

The Old Brain and Learning

Why is it so hard to teach some people anything?

As Yogi Berra said, "There are some people, who if they don't already know, you can't tell them."

Truth to tell, we're all that way and there is a good reason for it. It's built into our brains. On the way to the development of the human brain, we went through several phases. First there was a brain stem, which is the inner and most primitive layer. It is the part of the brain that oversees such functions as reproduction, self-preservation, circulation of the blood, breathing, sleeping, and the contractions of muscles in response to external stimulation. This brain stem sits on top of the spinal column in the base of the skull. It is sometimes referred to as the "reptilian brain" because all vertebrates from reptiles to mammals have one. Surrounding this first part is the portion of the brain called the limbic system. The function of this second layer of the brain is to generate emotions--especially fear and aggression. These two parts together we can call the "old brain." It is hard wired and determines most of your automatic reaction. The third layer is the cerebral cortex--that large mass of grey matter that we think of when we think of the human brain. It surrounds the old brain but does not completely control it although it can moderate some of its instinctual reactions. This new brain is the part that is conscious and alert and in contact with our surroundings. It is logical and tries to find a reason or cause for everything. [ref. Paul D. McLean, "Man and His Animal Brains," in *Modern Medicine*, Feb. 3, 1964.]

We are rarely aware of the functioning of the old brain--it is not part of our consciousness. Its main function is self-preservation. It examines every new stimulus to answer the question, "Is it safe?"

Unlike the new brain, the old brain has a vague awareness of the outside world. The images it receives are filtered by the new brain but come to it without interpretation. Like the black silhouettes of planes flashed on a screen for fighter pilots to recognize. Although the new brain is quickly able to recognize one person from another, one dog from another, the old brain seems only able to recognize six basic categories, is this particular person (thing) someone to:

1. attack,
2. submit to,
3. run away from,
4. have sex with,
5. be nurtured by, or
6. nurture.

It is up to the new brain to refine these categories. But the old brain has already started to ready the body to make its move. Evolution selected out the slow-to-react primitive brains long before the Stone Age. If the limbic system has sent the message to the brain stem to relax, its friendly; prepare to fight, its a foe; or flee, its too dangerous to fight, it takes some doing for the new brain to calm the emotion and reverse the preparation--drain the adrenalin, etc.

The brain continues to add new data to the memory storage relating to the person you have just encountered; however, if the initial impression was negative, your first response to each new encounter continues to be negative no matter how many positive experiences you have had since.

This helps to explain why people form friendships, select a mate, and have a happy or unhappy friendship or marriage. We tend to react positively to people who remind us of those who have nurtured us in the past...something about their looks or the way they behave makes our old brain decide that this person is likely to nurture us. Since the person who first nurtured us is typically a member of our tribe, if not our mother, we are likely to select someone who has characteristics like ourselves to nurture us. And if the other is looking to us for someone to nurture them, then a match is readily made. Unfortunately, far too often one or the other or both had an unsatisfactory childhood and "the child within" is seeking to have it made all better by the other...which helps to explain the large number of unhappy spouses with unfulfilled expectations! When a person is desperately seeking succor, they rarely have it in them to provide the succor needed by their mate.

The old brain has no sense of linear time. Yesterday, today, and tomorrow do not exist. The past and the present are the same. So the instinctual response may bear little relationship to the current situation. For example, spouses frequently overreact--fly off the handle--at seemingly trivial provocation. And the person who "blew up" may be unable to explain why he did so.

This tendency to hold on to initial impressions also helps to explain why it is so difficult for us to change. It takes a strong motivation to overcome an initial impression. If we have spent a lifetime defending a particular decision/action,

we are unlikely to change readily. Typically "first impressions" count for everything. Interviewers tend to form an impression "in the first thirty seconds" and spend the rest of the interview justifying that "decision." Consider brand loyalty or political party identification, or religious affiliation or learning a new concept that rationally is contrary to what we have believed.

How often is contrary information dismissed? It is "water off a duck's back."

To the old brain, anything that is not routine and habituated feels unnatural. The teachers' task is cut out for them. Teaching almost anything requires overcoming the myths or logical-but-wrong ideas constructed in childhood to fill the gaps of ignorance. Even learning a new language presents a problem. How to prevent a student dutifully practicing mispronunciation? Especially if they have seen the word before they have heard it--because they tend to pronounce the new word as if it is a part of their native tongue.

To overcome the natural resistance to change takes all the skill and patience a teacher can muster. All of this goes to explain why a nurturing teacher has a better chance than a hostile one. The old brain may cause a pupil to "knuckle under" when escape is not possible. But nurturing is far more likely to gain confidence and willingness to cooperate. The best thing that teaching has going for it is that, given enough time and enough repetitions, the brain can adjust to a new reality.

Memory tests indicate that people tend to recall what they believe to be true, but forget what they think is false. ["Don't believe everything you think" is a favorite bumper sticker.] It's automatic. It's also a big challenge to teachers to get pupils to accept as true what they are studying that is new or different from what they have figured out in an attempt to make a rational explanation of an unknown...or have been told by someone else who didn't really understand the phenomenon. How to challenge the myths and old wives' tales so that they begin to reconsider. And then provide [random] reinforcement to the newly adopted idea, fact, or method. The teacher's task is to convince them with evidence and reason that false is false and true is true. The best chance is with new material because it is--for a brief moment--wide open. Provide an association before the student picks one that is wrong. Show how the new item relates to other learning before it is incorporated incorrectly. Reteaching is extremely difficult so try to do it right the first time!