Complete Guide to MicroLearning and Learning Reinforcement

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Training Program Objectives

What are we trying to achieve with our training programs? I bet no one said that the goal of training was to waste money or time. Unfortunately for many traditional training programs that's exactly what we've been doing. There are lots of statistics out there but we are spending somewhere between **60 and 160 BILLION dollars on formal training** today as an industry. And the dirty little secret is that we also know that **70% of what employees are learning** in our formal training programs is forgotten one day after the training is completed! And research also shows that this number increases to **90% being forgotten within 30 days** of training.

It's also a fact that employees today are overwhelmed and distracted and have short attention spans – in fact, the average employee is only able to **focus on one thing for about 3 minutes** on average.

Also, it's a fallacy that classroom training, by far still the number one way we deliver employee training, covers most of what employees need to learn in order to do their job.

Research says we cover 10-20% of the knowledge and skills needed. And what we cover is taught days or weeks before or after its needed!

So, how can we make training more efficient so that the skills learned are retained over time?

The Forgetting Curve

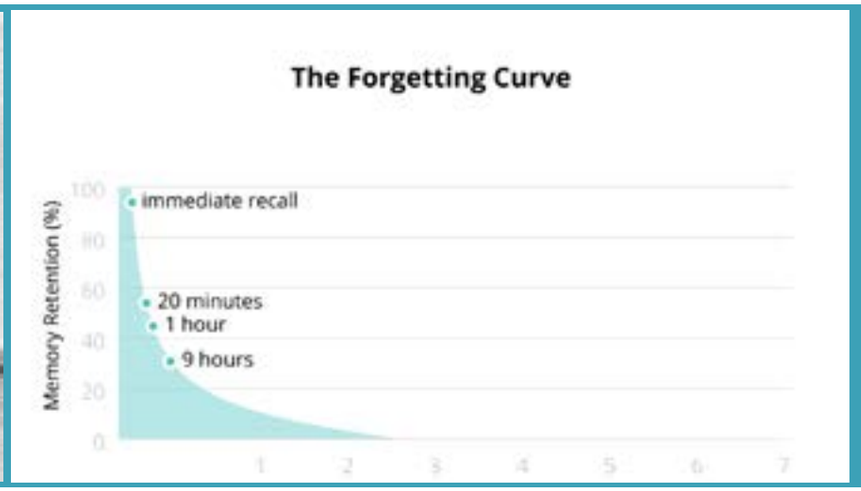
The research here isn't exactly new. In 1885, German psychologist Hermann Ebbinghaus developed the forgetting curve. His studies showed how information is lost over a period of time where there is no attempt to retrieve it. In other words, use it or lose it.

The brain uses this simple algorithm to decide what information to keep and what information to discard. For example, when you learn a new process at work and use it again the same day, then the next week and so on, the brain says "this is important, I better keep it!"

Conversely, if you attend a conference but don't use the information until two weeks later, your brain most likely will have discarded what you learned. The minute you stop learning (reading, listening, watching), you start forgetting. Again, use it or lose it.

