

6 TIPS

for working with the

BRAIN

to Create Real Behavior Change

BY BRITT ANDREATTA

The latest report from the research firm Bersin by Deloitte shows that more money is being spent on learning and development than ever before. And yet, studies suggest that as much as 90 percent of new skills learned are lost within a year. If learning activities don't yield real and sustainable behavior change, that investment is wasted.

We know that learning is the pathway to improvement, so it's natural that as organizations seek to improve their talent, they look to learning and development. But the problem is that some of our learning initiatives are not being designed as effectively as they could be.

Discover key principles for learning design that maximize the brain's capacity to learn, build memories, and develop habits.



As a learning professional, I have immersed myself in neuroscience research, and what I learned really changed how I approach training design and delivery. Some of the studies confirmed things I had learned through trial and error long ago, and others completely shifted how I approached my craft. Here are six takeaways.

Tip #1: Work with the brain

Different parts of the brain play core roles in how a person first learns information, then stores that information into memory, and finally uses that learning to create real and lasting behavior change. If we don't work with the brain and its natural processes, even the most popular or highly rated programs won't deliver in the long run.

It is imperative that talent development professionals keep their finger on the pulse of brain science. As researchers learn more about how the brain and nervous system work, it will only enhance the quality of our learning products.

The brain structures that are involved in learning include the hippocampus, the amygdala, and the basal ganglia.

To design the best learning experiences, we need to understand and respect the neuroscience of learning.

Tip #2: Focus is the starting point of learning

The hippocampus is the part of the brain that takes in information and moves it to our memory. When it's damaged, people lose access to past memories and no longer can make new ones.

The hippocampus acts like a recorder or data drive; like those devices, it has an "on" button. Physiologically, it's when our eyes and ears attune to something that causes the hippocampus to begin recording. Richard Davidson, from the University of Wisconsin, calls this "phase locking" and it's the starting point of all learning.

As a result, we must design our learning environments to help people focus and we must bust the myth that you can multitask while learning. Research has proved that when we divide our attention, our focus switches back and forth between the two activities, also known as switch tasking.

Brain Science Resources

Brain science is a burgeoning field and, within it, you will find a wide range of defined specialties from neurology to psychology to biology. This is a list of some of the scholars, practitioners, and organizations that I follow whose work sheds light on how the brain influences learning and behavior change.

Scholars

- Brené Brown, University of Houston
- Richard Davidson, University of Wisconsin
- Carol Dweck, Stanford University
- Paul Ekman, University of California at San Francisco

- Kurt Fischer, Harvard University
- Daniel Goleman, Rutgers University
- Mary Helen Immordino-Yang, University of Southern California
- Dacher Keltner, University of California at Berkeley
- Rudolph Tanzi, Harvard University

Organizations

- Association for Talent Development, www.td.org/Home/Publications/Blogs/Science-of-Learning-Blog
- Center for Investigating Healthy Minds at the University of Wisconsin, www.investigatinghealthyminds.org/cihmCenter.html
- Foundation for a Mindful Society, www.mindful.org/about-mindful
- NeuroLeadership Institute, www.neuroleadership.com/about
- Neuroscience Research Center at the University of Texas, <http://med.uth.edu/nrc>
- Oxford Mindfulness Center, www.oxfordmindfulness.org
- Super Brain of the Chopra Center, www.chopra.com/super-brain-by-deepak-chopra-rudolph-tanzi
- UC Berkeley's Greater Good: The Science of a Meaningful Life, <http://greatergood.berkeley.edu>

TO DESIGN THE BEST LEARNING EXPERIENCES, WE NEED TO UNDERSTAND AND RESPECT THE NEUROSCIENCE OF LEARNING.

The hippocampus loses vital pieces of information for both of the things we were trying to attend to. I call this “Swiss tasking” because we end up with holes in the data the hippocampus was capturing and, therefore, holes in our learning that cannot be recovered.

Here is the big shocker about the hippocampus: It can only hold so much information before it must be processed and pushed into short-term memory. Studies show that the maximum amount is about 20 minutes of information.

Lecture-style sessions never have demonstrated good results for retention, and now we know why—it works against the brain’s natural functioning. The good news is that many other learning activities can help.

All the hippocampus needs is a few minutes of processing to push that data into short-term memory and it’s ready again for more. I now build all my learning events in chunks of 15 minutes of information followed by a processing activity, such as a dyad discussion, a period of reflection, an experiential activity, or even a break.

I can then string these mini-modules together into a longer session, although I rarely go longer than a half-day because of what I have learned about the brain. Since I have adopted this approach, I have seen a real increase in the effectiveness of learning events in terms of comprehension, retention, and ultimately behavior change.

Learning is not the only activity that benefits from focus. Daniel Goleman’s latest book, *Focus: The Hidden Ingredient in Excellence*, details the positive impact focusing has on leadership, decision making, and creativity.

