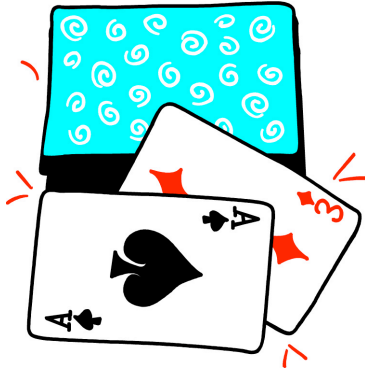


Six Trumps: The Brain Science That Makes Training Stick

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When you play most card games, there is one suit in the deck, or one card in the suit, that trumps all the others. The trump suit or card is the best one to have—with it, you can win the game.

This metaphor is an appropriate one for instructional strategies that work best *for the learners*. Certain ways to *learn*, meaning to be able to *remember* and *use* information, trump other, more traditional ways of learning. That is not to say that the traditional learning methods should be ignored; rather, some methods are better than others, and these methods help learners “win” the learning game. I call these methods “brain science principles” because they have been discussed at length in books about cognitive neuroscience and human learning.

This article gives you a summary of six brain science principles that trump traditional learning methods. It also provides you with some excellent resources, should you wish to explore these principles further.

This is a pre-publication excerpt from my newest book, to be published in the fall of 2010, and titled: *Using Brain Science to Make Training Stick*. Look for it on www.amazon.com.

In a nutshell, here are the six brain science principles that make training stick. When it comes to learning:

1. *Movement trumps sitting.*
2. *Talking trumps listening.*
3. *Images trump words.*
4. *Writing trumps reading.*
5. *Shorter trumps longer.*
6. *Different trumps same.*

Let’s take a bird’s-eye view of each.



1. Movement trumps sitting.

Molecular biologist John Medina, in his powerful book *Brain Rules* (2008), sums up the neuroscientific studies behind this principle: “Exercise boosts brain power” (p. 7). Movement—any kind of motion—increases oxygen to the brain, thereby giving the brain a cognitive boost.

Conversely, sitting for extended lengths of time makes thinking and learning more difficult to do because the oxygen levels in the body decrease.

Using This Principle: Learners need to move much more often than traditional training offers. Standing and stretching, turning and talking, bending and writing, wiggling arms and legs, rolling heads and shoulders—these are a few of the motions you can encourage learners to do *at least* every ten to twenty minutes during a training program. You can also build movement into your content-delivery by directing learners to do short, quick, topic-related review activities that include movement (see the “Articles” link on my website for free, downloadable movement-related review ideas).



2. Talking trumps listening.

In his excellent book *Informal Learning* (2007), technology expert and author Jay Cross, explains this principle by saying, “Learning is social. We learn from, by, and with other people” (p. 63). When learners discuss what they’ve heard, they process the information three times: first, by listening to it; second, by thinking about it; and third, by restating it using their own words. An expert on the educational implications of brain science, Patricia Wolfe, sums this up in her groundbreaking book *Brain Matters* (2001):

“The best way to learn something is to teach it” (p. 185).

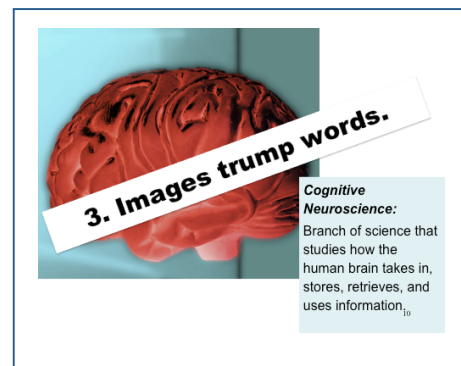
Using This Principle: Make sure you insert short, frequent, learner discussions throughout the training. Learner discussions can include pairs, triads, table groups, or whole group conversations. Discussions can be as short as one-minute or as long as time allows. Some examples of short discussion instructions to learners are:

Turn to the person sitting next to you and tell him/her one fact you now know that you didn’t know before.

Tell two people near you three facts you just learned about the topic.

Take two minutes to discuss the implications of this information.

Ask someone seated near you a quiz question about the content. Give him/her a thumbs up if the answer is correct.



3. Images trump words.

Wolfe also cites the research demonstrating the brain’s ability to remember images better than words. “The capacity for long-term memory of pictures seems almost unlimited” (2001, p. 153). When images, even simple ones like photos, stories, or metaphors are added to the lecture material, the entire

learning landscape changes. Instead of separate visible parts—a clump of trees, a road, a signpost, a hill, a car—the mind pulls these parts together to create a seamless whole: a vacation adventure.

In the previous paragraph, I used a metaphor to state the obvious: facts become more memorable when learners can use mental images to remember them.

