
The Brain: The Brain/Mind Learning Principles

*Excerpt from Education on the Edge of Possibility, by Renate Nummela Caine and Geoffrey Caine, 1997, pp. 104-115.
Alexandria, VA: Association for Supervision and Curriculum Development. Copyright © 1997 by ASCD.
Reprinted by permission. All rights reserved.*

Principle 1: The brain is a complex adaptive system. Perhaps the most potent feature of the brain is its capacity to function on many levels and in many ways simultaneously. Thoughts, emotions, imagination, predispositions, and physiology operate concurrently and interactively as the entire system interacts and exchanges information with its environment. Moreover, there are emergent properties of the brain as a whole system that cannot be recognized or understood when the parts alone are explored.

Principle 2: The brain is a social brain. “For the first year or two of life outside the womb, our brains are in the most pliable, impressionable, and receptive state they will ever be in” (Darling, 1996, p. 18). We begin to be shaped as our immensely receptive brain/minds interact with our early environment and interpersonal relationships. Vygotsky (1978) was partially responsible for bringing the social construction of knowledge to our awareness. For instance, therapy works through this dynamical interaction with others (Louis Cozolino, *Personal Communication*, March 1998). It is now clear that throughout our lives, our brain/minds change in response to their engagement with others — so much so that individuals must always be seen to be integral parts of larger social systems. Indeed, part of our identity depends on establishing community and finding ways to belong. Learning, therefore, is profoundly influenced by the nature of the social relationships within which people find themselves.

Principle 3: The search for meaning is innate. In general, the search for meaning refers to making sense of our experiences. This search is survival-oriented and basic to the human brain/mind. Although the ways in which we make sense of our experience change over time, the central drive to do so is lifelong. At its core, our search for meaning is driven by our purposes and values. Something of the extent of human purposes was expressed by Maslow (1968). Included are such basic questions as “Who am I?” and “Why am I here?” Thus, the search for meaning ranges from the need to eat and find safety, through the development of relationships and a sense of identity, to an exploration of our potential and quest for transcendence.

Principle 4: The search for meaning occurs through “patterning.” In patterning, we include schematic maps and categories, both acquired and innate. The brain/mind needs and automatically registers the familiar while simultaneously searching for and responding to novel stimuli. In a way, therefore, the brain/mind is both scientist and artist, attempting to discern and understand patterns as they occur and giving expression to unique and creative patterns of its own. The brain/mind resists having meaninglessness imposed on it. By meaninglessness, we mean isolated pieces of information unrelated to what makes sense to a particular learner. Effective education must give learners an opportunity to formulate their own patterns of understanding.

Principle 5: Emotions are critical to patterning. What we learn is influenced and organized by emotions and mind-sets involving expectancy, personal biases and prejudices, self-esteem, and the need for social interaction. Emotions and thoughts literally shape each other and cannot be separated. Emotions color meaning. Metaphors are an example, as Lakoff and Johnson (1980) so aptly describe. Moreover, the emotional impact of any lesson or life experience may continue to reverberate long after the specific event that triggers it. Hence, an appropriate emotional climate is indispensable to sound education.

Principle 6: Every brain simultaneously perceives and creates parts and wholes. Although there is some truth to the “left-brain-right-brain” distinction, that is not the whole story. In a healthy person, both hemispheres interact in every activity, from art and computing to sales and accounting. The “two-brain” doctrine is most useful for reminding us that the brain reduces information into parts and perceives wholistically at the same time. Good training and education recognize this, for instance, by introducing natural “global” projects and ideas from the beginning.

Principle 7: Learning involves both focused attention and peripheral perception. The brain absorbs information of which it is directly aware, but it also directly absorbs information that lies beyond the immediate focus of attention. In fact, it responds to