HOW WE LEARN

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“If keeping someone’s attention in a lecture were a business it would have an 80% failure rate,” wrote John Medina, author of Brain Rules: 12 Principles for Surviving and Thriving at Work, Home and School,in 2008.

Stop and think about that statistic for a moment. In any other area of business, an 80 percent failure rate would be unacceptable. Imagine that 80 percent of your company’s products had defects, 80 percent of your deliveries failed to reach the consumer on time, or 80 percent of the time you were late to work. That wouldn’t be acceptable, right?

Yet that’s precisely what’s happening in workplaces worldwide.

The more we observed the ineffectiveness of traditional lecture-based training, the more we began to wonder: If the status quo isn’t working, what does it really take to optimize the learning experience? If learners don’t learn best in a lecture, how do they learn best?

What about learning preferences? When asked, most learners express a preference for how they like information to be presented to them—auditory, visual, kinesthetic, for example. Many factors influence an individual’s learning preference, like past educational experiences, social environment, or basic cognitive structure. Could learning preferences be as varied as individuals themselves?

These questions both fascinated us and drove us to find the answer.

We hit the streets—on the way to the library—to find better ways to facilitate adult learning in the workplace. We reviewed several existing educational theories, devouring the research on brain science and psychology as it relates to learning. We aren’t brain-based learning experts, but we have amassed a vast reservoir of knowledge about optimal learning practices. Below we’ve provided several sample approaches to adult learning, each of which influenced our eventual development of Cafeteria Learning: a model for active, social, and experiential learning that focuses on choice.

Experiential Learning

A little girl stands in the middle of a driveway, her face beaming with excitement. Today is the day her father has promised to teach her to ride her bike.

After a few minutes her dad makes his way outside and exclaims with a smile, “Time for bike riding lessons!” He then proceeds to take his daughter’s hand and leads her inside the house, where a slide presentation is cued up.

“OK. Have a seat, please,” Dad instructs. He shines his laser pointer onto the projector screen. “Today we’re going to talk about the four steps of riding a bike. Pay careful attention—your mother and I will be testing you on this later!”

He gives her a handout and begins to read aloud from the slide presentation:

“With the right amount of effort and practice, riding a bike can be easy and fun! Here are the four steps you must know in order to get started.

“Step one: Always wear a helmet.

“Step two: Stand to the left or right of the bike with the handlebars firmly gripped.

“Step three: Lift your leg over the bar and sit on the seat. Your tippy-toes should just barely reach the ground . . .”

OK, so perhaps this story is a little far-fetched, but it beautifully illustrates a simple point: Learning without experience isn’t natural. We wouldn’t learn to ride a bike this way, so why would we expect our employees to learn this way?

Not only does it make sense that we learn best through experience, but it is also scientifically accurate: The very physiology of our brains is wired to learn through experience. Learning through experience is one of the most natural, basic concepts of learning. It’s how we begin to understand the world as children, and it’s how we continue learning through, and reflecting upon, experiences throughout our lives.

“While genetics and prenatal influences may calibrate the brain at birth, it is largely dependent on subsequent experiences to determine its capacities and deficiencies,” explained Dr. Kenneth Wesson in a 2010 article for Brain World magazine. “Author Joseph Epstein stated, ‘We are what we read.’ Neuroscientists would assert, ‘We are what we experience.’ Neural circuits are constantly reorganized and rerouted, based on the quantity, quality and timing of our experiences.”

Until recently, the common assumption was that our brains, like the rest of our bodies, stopped developing when we became adults. It was believed that neural cell generation—or neurogenesis—was not possible after childhood. We now know that neurogenesis is possible, albeit to a lesser extent, throughout adulthood (Ernst and Frisén 2015). “Although we cannot regenerate limbs, we can re-invent our brains through neuroplasticity. . . . Changes in brain function occur as the brain re-wires itself in response to new demands placed on it by the external environment. Our malleable brains help us thrive by crafting environmentally appropriate survival strategies. Brain plasticity underlies the brain’s extraordinary capacity to learn, unlearn and relearn,” Wesson wrote.

