


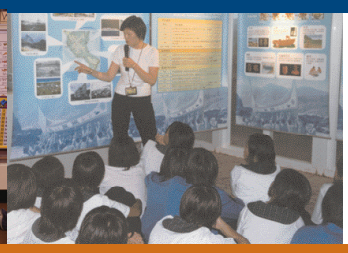

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Policy Brief

Does increasing hours of schooling lead to improvements in student learning?

Contents

Summary

Increasing the number of hours students spend in school each year, on the assumption that this will improve student achievement, has become a widespread trend. However, our analysis suggests that this trend can be misguided: the time students spend in the classroom is not always positively related to their academic achievement. Instead, it is effective teaching time that is most likely to have a positive impact on student achievement. As such, policies influencing how time at school is allocated can be a good way to improve educational outcomes.

Policy implications

The results of the analyses presented in this policy brief suggest that, for students, more time spent in the classroom does not necessarily increase their average achievement. However, the amount of time teachers spend instructing students exhibits a clear link to increases in average student achievement. Therefore, instead of increasing the total number of school hours per year, attention should be paid to time management practices. Schools could, for example:

1. Increase the proportion of teachers' time spent on instructional activities.
2. Increase the efficiency of teachers by:
   - Providing teachers with opportunities to engage in professional development programs on time utilization and classroom management;
   - Optimizing administrative procedures and lightening teachers' administrative workload so they can devote more time to purely teaching-related aspects.

Introduction

One key area in which policymakers attempt to influence learning outcomes is the amount of time students spend in school. However, key questions arise whenever consideration is given to changing the number of school hours per year. What are students actually doing while in school? Are they receiving instruction? Is increasing instructional time an effective way of improving academic achievement? Or are other factors at play that might help increase achievement? What policy implications can we draw from analyzing the international information available on this issue?

This policy brief aims to answer two of these questions:

- Is increasing the amount of time children spend in the classroom an effective way of improving their academic achievement?
- In regard to other factors that might help improve student achievement, does the amount of effective teaching time (i.e., time devoted to purely teaching-related tasks) have a positive effect on student achievement?

Efforts to increase the amount of time children spend in school are evident in a number of countries. In the United States, for example, President Barack Obama has called for setting higher educational standards by, amongst other measures, lengthening the amount of time students spend in school (White House Press Office, 2009). Newspapers in the United States often note that American students have lower international achievement test scores than their European and Asian peers, who have longer school years. More recently, England's Secretary for Education, Michael Gove, has advocated for a longer school day and school year, citing successful East Asian education systems (Burns, 2013). Similarly, France's government is considering adding half a day to its four-day school week (Clark, 2013).

Data from the Progress in International Reading Literacy Study (PIRLS) show that, among the countries participating in PIRLS 2006 and PIRLS 2011, the total amount of time students spent in the classroom per year increased by more than 47 hours on average across the five intervening years. Countries participating in PIRLS 2001 and PIRLS 2006 showed an average increase of 43 hours in yearly classroom time.

We used data from the two most recent cycles of PIRLS (2006 and 2011) to look into the relationship between time spent in school and student achievement. Examining changes in the amount of time students spend in the classroom, the amount of effective teaching time students receive, and student performance in reading over time and across countries helped us to identify a key requirement for successful policy intervention in this area.

What data were investigated?

IEA's Progress in International Reading Literacy Study (PIRLS) is an international assessment of reading comprehension of fourth-grade students. PIRLS 2006 and 2011 were conducted in more than 45 and 60 countries and benchmarking entities, respectively.[1] These studies made it possible to examine trends in reading achievement across these countries and benchmarking participants, as well as to study the broader educational contexts in which learning occurs. In PIRLS, educational contexts were explored using questionnaires completed by students, teachers, parents (or guardians), school principals, and the PIRLS national research coordinators within each country. The information gathered about educational contexts, together with the data on learning outcomes, allows researchers and policymakers to explore important issues in the field of educational policy.

