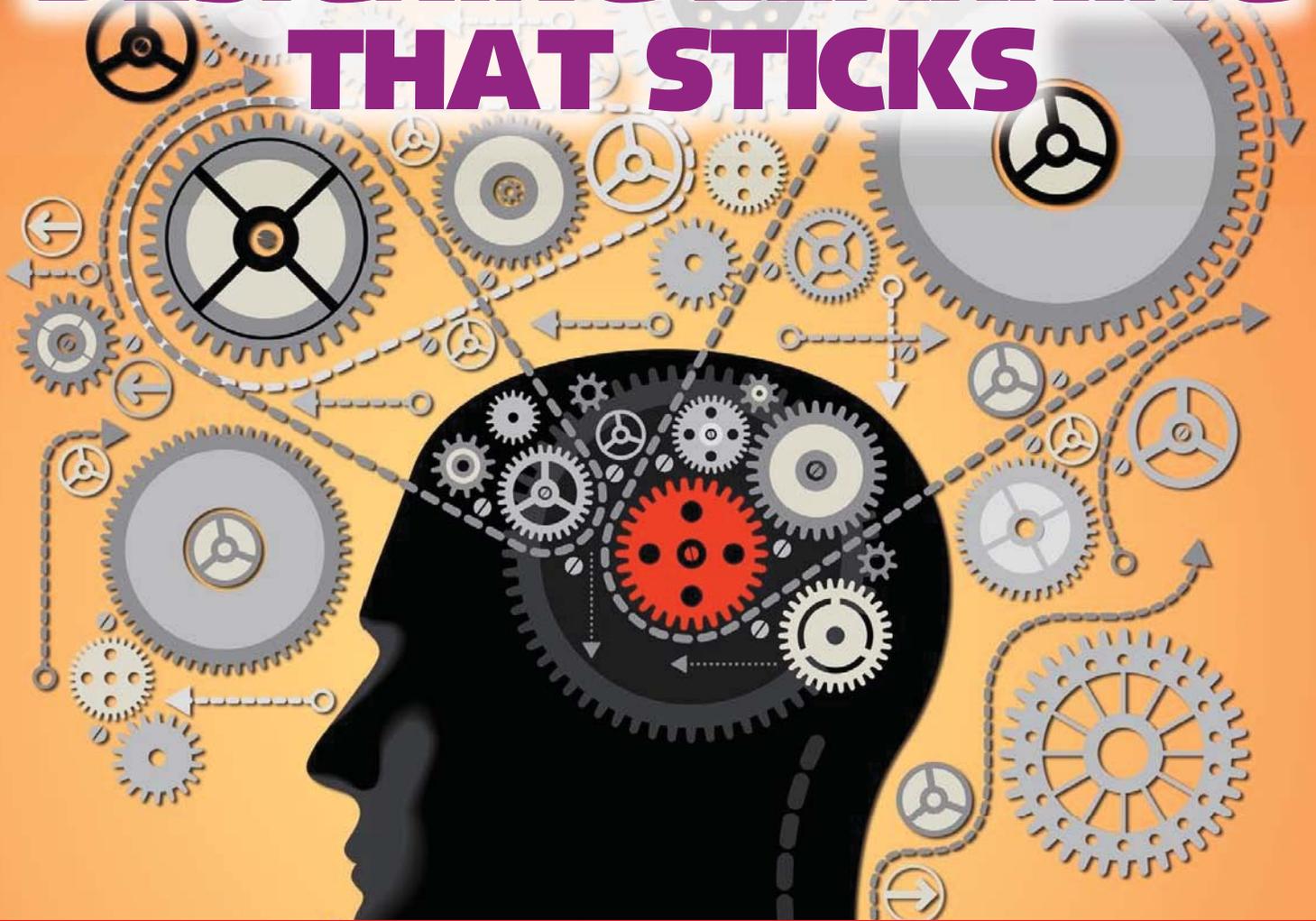


What the Latest Brain Research Tells Us about **DESIGNING LEARNING THAT STICKS**



BY SAM HERRING

It was a particularly memorable day for developmental molecular biologist and author John Medina – one in which his professional inquiries and parental curiosities would suddenly intersect. Walking down the street with his two-year-old son, Noah, the journey came to an abrupt halt when Noah discovered a pebble in the sidewalk. A few feet later, a weed popped up from a crack in the asphalt. Still further, a dead bug. Every discovery was accompanied by a squeal of glee from the young explorer. The world was his classroom.

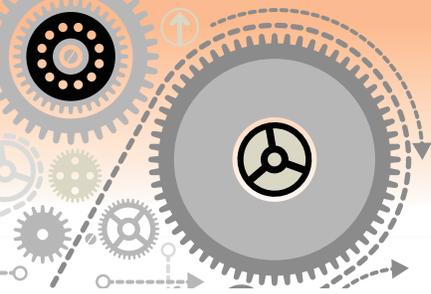
Medina relates the story of Noah and the

IT IS IMPORTANT THAT WE DESIGN NEW TECHNOLOGY-ENABLED LEARNING SOLUTIONS WITH CURRENT BRAIN RESEARCH IN MIND

pebble in the closing pages of his bestseller *Brain Rules*, and as a parent myself, I know his words ring true. If you've ever watched children at play in a safe and secure environment, you know that a child's classroom has

no boundaries. And if you've been reading the latest research on how children learn, you know that such a scene validates everything we know about how the brain retains information for the long haul, how creativity is encouraged, and how focus, safety and enthusiasm for learning pay off as a child learns new skills.

