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Elementary School Children Need More Time to Learn

Posted: 10/10/2013 6:57 pm

Give us back our time! Elementary school children need more time to learn as scientists, social scientists and artists.

Science is about how the natural world works and social studies is about how people live in the world. We'd all be better off if schools taught reading as a tool to support learning those big ideas found in science and social studies instruction, transforming reading instruction from its current role as the curricular "bully" in our schools into a role it is better suited to play — being a curricular "buddy."

Surprisingly, these are the words of reading expert, P. David Pearson, former Dean of the Graduate School of Education at UC Berkeley, delivered over a dinner after leading an external review of a large city's literacy program. This wisdom has been ignored as test performance pressures have increasingly focused elementary teaching on reading and mathematics skills.

In a 2007 National Survey, the Center for Education Policy [found](#) that since the enactment of NCLB in 2002 62% of districts reported increasing elementary instructional time for ELA and/or mathematics. Forty-four percent reported decreased time for social studies, science, art and music, physical education, lunch and/or recess, averaging in total 145 minutes per week. As shown in the table below, these decreases were most pronounced in schools identified for improvement under NCLB regulations.

District NCLB Status	Decreases in Instructional Time (minutes per week)		
	Social Studies	Science	Art and Music
At least One Identified School	90	94	61
No Identified Schools	70	67	55

Admittedly, my view is biased. I grew up in the 1950s and 1960s, earned my formal degrees in history, married an artist and then spent the better part of my career in science education. As a result, I think science, history and the arts are what make school engaging. They are what give meaning and purpose to many students to want to learn.

Maybe I was lucky. My formative years were a time of hope. The Great Depression, the nation's grand WPA response, the terrible rise of Hitler and the Holocaust and his defeat by the Allies were raw in my parents' memory, which they in turn insinuated into my consciousness. At the time, unions were still ascendant in defense of working people with

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whom we identified. In my family, being a Jew meant identification with the civil rights movement that represented a logical continuation of the struggle against bigotry and injustice.

As a result, history seemed relevant and worth learning. To me, it was far more interesting than phonics– which admittedly I never quite got– or grammar, which I apparently learned by osmosis and reading, rather than the expected rule memorization. By the time I was a teenager, engagement in opposing the War in Vietnam became the vehicle for my generation to fight against injustice. We believed that studying history would give us tools and understanding to act in the present.

As a child, science just seemed like fun. Since I lived in a rural suburb, nature was a place in which to play. Catching frogs, floating sticks in ditches, avoiding poison ivy and dropping different size rocks off cliffs fueled my curiosity about how the world worked and how it got this way. Despite the terrible destruction wrought by STEM– the atomic bomb– we saw science a tool for making things better. For us, the evolution-denying 1925 Scopes trial was the old stuff of the 1960 movie, *Inherit the Wind*, not its modern reemergence as “creation science.” As we gathered around the television to watch DuPont Theatre on Sunday evenings, we innocently believed Ronald Reagan when he promised, “better things for better living through chemistry.” After all, science led to a cure to the scourge of polio.

I do not remember how much time we spent on science and social studies in elementary school, but I do know that it was what captured my imagination. I have no data for pre- and post-Sputnik instruction time on science. I do know that by the time I reached high school in 1964, teaching science had gained primary importance. Somehow, we developed the sense that our new texts, BSCS biology, CBA chemistry and PSSC physics, were the wave of the future. As I grew older and entered college, I came to see science, history and the social sciences not just as inherently fascinating, but also as tools for change. I came to see science as set of sense-making and nonsense-debunking practices that stretched far beyond the natural world.

I’ve learned about the power of the arts indirectly– since I cannot keep a beat, dance, draw or– my enthusiasm notwithstanding– sing on key. My family taught me that the arts inspire too. Protest marches and history showed me that singing binds people together and gives them courage to carry on.

In this context, I am profoundly disturbed that time for science, social studies and arts learning in elementary schools appears to be at an all time low. According to the National Survey of Mathematics and Science, the average number of minutes per day teaching science in grades K-3 has declined from 24 in [2000](#) to 19 in [2012](#), and from 31 to 24 in

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grades 4-6. [Time](#) for the arts has fared even worse despite [evidence](#) of its multi-dimensional benefits.

