



coursera for business

The Science of Learning

Five ways to make your L&D strategy more successful

In partnership with Barbara Oakley

Distinguished professor of engineering and influential researcher on the neuroscience of learning

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Introduction

Creating a learner-centric L&D strategy

When delivering learning and development (L&D) programs, oftentimes, too much focus is placed on the content and teaching, rather than on the employees themselves. To upskill and reskill employees effectively, understanding how employees learn is important, too. But even as learning and development leaders strive to deliver programs that put employees first, they face multiple challenges.

First, most workplace learning happens in “flexi-chunks,” meaning **when and where learning takes place varies** significantly from employee to employee and from day to day.¹ Whether learning in a traditional office setup or on the go during a commute, meeting the needs of a mobile workforce is a real struggle.

Second, **career development is no longer a linear proposition.**² Learning functions have to determine how to support their employees’ personal and professional growth over time as their employees’ careers shape up in new and different directions—horizontally and vertically.

On the other hand, ensuring your employees stay on top of new skills matters. According to business theorist Arie de Geus, adopting new skills “**may be the only sustainable competitive advantage**,” particularly in times of recession.

To navigate this new age of learning, L&D leaders must find better ways to make connections between the *what*—the type of support to provide employees, and the *how*—the ways of delivering that support.

In this piece, we partner with Barbara Oakley, a distinguished professor of engineering at Oakland University and the creator of some of the most popular courses on Coursera, such as [Learning How to Learn](#), to produce five best practice tips that support L&D leaders in achieving this transformation.

Oakley’s primary translational research focuses on the fundamentals of how people learn, combining neuroscience and social-behavioral analysis. Here are five science-backed ideas we’ve curated with her support to help you build the most impactful learner-centric L&D program to date:

1. Help employees master new skills

Leaders should encourage combining periods of intense focus (focused thinking) with relaxing mental breaks (diffused thinking).

2. Help employees learn successfully

Leaders should consider a range of different content formats suited to the different types of learning needs to gain the right knowledge.

3. Cultivate employee curiosity

Leaders should allow space for their employees’ curiosity to flourish, giving them room to carve out their own careers.

4. Help employees retain the material taught

Leaders should provide employees with space to learn, retrieve, and absorb knowledge. This is much more important than the speed at which they learn.

5. Encourage employees to go beyond passive listening

Leaders should incorporate different layers of interaction into learning experiences. This actively engages employees instead of relying solely on listening.

1.

**Help employees
master new skills**

Help employees master new skills

Employees are dealing with a lot. Distinguish between focused and diffused states of thinking and give employees space for both to learn successfully.

Enterprise learning is often disconnected from employees' jobs, behaviors, habits, and preferences. A big part of the “why,” according to a 2016 Deloitte research report, is that the modern employee is dealing with a lot. Employees frequently feel overwhelmed, distracted, and impatient, and the average employee has just 1% of the typical work week left to learn.³

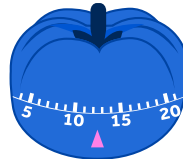
Bring it back to the year 2022, after a pandemic that transformed the traditional workplace and significantly blurred work-life boundaries, and employees' schedules are simply overflowing.

A good way to help learning leaders bring the best out of their employees—both in learning and everyday productivity, is by cycling between two thinking modes: focused and diffused.

The Pomodoro Technique

An effective way for learning leaders to encourage the habit of combining periods of intense focus (focused thinking) with relaxing mental breaks (diffused thinking) is with the Pomodoro Technique.

Francesco Serilo developed this time-management methodology in the 1980s. The idea is simple: Use a tomato (Pomodoro) timer to focus on a task for 25 minutes and then take a five-minute break. Take a longer break after four 25-minute sessions.



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People tend to think the only time you're learning is when you focus, and that's simply not true at all.

If you can't figure something out right away, taking a break is the most efficient use of your time because it allows your brain to shift to diffuse mode.

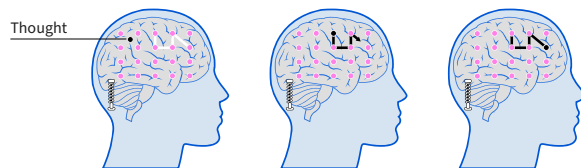
Barbara Oakley
Distinguished Professor of Engineering,
Oakland University

Cycling between thinking modes for the greatest impact

The brain has two different thinking modes: focused and diffused. Each helps employees in different ways. Combining both is the most powerful way for learning leaders to help employees make innovative connections between new and existing knowledge.

