



Simulation-Based Learning: The Link To Making Your Training Stick

Contents

Introduction	3
The Problem with Traditional Methods	3
Retrieve and Recall Leads to Strong Retention	6
Retrieval Practice	
The Spacing Effect	
Contextual Learning	
Simulation-based Training as a Response	9
to the Retention Gap	
Measuring What Matters	10
Retention as a Strategic Priority	11

If you're seeing high scores on paper but low performance in practice, you're probably left scratching your head as to why the material isn't sticking. And you're not alone. Many educational and workforce training programs struggle with a costly reality:

People forget what they've learned faster than we expect.

Your learners attend the training sessions, complete all the modules, and pass the quizzes. But weeks later, they hesitate during clinical rotations, misstep on job tasks, or require retraining for basic procedures that they just learned. This can be alarming, to say the least. However, when knowledge doesn't transfer, it's not usually a reflection of the learner or even the instructor. It's a result of how the human brain encodes content.

Traditional methods—such as lectures, videos, and readings—are insufficient on their own to support the encoding process. Simulation-based training is gaining traction, not just because it's interactive, but because it aligns with how the brain actually builds long-term memory. The research is clear. Memory is best formed through spaced retrieval, realistic contexts, and decision-making under pressure; all of which are incorporated into the SimTutor platform.

The Problem with Traditional Methods

For decades, classroom lectures and passive learning modalities have been the default approach to formal education and professional training. However, as cognitive psychology has advanced, so has our understanding of its limitations and why other methods are more effective.

In a foundational study on learning and memory, Roediger and Karpicke (2006) found that learners who engaged in repeated retrieval of material (i.e., self-testing) outperformed those who simply reread the same material.¹ Even when the latter group felt more confident in their understanding, the self-testers outperformed them. This phenomenon, known as the "testing effect," demonstrates that the act of retrieving information, rather than repeated exposure alone, strengthens memory.

In one experiment:

- ◆ The repeated study group recalled 81% of the material after 5 minutes but only 42% after one week.
- ◆ The testing group recalled only 75% immediately, but retained 61% one week later.

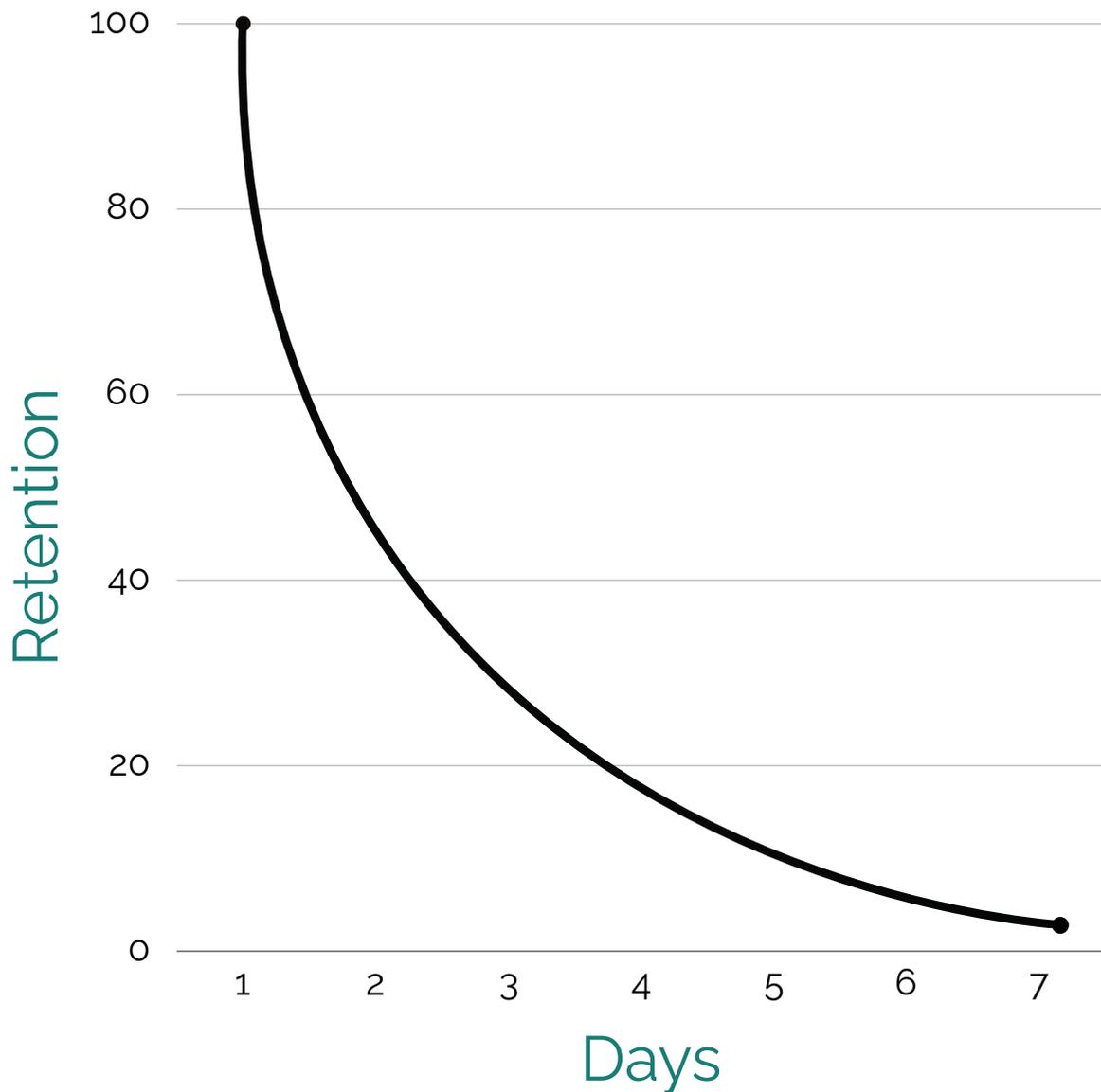
This illustrates that retrieval practice strengthens memory, even if it lowers short-term confidence.