Ironically, these reductions are occurring simultaneously with business and political leaders once again clamoring to improve science learning and stimulate critical thinking and creativity. Race-to-the-top, Title I School Improvement Grants, and pressures to base teacher evaluation of on students' reading and math scores have only exacerbated this trend.

It does not have to be this way. The better part of my classroom teaching years were spent in Bedford-Stuyvesant, Brooklyn with students who were overwhelmingly poor. I also spent seventeen summers in a camp with similar children. In both cases, they learned about their own history, the history of others and how people changed their worlds. We even wrote and acted in historical plays and sang old songs. They also learned about how the natural world works by turning over rocks, investigating streams, observing animals, and experimenting with plants, clay boats and batteries. In the process, children read, applied mathematics and gained self-confidence and a sense of possibility. These experiences taught me not to give up on kids.

Along the way, I became a science specialist, got introduced to the early 1990's round of NSF-funded, inquiry-based science curricula and came to lead science and mathematics improvement efforts. In my Brooklyn district, I was fortunate to work with a visionary superintendent, Mildred Jones, who saw in inquiry-based science an instructional model for student engagement. Overwhelmingly, the elementary classroom teachers taught little or no science. However, when with support from a National Science Foundation grant, we provided fully stocked science modules with a coherent developmental sequence, extensive sustained professional development and a reliable materials restocking system, the response was overwhelming: *The kids love it- even and especially the ones who at other times have behavior or learning problems. Finally, I have the tools and support to teach science. And most significantly: We're showing the doubting world that our kids can learn.*

These affirming experiences are being denied to students. In too many urban schools science, social studies and the arts have become expendable electives. Over the last twenty years, I have heard more and more that districts cannot not afford these research-based science materials and instead rely on books to teach science. Worse, I increasingly hear that teachers have little time to fit science, social studies and the arts into a literacy-dominated day. Sadly, that time is dominated by practice for reading tests and skills practice, rather than understanding writing and literature as vehicles for human expression and communicating important ideas.

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My principal area of work is K-12 STEM education. Arguments to improve the quality, depth, reach and diversity in science and engineering education abound. The most prevalent are that shortfalls in the number, quality and diversity of STEM graduates threatens the primacy of the US economy and reduces the prospects of today's student in an employment growth field. Others have countered that these shortages in number and quality do not exist.

Sorting through these claims and counter-claims is necessary, but training in anticipation of the job market should not be the driving rationale for improving elementary science learning or ensuring that science finds a reliable consistent place in daily learning. Instead, time allocation should be determined by judgments about how to build broad foundational knowledge and abilities for a future that we cannot yet imagine. That future looking perspective demands firing the imagination of students, engaging them in compelling ideas, supporting them to learn how to be learners– and how to learn with others.

Recently, I listened to a distinguished [panel](#), sponsored by the K-12 Center at ETS, discuss issues surrounding assessment of the [Next Generation Science Standards](#). The “take-away” theme in what I heard was that successful implementation of these aspirational new standards will require time and that teachers will need the space to learn and develop expertise. That means no rush to consequential testing to enable science and engineering to compete with reading and math or to evaluate teachers. There is no compelling evidence that high-stakes testing in reading and math have produced the 21st century learning for which so many have long advocated. However, it does mean investment in thoughtful development of actionable assessment tools at the appropriate level of specificity for teachers, administrators, instructional materials developers, researchers and policy makers. We also need to invest in research to develop strategies that take advantage of the complex interaction between language and mathematics skill acquisition and subject area learning. However, what we used to call *reading in the content areas* and now, *reading informational texts*, is a paltry substitute for active student engagement that models the practices of scientists and engineers, social scientists and historians, and artists of all types.

I am neither encouraging nor discouraging multi-disciplinary curriculum. Rather, I call upon literacy educators to advocate to give us back our time. I urge parents to demand that school leaders and policy makers give us back our time.