Focused thinking

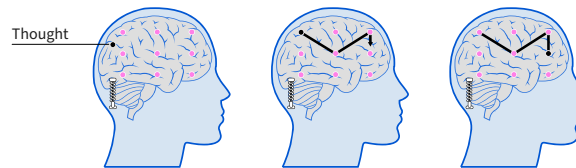
Focused thinking is often wrongly believed to be the only form of “productive” reasoning. When employees are in this state of mind, they’re concentrating and conscious. It is used to understand and solve familiar problems and to study a concept using existing neural pathways and knowledge. Because employers have a bias toward action, it’s not surprising to see many leaders believing employees are only productive when they are in this mode of thinking.⁴



Want your employees to learn a difficult and unfamiliar concept? Encourage them to study the concept with focused thinking, then let them wander around the office or get coffee with a friend to allow their brain to shift into diffuse thinking. In this respect, remote working has a lot of advantages.

Diffuse thinking

Diffuse thinking, on the other hand, is relaxed. It occurs largely subconsciously and can result in surprising connections in the brain. When employees’ minds have space to wander, their subconscious connects new and unfamiliar concepts with existing ones. Using focused and diffuse thinking in combination is the most powerful way to support new neural pathways that contribute to learning success.



Coursera LevelSets assess starting points for learning

From the concepts of “diffuse” and “focused” thinking, we realize that employees’ prior knowledge is extremely important for further development. Employees understand and make sense of things based on their existing **foundational knowledge**. Coursera’s LevelSets is a great tool to seize this nugget of wisdom.

[LevelSets](#) are bite-size assessments that quickly reveal an individual’s proficiency in specific skills and provide content recommendations to maximize learning. With LevelSets, organizations can target proficiency gaps, and employees can focus on leveling up their existing skills. LevelSets allow learning leaders to personalize the learning experience to the individual needs of their employees—whether they’re beginners, intermediate, or advanced learners—for all learning formats.

2.

**Help employees
learn successfully**

Help employees learn successfully

Certain types of learning require more explanation, others more active practice. Delivering learning in different formats matters.

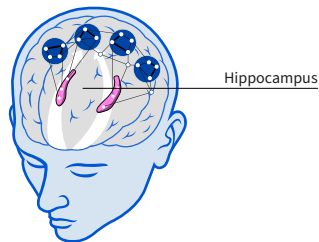
Employees are more alike than different in how they learn. What science has found, though, is that there are two main approaches to learning that use different pathways in the brain. This means offering different learning formats for different types of learning in an organization is important.

Learning about the history of machine learning, for example, won't require the same instruction as learning a programming language. Learning leaders must cater to this.

Declarative learning uses the hippocampus

Declarative learning—or an explanation-based approach—is the instruction that helps employees with factual data and concepts via the hippocampus. This type of instruction is easier to share and typically faster to learn but also easier to forget. The history of machine learning would fall under this category.

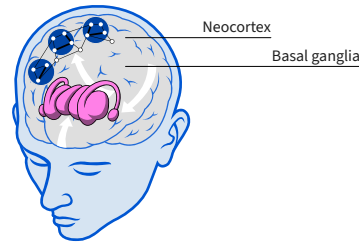
Learning leaders should promote the use of retrieval practices to refresh employees' memories of previously learned declarative learning. At Coursera, one such approach is with [Clips](#), 5-10 minute video lectures linking to longer courses on the platform. They can serve as “course refreshers” and drive engaged and continuous learning through shorter, actionable content on job-relevant topics.



Procedural learning uses the basal ganglia

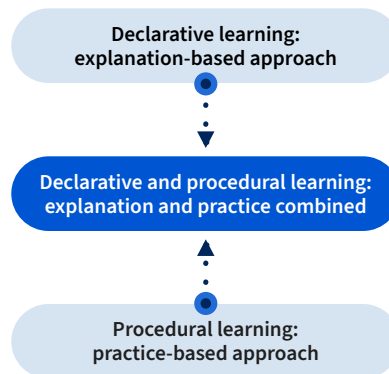
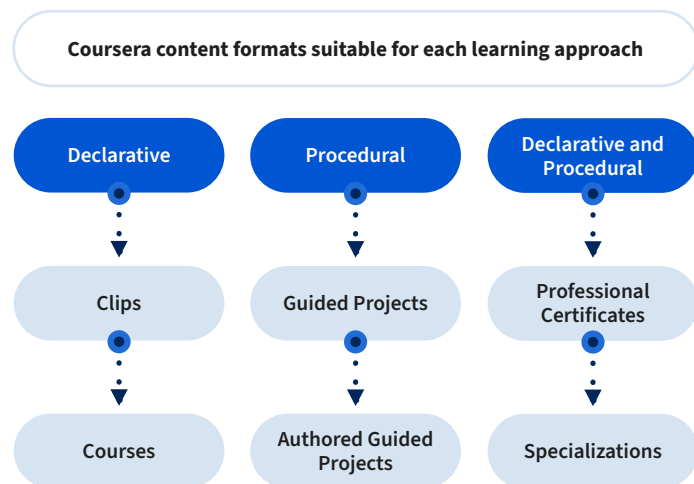
Procedural, or practice-based, learning goes through the basal ganglia and helps employees know how to do something—like learning how to program. It takes more time for an employee to learn, but once they've got it, it's very fast for them to use it—they don't need to think about it.