When learning is delivered in a single session or crammed into short windows, like conferences and singular training days, much of the information is quickly lost shortly after. Traditional lecture-style training deployed in primary and secondary education also shows high levels of forgetting shortly after.



The Forgetting Curve, first documented by Hermann Ebbinghaus² nearly 150 years ago, shows that **learners can lose up to 70% of new information within 24 hours**, with a steady decline as time passes. The percentage doesn't improve unless the material is revisited, retrieved, and applied over time.

The Forgetting Curve



The science behind the Forgetting Curve remains valid today. Learners may appear to grasp content during instruction, but without structured opportunities to recall and apply it, that knowledge is often inaccessible when it's needed most. In classroom-based and corporate environments, the result is a cycle of costly reteaching and remediation.

Retrieve and Recall Leads to Strong Retention

Cognitive science has outlined several core conditions for long-term retention:

- ◆ Retrieval Practice
- ◆ Spacing
- ◆ Contextual Learning

Retrieval Practice

Retrieval practice is a consistent strategy in cognitive science. Learners are asked to recall material from memory through self-quizzing, discussion, or simulation, rather than relying solely on reading and reviewing. This practice suggests that the act of effortful retrieval is what solidifies neural pathways, making the memory more durable and accessible in the future. Refer back to the 2006 study by Roediger and Karpicke where students who engaged in a retrieval practice after reading a passage retained significantly more content than those who reread the material multiple times.

SimTutor', intentionally incorporates quizzes and evaluations at specified intervals, enabling learners to strengthen their memory while developing the confidence to apply what they've learned under realistic conditions.

The Spacing Effect

The spacing effect, another reinforcement method, reveals that **people remember information more effectively when it is reviewed intermittently, rather than in a single sitting**. The science behind spacing is rooted in the brain's process of consolidation.

When information is revisited after a delay, the brain must work harder to recall it, resulting in stronger neural connections. The concept of a slight challenge, or “**desirable difficulty**,” forces the learner to **engage more deeply, ultimately strengthening recall**.³ In practice, this means a learner who revisits a concept across several days or weeks is far more likely to retain it versus one who crams the same material in a single sitting.

Educational methods that utilize spaced retrieval, such as **completing simulation scenarios at regular intervals or integrating review modules into weekly workflows**, are particularly effective, specifically in programs where learners are expected to master complex, multi-step procedures over time.

