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Getting Started

The human brain/mind is much like a dynamic kaleidoscope. The neurosciences are telling us that, energized by genetics, experience, and culture, students literally learn from everything. And as educators we are beginning to see that what this generation of students is learning beyond the classroom is unlike anything past generations have experienced. All too often educators find themselves stretched between the world of the past that signifies a sense of order and security, and the world of the future that continually beckons but calls for responses shrouded in ambiguity and uncertainty.

Like cautious pioneers, educators search for guidelines and signposts that tell them where they are going. Many educators are working to the point of exhaustion only to find that their efforts are undermined by forces beyond their control. And because they feel lost at times, entities of all kinds have stepped in to tell them which way they must go. But those entities are not present in schools and classrooms on a daily and yearly basis. It is easy to believe in certainty when not confronted with the immediate and immense complexity that represents students' living in today's world.

> It is as if educators have to learn to dance at the same time that they are also being told to march in step. In the process many of them have been robbed of their joy in teaching, which is fueled by laughter, creativity, and confidence.

One major struggle is between those who advocate schools that confine teaching largely to "the basics," and those advocating a more creative, student-centered approach. Advocates of the basics are committed to streamlining all teaching so that every child leaves school with the advocates' view of essential facts, information, and skills necessary for functioning as an adult. They do not trust that student-centered learning can lead to the type of mastery they see as critical to providing success in a discipline and in life.

Advocates of the student-centered approach would hasten to add that they too want to help students succeed and master facts, information, and skills essential to academic disciplines, but that learning should be exciting and meaningful for the learner as well. Most important of all, these educators tend to be convinced of the critical role that relationship and community play in learning.

Research from the neurosciences and research on learning in general is shedding light on this debate.

WE HAVE TO BEGIN WITH LEARNING

Several people have asked us to spell out what we see as the most important changes for education. For us, the answer is clear. We must understand how human beings learn and place that understanding at the very center of teaching. This is far from easy, and the entire process can be daunting.

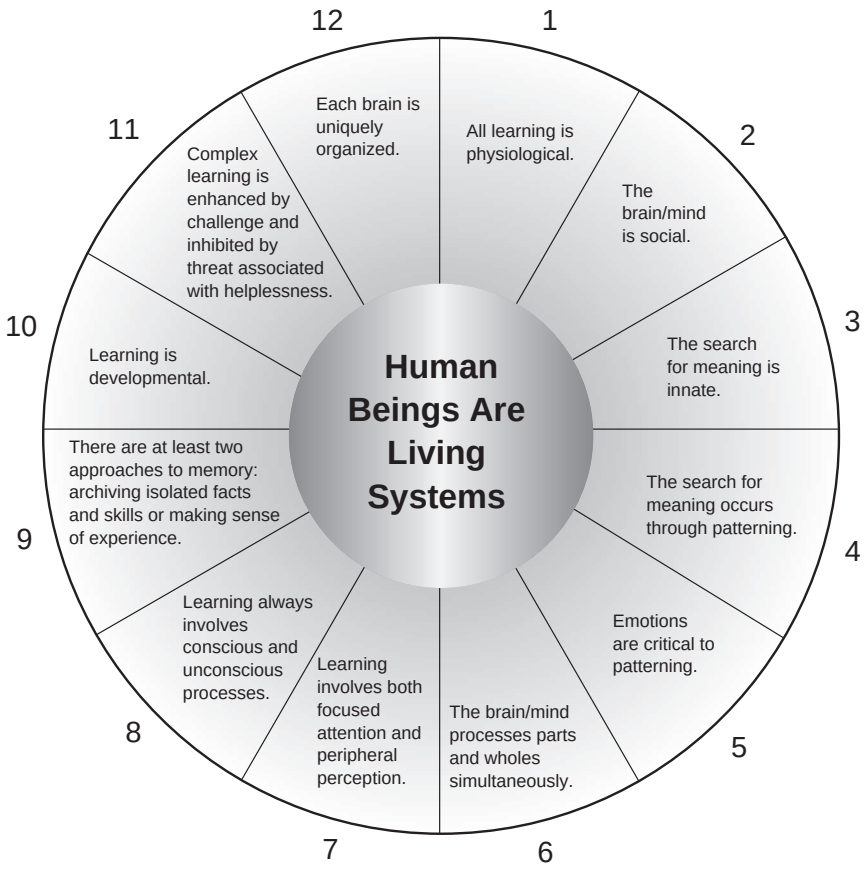
To make sense of the vast amount of research that has been generated in fields ranging from psychology to biology and neuroscience, the Caines developed a set of 12 Brain/Mind Learning Principles that summarize what we presently know about learning. These principles were originally spelled out in their book *Making Connections: Teaching and the Human Brain* (Caine & Caine, in press). The principles look at all learners as living systems where physical and mental functioning are interconnected (learning is psychophysiological). As a result, no one principle is more important than another. They are numbered for identification only.

On the surface each principle seems to be obvious: for example, "The brain/mind is social" (Principle #2). But each principle is also a gateway to deeper understanding. This principle, for example, can help educators better understand the link between social relationships, brain development, and learning (see Chapter 4). The principles are not separate and discrete. Each principle has a specific focus but involves aspects of the others. Each chapter in this book begins with a brain principle that summarizes research and current understanding about learning (see wheel, next page).

A Preliminary Definition of "Learning"

The principles help us understand why it has been so difficult to agree on what it means to learn. The principles show that several different processes are involved. The key to effective educational renewal is to integrate those different aspects of learning.

- For some, the primary aspect of learning is *memorization,* and the brain/mind is designed (in part) for memorization.
- For some, the primary aspect of learning is *intellectual understanding,* and the brain/mind is designed (in part) for intellectual understanding.
- For some, the primary aspect of learning is *making intellectual and practical sense of experience,* and the brain/mind is designed (in large measure) for making sense of experience.



Three interactive elements emerging out of the principles

Relaxed Alertness	Orchestrated Immersion in Complex Experience	Active Processing

All of these are legitimate. And as more aspects of the principles are implemented, the range of student learning increases.

LEARNING CAPACITIES

How do educators implement the principles? To begin with, the principles tell us that every learner has immense and specific capacities for learning that teachers can and must address.

The above principle, for example, "The brain/mind is social," tells us that every student has the capacity to learn through relationship with others. It supports cooperative learning, peer coaching, and having students share their work and ideas with others.

Although students will differ based on their background and genetic and physical makeup, the capacities let teachers know that every one of their students can learn more effectively if these capacities are seen as natural and are acknowledged and addressed in teaching.