
80. Levin, *About Time*, pp. 16-18.
81. Karweit, "Should We Lengthen the School Term?", p. 14.
82. Karweit, *Time on Task: A Research Review*, p. 67, Figure 4. Richard A. Rossmiller, "Time On Task: A Look at What Erodes Time for Instruction," p. 47.
83. Rossmiller, "Time On Task," p. 47.
84. Karweit, *Time on Task: A Research Review*, p.9.
85. Ibid., p. 12.
86. Ibid., pp. 69-70, 80-85 (Tables 1-4).
87. Levin, Glass, and Meister, *Cost-Effectiveness of Four Educational Interventions*, p. 13a.
88. Ibid., pp. 12-13.
89. Ibid., p. 14.
90. Ibid., pp. 27-29a.

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