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## Getting Education Right

*SCIENCE* HAS PUBLISHED THREE EDUCATION SPECIAL ISSUES SINCE I BECAME EDITOR-IN-CHIEF in 2008. We first focused on harnessing computer technologies for education (January 2009) and then highlighted the synergies between inquiry science teaching and the acquisition of literacy skills (April 2010). In this issue, we review the research on early childhood education. Especially informative are the long-term studies on the effects of early childhood interventions, which indicate that an appropriate schooling of children as young as 3 years old produces remarkably large benefits for society, even in cases where the children do not perform significantly better academically. A critical variable appears to be the effect of these early education programs on what neuroscientists call “executive function”: the brain activities that underlie each individual’s mastery of self-control.\* This finding raises critical questions about how nations educate their youth. For example, how can the programs that have thus far been used to enhance children’s self-control be further improved? To what ages should these programs extend in school, and how can the most effective practices be scaled up to apply them universally? And why has so little of what we have learned from research about schooling been incorporated into the way that most school systems function?†

In recent years, *Science* has been devoting increased attention to matters of education, both to highlight such fundamentally important questions and to encourage the work needed for solutions. There is nothing more important for the future of the world than how we prepare the next generation, and there is a clear need for a much larger investment by governments in science-based education research, both in laboratory and school-system settings. In addition, the science and scholarship of education are vastly underappreciated at the university level, where a vigorous collaboration between schools of education and other faculty will be required to address these issues. And most of all, we need to attract many more talented young people—like those who read *Science*—to meet education’s many challenges.

In his famous 1959 Rede Lecture on *The Two Cultures*, British scientist and novelist C. P. Snow criticized his own early dismissal of applied science, writing, “Pure scientists have by and large been dim-witted about engineers and applied science. They couldn’t get interested. They wouldn’t recognise that many of the problems were as intellectually exacting as pure problems, and that many of the solutions were as satisfying and beautiful.” Snow’s view that the division between “pure” science and other fields is an obstacle to solving modern society’s problems is reflected in J. P. Shonkoff’s Education Forum (p. 982), which describes a need to combine the best scholarship from many different disciplines to address education challenges. This synergy will not happen unless the world’s most prestigious institutions—universities, government agencies, academies, scientific societies, and journals—give this type of research the support, respect, and attention that it clearly deserves.

My own views on this matter have been deeply influenced by the scientist and great biology educator John A. Moore, who became a friend long after I first met him through his biology textbooks. After his death in 2002, I was privileged to have the responsibility for writing his memoir for the U.S. National Academy of Sciences,‡ thereby discovering his 30-year-old exhortation urging “the scholars in the universities to see beyond their specialties and their laboratories to the problems of general education and to be willing to join with colleagues in the schools of education to work towards excellence in the substance of education; in short, to seek to make education as respectable a commitment as scholarly research and publishing.” Well said.

— Bruce Alberts

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\*A. Diamond, K. Lee, *Science* **333**, 959 (2011); T. E. Moffitt et al., *Proc. Natl. Acad. Sci., U.S.A.* **108**, 2693 (2011).

†W. T. Gormley Jr., *Science* **333**, 978 (2011). ‡B. Alberts, *John Alexander Moore, A Biographical Memoir* (National Academy of Sciences, Washington, DC, 2011); available at [www.nasonline.org/site/DocServer/Moore\\_John.pdf?docID=78804](http://www.nasonline.org/site/DocServer/Moore_John.pdf?docID=78804).