Enter David Kolb, an American educational theorist who developed a well-known learning theory known as experiential learning. “Learning is the process whereby knowledge is created through the transformation of experience. Knowledge results from the combination of grasping experience and transforming it” (Kolb 1984, 41). Experiential learning “emphasizes the central role that experience plays in the learning process and regards learning as a holistic process of adaptation to the world, which involves the integrated functioning of the total organism—thinking, feeling, perceiving and behaving” (Li, Mobley, and Kelley 2013, 34-35). It consists of a “direct encounter with the phenomena being studied rather than merely thinking about the encounter, or only considering the possibility of doing something about it” (Borzak 1981).

Many well-known figures support the idea of learning through experience and have accordingly developed their own models for providing stimulating experiential learning environments. Maria Montessori, for example, an Italian physician and educator known for developing discovery-based schools across the world, built a movement that started in the early 1900s but truly blossomed in the 1960s. The Montessori model emphasized “opportunities for student movement and interaction in a structured environment that supports children’s natural curiosity” (Ultanir 2012, 204). In Montessori schools, children learn through direct experience and work with physical materials rather than receiving formal instruction (through lectures).

Consider this excerpt from Glenn Rifkin’s 2013 article (59) on the benefits of a Montessori education: “Daniel H. Pink believes that using Montessori methods in corporate training is an idea whose time has come. Using Montessori methods in corporate training ‘would require people to unlearn some bad habits they’ve acquired in other types of formal education,’ Pink said. ‘If Montessori-style internal training isn’t already happening,’ he declared, ‘someone should start it.’”

“Scientific observation,” wrote Montessori, “has established that education is not what the teacher gives; education is a natural process spontaneously carried out by the human individual, and is acquired not by listening to words but by experiences upon the environment” (Montessori 1946, 3).

Brain expert Eric Jensen wrote in his book, Brain-Based Learning: The New Science of Teaching & Training; “The brain is not very good at absorbing countless bits of semantic (factual) information. What feeds the brain more is meaningful exposure to larger models, patterns, and experiences. . . . This is why it makes good brain sense to facilitate a variety of experiences from which students can extract their own learning. The proportion of time that learners ought to be doing and talking, rather than sitting and listening, is a proportion of several variables” (Jensen 2000, 34-35).

Experience—doing, acting, touching, feeling, moving—is a natural and essential part of effective learning. It enhances our ability to learn, remember, and understand.

Emotional Learning

Think about one of your earliest memories. Can you see it in your mind? What does it feel like, sound like, who is there? Why do you remember this particular experience and not almost everything else that has happened since then? Did this event have a strongly emotional component?

Let’s say you’re in charge of creating a program that influences a change in behavior—for example, reducing texting and driving. You can create a slide presentation that provides a list of bullet points as to why driving and texting is bad, or you can display an image of a wrecked car with a reminder to avoid texting and driving. Which do you think will evoke more emotion? Which do you think will come to the driver’s mind as he decides whether to text and drive? Why?

Emotion acts as the framework that learners use to interpret meaning: According to Priscilla Vail (1994), the late prominent expert on learning, “Emotion is the on-off switch for learning.” We make thousands of decisions every day based on our emotions. Events that cause a significant emotional response tend to stick in our minds long after the experience has ended. As with your earliest childhood memories, you’re more likely to invoke an emotional response with learners—and consequently a memory—by displaying an image of a wrecked car than if you displayed just the words. Emotions influence how we learn. Perhaps the topic you design training for doesn’t have the same obvious emotional potential as the texting and driving example, but if you can insert humor, sarcasm, anxiety, joy, or some other emotion into your content, you can use it to your advantage and create a memorable learning experience.

Eric Jensen (2000) also noted that emotions:

Help us figure out what’s real and what we believe and feel.

Activate long-term memory (the more intense the amygdala arousal, the stronger the imprint).

Help us engage our values while making decisions.