The spacing effect demonstrates that information retained over time and revisited periodically is significantly more likely to be recalled when needed, like your safety protocol that is needed rarely but emergently.

Contextual Learning

Contextual learning refers to using real-world or job-relevant situations to help learners form stronger mental associations and apply what they've learned. Abstract instruction, such as lectures and presentations, is often disconnected from practical application instruction. Conversely, case study review and simulation-based training provide contextual learning that activates the brain's natural preference for pattern recognition.

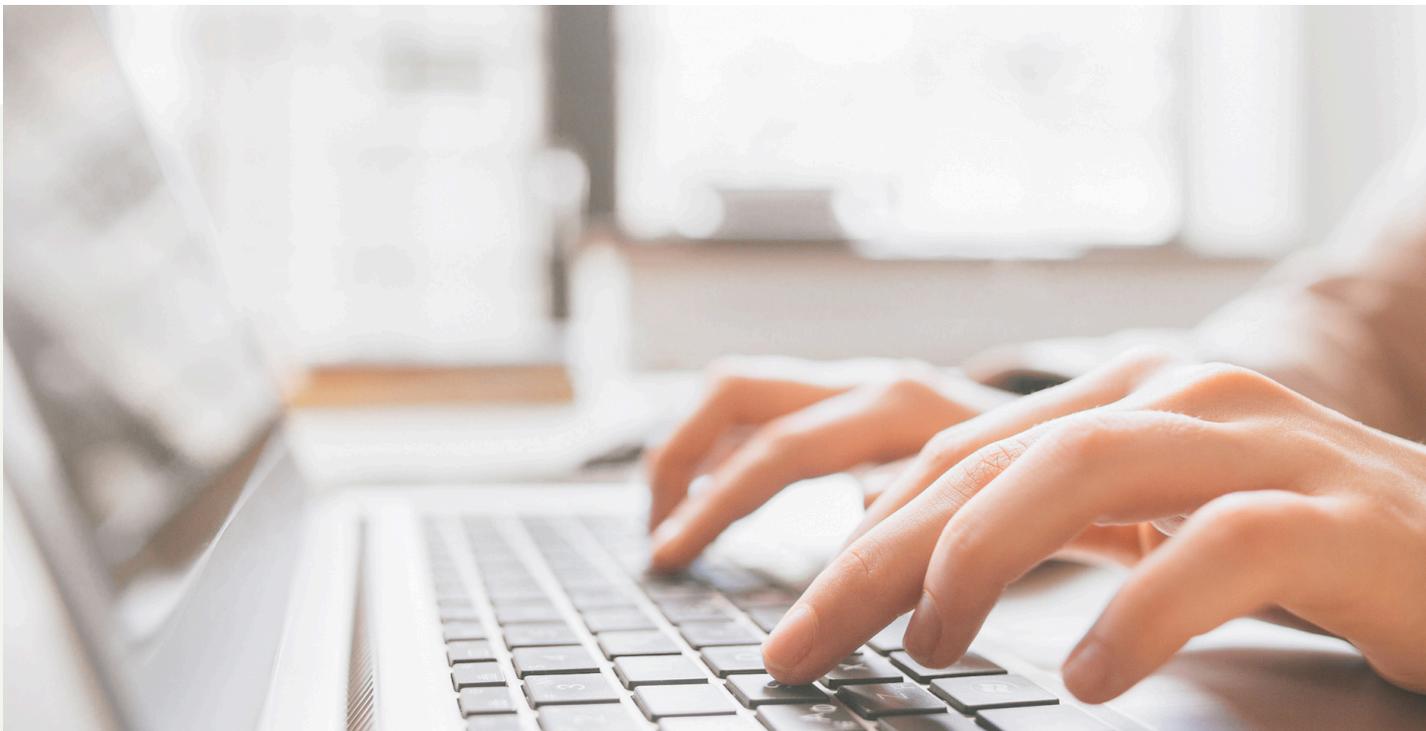
In a text titled “*How People Learn: Brain, Mind, Experience, and School: Expanded Edition*” by the National Academies Press, the authors emphasize that learners retain critical knowledge when they apply new information to familiar scenarios and solve problems that resemble real-world challenges.

