

## The Unschooled Mind

Howard Gardner

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Consider the mind of a 5-year-old. A blank slate? An empty vessel? Not by a long shot, says Howard Gardner in this engaging, surprisingly easy-to-read synthesis of research on early learning and cognition.

"In its theoretical resourcefulness and intuitions, it [the 5-year-old's mind] is powerful; in its artistic endeavors, it can be creative and imaginative; in its adventurousness, it is exemplary." All 5-year-olds have constructed workable theories of life, mind, self, and matter, he tells us. They have acquired the language. They understand narrative and can tell stories. They have firm grasps of many spatial, temporal, and numerical relations. They are naturally inclined to construct meaning, to learn.

So powerful are these early, primitive models of how world and mind work that they last a lifetime. "In every student there is a 5-year-old's unschooled mind struggling to get out," Gardner writes. And this fact has profound implications for schools.

Gardner believes that schools should seek to lead each child to the highest degrees of understanding. Unfortunately, even when schooling appears most successful, it often falls short. Our best students lack deep understanding of what we purport to teach them. A major reason is that schooling ignores that 5-year-old's mind, neither building on its strengths nor directly confronting its primitive models of how the world works.

"Education that takes seriously the ideas and intuitions of the young child is far more likely to achieve success than education that ignores these views, either considering them to be unimpor-

tant or assuming that they will disappear on their own," he writes. The scholastic and disciplinary forms of knowing that constitute the agenda of the modern school can triumph only if teachers first engage and then integrate children's prescholastic frames of reference.

Gardner describes typical prescholastic/scholastic conflicts in the sciences, mathematics, and the humanities. He shows how even MIT physics students adopt the practices of naive elementary school students when studying Newton's laws of motion. He shows how college biology students typically misunderstand evolutionary theory and animal behaviors. He shows in numerous ways how students struggle to reconcile their sound intuitions about mathematics with the sophisticated demands of symbolic notation. He reviews research showing that economics instruction does little to change major misconceptions about the economy. He shows how ingrained are habits of literal reading, stereotyping, and oversimplification of historical events. And he describes powerful ways of bringing these conflicts to the surface and turning them into opportunities for deeper understanding.

Gardner's recommendations for improvement are not surprising to those who have followed his writing, perhaps bold to new audiences. Either schools should become more like children's museums, he says, or they should be replaced by children's museums. Since apprenticeship builds most effectively on the ways young people learn, traditional schooling should give way to far more apprenticeship. Basic skills instruction must yield to instruction in which the deployment of the skills makes sense.

Students must be exposed regularly to "Christopherian encounters," powerful, personal discoveries that forever transform them. Schools must

cultivate a "folio culture," and policy-makers must embrace more robust ways of evaluating progress.

Teachers must learn (and the rest of us must help them find time and rewards to learn) how to approach any subject in at least five ways: through narrative; through logical-quantitative approaches; through philosophical, "foundational" inquiries; from an aesthetic point of view; and in ways that create and draw upon student experiences. Educators must acknowledge the many forms of intelligence students bring to school and address intellectual strengths far more directly than they ever have.

To say all this is to say, of course, that schooling needs to be "restructured." Others have argued this case from other vantage points. Many writers have said that schooling must change because a global economy calls for a much higher level of literacy. Many have argued that demographic changes in the United States force us to rethink our system. Many have argued for change on the basis of research findings about effective schools. And many remind us forcefully of our moral obligation to do what we have promised to do: provide all children equal opportunities to develop their intellectual powers to the fullest.

To these calls for reform, Gardner adds yet another compelling reason for change: what we know about learning does not support current practice. Moreover, were we to apply even a fraction of the knowledge Gardner marshals for us, education might finally lead to the deeper understanding that should be its primary goal.

Available from Basic Books, Inc., 10 E. 53rd St., New York, NY 10022, for \$23 (hardback).

— Reviewed by Rexford Brown, *Education Commission of the States*, author of *School of Thought: How the Politics of Literacy Shape Thinking in the Classroom* (Jossey-Bass).

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