PIRLS offers a unique opportunity to address the questions posed by this policy brief for several reasons. First, it allows exploration of these issues from an international comparative perspective, so enhancing the possibility of generalizing the trends identified during the analysis. Second, it focuses specifically on reading at the fourth-grade level. There are several reasons why analyzing reading skills at this level is an appropriate measure of student learning. For example, acquisition of reading literacy depends less than acquisition of subject-based knowledge (e.g., mathematics and science) on specific teacher-based instruction (Braun, Kirsch, & Yamamoto, 2011). Also, fourth grade is acknowledged as a pivotal year in student learning because it is typically when students begin "reading to learn" as opposed to "learning to read" (Chall & Jacobs, 2003).

What we analyzed

1. Association between increasing the number of hours students spend in the classroom and their reading achievement

For our purpose, we estimated, for each PIRLS country, the total number of hours children spent in the classroom during the school year.[2] Table 1 shows trends in the amount of time children spent in the classroom in those countries that participated in both PIRLS 2006 and PIRLS 2011. The first four columns show the average amount of time students spent in school per year and the average achievement score in PIRLS for each of the two cycles. The fifth and the sixth columns show the changes in average achievement and in the time students spent in school per year. The last two columns show the percentage change for both achievement and time in school.

As is evident from Table 1, most countries reported an increase in the number of hours students spent in the classroom between the two PIRLS cycles. For six countries, the change was negative, and for three countries there was no change. A difference of eight hours or fewer could be attributed to a national holiday falling on a weekend in one year and on a weekday in the next. We categorized these minor changes as "no change." Overall, in 27 of the 36 countries, the total numbers of hours increased.

1 Benchmarking participants are generally regions of countries, political demarcations, or education systems that participate individually in IEA studies. For example, PIRLS 2011 involved nine benchmarking participants, including three Canadian provinces, two Emirates, the Andalusian region of Spain, and the US state of Florida (Mullis, Martin, Foy, & Drucker, 2012).

2 The total number of hours children spent in school per year was estimated based on the principals' reports in the PIRLS school questionnaire of school days per year and instructional hours per day.

Table 1: Trends in reading achievement scores and the number of hours students spent in the classroom per year: 2006 and 2011

Country	Average number of hours students spent in the classroom during 2006	Average number of hours students spent in the classroom during 2011	Average reading score in 2006	Average reading score in 2011	Absolute change in the number of hours students spent in the classroom per year (2006–2011)	Absolute change in average reading score (2006–2011)	Percentage (%) in the number of hours spent in the classroom (2006–2011)	Percentage (%) in average reading score (2006–2011)
Romania	654	796	489	502	142	12	22	3
Kuwait	873	967	330	419	94	89	11	27
Morocco	952	1,040	323	310	88	-12	9	-4
Indonesia	1,210	1,297	405	428	86	24	7	6
Singapore	931	1,012	558	567	82	9	9	2
Hong Kong SAR	1,000	1,060	564	571	60	7	6	1
Norway	767	817	498	507	50	9	7	2
Canada (Quebec)	869	916	533	538	47	5	5	1
International average	**878**	**925**	**508**	**503**	**47**	**-4**	**5**	**-1**
France	888	935	522	520	46	-2	5	0
Bulgaria	627	673	547	532	46	-15	7	-3
Trinidad and Tobago	981	1,024	436	471	43	35	4	8
Iran, Islamic Republic of	684	727	421	457	43	36	6	9
Austria	768	808	538	529	40	-9	5	-2
Spain	849	888	513	513	40	1	5	0
Germany	827	863	548	541	36	-7	4	-1
Georgia	714	748	471	488	34	17	5	4
Hungary	729	760	551	539	30	-12	4	-2
England	958	987	539	552	29	12	3	2
Poland	739	764	519	526	25	6	3	1
Qatar	1,046	1,068	353	425	21	71	2	20
South Africa	1,109	1,129	302	421	19	119	2	40
United States	1,059	1,077	540	556	18	16	2	3
Canada (Alberta)	994	1,011	560	548	17	-12	2	-2
Russian Federation	646	660	565	568	14	4	2	1
Belgium (French)	925	938	500	506	13	6	1	1
Israel	1,066	1,075	512	541	9	28	1	6
Canada (Ontario)	970	979	555	552	9	-3	1	-1
Italy	1,076	1,085	551	541	8	-10	1	-2
Netherlands	1,070	1,078	547	546	8	-1	1	0
Slovak Republic	777	780	531	535	4	4	0	1
Chinese Taipei	994	989	535	553	-5	18	0	3
New Zealand	938	932	532	531	-6	-1	-1	0
Sweden	860	849	549	542	-10	-8	-1	-1
Denmark	890	860	546	554	-30	8	-3	1
Slovenia	721	684	522	530	-37	9	-5	2
Lithuania	695	649	537	528	-46	-9	-7	-2

Note: Countries are sorted from highest to lowest by change in the number of hours students spent in the classroom per year.
Source: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS), 2006 and 2011.

