A Teacher's Exploration of Steven Pinker's

How the Mind Works

Steven Pinker (1997). W.W. Norton & Co., Inc. 660 pages.

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When I studied for teacher certification many years ago, there was little research in cognitive science. During the past few years, technology has been giving scientists new insights into how the brain functions. Paradoxically as the science of cognition advances, education seems to be slipping. Many students are not mastering reading or writing in their first language, and foreign language learning is experiencing dismal results. The dichotomy between the strides in the laboratory and declines in the classroom led me back to graduate school in teacher education. There I was dismayed to find the same decades-old theories taught will little acknowledgement of modern cognitive science.

The above explains why I was delighted when the director of the Center for Cognitive Neuroscience at Massachusetts Institute of Technology (MIT) published his fascinating work How the Mind Works. Language teachers may be familiar with Steven Pinker's earlier book The Language Instinct. Pinker has the ability to take complicated, scientific theories and illustrate them with humorous, real-world examples. On the other hand, he does not resort to pop psychology or pseudo science to make his writing palatable to the general reader. The result is a book that is a fascinating but a slow, complicated read.

The most difficult section of the book for me to grasp was the long comparison of the mind to a computer. Without programming knowledge, explanations of natural

computation, auto-associators, and path integration were sometimes difficult for me to comprehend; perhaps as an educator and computer user, it would behoove me to learn more about this area. A friend who works in the computer industry assures me that Pinker's computer analogies make perfect sense.

The whole language movement has tried to make language learning as close as possible to the natural acquisition process, but failures in the whole language approach may be inevitable since the working of the mind is not simple or self evident. Pinker states, "The real action is in the patterns of connections among neurons....Virtually nothing is known about the functioning microcircuitry of the human brain...." (p.184) The author illustrates in many ways how the mind breaks its processes into modules, as he makes comparisons to the computer. The most important conclusion for the language teacher is that not all four skills: reading, writing, listening and speaking, are acquired the in the same way. The "natural" and whole language approaches operate from the premise that people automatically absorb language. Pinker reminds us that all cultures have sophisticated spoken language, but the written language has not existed throughout human history and is still not a part of every culture.

Much of the failure in public education comes from the headlong surge into modern approaches without sufficient prior research and testing. Pinker says, "Without an understanding of what the mind was designed to do in the environment in which we evolved, the unnatural activity called formal education is unlikely to succeed." (p.342) He points out that the understanding of mathematics is highly satisfying, but the work of getting to that level is not always fun and enjoyable. I would say the same thing about foreign language proficiency. Some of my most rewarding experiences have been living and interacting in distant cultures, but the beginning stages of my language learning were a hard, time-consuming slog. Pinker argues against whole language approaches when he states, "...whole language, the insight that language is a naturally developing human instinct has been garbled into the evolutionarily improbable claim that *reading* is a naturally developing human instinct." (p. 342)

Natural approaches to education need to take account of the areas where everyday reasoning do not lead to the truth. Pinker points out that if people's instinct for statistics were not so faulty, the hugely profitable gambling industry would go out of business. Common sense functions well in societies that live on the land because millions of years of evolution has shaped the brain and nervous system for agriculture and hunting. In high tech industrial societies, however, the type of knowledge required is more formal and abstract.

How the Mind Works delves into all areas of human behavior—learning, partner selection, sex, pain avoidance, pleasure seeking, aggression, love. Much of human endeavor is motivated by feelings, making emotion a part of our evolutionary heritage. We are driven to love and protect our family groups and to run from or fight our perceived enemies. In groups, we jockey for positions of power or acceptance and are aware of who we are and

where we stand. In my own research and teaching, I have been interested in how emotions affect the ability to learn, and I have been experimenting with feedback circles and journal writing. I find it imperative that we teachers try to understand what goes on emotionally with our students. When our material is not challenging, students may tune it out and disengage from the learning process. On the other hand, when our course content is beyond what the student perceives to be a reachable, he or she may either become either passive or aggressive, thereby working harder to protect the ego than to learn the material.

Acknowledging the student's emotional well-being is far from being uselessly subjective, for our feelings have evolved as a part of our survival mechanism. As we teach, we can use the emotional, or affective, domain to excite and motivate. However, taking into account that not everything we need to learn comes easily, we may need to hark back to the traditional disciplines of repetition and grammar analysis. How the Mind Works validates my own teaching philosophy which calls for a balanced approach. A structured core curriculum can be spiced with appropriately timed learning activities to as fully as possible activate the cognitive modalities. Pinker shows that even humor is an important survival tool as it lubricates social situations by dispelling aggression. Teachers have often found that laughter in the classroom builds cohesiveness and reduces self-consciousness.

Many language teachers use music in the classroom. Pinker gives some theories as to why music as a pleasurable part of all cultures. Its rhythms may have a relationship to our physical natures and motor control. The melodies may tap into man's need to find meaning and hark back to "emotional calls." (p. 536) A long section of the book describes the development of sight. Like hearing, sight evolved for optimum survival of the species, and Pinker makes conjectures as to why it has also become a window to meaning. The pages on sight and visual perception were fascinating. Education psychology includes many studies of visual assumptions, and this type of research is always intriguing. How the Mind Works includes perceptual experiments that will be familiar to most teachers, but there is a lot of new material as well.

Of immense value to me as a teacher and researcher is Pinker's twenty four page bibliography. Pinker delves into so many areas in this book that some of the coverage is rather superficial. As I was reading, however, I kept a future reference check list at the back of the book, and now I am ready to investigate other sources on the workings of the mind. I do recommend highly How the Mind Works as a fine starting point for learning about research in cognitive science. I know that I will return to this book again and again because each time I do I find more fascinating information. At $17 for the soft bound edition, this prize-winning book was a good investment for my home library.