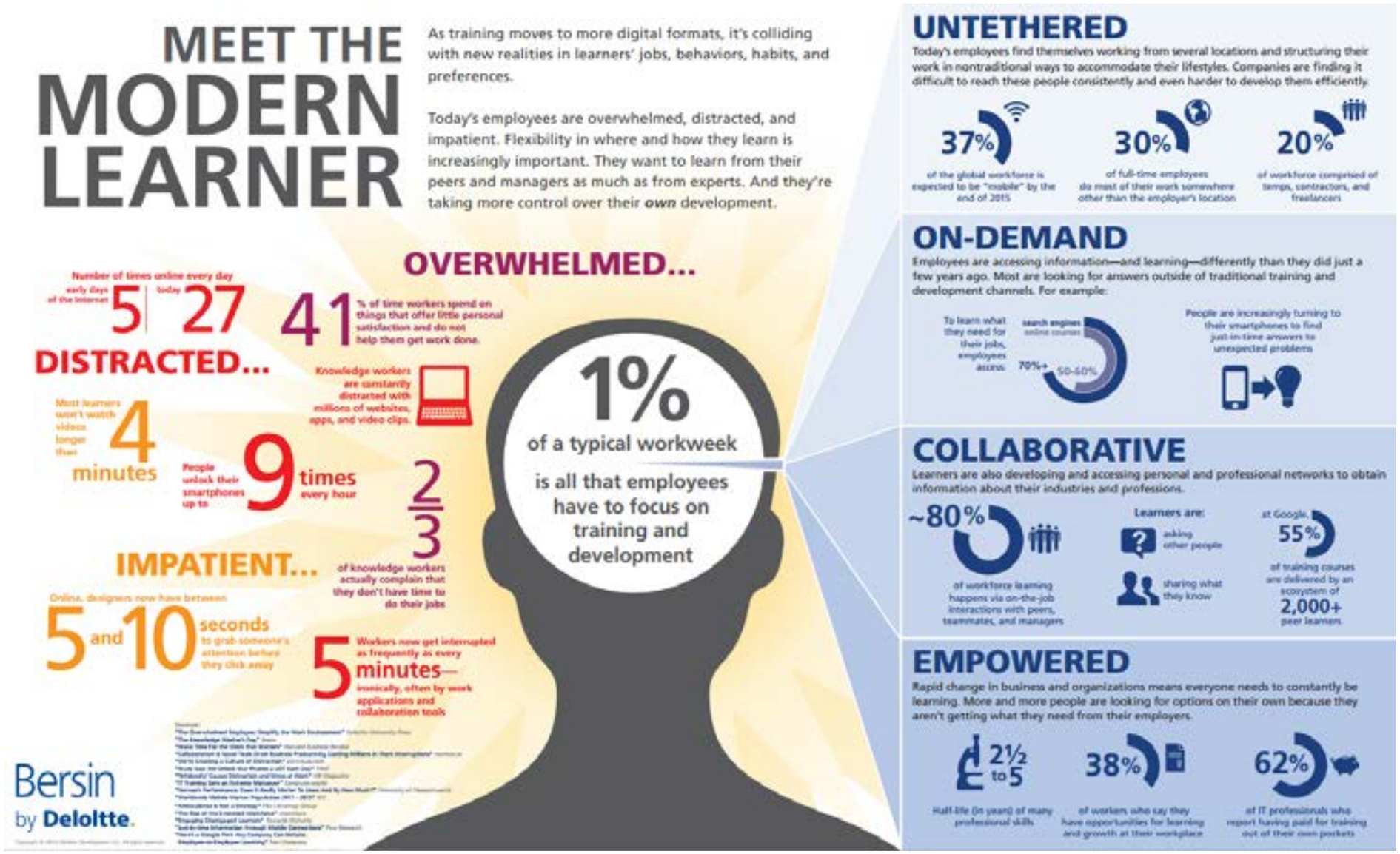
The Forgetting Curve

The forgetting curve demonstrates the decline of memory retention in time – how information is lost over a period when there is no attempt to retain it.



Learners Today

More recent research done by Bersin by Deloitte shows the challenges we face in training today's modern worker, who is overwhelmed by the information they are inundated with on a daily basis, distracted by the interruptions they either cause themselves or those that others create, and as a result has the attention span of a fish, according to at least one study.



Using Science to Improve Outcomes

"No matter how much you invest into training and development, nearly everything you teach to your employees will be forgotten.

Indeed, although corporations spend billions of dollars a year on training, this investment is like pumping gas into a car that has a hole in the tank. All of your hard work simply drains away."

Art Kohn, PHD, Professor, Author and Consultant

The good news here – and there is good news – is that **we can use science to improve the outcomes of our workplace learning.** Virtually every other profession uses science to improve their results.

For example, architects use the proven principles of physics and match to design buildings that will function safely and last decades or even centuries. Architecture is often described as being an art form, but it is the science behind that art that makes it work!

Another example that might surprise you - professional baseball teams use science to improve their teams' performance. In fact, there is something known as exit velocity – which roughly stated is the speed that the ball leaves the hitters bat. Every MLB team measures this for every hitter in their system. The theory is that the faster a ball goes when hit the farther it will go and the less likely that batted ball is to be caught by a fielder. It is simple physics applied to baseball to help teams decide which players to play and which not to play.