When was the last time you approached your company's learning strategy in a similar fashion? Not by putting crayons in cubicles, but in terms of considering the *science* behind how we learn. At a time when there are more opportunities than ever to utilize



EFFECTIVE LEARNING TECHNOLOGY DESIGN ENGAGES LEARNERS SO THAT THEY CAN TRULY FOCUS ON THE LEARNING EXPERIENCE THEY NEED AT THAT MOMENT

a plethora of social, collaborative, mobile and gaming technologies for learning, it is even more important that we design new technology-enabled learning solutions with current brain research in mind.

Brain Science and Learning

Particularly in the last few years, some of the most exciting findings in learning theory have emerged not from technology developers with the latest new “app,” but from molecular biologists, neuroscientists, and even early-childhood development experts. Authors like Medina, Annie Murphy Paul, Atul Gawande and others are challenging learning and development leaders to consider more than just what the flashiest new technology application trick might be, how best to set up a repository of documents, or even the most effective ways to assess learning at the end of yet another instructor-led training course. They’re asking us to consider brain science - how the brain takes in and retains information, how we learn best for the long term, and how some of the holy grails of the learning industry, like the classic course post-assessment, may not offer the long-term learning results we desire in our organizations.

So, what can this new science of learning teach us about how best to construct learning programs, how to measure success, and most importantly, how to answer the question on every chief learning officer’s mind: “Are my programs really working?”

Design Matters

Brain Rules lays out convincing evidence that how our brains are wired has important implications for learning design. In it, Medina lays out 12 succinct rules for learning based not on technology, but on biology: understanding what’s really going on in our neural pathways as we struggle to acquire and utilize new information. The most practical counsel for those of us overwhelmed by our daily work: no multitasking. “We are biologically incapable of processing attention-rich inputs simultaneously,” writes Medina, because of the sequential tasks the brain must perform in order to switch attention from one thing to another. And, he emphasizes, studies show that a person who has been interrupted takes 50 percent longer to accomplish a task, and makes up to 50 percent more errors, than someone who concentrates on one task at a time.

Annie Murphy Paul makes similar

points about the dangers of multitasking in the learning process in a recent issue of her newsletter “The Brilliance Report”:

When our minds are engaged in a task ... the information relevant to that task is held in our short-term memory. The reason multitasking is detrimental to learning holds for young people as well as adults: The brain can’t really pay attention to more than one thing at a time. Rather, it switches its focus between the two tasks, making us slower and less accurate at both.

Put simply, design matters. We must engage learners through an immersive and relevant learning experience that draws the learner in to hold their attention. That way, learners get what they need and don’t feel the need to wander. They aren’t tempted to multitask.

Of course, learning technologies aren’t just a means for entertaining people to combat distraction during the learning process. Effective learning technology design engages learners so that they can truly focus on the learning experience they need at that moment. One leading financial services firm offers learning tools for investment advisors that provide easy access to compelling “nuggets” of learning on financial topics relevant to their daily practice. The structure of the learning tool allows advisors to dig deeper to view additional layers of related information, or to bookmark that information for later. It’s a simple but effective concept: Meet the learner where they are, and allow them to access additional resources as desired.

Structure

Another key ingredient for effective learning is the structure, method or form in which it is delivered. For example, what is the best way to present new information for long-term retention and accuracy? Consider the findings of Atul Gawande, a surgeon and author. In *The Checklist Manifesto: How to Get Things Right*, he tells the story of how a community hospital staff in a small Austrian town saved a child’s life

The Bookshelf

Consider delving into one or more of these titles to learn more in depth about the science of learning and its implications for organizational learning and development.

- John Medina: “[Brain Rules](#)” and “[Brain Rules for Baby](#).” Two utterly readable examinations of the brain’s rules of engagement, from multitasking being a physically impossible phenomenon to why regular sleep is so essential for helping us to synthesize learning.
- Annie Murphy Paul: “[Origins](#)” and the upcoming “[Brilliant: The New Science of Smart](#).” The science journalist and blogger presents compelling evidence that learning is a scientific phenomenon, and how best to take advantage of that knowledge to create effective learning opportunities.
- Atul Gawande: “[The Checklist Manifesto: How to Get Things Right](#).” An engaging look at how simplifying complex learning tasks into the most basic of all learning tools - a checklist - can be the difference in whether tasks are performed accurately, or new processes retained over time.