This type of learning is best taught through hands-on instruction like [Guided Projects on Coursera](#). Guided Projects help employees acquire mastery with in-browser tutorials led by an expert.



The different approaches to learning

Today, most learning is neither completely declarative nor completely procedural. A thorough L&D program, therefore, tends to combine both approaches.



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We often learn best when we can integrate what we're learning by using a lot of our different senses including hearing, seeing, and, perhaps especially, being able to feel with our hands.

Barbara Oakley
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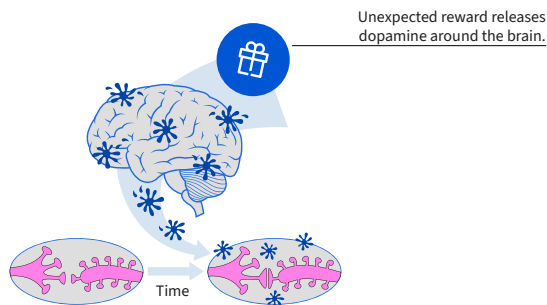
3.

Cultivate employee curiosity

Cultivate employee curiosity

Exploring and satisfying curiosity stimulates our brains with dopamine. Cultivate employee curiosity with short-form content.

When employees are curious, and they satisfy that curiosity, their brains are stimulated by dopamine, which is a neurotransmitter that signals employees' internal reward system. Creating and nurturing curiosity for learning can help employees feel good about their learning experiences and make them want to come back for more.



The pharmaceutical company Novartis has received many accolades for its workplace culture.⁵ Part of this success comes from cultivating curiosity in its employees.

By helping employees stay curious, Novartis finds there is always time to learn—in fact, the company is encouraging each employee to train 100 hours a year.⁷

In 2021 alone, across learning partners like Coursera, Novartis registered a total of more than 47000 active users and more than 105 000 courses were completed by employees.⁸

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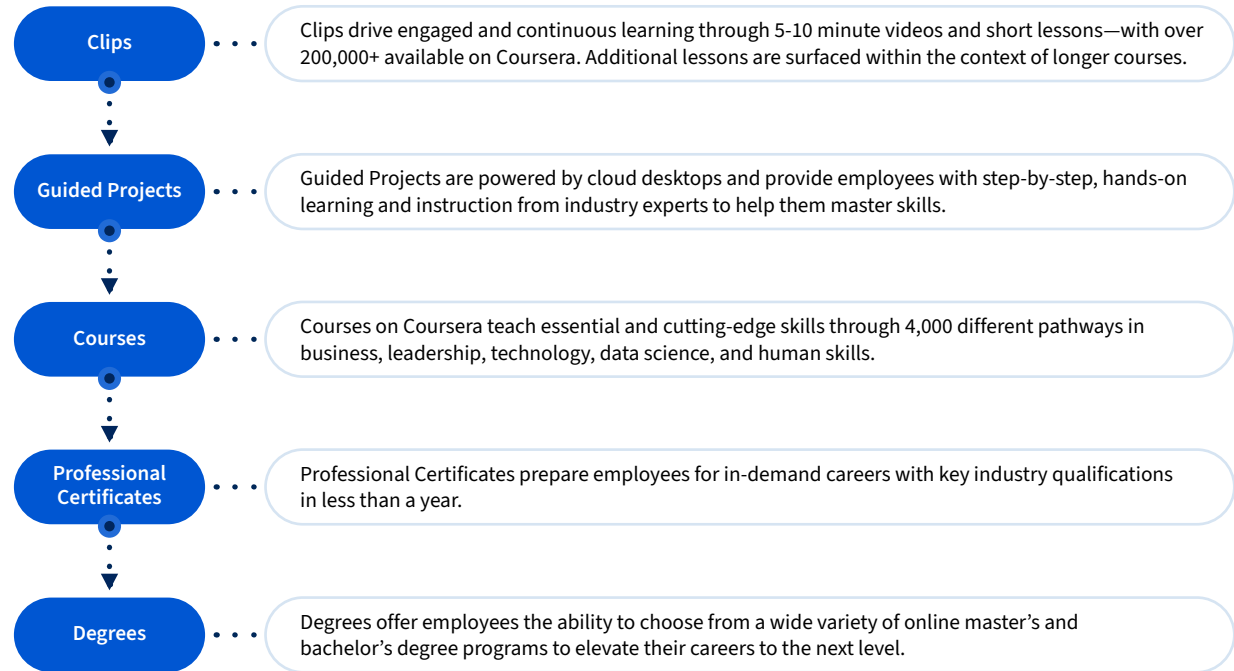
Curiosity is a key part of the culture within Novartis.

