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Making a Science of Education

FOR SUCCESS IN AN INCREASINGLY COMPLEX, CROWDED, AND DANGEROUS WORLD, A NATION must strive to be a meritocracy: Its education and social systems should be structured to select those with the most talent, energy, wisdom, and character as the next generation of leaders for each segment of society. When I was young, I was taught that providing equal opportunities for everyone was a matter of social justice—part of the social contract in the United States. Now, I believe that it is also a matter of national survival. Any country that fails to encourage and develop the talent in each individual through its public school system will suffer greatly, because the quality of a nation depends on the collective wisdom of both its leaders and its citizens.

An outstanding education system imparts values that support good citizenship, while empowering adults to be life-long learners and problem solvers who can make wise decisions for their families, for their communities, and for their workplaces. Such an education system must continually evolve to remain relevant to the interests and needs of each new generation. To achieve these ambitious goals, we will need much more emphasis on both science education and the “science of education.” It is my hope that *Science* can help to promote progress on both scores.

In 2006, *Science* began a monthly Education Forum. We now plan to build on this strong beginning by recruiting high-quality articles on education from the world’s best experts for every section of the magazine. Thus, we will be publishing important work in education as Perspectives, Policy Forums, Reviews, or as original Research Reports and Articles, while continuing to cover education in the News section. This first issue of 2009, with its focus on Education and Technology (see page 53), represents a start that will hopefully inspire many more articles to come.

As this special issue explains, the computer and communication technologies that have profoundly altered many other aspects of our lives seem to hold great promise for improving education as well. But technology is only a tool. To fulfill its promise for education will require a great deal of high-quality research, focused on its utilization and effects in both school and non-school settings. Only by collecting and analyzing data on student learning can we hope to sort out the many variables that determine effectiveness.

The same type of scientific research is also needed to explore, analyze, and improve each of the many other components of educational systems. For example, the most important element of any education system is a highly skilled teacher. Teacher recruitment, preparation, retention, and professional development all need to be informed by scientific research in education. Curricula, pedagogy, assessment, and school system management similarly require focused research. We hope that what scientists are learning about each of these important aspects of education will be reported and reviewed in *Science*.

Research in the social sciences is especially challenging because of the conditionality of its findings: The effects of an intervention are likely to depend on many variables that need to be studied and understood. Some readers may therefore question whether the science of education deserves a prominent place in this prestigious journal. For them, I offer the wisdom of Alfred North Whitehead, who wrote 80 years ago: “The art of education is never easy. To surmount its difficulties, especially those of elementary education, is a task worthy of the highest genius.” [But] “when one considers...the importance of this question of the education of a nation’s young, the broken lives, the defeated hopes, the national failures, which result from the frivolous inertia with which it is treated, it is difficult to restrain within oneself a savage rage. In the conditions of modern life the rule is absolute, [a country] that does not value trained intelligence is doomed.”

The sense of rage is every bit as appropriate today. But we now recognize that we must look at the “art” of education through the critical lens of science if we are to survive.

—Bruce Alberts

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