Unlike rational decision-making, which eliminates feelings and relies on pros and cons, modern brain research casts a new light on the important role of emotions in learning and decision-making. According to research by the Center for Development and Learning, the brain relies on basic emotions—fear, anger, sadness, emotions—to urge action (Lawson 2002). Emotions start in a complex bundle of nerves in the middle part of our brain called the limbic system. It’s here where our emotions are housed and memories are formed. When this system is operating, the pathway to learning is open.

One of the structures in the limbic system is located deeper in the brain. The amygdala, two almond-shaped groups of nuclei, performs a primary role in the processing of memory, decision-making, and emotional reactions. In response to internal and external stimuli, the amygdala releases chemicals that stimulate our brain, which can help us process and remember information.

Effective learning, then, should be designed to arouse emotional responses within learners—to open the pathways in their brains to learning. Doing this should help learners remember important information and take action on the concepts they’ve learned.

Social Learning

A tidal wave of social learning is reshaping the way we experience new information. Social learning builds a sense of community, creates standards or reference points, and offers alternative perspectives. It also generates support and encouragement within our networks. Children, of course, seem to learn through social interaction quite naturally. Perhaps social learning allows us to tap back into something fundamental to learning: a sense of curiosity and exploration.

Many of us spend a lot of time on social media through sites such as Facebook, Twitter, and Pinterest. Then when we go to work, it’s as if we revert back to how we used to communicate a decade ago. With email as the standard mode of communication at work, it’s often difficult to openly communicate and collaborate on projects. “Training gives people solutions to problems already solved. Collaboration addresses challenges no one has overcome before,” wrote Tony Bingham and Marcia Conner, co-authors of The New Social Learning: Connect, Collaborate, Work(2015). “When you engage with people, you build your own insight into what’s being discussed. Someone else’s understanding complements yours, and together you start to weave an informed interpretation. You tinker until you can move on.”

As journalist Debra Donston-Miller (2012) says, you should “Embrace social learning or be left behind.” Learners have grown tired of searching for information online; now they want to network with and learn from their peers. Effective learning is not a one-sided transaction in which knowledge is transferred from an instructor, presentation, or textbook directly to the learner. The information learners can glean from networking and interacting with one another is often as valuable, if not more so, than the information they will receive from traditional learning methods.

Learning for Introverts and Extroverts

In our experience, the terms introverts and extroverts have become hot topics in learning and development. If you’ve ever taken the Myers-Briggs Type Indicator, you probably know which personality type you most strongly identify with. It’s all about how you naturally derive your energy and process information. Extroverts generate their energy from an active group, while introverts thrive in solitude and reflection.

As with any sort of sociological labeling, there’s a high risk for misunderstanding and stereotyping. For example, introverts aren’t necessarily shy. In Quiet, Susan Cain (2012) provides an in-depth analysis of the introverted life. “Shyness is the fear of negative judgment, while introversion is simply the preference for less stimulation. Shyness is inherently uncomfortable; introversion is not,” Cain says. And extroverts don’t always talk before or in place of thinking.

At a meeting of local learning and development professionals, we facilitated a lively discussion about our experiences designing training programs with introverts in mind. The majority of individuals at the meeting self-identified as introverts, which is the opposite of American culture at large. We discussed some of the common misunderstandings and stereotypes for both introverts and extroverts. Table 1-1 illustrates what the group said.

<<insert Table 1-1; Table 1-1. Misunderstandings of Extroverts and Introverts>>

When we shifted the discussion from misunderstandings and stereotypes to a self-reported discussion of how introverts prefer to experience learning, we saw some really interesting results.

Our group of introverts told us that they prefer learning that:

takes place in small groups

offers pre-exposure to content before group discussion

is discovery-based, and as much as possible is self-paced

offers built-in opportunities for reflection and follow-up discussions

is free from distractions and overstimulation

allows for a balance of quiet time and some interaction

provides an opportunity for sharing information in pairs

includes time for independent reflection.

Much of what we found is supported by research cited in Susan Cain’s book.