2. Association between overall amount of time students spent in the classroom and their reading achievement

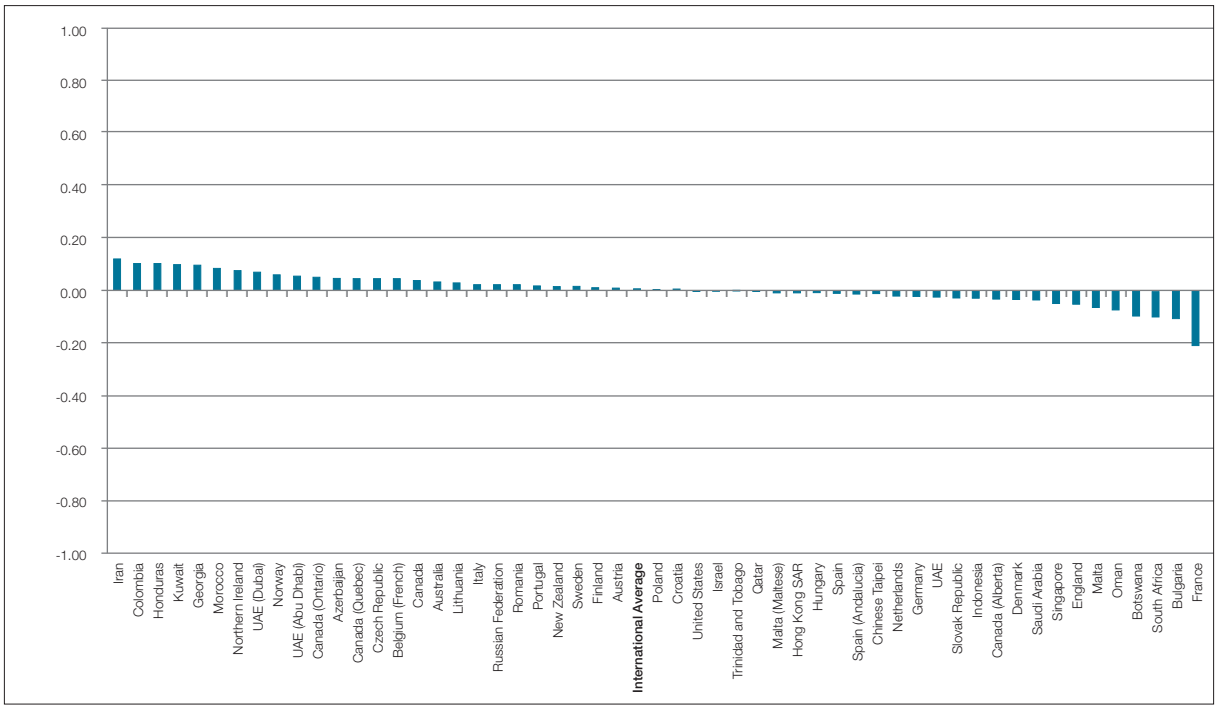
As can be seen in Table 1, with few exceptions, increases in the time spent in the classroom did not lead to comparable increases in student achievement. (This finding also held true when we compared data for the 2001 and 2011 PIRLS cycles.)

To investigate this trend further, we calculated the correlation between the amount of time children spent in the classroom per year and their reading achievement in PIRLS 2011. Correlation is a measure of the strength of the relationship between two phenomena: in this case, time spent by students in the classroom and their reading achievement. A correlation is expressed by means of a *correlation coefficient*—a statistic with values ranging from zero to one, where zero indicates no observable relationship, and one indicates a perfect relationship.

