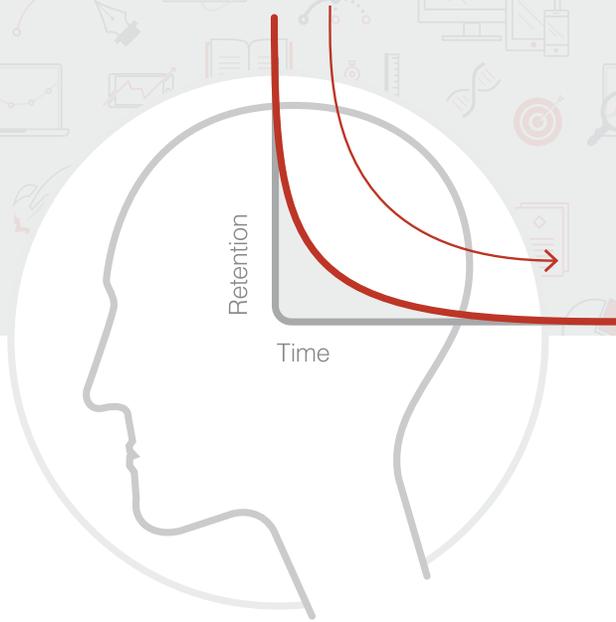# Send in the Reinforcements: How the Mobile Revolution can Overcome the Forgetting Curve

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Forgetting is Ruining Your Investment in Learning

You know the pattern. You spend thousands of dollars preparing new employees to succeed on the job. They show up on their first day of work eager to soak up as much as they can. The onboarding program might take a few days or perhaps a few weeks. They come out on the other end fully equipped, so you hope, with the knowledge and skills they need to perform well.

But the moment they leave the classroom, something begins to happen that you hadn't planned for. Their new knowledge rapidly drains away. Within a few weeks, most of what they've learned has been lost. They become unwitting victims of the Forgetting Curve, and end up remembering little of what they had learned.

It's not just new hires. A senior salesperson might take a highly regarded course on account management. It costs a thousand dollars or more, but you know the real costs are the opportunity costs – the relationships they're not building, the deals they're not making while sitting in that seminar. Three months later the memory leak has confirmed your misgivings. Your salesperson can't even remember why they attended in the first place. They've simply forgotten.

Your employees' all-too-human limitation in retaining what they have learned is wrecking your ROI. Most organizations, however, never do a thing about it. As for those that have tried, their attempts have been hindered by a scarcity of effective options.

Until now.

Mobile devices and apps are the new kids on the block in the eLearning world. However, many providers of mobile learning solutions miss the point when they treat mobile merely as an issue of *accessibility* – that is, simply as a way to distribute pre-built learning content hosted on a central server to workers in the field.

When the full capabilities of mobile devices are brought together in a set of carefully designed, intelligent apps, they offer organizations a gigantic opportunity to drive greater value and increase their competitive positioning by taking advantage of entirely new workflows and rethinking their entire approach to employee training.

The question is, can the mobile revolution help in the fight against the Forgetting Curve?

The Relentless Memory Leak

The memory leak has been impacting the return on your training investment for a long, long time. Back in 1885, Hermann Ebbinghaus, a professor of philosophy at the

University of Berlin, espoused the first "Forgetting Curve."
Ebbinghaus plotted on a graph how long it took for him to
forget lists of syllables he had just memorized.

The Ebbinghaus Forgetting Curve
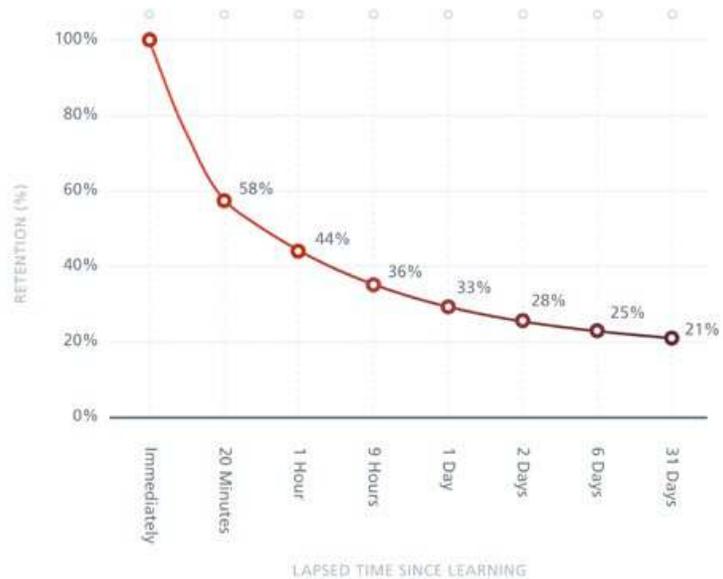
He only had one test subject – himself – but further research
over the past century has tested and refined his hypothesis. To
say the results are discouraging would be an understatement,
because Ebbinghaus found out we forget a lot in very little
time (more than half within one hour).