Tip #3: Connections are the key to memory

As soon as the hippocampus captures learning, it first moves that learning into short-term memory and then eventually to long-term memory. Again, our knowledge of the brain

can help us tap into the body’s natural process for doing this.

Studies have shown that learning is the most likely to be retained and remembered when it can be connected to something we already know. Knowledge is stored in the brain as schemas, which are built up over time through experience. For example, think of bananas and you will recall instantly their color, shape, taste, smell, and whether you like them.

Schemas are neural networks and they get bigger and stronger as we add to them. Because I traveled in Venezuela, my schema for bananas includes the smaller, sweeter cambur, along with fond memories of baking with family.

Talent development professionals can take advantage of this natural process by attaching new learning to schemas that already exist in the learner’s brain. The best teachers instinctively do this. Whether they are teaching calculus, software, or leadership, they explain the abstract in concrete ways that connect to learners’ existing schemas.

Having been a dean at a major research university, I noticed that this was what distinguished the best math and science instructors from the rest. They were gifted at connecting to schemas that existed in the minds of young adults in a way that made the complex not only accessible, but even easy.

So how do you activate your learners’ schemas? First, you must step into the perspective of your learners. Knowing your audience will help you know what is there to play with. Many of us have faced this with multigenerational groups when an example that works for Boomers generated blank stares with Millennials. Any learning design or facilitation should start with asking yourself, “Who is in the room and how can I make meaningful connections to something they already know?”

Another shift I have made is to share a few different models or examples instead of just one. This broad approach allows me to activate the schemas of more people in the room

because I know that at least one is likely to hit the target. And this approach creates the added benefit of connecting the dots between those models.

For example, when I teach change management, I share a model of organizational development, research on how humans respond psychologically to change (known as the change curve), and Brené Brown's work on vulnerability. Together, these models provide the *why* and *how* change is both inevitable and difficult. It also shows the complex intersections that are at play, which provides insight about how to navigate them successfully.

I ask my learners to remember two times they experienced change, one that went smoothly and one that was difficult. This activates not only those specific memories, but also their individual schemas of change. When I pair this with hands-on activities for leading change effectively, the result is powerful and lasting.

Tip #4: Aim for three retrievals

One of the biggest insights from brain science has to do with how our memories are made. For conceptual learning, the evidence is clear that it's through the act of retrieval—having to recall something we have learned—that makes learning memorable for the long run.

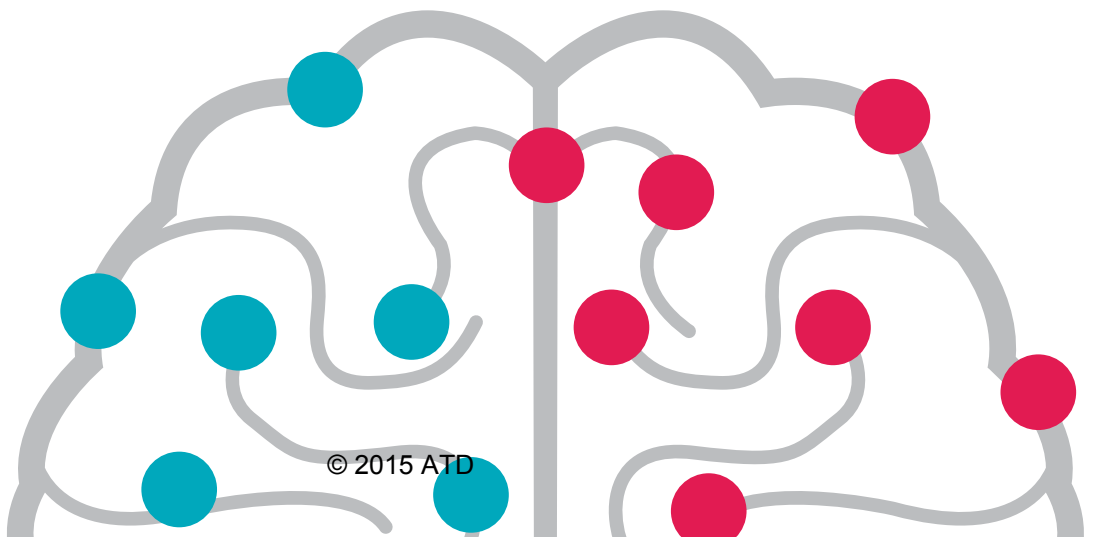
For example, I could teach you about neuroscience today (reading is certainly one of the ways we learn). I can activate your schemas and you might even have an “aha

moment.” But if you don't have to retrieve that learning again, it eventually will get dumped from your brain.

Retrieval can occur through a variety of methods such as sharing what you learned with someone else, reflecting on how it relates to a past experience, doing an activity with hands-on application, quizzing yourself on your understanding, and a host of other learning activities. As instructional designers, we can easily build retrievals into our learning events and empower our learners to do that for themselves.

