Lighting Up the Mind: Why the Arts Are Important to Learning

By Lori Phillips, EdD

What kind of person will be valued in the workplace of the future? What kind of "smarts" are our universities looking for now?

Many think that the rigid, sequential, unambiguous thinking so prevalent in the past will no longer be enough. Different abilities, more holistic and nonsequential, will come to be valued.

Many believe that these types of abilities are best developed by comingling learning with the arts. Arts educators have long argued that the arts offer opportunities to "light up the mind," by enhancing both its analytical and holistic pathways. But how will we know if we have actually succeeded in developing this powerful neural network? Fortunately, new developments in the neural sciences have enabled us to look at brain activity in "real time" and begin to understand some of the physiological changes in the brain that seem to accompany this learning process.

According to Daniel Pink, author of *A Whole New Mind: Why Right-Brainers Will Take Over the Future*, "The future belongs to a different kind of mind-creators and empathizers, pattern recognizers and meaning makers" (2006). According to some of the top CEOs in the country, gone are the days of a society built on logical, linear, computer-like thinking. Both universities and businesses are looking for individuals who are ready to move into the conceptual age. These inventive, empathetic, big picture type thinkers are artists, designers, inventors, story tellers, meaning makers, and idea connectors. They know how to detect patterns and opportunities, create artistic emotional beauty, craft narratives, and combine unrelated ideas into something new.

The Arts and Learning

Because so many of a child's early years are devoted to acquiring skills of language and mathematics, children gradually learn, unconsciously, that the normal way to think is linear and sequential. They learn that the pathway to understanding moves from beginning to end, from cause to effect. Students learn to trust mainly symbol systems, such as words, numbers, and abstract concepts, that separate the experiencing person from what the person is experiencing (National Art Education Association, 2007).

Learning in the arts requires whole brain thinking. When participating in the arts, the student must jump between the intuitive and the analytical. The arts require not only an active mind, but a trained one (see sidebar).

The 10 Ways the Arts Promote a Different Type of Thinking

The arts help us:

- Make good judgments about qualitative relationships.
- Use our judgment rather than deciding by rules
- Teach children that problems can have more than one solution and that questions can have more than one answer.
- Celebrate multiple perspectives.
- Interpret the world in many ways.
- Teach children that in complex forms of problem solving, purposes are seldom fixed, but change with circumstance and opportunity. Learning in the arts requires the ability and a willingness to surrender to the unanticipated possibilities of the work as it unfolds.
- Make vivid the fact that neither words in their literal form nor numbers exhaust what we can know. The limits of our language do not define the limits of our cognition.
- Teach students that small differences can have large effects.
- Traffic in subtleties.
- Teach students to think through and within a material.
- Employ means through which images become real.
- Help children learn to say what cannot be said.
- Reach into poetic capacities to find the words that will do the job.
- Enable us to have experience we can have from no other source and through such experience to discover the range and variety of what we are capable of feeling.
- Symbolize to the young what adults believe is important.

(Elliot Eisner, 2002, Stanford University)

The arts require us to do more than acquire information and organize the facts. They are conceptual by nature. And the conceptual age is here! Gone is the informational age and focus on acquiring and applying theoretical and analytical knowledge. Lawyers, accountants, engineers, and executives will be expected to design and conceptualize. Successful individuals will be able to make qualitative judgments, see ideas in multiple perspectives, and know that neither words nor numbers can give them the full picture of their own understanding.

Lighting Up the Brain

But is there any evidence that these new ways of thinking are, in fact, real? Can they be "seen in action" in the human brain? The answer seems to be yes! The brain has been slow to give up its secrets. Recently, new medical imaging techniques, called magnetic resonance imaging (MRI), make the internal world of the mind visible, much as X-rays reveal the structure of our bones (Carter, 1999). We can actually see the brain being stimulated, as words are spoken, read, or written. There are images of the brain in which hot spots literally light up as the brain works through mental activities. Can you imagine being able to observe thinking and learning right before your eyes?