ENCOURAGEMENT, A SAFE LEARNING ENVIRONMENT, AND ACTIVE REFLECTION LEAD TO LONG-TERM RETENTION OF NEW CONCEPTS

after she had been trapped underwater in an icy pond for over half an hour. Despite the modest resources of the provincial hospital, they performed this miraculous feat through the use of the simplest of performance support techniques: a checklist.

Gawande argues that modern medicine has become so complicated and specialized that it's simply impossible to expect one person to remember all of the correct steps in a complex sequence from memory alone. But with the help of a simple list, best practices can be encoded, shared and taken to scale — and since the brain can focus on one task at a time, excellent performance is enabled through this simplest of tools. Interestingly, Gawande provocatively suggested in his 2012 *New Yorker* article “Big Med” that the healthcare field could learn a great deal about standardizing best practices from the Cheesecake Factory, the restaurant chain known for stunningly consistent service nationwide. The chain empowers kitchen managers to coach their staff as they prepare customer meals, and only those deemed of the highest quality are allowed to be served.

Practical Applications

Ideas such as sustaining learners' attention, simplifying complex tasks, and coaching to ensure consistently high-quality results naturally suggest applications for the learning field. So what might these concepts look like in action?

Consider the case of a leading global innovation consulting firm that partners with clients to invent new products, brands, services, and business models; and helps those clients build in-house innovation capabilities so their employees become catalysts of enduring innovation. This firm wanted to extend their clients' learning experience beyond the traditional in-person workshop to fully integrate with their work environment. The solution was a continuous learning environment, made possible through a thoughtfully designed learning and performance support portal enabling self-directed learning.

The solution encouraged self-directed

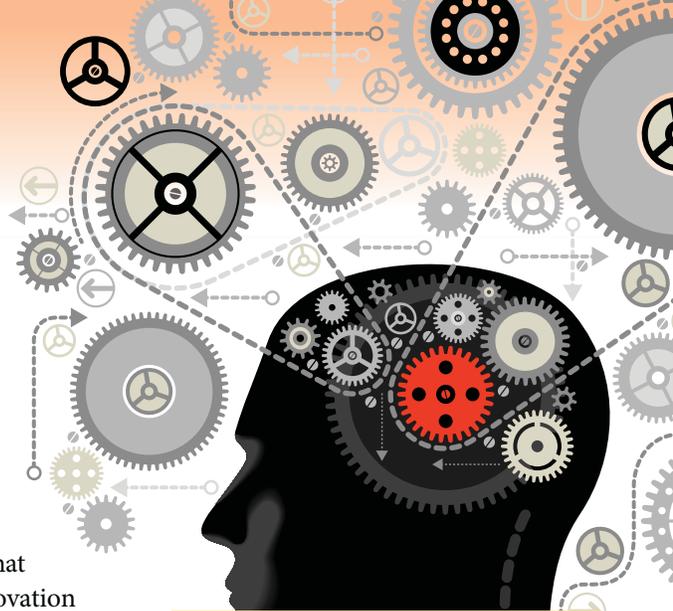
learning around key areas of core innovation knowledge and skill. The learning environment was thoughtfully designed to allow the learner to navigate through an intuitive learning map to first access short “nuggets” of content and tools that would help them to lead innovation projects. A second step focused on meaningful application of knowledge and skill to the work environment, aligning learning content and job-related tools with real world work activities. A third component was reflection and feedback, critical for reinforcement of new skills. Individual learners in this environment were challenged to reflect on what they learned from their experiences, and invited to discuss their learning experiences with a coach or mentor, or with their fellow learners through a social post.

The act of reflection, sharing and ongoing reinforcement of innovation capabilities is a far cry from a typical assessment offered at the end of most day-long workshops. And, its use is supported by the scientific findings around how short- and long-term memory function biologically, and particularly how encouragement, a safe learning environment, and active reflection lead to long-term retention of new concepts.

Parting Thoughts

These observations are but a starting point for a larger conversation that should take place inside any organization: Considering how the science behind how we learn best can translate into even more effective methods for learning and development in your workplace. This is by no means an exhaustive list of the latest resources (see “The Bookshelf” for more). Use these sources as a place to begin examining how the new science of learning can help your organizations design learning solutions that are engaging, interactive, supportive, and most importantly, lead to the results you seek.

Sam Herring is CEO and co-founder of Inrepid Learning. Email Sam.



Takeaways

- Learning leaders who want to ensure the efficacy of their companies' learning strategies would be wise to consider the findings of neuroscience, molecular biology, and early childhood development. These fields offer insights on how we learn and retain information over time, with major implications for the success of any training endeavor.
- Create learning solutions with design and structure in mind. Give particular attention not only to what tools and features are being utilized in a training solution, but whether they will contribute to the learner's ability to concentrate, focus, and retain the information for the long term. Additionally, consider simple, effective tools such as checklists, which can be linked to supporting learning resources.
- Assessments given at the end of a training session test short-term memory. More interactive learning opportunities, such as ongoing coaching sessions with peers and mentors, reinforce long-term skill development. Your company's success in training will depend greatly on which approach you choose to adapt to support your employees' learning endeavors.