“
...to improve flexibility is to let students learn in a specific context and then help them engage in 'what-if' problem solving designed to increase the flexibility of their understanding.⁵”

What does this look like for your learners?

When students and trainees encounter content in a scenario that mirrors the environment in which they'll use it—such as triaging a virtual patient, troubleshooting equipment on a simulated factory floor, or resolving a conflict in a customer service interaction—recall is significantly enhanced because the information is tied to a specific sensory and emotional event.

Simulation-based training leverages this principle by placing learners in authentic tasks that require judgment, adaptation, and reflection. Rather than treating knowledge as static content to be memorized, contextual learning helps transform it into usable expertise that can guide action in dynamic, high-stakes environments, thereby reinforcing memory.



Simulation-based Training as a Response to the Retention Gap

In educational settings, simulation-based training platforms help bridge the gap between theory and practice. This type of learning infrastructure capitalizes on all three learning conditions. In simulated environments within the platform, learners are asked to make decisions, adapt to new variables, and experience the outcomes—right or wrong—in real-time.

Consider a nationwide tax preparer that utilized a simulation-based platform to transform late-season call center onboarding. The scenarios were designed to reflect real-world calls: managing complex tax inquiries, de-escalating emotions, and resolving issues with empathy and precision. Because agents were actively retrieving conversational tactics and applying them within realistic scenarios, they engaged in powerful retrieval practice. Repeat sessions were scheduled across multiple days, reinforcing skills through spaced repetition, rather than compressing training into a single boot camp.

The simulations inherently included contextual learning, complete with various levels of dialogue complexity and time pressures, creating an immersive environment that mimicked the actual call-center floor.



The outcomes were clear: a 131% return on investment, 4,119 fewer handling hours, 17-second reduction in talk time, and a clear closing of the performance gap between early and late-season hires.⁵

This is the brain's sweet spot—retrieval, spacing, and context—delivered through simulation, not just surface learning.

Measuring What Matters

Another advantage of simulation is that it doesn't just improve retention—it **can measure it.**

SimTutor allows instructors and administrators to assess:

- ◆ How often learners revisit content over time
- ◆ Whether they apply procedures correctly across attempts
- ◆ Where errors tend to occur, and whether they resolve with feedback

Traditional training methods often rely on completion rates, satisfaction surveys, or post-tests that capture what learners can do immediately after instruction, but not what they'll remember or apply weeks later. SimTutor is designed to give you better visibility into what your learners actually learn. They provide a window into how the knowledge is retained over time, tracking whether learners are retrieving, applying, and improving.

SimTutor offers integrated performance analytics that help instructors and program leads answer key questions:

- ◆ Can learners competency be measured before and after training?
- ◆ Can we identify where learners consistently struggle?
- ◆ Can you view how often learners revisit key modules or simulations?
- ◆ Can data shows how knowledge holds up across days, weeks, or months?
- ◆ How can simulations adjust based on learner responses?

This turns training into a dynamic feedback loop. Learners can revisit material as needed and over time. Instructors can track retention, improvement, and mastery instead of participation alone. With the right data, you stop guessing who's ready and start being intentional about your learners' needs before they show up as costly errors.

Retention as a Strategic Priority

Simulation-based training provides learners with the kind of experiences their brains are designed to remember. It bridges the gap between knowledge and application, ensuring that what is taught is more likely to be retrieved when the moment matters.

Long-term memory formation depends on how information is engaged, and simulation-based training leans into all three learning mechanisms proven to enhance retention.

- ◆ Testing—not reviewing—is what helps learners retain and apply.
- ◆ Easily revisiting concepts over time, rather than cramming, solidifies understanding.
- ◆ Prioritizing information that's used in meaningful, real-life contexts. Problem-solving in varied, realistic situations activates deeper learning.

To explore how simulation-based training can improve retention across your academic program or workforce curriculum, book a SimTutor demo. We help connect cognitive science with practical results to make your training stick and your learners perform their absolute best.

Ready to see how simulation-based training can be the link between learning and retention?

Book a demo and explore how simulation can improve readiness, reduce training waste, and deliver scalable performance gains across your workforce.

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