A correlation is positive if both measures rise or fall together, for example, if time spent in the classroom increases and student achievement scores also increase. If the correlation is negative, then one measure rises while the other falls, for example, if time spent in the classroom increases and student achievement scores decrease. In Figure 1, the correlation between number of hours students spent in the classroom per year and students' reading achievement is shown for each participating education system.

The graph shows no clear pattern across the countries participating in PIRLS 2011. Some countries exhibit a positive relationship while others are negative. Also, the correlations are rather small and, in all cases, non-significant. The correlation coefficients vary between –0.21 in the case of France and 0.12 in the case of Iran. In other words, these results suggest that there is not a strong relationship between the amount of time children spend in the classroom and their reading achievement.

Figure 1: Correlation between the number of hours students spent in the classroom per year and average reading achievement: PIRLS 2011 data



Source: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS), 2011.

3. Association between effective teaching time and students' reading achievement

The time students are in school is spent in different ways, not all of which lead to the same learning outcomes. Teachers devote their time in class with students not only to teaching activities but also to other activities, such as administrative duties and maintaining discipline. According to a teacher survey conducted by the OECD, in most participating countries one teacher in four loses at least 30 percent of classroom time to students' disruptive behavior or the demands of administrative tasks (OECD, 2009).

Since the 1970s, researchers have shown that how teachers use their time in the classroom matters. They have produced findings that show increases in *effective* teaching time, that is, the proportion of time in the classroom devoted purely to teaching-related tasks, result in increases in student achievement (Stallings & Kaskowitz, 1974). Organizations such as the National Center on Time and Learning[3] and the Center for American Progress[4] have pushed this idea further by suggesting that professional development for teachers, enrichment programs, and increased teaching time are all key areas for improving student performance.

While our analysis of the time children spent in the classroom did not show a clear relationship to achievement, the PIRLS background data allowed us to examine this matter more closely. By identifying the proportion of class time utilized for purely instructional purposes (as opposed to administrative and disciplinary tasks), it is possible to focus on what intuitively seems to be a more effective measure of improvements in students' achievement. PIRLS 2006[5] asked teachers to state the proportion of time their students spent in the classroom that was devoted to teaching the whole class or working with individual students or small groups. This information enabled us to exclude time assigned to administrative tasks, maintaining discipline, and other activities and to estimate the proportion of time devoted to purely teaching-related tasks (i.e., effective teaching time).

Table 2 shows the expected change in average achievement score points for each 10 percent increase in the proportion of effective teaching time. When doing these calculations, we controlled for the amount of time students spent in the classroom. In other words, we assumed that all students spent the same amount of time in the classroom and that the only thing that changed was the proportion of effective teaching time. We found a significant positive

3 http://www.timeandlearning.org/
4 http://www.americanprogress.org/
5 We used data from PIRLS 2006 for this analysis because this information was not available in PIRLS 2011.

relationship between the proportion of effective teaching time and students' reading achievement in 12 of the 36 education systems that participated in PIRLS 2006. This relationship was negative in the Netherlands and not statistically significant in the remaining countries. Although only approximately one third of the countries showed a significant, positive relationship, this outcome stands in contrast to the relationship between increasing overall time spent in the classroom and average student achievement scores, where no trend of a positive relationship let alone a significant one could be found. Although eight of the countries in Table 2 exhibit a negative trend, the relationship is significant in only one.

The information contained in Table 2 also indicates that, in many of the countries, increases in the amount of effective teaching time is positively associated with students' achievement in reading. Consider, for example, the case of New Zealand. If the time the New Zealand teachers spent in purely instructional activities increased from 80 percent to 90, we could expect that the national average student performance in PIRLS would improve from 532 to 541 score points (532+9.3 = 541.3). While the increase in score is small, the presence of a consistent trend internationally across countries suggests that effective teaching time is more strongly related than overall time spent in the classroom to improved student achievement.

