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How to separate **learning myths** from reality

Misconceptions about the brain are embedded in corporate training programs and could be sabotaging their effectiveness. Companies should reevaluate them in light of the latest scientific insights.



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Over the years, you have probably gained some insight into how your brain works. You may have taken a course or read a book that promised to reveal the secret of maximizing your mental capacity—a common sales pitch of leadership coaches these days. In the process, you may have read that after a critical period in childhood there is no hope for significant learning, that half of your brain is inactive at any given time, or that you're capable of learning properly only in your preferred style.



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Each of these claims is what we call a “neuromyth,” a misconception based on incorrect interpretations of neuroscientific research. Our experience advising companies on their lifelong-learning initiatives suggests that such misunderstandings remain embedded in many corporate training programs. As companies increasingly pour money into developing their employees, they can no longer afford to invest in training programs based on inaccurate and out-of-date assumptions. In recent years, for example, US businesses alone spent more than \$164 billion annually on employee learning.¹ The stakes are high and getting higher.



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Bridging the gap between popular neuromyths and the scientific insights gathered in the past few decades is a growing challenge. As modern brain-imaging techniques, such as functional magnetic resonance imaging (fMRI), have advanced scientific knowledge, these misleading lay interpretations by business practitioners have advanced as well. Unless such misconceptions are eliminated, they will continue to undermine both personal- and organizational-learning efforts. In this article, we'll address the three most prominent neuromyths in light of the latest research and explore some of the implications for corporate learning.

Myth #1: The critical window of childhood

Most of us have heard about critical learning periods—the first years of life, when the vast majority of the brain’s development is thought to occur. After this period, or so the assumption too often goes, the trajectory of human development is deemed to be more or less fixed. That, however, is an exaggeration. Recent neuroscientific research indicates that experience can change both the brain’s physical structure and its functional organization—a phenomenon described as neuroplasticity.

Researchers studying the plasticity of the brain are increasingly interested in mindfulness. Practicing simple meditation techniques, such as concentrated breathing, helps build denser gray matter in parts of the brain associated with learning and memory, controlling emotions, and compassion. A team led by Harvard scientists has shown that just eight weeks of mindful meditation can produce structural brain changes significant enough to be picked up by MRI scanners.²

Organizations from General Mills in consumer foods to digital bellwethers such as Facebook and Google increasingly give their employees opportunities to benefit from mindfulness and meditation. Most such programs have garnered enthusiastic support from employees, who often see a marked improvement in their mind-sets and job performance. For example, employees at the health insurer Aetna who have participated in the company’s free yoga and meditation classes report, on average, a 28 percent decrease in their levels of stress and a productivity increase of 62 minutes a week—an added value of approximately \$3,000 per employee a year. CEO Mark Bertolini, who started the program a few years ago, marvels at the level of interest generated across the company; to date, more than a quarter of Aetna’s 50,000 employees have taken at least one class.³ Leaders like Bertolini understand that providing them with the tools to become more focused and mindful can foster a better working environment conducive to development and high performance.

Myth #2: The idle-brain theory

A recent European survey discovered that nearly 50 percent of teachers surveyed in the United Kingdom and the Netherlands

believed that the idle-brain theory has been proved scientifically.⁴ This misunderstanding originally stemmed from inaccurate interpretations of activation hot spots in brain-imaging studies. By now, more carefully interpreted functional brain scans have shown that, irrespective of what a person is doing, the entire brain is generally active and that, depending on the task, some areas are more active than others. People can always learn new ideas and new skills, not by tapping into some unused part of the brain, but by forming new or stronger connections between nerve cells.

This insight into the brain's capacity becomes particularly relevant for the environment and context in which learning typically occurs. Everybody knows, all too well, about the habit of quickly checking e-mails or planning for the next meeting in the middle of a training session. The problem is that such multitasking engages large parts of the brain's working memory. Without freeing that up, we cannot successfully memorize and learn new information. In short, multitasking and learning cannot occur effectively at the same time.

Some organizations, recognizing this problem, are working to build immersive learning environments where distractions are eliminated. At McKinsey, we've created a model factory that participants can walk through to see operating conditions in action. But first, everyone is asked to place their phones and other distractive belongings in a locker, so they can fully concentrate on the learning exercise at hand. At many companies, removing the temptation of using mobile devices during learning sessions is becoming commonplace.

Myth #3: Learning styles and the left/right brain hypothesis

Almost everyone has encountered the theory that most people are either dominantly analytical (and left brained) or more creative (and right brained). However, this either/or dichotomy is false. The two hemispheres of the brain are linked and communicate extensively together; they do not work in isolation. The simplistic notion of a false binary has led, in many businesses, to the misconception that each one of us has a strictly preferred learning style and channel. Recent studies have flatly disproved this idea, suggesting instead that engaging all

the senses in a variety of ways (for instance, audiovisual and tactile) can help employees retain new content.

One organization that puts this idea into practice is KFC, which uses multiple forms of learning in customer-service training. Sessions begin with an after-hours board game placing the entire team of a store in the role of the customer. This is followed up by “gamified” learning that fits into roughly 15-minute windows during shifts. These video game–like modules put the employees behind the cash register to handle a number of typical customer experiences, including responding to audio and visual cues of satisfaction. At the end of the online modules, employees physically reconvene at the front of the store to hear feedback, report on what they’ve learned, and receive live coaching as reinforcement.



Although significant progress has been made, much remains to be done to eradicate neuromyths from the philosophy of corporate-training programs. Neuroscience research has confirmed some of the approaches that learning professionals already use, such as on-the-job reinforcement and engagement without distractions. But that research has also contradicted other approaches. Companies should draw on the newly substantiated insights and may need to rethink their training programs accordingly. At the very least, they need to improve their dialogue with, and understanding of, the scientific community. ○

¹ *2013 State of the Industry*, Association for Talent Development, December 2013, td.org.

² Omar Singleton et al., “Change in brainstem gray matter concentration following a mindfulness-based intervention is correlated with improvement in psychological well-being,” *Frontiers in Human Neuroscience*, February 18, 2014, frontiersin.org.

³ David Gelles, “At Aetna, a CEO’s management by mantra,” *New York Times*, February 27, 2015, nytimes.com.

⁴ Paul A. Howard-Jones, “Neuroscience and education: Myths and messages,” *Nature Reviews Neuroscience*, 2014, Volume 15, Number 12, nature.com.

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