In addition, consider what psychologist Russell G. Geen found in a 1980s study of introverts and extroverts: Participants were asked to play a challenging word game while being periodically interrupted with a burst of noise. They were given headsets with the ability to adjust the volume until it was “just right” for them. Extroverts chose more intense noise levels, while introverts reduced the level of noise. And then extroverts and introverts performed best when they adjusted the volume of the noise to a volume they preferred (Geen 1984). When they were asked to switch headsets, but keep the preferred volume of the other personality type, performance results of both extroverts and introverts went down.

The question is how can we design learning experiences in which introverts don’t have to feel dominated by extroverts and where they are free to learn in their preferred style and manner (and vice versa)? An effective and comprehensive learning experience appeals to both introverts and extroverts, not just to one or the other. Offering learners a choice in the activities they prefer to participate in is one way to achieve this.

[Learning Through Play as Adults](http://www.idealearninggroup.com/blog/learning-through-play-as-adults)

Learning through play is a given for children, so why do we have a hard time accepting play as an effective means of learning as adults? Why do we so often dismiss it as a waste of time? According to authors Patrick Bateson and Paul MartininPlay, Playfulness, Creativity and Innovation(2013), many species continue to play beyond their youth. Play is one way to spread discoveries through social learning. In fact, some animals such as rats and grizzly bears fail to properly develop socially without a healthy amount of play.

In an [October](http://www.clomedia.com/articles/5877-the-connection-between-play-and-problem-solving) 2014 article in Chief Learning Officer, Andrea Park looked at problem-solving through the lens of play, particularly gamification. She cited research by the Wharton School at the University of Pennsylvania indicating that there are eight steps to promote business success in workplace gamification: “Problem solving, exploration, teamwork, recognition, success, surprise and novelty, creativity and knowledge sharing.” She continued, “Interactive learning programs at millennial-friendly companies often provide examples of several, if not all, of these qualities.”

Play is one of nature’s ways for generating new neural networks and reconciling cognitive difficulties, according to [a 2009 article](http://health.usnews.com/health-news/family-health/childrens-health/articles/2009/03/09/10-reasons-play-can-make-you-healthy-happy-and-more-productive) in U.S. News & World Report. It’s not only a useful way to solve problems, but it also helps us build our creativity and social relationships, according to Stuart Brown and Christopher Vaughan in their book Play: How It Shapes the Brain, Opens the Imagination, and Invigorates the Soul(2010).

Learning, it seems, doesn’t always have to be hard work. We believe you can add levity and fun without compromising instructional goals.

Lecturing on Its Own Is Ineffective

Imagine you are in a dimly lit conference room, coffee in hand, feet on the ground, sitting face-forward. You watch as an instructor walks up to the podium, clears her throat, and begins to speak.

Ten minutes in, she’s lost you. As she lectures on, you find yourself thinking about lunch—should you stay at the office and finish the project you’re working on, or go out with co-workers for lunch? Did you remember to lock the front door this morning? Hope the dog doesn’t get into the trash.

The people on either side of you aren’t faring much better. You watch as they check their smartphones, fidget in their seats, and do their best to appear semi-interested. You feel like a life-sized replica of those bobble-heads on a car dashboard, continuously nodding off despite your best efforts to stay alert.

This style of instruction does not offer the opportunity for interaction or the opportunity to actively apply the concepts in meaningful ways. There’s no opportunity for input, reflection, or new ideas, and certainly no opportunity to choose among learning options. Your only option, in fact, is to sit in your chair, attempt to keep your eyes open, and resist the urge to jot down your grocery list.

The purpose of the training, you’d been told, was to generate excitement about new company initiatives and boost morale. And yet it failed on all accounts. The worst part is this type of training doesn’t just happen in bad dreams. Training like this takes place every day, where lecturers drone on, time ticks slowly, and learners check out.

