

How is neuroscience influencing teaching and learning?

Research in the neurosciences has exploded over the past half century since the very first Society of Neuroscience meeting in the early '70's, and especially since the '90's were declared to be the 'decade of the brain'. Much of that research has focused on learning disabilities and on the nature of learning more generally. These are the areas where neuroscience has the most to teach us about education. For instance:

- brain injuries resulting from strokes, concussions or disease have provided key insights into cognitive functions associated with both specific and more widely distributed brain areas associated with learning
- brain imaging techniques have enabled researchers to observe the brain in great detail, and when engaged in different aspects of thinking and learning
- brain development and disorders from fetus to adolescence to old age has revealed many aspects of cognitive development affecting learning
- neurofeedback connects aspects of learning with brain activity in ways that may provide more holistic insights into mind-body relationships

These studies have been contributing in significant ways to interdisciplinary research that seeks to integrate studies in mind, brain, and education to better understand and improve teaching and learning in areas such as:

- reading and comprehension, particularly with regard to dyslexia
- identifying learning disorders and designing effective interventions
- promoting greater self-awareness and attentiveness to help mitigate debilitating conditions such as mathematics anxiety and attention deficit hyperactivity disorder (ADHD)
- furthering vocational training in brain-computer interfacing

Over the past decade, a number of government initiatives, academic organizations, conferences and other venues have emerged in support of combining and bridging research in neuroscience and education. Still, there remains a broad gulf of understanding between brain behaviour and how children learn. Collectively, parents and educators need to develop a clearer understanding of how neuroscience can impact teaching and learning in order to influence how this research can be embedded into classroom practice.

For online resources as well as the research references that inform this issue, please visit:
www.cea-ace.ca/facts-on-education

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