How We Learn

The first thing we need to understand, even if only at a high level, is how we as people process information and learn new things. We don't need a degree in neuroscience here to understand a few important concepts. First, information comes at us and we process it first through an encoding process in our short-term memory, which has a limited capacity. In fact, the cognitive load theory states that we can only process 5 to 9 bits at a time. Some bits of information stay in our short-term memory and others are quickly forgotten.

Consolidation is another key learning process, where scientists believe the brain replays OR rehearses the new information, looking for connections to existing information or a context in which to keep or make information meaningful. This process of consolidation help us to retain more of the important stuff or stuff that is closely related to other important information.

Another key learning process is retrieval. Researchers believe that forced **retrieval is most effective after time has passed after the initial learning and some forgetting has occurred** (some call this "reconsolidation" – others spaced retrieval). The bottom line here is our brain needs to work to "secure" the learning for easier retrieval later.

Encoding
Short-term memory, observations, memory traces and what we've seen (limited capacity)

Consolidation
Time scientists believe the brain replays or rehearses the learning, new knowledge next to neural markers

Retrieval
Forced retrieval is most effective after time intervals and some forgetting has occurred

Learning Myths

There are several myths about learning we need to address.

Myth #1: “Forgetting is the failure of memory”

This is just not true. Neuroscientists say that forgetting is adaptive. We live in a fast-paced, busy world that is constantly feeding us new information. Television, news, media and advertisements are all around us every second of the day. In response, the brain appropriately filters out information that is no longer being used, and that is no longer important.

Forgetting is not a failure of memory - on the contrary - it is a fundamental part of the entire memory system. It is an active, normal and desirable component that helps us learn what really matters and forget what doesn’t.

Myth #2: “If the information is relevant, I will remember it”

In school, many of us studied for tests by re-reading the chapters in the textbook or reviewing the material over and over and by going over our notes. Unfortunately, recent research has proven this to not be an effective study method.

In the book, **Make It Stick, The Science of Successful Learning**, Drs. Henry Roediger and Mark McDaniel, professor at Washington University, draw from recent discoveries in cognitive psychology and other disciplines, to offer concrete techniques for becoming more productive learners.

Among their findings was that more complex and durable learning come from testing, introducing certain difficulties in practice, waiting to re-study new material until a little forgetting has set in, and mixing up the practice of one skill or topic with another.

Organizations and the Science of Learning

Other scientists have also added other important contributions to how we can use science to improve the results of our employee training programs. For example, Eduardo Salas, a professor of organizational psychology at the University of Central Florida and a program director at its Institute for Simulation and Training, has studied corporate training programs for more than two decades.

He was recently quoted in a Wall Street Journal article entitled “So Much Training, So Little to Show for It” as saying how surprised he was that organizations rely so little on the science of learning. He expressed concern that organizations were generally uninformed with so much known about learning and training and development.

What was the most surprising thing you have learned from years of studying corporate training?

“How little organizations rely on the science of learning and training. I’ve been doing this for a long time, and many organizations are uninformed about what it is we know about learning and training and development.

What happens before and after a training session is just as important as the actual instruction itself. “

Eduardo Salas, Professor of Organizational Psychology, University of Central Florida

6 Ways to Use Science to Improve Your Employee Training Program

How can we use science to improve our employee training programs? With much of the research already done by Drs. Salas, Roediger, McDaniel, and Dr. Art Kohn, we've identified 6 specific strategies you can use to get the best possible results from your employee training program.