Table 2: Expected change in reading achievement in relation to changes in the proportion of effective teaching time

Country	Average reading score	Average percentage (%) of effective teaching time	Expected change in score points for every 10% increase in effective teaching time
South Africa	302	70	16.6 *
Israel	512	81	13.9
Trinidad and Tobago	436	79	12.5 *
Bulgaria	547	83	10.2 *
Slovak Republic	531	85	10.0 *
Russian Federation	565	88	9.5 *
New Zealand	532	80	9.3 *
Hungary	551	88	9.1 *
France	522	86	8.1 *
Denmark	546	79	6.2 *
England	539	82	5.8
United States	540	80	5.4 *
Canada (Quebec)	533	74	5.3 *
Austria	538	83	5.0 *
Kuwait	330	73	4.8
Singapore	558	76	4.5
Germany	548	82	4.1
International average	**508**	**80**	**3.8 ***
Canada (Alberta)	560	81	3.8
Georgia	471	78	3.0
Sweden	549	83	2.9
Belgium (French)	500	83	2.4
Lithuania	537	89	2.0
Qatar	353	73	1.7
Norway	498	84	1.3
Romania	489	85	1.3
Canada (Ontario)	555	78	1.0
Indonesia	405	73	0.3
Spain	513	81	0.0
Hong Kong SAR	564	71	-0.2
Chinese Taipei	535	85	-0.6
Poland	519	85	-1.8
Italy	551	85	-2.4
Iran, Islamic Republic of	421	72	-2.9
Slovenia	522	87	-3.0
Netherlands	547	78	-3.3 *
Morocco	323	82	-6.5

Source: International Association for the Evaluation of Educational Achievement (IEA), Progress in International Reading Literacy Study (PIRLS), 2006 and 2011.

Conclusions

Our analyses of PIRLS data show that increases in the amount of time that the PIRLS students spent in their classrooms per year was not consistently associated with improvement in their average reading achievement. Instead, our results suggest that it is how classroom time is used that makes a difference in student learning outcomes. In a good number of the countries participating in PIRLS, higher proportions of effective teaching time related to higher achievement. Therefore, when determining how to increase students' achievement, policymakers and other interested parties should find it worthwhile to analyze how classroom time can be most efficiently used.

On the basis of our analysis, we have identified the following policy implications:

1. *Increasing the total school hours per year probably does little to increase student learning.* Despite the trend among countries to increase the total amount of time children spend in the classroom, evidence suggests that more school hours per year do not translate into higher average student achievement.
2. *There is promise in focusing on teacher activities in the classroom; specifically, allowing teachers more time to teach.* Given that total classroom time did not show an association with average academic achievement, we examined whether the proportion of classroom time spent on teaching activities (excluding time devoted to administrative tasks, such as recording attendance, handing out school information forms, keeping order in the classroom, and the like) exhibited a positive association with student achievement. Our results show that this was the case in a number of the PIRLS countries.

   Other studies have identified weaknesses in classroom management skills and skills for dealing with student discipline, as well as the burden caused by heavy administrative workloads, as some of the most important problems hindering teacher effectiveness. For example, on average, one-quarter of new teachers participating in the OECD Teachers Survey lost 40% of their class time to factors other than actual teaching and learning. The same study revealed that more than 30% of these teachers considered "student discipline and behavior problems" and more than 25% considered "classroom management" to be areas of high development need (Jensen, Sandoval-Hernandez, Knoll, & Gonzalez, 2012). For these reasons, policy focused on raising student average achievement should consider practices such as providing opportunities for teachers to develop their time and classroom management skills, lightening their administrative workload, and optimizing administrative procedures school wide.
3. *Policymakers should recognize that multiple factors contribute to student learning.* This policy brief has analyzed only two possible influences on student learning: the average yearly number of hours that students spend in the classroom and the amount of classroom time that teachers spend engaged in teaching students. However, other known factors, such as student characteristics and family background (see, for example, Hattie, 2009), play an important role in predicting educational achievement.[6] We therefore urge policymakers involved in designing intervention policies aimed at raising the achievement of subgroups of students (e.g., socially disadvantaged, those in rural schools, etc.) to shape those policies according to in-depth analyses and findings of relevant data.

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6 In analyses not reported in this brief, we controlled for such variables and confirmed that the trends reported here remained unaffected.

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The International Association for the Evaluation of Educational Achievement, known as IEA, is an independent, international consortium of national research institutions and governmental agencies, with headquarters in Amsterdam. Its primary purpose is to conduct large-scale comparative studies of educational achievement with the aim of gaining more in-depth understanding of the effects of policies and practices within and across systems of education.

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