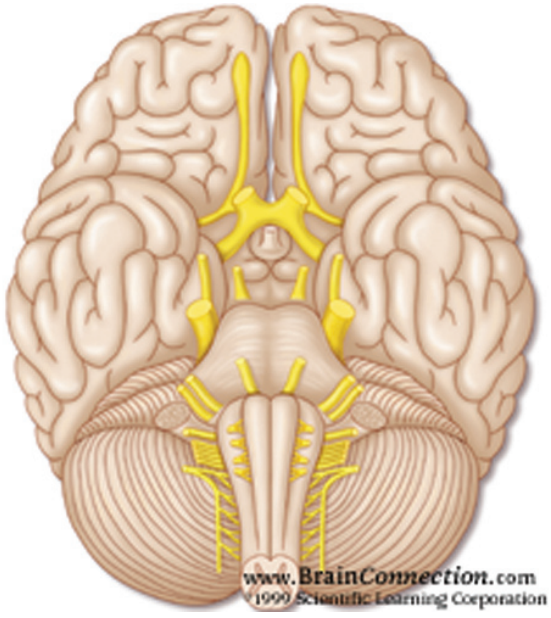
One may wonder, *Do different types of learning "light up" different areas of the brain?* Rita Carter's book, *Mapping the Mind,* a study done at the Wellcome Department of Cognitive Neurology showed just that (Carter, 1998). In the study, people were asked to read two different types of stories as they lay in a scanner. The MRI showed the areas of light and color in the regions of the brain that were active.

In the first story, a burglar had just robbed a shop and was making his getaway. As he ran, a policeman saw him drop his glove. The officer did not know the man had just committed a burglary; he only saw him drop the glove. He shouted "Hey! You! Stop!" in an attempt to alert the man to his missing glove. However, the burglar turned around, saw the police officer, and gave himself up. He put his hands up and admitted he had committed the crime.

In the second story, a burglar was about to break into a jewelry shop. He picked the lock and crawled under the electronic detector beam to avoid setting off the alarm. He then quietly opened the door to the storehouse and saw the glittering gems. As he reached out, he stepped on something soft and heard a loud screech. Immediately, the alarm sounded.

At the end of each story, the participants were asked two different types of questions. After the first story, they were asked, *Why did the burglar give himself up?* After the second story, they were asked, *Why did the alarm go off?* The first question required the participants to have insight into the burglar's mind, while the second required only general factual knowledge.

The brain scans physically showed that the participants used different regions of their brains to answer each question. In answering the question about the burglar's state of mind, both the left and right sides of the brain lit up. Hot



spots were equally visible in the middle prefrontal cortex and in both hemispheres of the brain. However, when asked to answer factual or foundational questions, such as *What did the burglar step on?*, hot spots were only visible in the left hemisphere of the brain.

Although in 95% of the population, the area that processes language is on the left side of the brain, just above the ear, this study suggests that deeper, more holistic understanding requires both sides of the brain.

Cognitive, factual aspects of the words we hear or read are processed in our left hemisphere. The right hemisphere processes the emotional aspects of tone, rhythm, pitch, and inflection. These aspects of language are called prosody, or the emotional side of language, and are significant for understanding the meaning of words (Zull, 2002).

Similar research showed similar results for reading comprehension in elementary students. "Good readers" are the ones who engage many areas of their brains (Sousa, 2006). In essence, reading comprehension requires making connections, inferences, personal knowledge, emotions, and memories to make meaning of images or text.

Intuition tells us, and studies seem to show, that for rich learning to take place, the learner must be able to learn and retain factual knowledge. The learner must also be able to make inferences and connect ideas. The learner must be able to make qualitative judgments, see ideas in multiple perspectives, and know that neither words nor numbers can give us the full picture of our own cognition. When this happens, the prefrontal cortex literally lights up like the fireworks. It connects with other parts of the brain as it searches for memories, personal knowledge, stored information, and emotions, in order to read between the lines of learning.

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