In 2011 two cognitive psychologists, Lee Averell and Andrew
Heathcote from the University of Newcastle in Australia,
plotted a new version of the Forgetting Curve based on a
detailed observation of test subjects over a period of 28 days.
Within a day after an initial learning session, their test subjects
forgot, on average, 40 percent of what they had learned. They
lost an additional 25 percent by the third day and 15 percent
more by the eighth day. The remaining one-fifth of the new
information dripped away more slowly, with a very small
percentage coalescing into more or less stable memories.[1]

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[1] Lee Averell and Andrew Heathcote, "The Form of the Forgetting Curve and the Fate of Memories, *Journal of Mathematical Psychology* 55, No. 1 (February 2011): 25–35.

However much a training event engages your employees – and however much it costs you – 80 percent of its effect will vanish within a week or two.

The Business Case for Training Reinforcement

Even though the memory leak impacts training ROI so drastically, most companies ignore it. In 2014 the Aberdeen Group, a market research firm, surveyed 260 organizations to examine best practices in sales training. They found only 114 of these companies (44%) take some action to help their employees retain the knowledge they have learned at a training event.[2]

Training reinforcement plugs the memory leak by delivering ongoing and regularly scheduled learning and recall exercises (referred to as retrieval practices), optimized to fight the tendency to forget. And its impact shows up clearly in business results. Companies that practice training reinforcement see 17 percent more of their business-to-business sales professionals, and 14 percent more of their sales teams, hitting their annual sales targets compared with other companies. But the reinforcement effect is greatest among new hires: 34 percent more of them reach their first-year sales quotas than do their peers working at other companies.

Training reinforcement also correlates with best-in-class sales practices. Companies that reinforce sales training are 64 percent more likely to follow an evolving sales methodology; 58 percent more likely to keep a central repository of best practices; and 74 percent more likely to have a formal process in place to capture and share tacit knowledge. Training reinforcement has become part of a virtuous cycle that leading organizations pursue.

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[2] Peter Ostrow, *Once Is Not Enough: Why Sales Training Reinforcement Is a Must-Have* (Aberdeen Group, May 2014), 2.

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Learning in a World of Moments

Learning has always had to fit into the spaces left over after more immediate business priorities have been met: an employee ends up missing half a day of that seminar because of a customer's unexpected crisis, or makes do with skimming that 50-page chapter on his or her lunch break. When web-based eLearning arrived, it offered a solution with the promise of learning anywhere, at any time.

But eLearning overpromised. "Anywhere" doesn't really mean anywhere. It means finding a location where you can connect your laptop to a network. And "anytime" doesn't really mean anytime. Self-directed eLearning requires planning: setting aside a block of time in advance and protecting it from many competing work priorities.

As the rhythms of life have accelerated, however, and work tasks become more complex, the demands placed on training and knowledge transfer have outstripped eLearning's ability to respond. Employees now need learning support at the precise time and location where they have to apply that learning. The time available for learning has shrunk, and ongoing planned eLearning sessions are now more and more a luxury.

"What used to be our predictable, daily sessions online," Google says, "have been replaced by many fragmented interactions that now occur instantaneously. There are hundreds of these moments every day – checking the time, texting a spouse, chatting with friends on social media."

They are called *micro-moments*. They happen when your first reflex is to pick up your smartphone to "learn something, do something, discover something, watch something, or buy something. They are intent-rich moments when decisions are made and preferences shaped. In these moments, consumers' expectations are higher than ever."[3] Today, learning has to win in those moments.