This is what distinguishes great presenters from excellent instructors. Great presenters can create a feel-good experience that activates our schemas and that we thoroughly enjoy. And we will give those presenters or programs high ratings for satisfaction and raving reviews. But if no retrieval occurs, that learning will disappear in the following weeks and months. Sure, people will still say that they loved it, but they won't be able to remember much of what they learned, nor will their behavior change as a result.

Research has shown that it is most effective to get to at least three retrievals. Memory studies have shown that three retrievals yield the best accuracy and retention. Although you can go on to more, the benefit seems to be better at three, so I focus on that number of retrievals in my own learning design. You can certainly build three retrievals into



one learning event, but retention will be even more powerful if you add sleep to the mix.

Tip #5: Build in sleep between learning

It turns out that the sleeping brain plays a large role in how long-term memories are formed. While we sleep, the brain pushes information that we learned that day from our short-term memory into our long-term memory. It's when we sleep that our brain adds the day's learning onto existing schemas, and physically builds and strengthens neural pathways.

It also does a little housecleaning. Every day, we take in thousands of bits of information and it is during sleep that our brain chooses which of those bits is worthy of being retained. It even revisits items already in long-term memory and deletes the information that has not been activated in a while.

The animated movie *Inside Out* does a great job of depicting this process. While Riley is sleeping, the minion-like workers in her brain decide to vacuum out most of the names of the U.S. presidents.

So how can we use sleep to enhance our learning events? Flip the classroom and use blended learning.

I now have learners do some pre-learning a few days prior, then we take a deeper dive in the classroom through hands-on application. I extend their learning with post-event opportunities and resources. For example, when I design leadership training, learners are asked to watch a corresponding online course at lynda.com. They can do this at their own pace and it frees me up from teaching some of that content so that I can use our in-person time for more focused work.

When we come together, we do in-depth hands-on practice of the skills I want them to use. And after the event, I provide them with additional learning materials such as links to TED Talks, articles, and assignments to further hone their skills.

This blended approach allows me to create three retrievals spaced with sleep, and it also starts to build the habits of the behaviors I am trying to cultivate.

ONE OF THE BIGGEST INSIGHTS FROM BRAIN SCIENCE HAS TO DO WITH HOW OUR MEMORIES ARE MADE.

Tip #6: Be a habit designer

Ultimately, the goal of most learning activities is behavior change. No matter the topic, we are trying to elicit new and better behaviors in the learner.

Charles Duhigg's *The Power of Habit* changed the way I see my work. He shares the science of how the basal ganglia in the brain builds habit loops that include a cue or trigger, the routine of behavior, and the reward for completing that routine.

Over time, habits become well-grooved neural pathways that almost happen on auto-pilot, for example how you currently log in to your computer or how you get to work.

When we are trying to create behavior change, we need to think about the habits that are currently in place and how to design new, better habits that will be more compelling than the comfort of the current ones.

I now think of myself as a habit designer. All of my learning design starts with identifying the habit loop I hope to instill, and I work backward from there. Although retrievals are the key to moving conceptual learning into memory, repetition is the key for habit design. The more we fire neurons together, the stronger that neural pathway becomes, to the point that researchers can measure the neurons growing thicker.

As talent development professionals, we are in the business of cultivating potential. Your organization as a whole—as well as every person in it—have unrealized ability, and your job is to cultivate that potential through the learning experiences you create. Work with the natural processes of the brain and nervous system to maximize the impact of your great work.

■ **Britt Andreatta** is director of learning and development and senior learning consultant for global talent development at lynda.com (now part of LinkedIn); britt@brittandreatta.com, [@BrittAndreatta](https://twitter.com/BrittAndreatta).



talent development

SUBSCRIBE TODAY!



YES, I would like to subscribe to TD!

Subscriber Information

First Name: _____ Last Name: _____

Job Title: _____ Company Name: _____

Address 1: _____

Address 2: _____

City: _____ State: _____ Postal Code: _____ Country: _____

Phone: _____ Email: _____

Subscription Type

Individual (U.S.) - \$150

Individual (Outside the U.S.) - \$216

Institutional (U.S.) - \$300

Institutional (Outside the U.S.) - \$366

Get even more when you become a member of ATD! All ATD memberships include a monthly subscription to *TD* magazine, plus access to webcasts, publications, research, and discounts on conferences.

Professional Membership (One Year) - \$229

Professional Plus Membership (One Year) - \$349

Payment Type

VISA

MasterCard

American Express

Discover

Check in USD Payable to *TD* magazine

Payment Details

Name on Card: _____ Card Number: _____

Exp. Date: _____ Security Code: _____ Signature: _____

Check Number: _____

Return Form to:

ATD Subscriptions | PO Box 1567 | Merrifield, VA 22116-1567

FAX: 703.299.8723

Prices valid through December 31, 2015. *TD* magazine is published by the Association for Talent Development, formerly ASTD.

071426.31610

Order online at www.td.org/tdsub

© 2015 ATD



Association for
Talent Development