



From Brain to Mind: Using Neuroscience to Guide Change in Education

By James E. Zull

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Finalist for *Foreword Magazine's 2011 Book of the Year*

With his knack for making science intelligible for the layman, and his ability to illuminate scientific concepts through analogy and reference to personal experience, James Zull offers the reader an engrossing and coherent introduction to what neuroscience can tell us about cognitive development through experience, and its implications for education.

Stating that educational change is underway and that the time is ripe to recognize that “the primary objective of education is to understand human learning” and that “all other objectives depend on achieving this understanding”, James Zull challenges the reader to focus on this purpose, first for her or himself, and then for those for whose learning they are responsible.

The book is addressed to all learners and educators – to the reader as self-educator embarked on the journey of lifelong learning, to the reader as parent, and to readers who are educators in schools or university settings, as well as mentors and trainers in the workplace.

In this work, James Zull presents cognitive development as a journey taken by the brain, from an organ of organized cells, blood vessels, and chemicals at birth, through its shaping by experience and environment into potentially the most powerful and exquisite force in the universe, the human mind.

Zull begins his journey with sensory-motor learning, and how that leads to discovery, and discovery to emotion. He then describes how deeper learning develops, how symbolic systems such as language and numbers emerge as tools for thought, how memory builds a knowledge base, and how memory is then used to create ideas and solve problems. Along the way he prompts us to think of new ways to shape educational experiences from early in life through adulthood, informed by the insight that metacognition lies at the root of all learning.

At a time when we can expect to change jobs and careers frequently during our

lifetime, when technology is changing society at break-neck speed, and we have instant access to almost infinite information and opinion, he argues that self-knowledge, awareness of how and why we think as we do, and the ability to adapt and learn, are critical to our survival as individuals; and that the transformation of education, in the light of all this and what neuroscience can tell us, is a key element in future development of healthy and productive societies.

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Editorial Review

Review

"Despite the science-heavy topic, Zull writes in such a way that the casual reader with an interest in the mind and education should be able to follow along easily. He explains concepts articulately and coherently. When discussing research, he does mire the text in minute details about the experiments themselves, focusing instead on the relevant results. He manages to find a balance between science content and conversational style, resulting in an enlightening, engaging text."

In short, *From Brain to Mind* is an engrossing book that is as entertaining as it is educational." (Erin E. Gonzales, College of Education, University of North Texas *The Review of Higher Education*)

"Zull takes the reader on a journey from understanding the brain as a biological organ (a collection of cells, neurons, and chemicals) to understanding the brain as a complex, thinking, human mind that experiences emotions, makes decisions, and learns...I highly recommend Zull's book to learning center staff, it could also make a great professional development activity for staff." (*The Learning Assistance Review*)

"*From Brain to Mind* challenges educators to see what children learn from the perspective of neuroscience, and to see what this perspective provides educators... The metacognition Zull advocates should lead the reader to work through the chapters and come up with ideas about or approaches to education. Summing Up: Recommended." (*Choice*)

"To better teach the mind, one should understand the brain. *From Brain to Mind: Using Neuroscience to Guide Change in Education* discusses a more scientific approach to education from James E. Zull as he discusses how the brain receives information and how to better understand cognitive development of mind as an educator. Stating that developing learning skills are more important than ever in today's world that you may see multiple jobs throughout, *From Brain to Mind* is an excellent pick for anyone who wants to understand a more a scientific approach to education." (*Midwest Book Review - Education Shelf*)

"*From Brain to Mind: Using Neuroscience to Guide Change in Education* provides a powerful survey of how we learn, offering lay educators an introduction to what neuroscience can tell us about cognitive development and its links to teaching strategies. From how a brain becomes a mind through experience and how the education process can support that connection, chapters discuss leapfrogging patterns, the biology of motivation, education and memory formation, and much more. Any educator's library should include this." (*California Book Watch*)

"My congratulations to James Zull for the way he connects neuroscience and education, and offers valuable insights on how we can be more intentional in improving the opportunities and conditions for learning in and out of the classroom. This book is articulate, and convincing, and strikes an excellent balance between a substantive explication of brain science and an engaging and conversational style." (**Elkhonon Goldber**, Clinical Professor of Neurology at the NYU School of Medicine, author of *The New Executive Brain*)

About the Author

James E. Zull is Professor of Biology and of Biochemistry, and Director of The University Center for Innovation in Teaching and Education (UCITE) at Case Western Reserve University. After 25 years of research on cell-cell communication, protein folding, cell membranes, and biosensors, he turned his interest

toward understanding how brain research can inform teaching. Building on his background in cell-cell communication, his experience with human learning and teaching at UCITE, and drawing on the increasing knowledge about the human brain, led to writing his acclaimed first book, *The Art of Changing the Brain*.

Users Review

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Frank Lach:

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Frances Hayes:

The reason why? Because this From Brain to Mind: Using Neuroscience to Guide Change in Education is an unordinary book that the inside of the reserve waiting for you to snap that but latter it will distress you with the secret this inside. Reading this book alongside it was fantastic author who write the book in such incredible way makes the content within easier to understand, entertaining means but still convey the meaning thoroughly. So , it is good for you for not hesitating having this any longer or you going to regret it. This phenomenal book will give you a lot of positive aspects than the other book get such as help improving your proficiency and your critical thinking approach. So , still want to hold up having that book? If I were being you I will go to the book store hurriedly.

Peggy Elmore:

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