1. Chunk it.

2. Space it out.

3. Test it.

4. Mix it up.

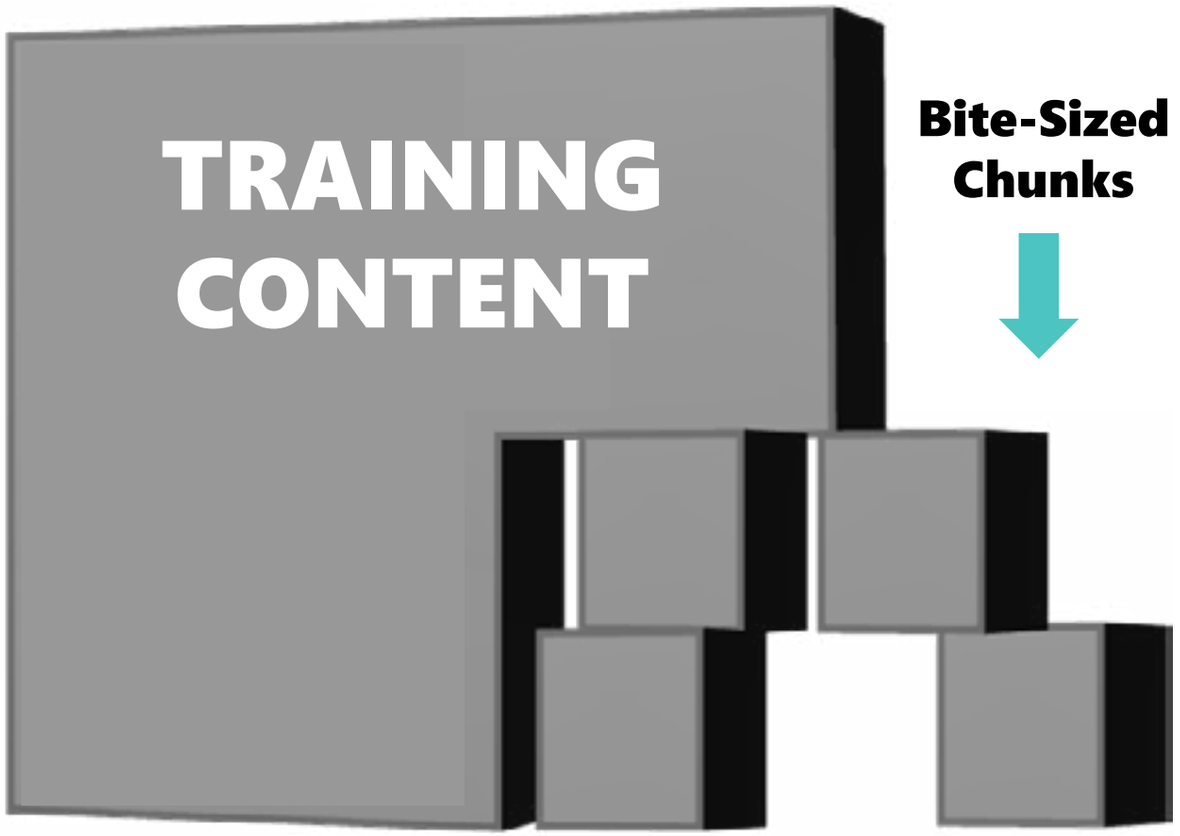
5. Make it hard.

6. Write to remember.

1. Chunk It

First, chunk your training content. In cognitive psychology, **cognitive load refers to the total amount of mental effort being used in the working memory.** Cognitive load theory states that we have mental “bandwidth” restrictions. In other words, our brain can only process a certain amount of information at a time.

One of the things that can cause overload is too much information. So the number one thing we need to do with our training content is to chunk it down into bite-sized “bursts” to lower the cognitive load. There is a growing trend today to replace the tortuous training marathons of the past with short learning experiences.



Microlearning is very popular and a key component of BizLibrary’s online training solution. We offer training videos that are typically 5-10 minutes in length to address the needs of today’s workplace and the realities of learning science. These short training “bursts” can be delivered several times per week or even daily, and easily fit into today’s busy schedules.

When microlearning is delivered in a consistent, ongoing way, you have the ability to drive continuous learning, building up knowledge over time, and produce long-term behavior change.

2. Space It Out

The second science-based learning strategy is to space out the training over time. Cramming is something many of us are familiar with from our high school and college experiences. And it can be an effective learning methodology if your only objective is to pass a one-time exam.

Unfortunately, employee training doesn't work like that. The knowledge and skills we are learning need to be retained over a long period of time. Fortunately, there is a solution... spaced repetition.

Spaced repetition uses the "spacing effect" which essentially says that by **spacing out the information over time rather than cramming it into one session or a short time period, you will improve your long-term memory.**

The image here illustrates this concept. This has very important implications for us as learning professionals. We need to space out our programs so employees will get the most from their training time.

