Five Big Ideas for Effective Teaching

Connecting Mind, Brain, and Education Research to Classroom Practice

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EDUCATION

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CHAPTER 1

Challenges and Opportunities in 21st Century Schooling

Teachers make a difference. Indeed, of all the factors that education leaders can control, the quality of teaching has perhaps the greatest potential effect.

—Committee on the Study of Teacher Preparation Programs in the United States and the National Research Council, Preparing Teachers: Building Evidence for Sound Policy, p. 9

What do you think represents the most significant challenge and greatest opportunity in education today?

Every day we are inspired by stories of teachers who are applying the implications of research and the latest strategies in the classroom, and by the students who are benefiting from these innovative approaches. These teachers' commitment to their students' success is exemplary, and their enthusiasm is evident in the stories they share: the Oklahoma 2nd-graders who demonstrate their favorite reading comprehension strategies for students in New Zealand through a video blog, the Georgia middle schoolers who are excited to show how metacognition helps them take charge of and improve their academic performance, or the California 8th-graders who use various strategies to aid in meaning-making and recall of key science concepts. The best teachers also share how they apply what they have learned about the science of learning to their own professional and personal lives.

But these kinds of stories too seldom make their way into the public discourse about education. Instead, we are told by policymakers and

news organizations that our school system is not what it once was: The United States lags far behind other countries, the achievement gap for poor and minority students continues to widen, and schools cannot meet rigorous new standards. Yet the teachers in the classrooms described here and throughout this book are committed to making a positive difference in guiding their students to achieve more of their academic potential. They approach their work with confidence and enthusiasm because they know they have the tools needed to improve their practice, and they are committed to ongoing learning necessary to keep pace with the changing demands of their profession.

In 2000, the National Research Council report *How People Learn* (Bransford, Brown, & Cocking, 2000) highlighted the ways in which learning changes the brain and suggested approaches for increasing student achievement. Since then, a few universities have begun offering degree programs for educators that combine mind, brain, and education research; among them are Harvard University; Nova Southeastern University; and the University of Texas, Arlington (Sparks, 2012). Journals such as *Scientific American Mind* and *Mind, Brain, and Education* share research from this new field. This transdisciplinary approach is transforming the way we think about education.

Mind, brain, and education studies began to develop around the world in the early 21st century (Tokuhama-Espinosa, 2010, 2011a). The International Mind, Brain, and Education Society (IMBES) was formed in 2003, in part, to provide "support for the interest in brain-based education" (Miller & DeFina, 2010, p. 142); the IMBES website (http://www.imbes.org) sets out its mission to "facilitate cross-cultural collaboration in biology, education and the cognitive and developmental sciences." Major conferences in countries like Japan, the United States, and the United Kingdom provide opportunities for researchers and practitioners across disciplines, including the cognitive sciences, neurobiology, and education, to share knowledge and establish new ways of working together (Battro, Fischer, & Lena, 2008). Scholars working in the field of mind, brain, and education are often characterized by a willingness to share knowledge with others outside their original disciplines, a recognition of the need to adapt professional language in order to communicate with others outside their immediate field, and a belief that linking information across disciplines is beneficial for themselves and others (Tokuhama-Espinosa, 2011a).

To Learn More

Tracey Tokuhama-Espinosa, professor of education and neuropsychology at the Universidad San Francisco de Quito in Ecuador, has conducted research in the mind, brain, and education field using a Delphi panel format to facilitate the exchange of information among experts around the world in various related disciplines. This research is the basis for her book The New Science of Teaching and Learning: Using the Best of Mind, Brain, and Education Science in the Classroom (Teachers College Press, 2010).

The mind, brain, and education field includes findings from educational neuroscience, sometimes referred to as *neuroeducation*, which has been defined as "an emerging effort to integrate neuroscience methods, particularly functional neuroimaging, with behavioral methods to address issues of learning and instruction" (Varma, McCandliss, & Schwartz, 2008, p. 140). Practitioners may also draw from the discipline of school neuropsychology, an emerging area within school psychology (Miller, 2010). Research and principles from these fields have practical implications for classroom instruction. For example, Berninger and Richards write that a basic understanding of key neuroscientific concepts may prove useful for teachers, including

> normal variation within and across students and in individual student learning outcomes, nature-nurture connections, learning as developmental, multiple codes and modalities of representation, alternative pathways in learning, potential for building multiple and alternative connections in the brain, alternative instructional approaches for achieving the same learning result, and functional systems with numerous, interacting components. (2002, pp. 317–318)

Especially as the mind, brain, and education field gathers momentum, this is an incredibly exciting time to be an educator. While we do face challenges, the knowledge we need to overcome them is within our grasp—and we have every reason to hope and believe that, given the proper approach, our schools and classrooms can fulfill their promise of helping every child learn and succeed.