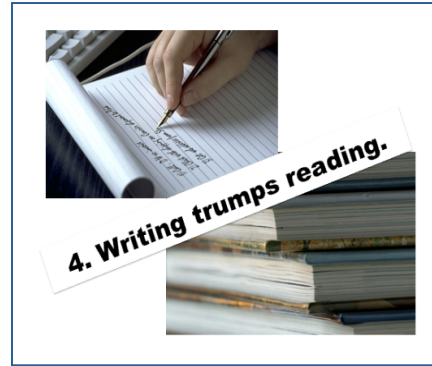
Using This Principle: Make a commitment to spend some preparation time gathering meaningful photos, clipart, stories, videos, metaphors, and real-life case-studies or job scenarios, all relevant to the topic. Allow time for learners to share or create their own image-making metaphors and stories. More examples are:

Create slides and handout materials that contain relevant photos or clipart instead of, or in addition to, printed information.

Have learners draw visual representations (doodles, logos, flow charts, and the like) of important content.

Use graphic organizers (mind maps, concept maps, clustering, or bubbling—do a Google search for free, downloadable graphic organizers) on which learners can take notes.

Collect both in-house and industry-specific anecdotes, stories, and case studies. Also jot down relevant stories that learners share and that (with their permission) you can share with future classes.



4. Writing trumps reading.

Writing is a whole-brain task, meaning that it's almost impossible to write about one thing and think about something else at the same time. Writing is also multi-sensory, in that it is kinesthetic, visual-spatial, and tactile. Learners cognitively process information a second time when they write it after hearing it. Furthermore, most learners will remember content that *they write* longer than the content they hear, or the content they read. Jay Cross explains: "Taking notes is a valuable form of processing information ... known to increase the likelihood of understanding and remembering material" (2007, p. 78).

Using This Principle: Remember to stop talking and give learners a minute or so to write a short summary of what they learned, three facts about the content, a question they still have, an opinion, a quiz question, etc. Note-taking tools can be graphic organizers, index cards, post-it notes, paper charts or placemats, and chart paper taped to walls.



5. Shorter trumps longer.

The human brain learns best when content is divided into smaller “chunks” or segments of information. Patricia Wolfe illustrates this principle with the example of phone numbers. “Phone numbers are not remembered as a list of ten numbers but as two chunks of three numbers and one chunk of four” (2001, p. 100). Grouping facts into larger categories or major concepts is another way of chunking. So is dividing content-delivery into shorter segments of time—about ten or twenty minutes, rather than sixty or ninety minutes. John Medina describes this process thus: “The way to make long-term memory more reliable is to incorporate new information gradually and repeat it in timed intervals” (2008, p. 147).

Using This Principle: Time your content-delivery. Divide all into lecture segments into “chunks” of about ten to twenty minutes in length. If you lose track of time during the class or training, use a stop watch, timer, or assign a person to hold up a “one minute to go” sign. In between the chunks, engage learners in short, quick, one-minute review activities in which they move, talk, and write.



6. Different trumps same.

The human brain is hardwired to notice changes in the learning environment and to ignore sensory data that remains predictable or the same over time. In his book *Brain-Based Learning* (2000), author and member of the International Society for Neuroscience, Eric Jensen, states that “any stimuli introduced into our immediate environment, which is either new (novel) or of sufficiently strong emotional intensity (high contrast), will immediately gain our attention” (p. 122). The implications are profound: the brain will eventually ignore anything that is routine, repetitive, predictable, or boring. Think about traditional lecture methods (facts, no stories), PowerPoint® slides that all look the same, or a sterile learning environment with little visual stimulation anywhere—all which the brain will eventually ignore.

Using This Principle: CHANGE things regularly: your instructional methods, learner activities, and the environment. Make sure to engage learners at regular intervals by having them move, talk and write. Use the walls and surrounding areas in the room as breakout areas for learners, as well as areas to which you move when lecturing (instead of standing in one place in front of the class). Insert relevant, emotional pieces into your content: stories, photos,

topic-related jokes, metaphors, analogies, videos, etc.

Final Thoughts

Is this a complete list of current brain science principles that relate to human learning? Not at all. Will this list of six principles move you in the direction of creating a more brain-based learning experience every time you train and teach? Absolutely! Small changes to your training programs can lead to profound results for learners. And understanding how the human brain learns is the first step towards creating instruction that is brain-based, not tradition-based.



Sharon Bowman is a professional trainer, teacher, author, and speaker. She is the president of Bowperson Publishing & Training, Inc. Over 70,000 of her seven popular training books are now in print. For free excerpts of her books and other tips and articles, log onto www.Bowperson.com.

Resources cited in this article:

Brain-Based Learning. (2000) Eric Jensen
Brain Matters. (2001) Patricia Wolfe
Brain Rules. (2008) John Medina
Informal Learning. (2007) Jay Cross

Sharon's books (with brain research):

How To Give It So They Get It.
 (5th printing 2009)
Preventing Death by Lecture.
 (4th printing 2008)
Training from the BACK of the Room. (2009)
The Ten-Minute Trainer (2005)

Other resources:

Teach Like a Champion. (2010)
 Doug Lemov
12 Brain/Mind Learning Principles in Action.
 (2005) Renata Caine
A Celebration of Neurons. (1995)
 Robert Sylwester

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