We've been looking at how we can support that culture of curiosity, considering how we should encourage people to take the time to learn, make sure there are great learning opportunities available, and encourage that constant questioning and experimentation.⁶

Simon Brown
Chief Learning Officer, Novartis

From curiosity to persistence with Coursera

Learning leaders can stimulate curiosity by stoking initial interest in learning a new subject. Short-form content like Coursera's [Clips](#) is a great way to pique curiosity in this way. This strategy is incredibly helpful for employees to take charge of their own development.



4.

**Help employees retain
the material taught**

Help employees retain the material taught

Some employees learn faster than others. Consistent time, effort and focus on learning are what's important. Focus on creating stackable learning experiences.

Within every organization, there'll be employees with a variety of working memory capacities. What's more, they'll all understand things based on what they already know, and that's different for everyone.⁹

Although feeling frustrated when employees struggle to understand new concepts right away is normal, the process of carefully listening, studying, and taking the time they need to get their head around a subject can mean new knowledge really sticks in their brains. It can actually be an advantage.

Indeed, higher- or lower-capacity working memory should not be equated with higher or lower intelligence.

Oakley says that “there are even Nobel Prize winners with lesser capacity working memory. And the reason they won those Nobel

Prizes is that when they were learning, they went really slowly and had to practice or it fell out of their heads. But in doing so, they caught errors that the faster learners with the big capacity working memory just jumped right over.” It's worth giving employees the time and resources they need to fully complete their training. This will help them bring different perspectives to the table and better connect the dots with existing knowledge.

“Some people have brains like race cars, and they can get to the finish line really fast,” says Oakley. “Other people's brains are more like hikers. They can get to the finish line, but it's a lot slower.

“Think about what they experience as they're walking, though. They can reach out and touch the leaves on the trees, they can smell the pine in the air, and see the birds. It's a completely different experience and in some ways far richer and deeper.”¹⁰

In a learner-centric L&D model, learning leaders should look beyond the goal of employees finishing a course or gaining a qualification. Oakley recommends that learners “just think about putting in the time and effort and slowly build up from there.”

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Some people with higher-capacity working memory can understand an explanation really quickly and then they practice a little bit, and they get it.

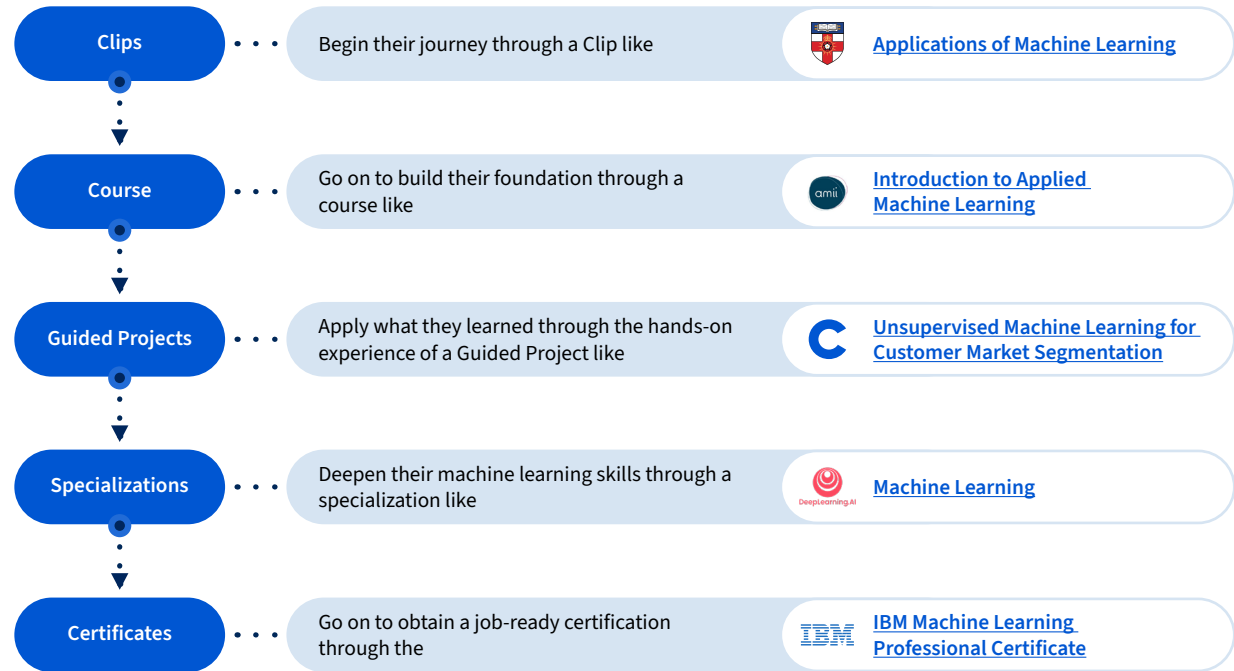
But for someone with lesser capacity working memory, they might have to watch a video several times and practice a bunch of times.