It isn’t surprising that lecturing is often ineffective. After all, the word lecture is rooted in the Latin word legere, “to read.” In medieval universities, before the invention of mechanical printing, the professor would stand at the lectern and literally read aloud from handmade texts (Wood 1989). The lecture was born because books were rare, valuable, and in short supply—in other words, it was born out of necessity, not because it was necessarily an effective way to teach.

That said, lecturing can be done well. Lectures and slide presentations aren’t inherently bad; in some cases they are quite useful. In fact, we often begin our Cafeteria Learning sessions with mini-lectures to provide learners with context and a foundation for the rest of the workshop. The key is to treat lectures as one piece of the overall learning experience rather than relying on them as the sole method of content delivery—and to do so skillfully based on brain-based principles that have been shown to keep learners engaged.

Ted Talks are a wonderful example of engaging lectures. They owe their success in part to their brief format; the rule is no longer than 18 minutes, told by people with a palpable passion for their topic.

Constructivist Learning

“We do not learn by passively receiving, and then remembering what we are taught,” wrote Geoff Petty, author of Evidence-Based Teaching. “Instead, learning involves actively constructing our own meanings. This literally involves the construction of connections between neurons. We invent our own concepts and ideas, linked to what we already know. This ‘meaning-making’ theory of learning is called ‘constructivism’” (Petty n.d., 1).

Petty explained that “exam howlers,” or entertaining mistakes made on exams by children, are an effective illustration of constructivism in action. One student, for example, stated that “History calls them ‘Romans’ because they never stayed in one place for very long” (Petty n.d., 1).

“These genuine mistakes show ‘meaning making’ in practice,” wrote Petty. “If students only remembered what they were told, they would not make such mistakes; they would either remember or not. Conceptual errors show that we make our own mental constructs, we don’t just remember other peoples’” (Petty n.d., 1).

Our brains actively interpret and construct, rather than passively receive, knowledge based on what we already know. Of course, even when learning from a lecture we are constructing knowledge on some level. But by giving learners the opportunity to construct their own knowledge rather than spoon-feeding them preconstructed information, we take learning to the next level. And the more opportunities learners are given to actively construct their own knowledge, the stronger their learning becomes.

This concept will make intuitive sense to anyone who’s ever purchased ready-to-assemble furniture. Consider the following question: if someone gave you a piece of furniture to assemble and then explained to you how they put it together, how well would you remember what they’d told you five minutes later? A day later? A few weeks later? What’s more, how well would you understand why it was built in a particular way and the underlying concepts of its construction?

In this way, knowledge is like building furniture: If we really want people to build meaningful and relevant learning experiences, we must allow them to construct it themselves and to draw their own conclusions from the pieces they’re given. “It is not the knowledge or ideas, but the learner’s construction of knowledge or ideas that is critical. Increases in student learning follow a reconceptualization as well as an acquisition of information,” said John Hattie (2009, 37).

This idea is at the heart of the constructivist approach, which is rooted in research and theories developed by innovative educators and psychologists such as John Dewey and Jean Piaget. “Only by wrestling with the conditions of the problem at hand, seeking and finding his own solution (not in isolation but in correspondence with the teacher and other pupils) does one learn,” said Dewey in his 1910 book, [How We Think](http://ia600308.us.archive.org/15/items/howwethink000838mbp/howwethink000838mbp.pdf).

The constructivist approach emphasizes learning over teaching, offers authentic tasks to engage learners, provides opportunities to construct instead of reproduce information, and poses problem-based scenarios (Ultanir 2012).

The Missing Piece: Choice

In a nutshell, effective learning takes places when experience becomes central—when learners have the chance to act, move, problem-solve, and construct their own knowledge. So how do we apply this to our work?

“Corporate learning should be characterized by sharing knowledge, capturing experiences, reusing them, creating new knowledge, and recognizing and solving workplace problems in a process-oriented, collaborative manner,” stated researchers Betty Collis and Anoush Margaryan (2004, 39). We’ve been proponents of this kind of learning for years. However, as much success as we had with these approaches, we’d occasionally notice something interesting: certain activities worked better for some learners and not for others—some thrived in group activities, while others preferred to learn alone. If learners felt uncomfortable about speaking aloud in a group setting or competing against others, it actually ended up hindering their learning. Or the thought of what would be required of them prevented others from showing up to the workshop all together.