The Mobile Revolution

Traditional reinforcement strategies fare badly under the new demands. Even the shortest eLearning modules are too long to meet the needs of a moment. Micro-moments arrive without warning. When a learning moment opens, it won't wait while you find your laptop, boot it up, locate your network, log in to your LMS, sift through a list of courses, and, finally, take one. And even if reviewing old material actually provided effective reinforcement – research says it doesn't[4] – who has the time or the inclination to retake courses they have already spent hours or days on the first time?

Learning providers and learning and development departments are therefore under increasing pressure to make their products work on mobile devices. Some have repurposed existing eLearning materials into smaller "micro-learning" modules that employees can retrieve and consume on their phones. Others have designed mobile apps that integrate with learning

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[3] Sridhar Ramaswamy, "How Micro-Moments Are Changing the Rules," Google, https://www.thinkwithgoogle.com/articles/how-micromoments-are-changing-rules.html.

[4] Peter C. Brown, Henry L. Roedinger III, and Mark A. McDaniel, *Make It Stick: The Science of Successful Learning* (Cambridge, MA: Harvard University Press, 2014).

management systems so they can send and track their courses across the network to an employee's tablet and capture test scores. These companies have understood the mobile challenge, then, to essentially be one of *accessibility* – that is, making a way for workers in the field to use their smartphones or tablets merely to find and use pre-built learning material hosted on their corporate LMS.

But to treat mobile merely as an issue of accessibility is to ignore its transformative power. The new business environment created by mobile technology enables creative organizations to take advantage of entirely new workflows to drive greater value and compete more effectively.

An Intelligent Reinforcement Experience

Each of your employees brings a unique mix of aptitudes, motivations, and behaviors to their learning endeavors. Some learn quickly; some at a slower pace. Some are keen to absorb as much as they can while others want only the bare minimum they need to do a good job. And some can handle more difficult material while others need an easier path. If you don't design your training reinforcement plan to respond to these variations in your learning cohort, the efficacy of your plan diminishes significantly.

Web-based eLearning has never done this particularly well. Web and Macromedia Flash courses were conceived 20 years ago to operate over narrowband networks, a challenge that computer-based training (CBT), employing heavy media on CD-ROMs, could never meet. To reduce network load, eLearning vested computing power in a distant webserver and gave students access to learning content through a thin client – that is, a simple web browser. But unlike a browser, a smartphone is a powerful computer in its own right, capable of making complex decisions instantaneously, even when disconnected

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A *Reinforcement Experience* (RXP) combines an optimally designed schedule of learning interventions with the core features of a mobile device to deliver a continuous learning experience, with an unprecedented level of personalization, that can respond instantly to the unique changing needs of each member of your workforce.

Learning management systems and some authoring tools have offered basic adaptive features for some time. They've been able to automatically modify the learning material shown to a student based on that student's prior performance. But an RXP responds to more than just performance on tests. The constellation of capabilities mobile brings to the table enables a revolutionary new model of intelligent learning, one where mobile devices and the cloud services that support them respond instantly to the changing needs of each individual employee.

How Does a Mobile Reinforcement Experience Work?

A truly intelligent reinforcement app can detect who a particular learner is; pull up a record of their past preferences and daily behavior; evaluate their responses and current status in real time; and adapt the content, pace, and timing of retention activities to optimize the effect for that learner. Micro-moments can appear at any time; an RXP engine can predict when one will open. And if it's not convenient or you're not in the mood, it can come back later. In an hour? In the evening? How about first thing tomorrow morning?

An RXP relies on highly granular data capture, robust analytics, a powerful cloud infrastructure, and a rapid development cycle for new features and improvements – capabilities that are inherent in mobile technology.

Aptitude, Motivation, and Behavior

In adaptive eLearning, the LMS and certain authoring tools choose the content to be served to a user based on his performance on a quiz. But aptitude is only one component of a truly personalized learning experience. An RXP engine can also read other aspects of the learner's behaviour and will modify not only the content, but also the pace and timing of the learning interventions to be pushed to them.

Different learners arrive not only with different levels of proficiency, but with different motivations and patterns of behavior. A slow learner needs the system to measure out learning material at a pace and frequency that won't overwhelm them. At the other end of the scale, a highly motivated individual may race through quiz after quiz until the experience loses its value. Your learning reinforcement plan must be prepared to provide ever-increasing challenges and extra mastery-level content for that individual. Otherwise, you risk losing their interest.

