BRAIN RULES THAT WORK IN TRAINING

BY LYNDON LOVELL

The brain is simply amazing, yet we often take it for granted and do not give it a second thought. A basic understanding of how the human brain works is essential for training and development professionals. Learning how information gets processed by the brain, is retained in long-term memory, and how the brain is malleable and changes over time, is an important step in order to create better instructional design content.

Anatomy of the brain: the hippocampus

Deep inside the frontal lobe is the hippocampus. It serves as our data drive; it holds and sorts new information that comes in and then stores it in memory. To turn the hippocampus "on", you need to *focus*.

Tips

Get learners thinking about learning. Tell the learners in advance what is important about what they are about to learn; this will help them to start focusing. Metacognition is the term for thinking about one's own thinking or self-reflection. When discussing what students are about to learn, try and link concepts or things to things the audience already knows.

Play to the amygdala. The amygdala is a part of the brain near the hippocampus which is known for our fight or flight response, i.e. survival. When we come across something that threatens our survival we tend to remember. To help learners, engage their personal/emotional perspective. Incorporate games and playfulness. Find ways for learners to share information with others. Reflect on what they have done and incorporate some competitiveness.

Reinforce importance. During the training, reinforce the importance of what they are learning, so their brains will get ready to file the (upcoming) information away.

Short-term or working memory

Think of short-term memory as a temporary file in your brain. Important information gets stored among all the hundreds of brain inputs we receive at any one time; our brains file the important information for later use. If something important (say, for your survival) happens or is reinforced enough, it will go into your long-term memory. When we learn new things, our brain searches, or cross-references, information already stored in our longer term memory.

Tips

Provide concept maps. Concepts maps are similar to brainstorming. Start with an idea (a word or words) in a circle or bubble, then branch out with connecting lines to related ideas in additional circles. Concept maps help new information stick by relating it to information learners already know.

Provide connections. Include connection-based activities, such as reflecting back onto on one's prior experience. Or wordplay – using acronyms (for instance when setting your passwords) and other pneumonic devices; social activities – sharing information with others; and music, which (from a neurological aspect) points to so many different areas within the brain. Music is powerful because it stays in the brain.

Design adaptive learning. When creating courses, remember that not all learners have the same knowledge; some learners will already know some of the content. Before commencing an eLearning course, quiz the learners with a short assessment based on the upcoming content – if they answer certain questions correctly, then the course should be customised to skip the sections they already know.

Provide quiet time. Providing some rest time or breaks post-instruction helps a learner get to insight by allowing them to reflect on what they have learned.

Why do we forget?

Your brain is constantly being bombarded – not only with information from external sources (things going

on around us), but also from internal sensory impulses, eg you have an itch, the feeling of clothing on your skin, hunger pangs, the way your body is sitting or standing.

The brain can only store about seven things in your working memory at one time. If not repeated, the memory will only last about 30 seconds. You need to "repeat to remember" (Medina, 2014).

Attention span

Many statistics portray how much students actually forget after a training session (whether it's a face-to-face training session or an eLearning course). Art Kohn suggests that without any reinforcement, within one hour, people will have forgotten an average of 50 percent of the information you presented. Within 24 hours, they forget an average of 70 percent of new information. Within a week, an average of 90 percent is gone. Knowing how quickly students can forget information is important to instructional designers, or any professional managing staff training. Ideally, our courses should be memorable and meet all learning goals and objectives.

Tips

Deliver short chunks of information. Providing or delivering information in short chunks will allow learners to focus and stay focused. There is a capacity issue in relation to focus – generally 20 minutes' worth of information. To help learners retain the information and focus, make sure that you do not teach one concept longer more than 20 minutes. Break it up by having a quick break or by changing path, eg after 15–20 minutes open up for discussion, change to a role-play scenario, or introduce a new idea.

Provide spaced learning. When developing training programs, ensure that not all of the course is delivered in one go without follow-up training. As mentioned earlier, reinforcement is the key.

Neuroplasticity

Until as recently as the 1980s, it was thought that the brain did not change. Rather it was hard-wired after adolescence, or around 20 years of age. Neuroscientists now accept that the brain is malleable or plastic.

Results of research into people with no skill in a particular subject who were then trained in it showed that the initial learning of a new task is pivotal in changing the structure of the brain more so than the ongoing rehearsal of the learned subject.

So, when we learn something new, neurons – electrically charged cells – will fire making make new synaptic connections with other cells. All up 10,000 trillion synaptic connections may be going on.

Allow failure. Re-write training activities which will make people fail more often. This will stimulate much more neural activities rather than the successful completion of a new task. This is because when we take on unfamiliar, difficult or creative tasks, we're suppressing the part of our brain that directs automatic thinking processes.

We have to get those neurons firing!

Things to consider when designing courses:

- Get learners thinking about learning
- Play to the amygdala
- Reinforce importance
- Provide concept maps
- Provide connections
- Design adaptive learning
- Provide quiet time
- Deliver short chunks of information
- Provide spaced learning
- Allow failure

The tips outlined in this article can help us build better and more effective training programs. By providing training techniques based on what we know about the most complex organ in the human body, we can help learners learn, comprehend and retain new information.

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