Overcoming the Forgetting Curve

The timing of the repetitions is also important. The science says that as we move further out we should increase the amount of time between repetitions to increase the amount of time or forgetting between them. This increases the difficulty but also, by making our brains work harder, learning and retention is increased.

The image here shows the timing recommended by Dr. Art Kohn, one of the scientists leading the brain science revolution. He recommends **learning "boosts" 2 days, 2 weeks and then 2 months following training to maximize ROI.**

Fortunately, there are technologies available to do this easily… including our very own BoosterLearn platform!

3. Test Learners

The third learning strategy we suggest for our clients is to test learners. Many of us view tests or quizzes as similar to a car dipstick, simply measuring the amount of knowledge that is retained by learners. It turns out that is wrong. In addition to measuring learning, testing actually increases learning more than any other study method.

Incorporating tests and quizzes into employee training programs is more than just measuring the amount of learning that has taken place. It's a critical part of the learning itself. Not that your learners will love the testing. But they will learn more from it, so resist the temptation to skip testing!

The Testing Effect - Retrieval

• Testing increases learning more than any other study method.
• Long-term memory is increased when some of the learning time is devoted to retrieving the to-be-remembered information.

4. Mix It Up

Traditional employee training has focused on mastering one skill at a time... building on each newly acquired skill one at a time. In the learning science world, this is called “blocking” and it is common practice due to the ease of scheduling and perceived value of mastering one thing at a time.

However, another strategy promises improved results. Enter “interleaving,” a largely unheard-of technique that is capturing the attention of cognitive psychologists and neuroscientists.

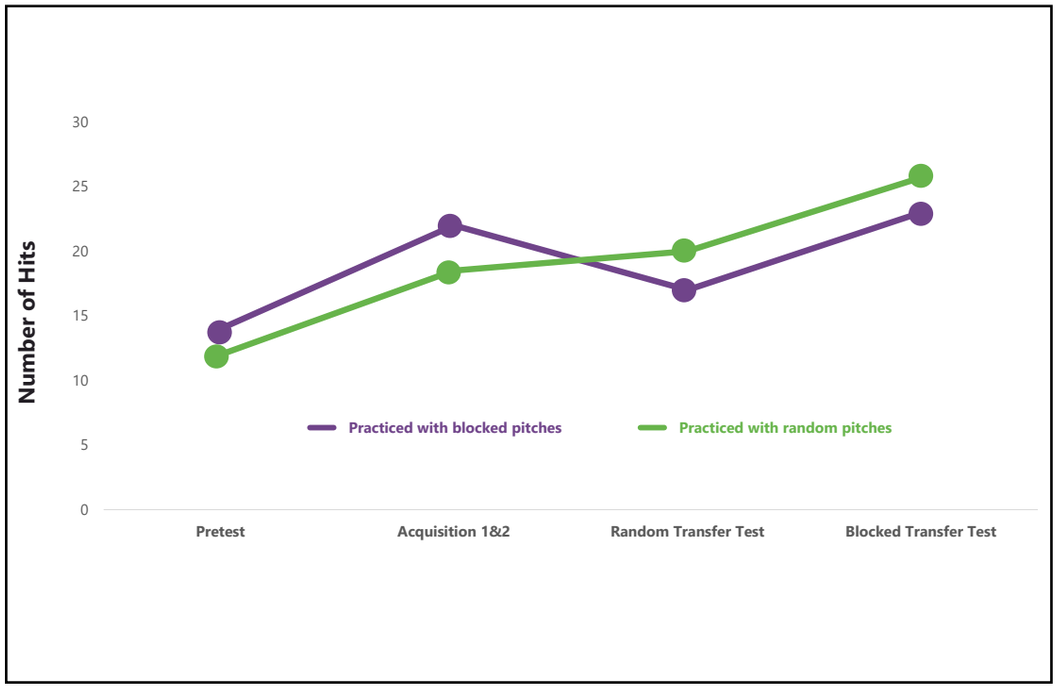
Over the past four decades, a growing body of research has found that mixing or “interleaving” often outperforms blocking in terms of learning effectiveness.