The mobile RXP can also pick up clues from the behavioral patterns of learners in relation to retention quizzes and learning content. An individual who responds well to structure will adhere to their reinforcement plan vigilantly, returning to it at similar times every day. A learner who lives on the spur of the moment might be less consistent, jumping in and out as their micro-moments come and go.

By knowing the pacing, frequency, and volume of content appropriate for each learner, and the prescriptions of the optimized learning reinforcement plan, an RXP system can push learning interventions at the best times for each user.

A good reinforcement plan, then, offers different *speed lanes*, if you will, to accommodate every type of learner.

Location, Calendar and Address Book Integration

A smart device maintains an intimate connection with the daily life of its user. It knows where they are, whom they know, and what they are occupied with at several points during the day. This intimate knowledge raises the personalization of training reinforcement to an entirely new level.

Have you just arrived at your customer's offices? An RXP system can match your location to the customer's address in your phone's address book to determine that you are on their premises, and can push relevant material to your phone in anticipation of your need.

Do you find yourself habitually looking over your learning material at a particular time of day? The system remembers your favorite moments to learn and prompts you with retention exercises during those times.

Is the business day drawing to a close? The RXP system taps your calendar app to find out when your meetings are over, and can reach out to grab a few of your idle moments to serve you a quick refresher quiz. Or it can wait until you get home to suggest a longer learning course.

Even the best LMS implementations cannot match this level of personalized learning.

Precision Data and Analytics

In theory, eLearning has always had the technical capability to track learner behavior at a fine level of detail. In practice,

however, training departments often settle for generating standardized weekly or monthly reports of completion rates and quiz scores. In some cases, organizations track the length of time learners spend on components of an eLearning course. Unfortunately, time tracking doesn't work in self-contained rich media courses custom-built in Flash or purchased off the shelf.

With mobile, however, data is collected at very minute levels by default. Every touch, every swipe, every invocation of an app feature, and the time it takes a learner to answer a question can be recorded and analyzed. And instead of only generating reports, that data can be interpreted by your intelligent app and injected back into the system to fine-tune the subsequent steps in your personalized learning experience.

Rapid Development Cycle

ELearning resists change. Most corporate learning management systems are bulky, monolithic pieces of enterprise software, and implementing one is a long process. From winning the initial buy-in from senior management to selecting a vendor, navigating company politics, and engaging and monitoring major IT resources, setting up an LMS can take several months, sometimes even a year or more. Given the large resource expenditure, it becomes hard to justify upgrades or feature enhancements to corporate executives for what is often considered a non-mission-critical system. Many organizations implement their LMS once and never upgrade unless there is an extreme need or it becomes obsolete. Others only upgrade every five years or so. That's far too long in a business environment that moves at today's speed.

Mobile development, however, is characterized by a rapid development cycle, at a fraction of the cost of an LMS upgrade, that can push out product improvements in a matter of days, not weeks. More substantial features can take weeks instead of months. Because an RXP system is not dependent on the

corporate LMS, new features can be introduced continuously. Most of them appear automatically as services are upgraded in the cloud. More expensive improvements require only an instantaneous app download commonplace for anyone with a smartphone.

Conclusion

The need for reinforcement is clear, and mobile is the vehicle to deliver a robust Reinforcement Experience. The mobile Reinforcement Experience offers your organization a new way to conceive of your employees' learning needs, and to win back your return on investment in training that the Forgetting Curve has robbed. When it comes to training reinforcement, the web is dead and it's not coming back. If mobile devices are employed for more than simplistic accessibility, they can drive an unparalleled learning experience, personalized to a degree not yet seen in learning circles. They make possible new business workflows that can enable you to drive greater value for your internal and external customers, and help you compete in our accelerated world.

MORE ABOUT SWISSVBS:

As a leader in training reinforcement solutions, we empower you with our award-winning ECHO app to improve your employees' retention and performance. Our dynamic platform and training reinforcement experts will maximize your learning investments and equip you with powerful data to transform your learning initiatives.

For over 16 years, our customers have relied on our innovative products and services to improve employee performance and business outcome in industries as diverse as health, retail, insurance, manufacturing, and finance.

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