Still others seemed to lack motivation and enthusiasm for the assigned activity. Despite the hands-on approach, some learners felt as if someone were forcing them to participate (though technically, someone was). Despite their increased engagement when compared to a traditional lecture, it still seemed like some subtle but nonetheless important piece was missing from many current approaches.

As we continued our quest to understand how people learn, we figured out what was missing: choice. Learners thrive when the learning approach not only adheres to the principles summarized thus far, but also when it allows them to choose from a variety of ways to experience the content. In fact, increasing learners’ options and choices in turn increases their intrinsic motivation (Zuckerman and others 1978).

Most learning experiences, whether active, including activities, or passive, as in lecturing, are akin to eating out at a choice-less restaurant. Rather than feeling empowered and in control, learners often feel as if they’re being forced to learn in one way. And when they feel as if they’re no longer in the driver’s seat, they understandably demonstrate apathy, resistance, and dread.

Choice is important for other reasons. Research has shown that grouping learners by one learning style and catering a learning program to it is ineffective—everyone learns through various modalities (Looss 2001). The preference for one learning style over another can shift over the course of a person’s lifetime or even within a single day. What research on learning styles does emphasize, however, is that providing a choice of learning experiences is compatible with how we learn best: “Rather than trying to figure out who is what kind of learner, the [learner style] framework is most valuable in its ability to help you determine if your teaching approaches and methodologies cover the broad spectrum of learner types. . . . The two most important things to remember for building a successful brain-based learning styles approach are: (1) provide a variety of approaches, and (2) offer choices,” states Jensen (2000, 146). Jensen suggests providing choice among multiple learning characteristics within the following categories:

context variables (for example, contextual “real life” environments or structured classroom environments; individual or group learning)

input preferences (for example, visual, auditory, or kinesthetic input sources)

processing formats (for example, “big picture” learning or sequenced, formulaic learning; abstract learning or concrete learning)

response filters (for example, learning through noting similarities or noting differences; learning by trial and error or reflection).

As we sought to design the ultimate Cafeteria Learning experience, we embraced Jensen’s research on how to blend choice into any learning offering. In addition, our model took inspiration from the Universal Design for Learning principles, which aim to give all participants equal access to learning opportunities, as defined by the Center for Applied Special Technology (CAST 2000). One such principle reinforces the need for choice in any learning setting: “Offering learners choices can develop self-determination, pride in accomplishment, and increase the degree to which they feel connected to their learning.” But the principles caution that this choice should not extend to the learning objective itself; learners need some structure in what they need to achieve as a result of the learning program. Finally, much like learners prefer choices in how they learn, they also have preferences in how much and what kind of choices they want.

When you design your own Cafeteria Learning style training program, you cannot solely focus on providing choice. You must also prioritize the right kinds of choices and determine how much autonomy learners should have in order to ensure engagement with the learning material and change when they return to their daily work. In the end, the optimal learning environment empowers learners to own their learning experience—Cafeteria Learning and the framework within this book can be your guide to this lofty goal.

Chapter Summary

For a long time, we struggled to integrate everything we’d learned into one approach. How could we provide learning that was experiential, social, playful, active, and constructive? How could we cater to both extroverts and introverts? Like many learning professionals, we felt stretched for time. Sometimes it felteasierto default to the norm and continue doing things the way they’d always been done.

That, of course, is what had gotten us into this dilemma in the first place. Like most learning professionals, we can relate to having a lot of work to do and not enough time, or working in environments where the way it’s always been done is the expectation. So we defaulted to the familiar, traditional instructional approaches, even when we set out with the best intentions to transform the way people learn at work.

But now we had a choice: walk the walk and risk an unknown (and potentially disastrous) outcome in front of our peers, or violate the very principles and values we stood for.

Something had to give.