Whereas blocking involves practicing one skill at a time before the next (for example, “skill A” before “skill B” and so on, forming the pattern “AAABBBCCC”), in interleaving one mixes practice on several related skills together (forming for example the pattern “ABCABCABC”).

5. Make It Hard

Related to the concept of mixing it up is the idea that we need to make our learning challenging. The famous quote that "nothing worth having was ever achieved without great effort" is definitely true with regard to learning. Researchers from neuroscience, psychology and other disciplines have come to the conclusion that making training programs more challenging improves long-term retention.

The classic study of the learning difference between blocked practice and interleaved practice was done with a college baseball team at Cal Poly. In this study, one group of batters were told what pitch was coming. They got 15 fastballs, 15 curve-balls and 15 change-ups. The second group also got 45 pitches but they were not in any specific order. Which group do you think became better batters overall?



As you've probably already gathered at this point, the answer is Group 2—the hitters who started practicing with random pitches (aka: interleaved practice), which was more challenging. Their short term progress was slower because of the more difficult practice regimen, but those challenges came along with a longer term upside: when they finally started building up their skills and got good enough to hit randomly pitched balls effectively—curve-balls, fastballs, etc.—they retained these skills over the long run; making them better batters as a result.

Even though Group 1, who hit curve-ball after curve-ball felt and looked like they were getting better and faster during practice, their gains didn't last because they were only based on short-term memory.

6. Writing To Remember

The sixth strategy for improving our training programs is to require learners to write in order to improve their retention. One easy way to improve learning retention of the most important items is to ask learners to take notes during verbal presentations.

It turns out that taking notes doesn't improve the amount of information we remember, but it does help us organize the information in such a way that we remember more of the important stuff.

Finally, another idea you can use is to include essay questions in your testing. For example, we suggest asking learners to summarize the key take-aways in their own words in order to improve their retention.

What Can We Do Before Training To Improve Outcomes?

So far we've been talking about what we can do during the training process: chunking training content to avoid cognitive overload and recognizing the limitations of the modern workplace and the modern learner.

It has been said that what happens before and after training is as important than what we do during, and we've also discussed several strategies for things we can do after the training... ways to use scientifically proven methods for overcoming the forgetting curve and help learners retain more of the most important information.

We also need to look at what we can do before training to set the stage for more effective and efficient employee training. There are several things you can do beforehand to improve your results.

First, is the concept of priming. Priming refers to a general memory phenomenon in which exposure to one stimulus influences a response to another related stimulus. For example, say the word silk 10 times.... Go ahead... silk, silk, silk...

Now answer the question, "What does a cow drink?"

Most people will answer milk to this question. We associate milk with cows and it rhymes with silk. The correct answer of course is that cows drink water, but by exposing people to the word silk we've influenced their answer.

Improving Training Outcomes

Within the context of training, **priming refers to events before the training that make learners more likely to learn and retain key information**. For example, in the days prior to training, you can prime employees by asking a series of questions on the topic to be covered in the training. Another technique you can use before training is to set appropriate expectations for the training. For example, we know that training needs to be challenging and we also know that learners don't necessarily enjoy being challenged.

By preparing them ahead of time with the message that "Hey this training is important and it's going to be challenging – but you can learn this stuff with some hard work and it's definitely worth it" you are preparing learners to embrace the hard work ahead. The result will be learners up for the challenge – learners who are prepared and come in with an increased concentration level.

What can you use to improve your employee training programs? We suggest you incorporate two big things:

- First, we hope you'll incorporate short training "bursts" into your training programs. Chunk you content into bite-sized pieces.
- Second, we hope you'll develop a series of short learning "boosts" following your training to help your employees retain and transfer the information learned to their jobs.

ABOUT BIZLIBRARY

BizLibrary is a leading provider of **online employee training and eLearning solutions**. The BizLibrary Collection is an award-winning content collection, and contains thousands of online videos and eLearning courses covering every business training topic, including: communication skills, leadership and management, sales and customer service, compliance training, desktop computer skills, and more.

The BizLibrary Collection can be accessed online through BizLibrary's **Learning Management System** (LMS) or through any third-party LMS. Technology solutions include: BizLibrary's Learning Portal, Content Management System, and LMS to help clients **improve and manage employee learning** across the entire organization.

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