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Coursera's stackable content: Smaller goals for greater results

Stacking learning on Coursera allows employees to work on smaller, achievable goals but still end up with deep reskilling and upskilling.

For example, an employee looking to reskill in machine learning on Coursera might follow this journey:



5.

**Encourage employees to go
beyond passive listening**

Encourage employees to go beyond passive listening

Online learning allows for great cohort-based social learning experiences. Combine passive listening with more active engagement by leveraging this practice.

Online learning is constantly improving as technology advances. This means employees can now easily have real-time interactions with colleagues enrolled in the same course—no matter what part of the world they're based in—through breakout rooms that facilitate active engagement in smaller groups.

Research shows that speaking with familiar people and seeing their reactions gives another dopamine rush.¹¹ This is why familiarity with a cohort allows employees to be inspired throughout their learning experiences.

This interactive approach is the essence of cohort-based learning. A group of employees come together to join a course

and then move through it at a similar pace. Much of the learning is peer-to-peer and provides a variety of ways to think and learn by active engagement.

The idea of cohorts is not new, but this educational format wasn't as easy to deliver until video-conferencing tools became commonplace. Cohorts of peer employees can now come together from dozens of countries, meet at any time of the day, and adapt the curriculum to their work circumstances on the fly.

McKinsey proposes a 70:20:10 framework that captures this cohort-based learning approach in the workplace. This framework has 70% of learning taking place on the job with tools like Guided Projects, 20% taking place through interaction and collaboration such as with cohort-based learning, and 10% through formal-learning interventions such as classroom training and digital curricula.¹²

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I truly believe that teaching online can help match the outcomes possible in a traditional classroom, and indeed, even surpass it.

You can engagingly present the materials and then have employees take part in active-learning exercises.

Barbara Oakley
Distinguished Professor of Engineering,
Oakland University

How can Coursera help track cohort-based learning in your organization?

Done right, cohorts result in a large community of engaged employees collectively addressing real business problems and developing knowledge and insights they can put into practice at work.

[Skills Dashboard](#) from Coursera helps measure the effect of cohorts on learning by tracking actual skills developed by employees across business, technology, and data skill sets.

Skills Development Tracking

Understand skill gaps, progress, mastery, and more across 100+ skills.

ROI Reporting

Gain access to skill breakdowns and introduce new content using insights into employees' top skills.

Skills Benchmarking

See how your organization's skills proficiency stacks up against competitors.

Learning leaders can follow employees as they progress in their learning journey and iterate the process with the different learning tips shared in this article.

IDC reports that companies using Coursera see tangible business benefits

+25%
Productivity

+94%
More trained

+38%
Retention

746%
Three-year ROI

+20%
Employee mobility

Conclusion

Learner-centric L&D strategies drive impact

The science of learning provides several important insights into how to engage employees, putting them at the center of their own learning path. Despite distractions and competing interests, employees who invest in this ongoing effort will be best equipped to master new learning.

And the more your whole workforce gets into the habit of learning, the easier it will get for your organization to acquire new knowledge and skills faster and better than the competition.

Shifting to a learner-centric strategy requires curating content in a variety of formats, personalized to different needs—these options also serve to spark curiosity and engage employees more actively.

Understanding the science of learning will help learning leaders adopt courses, incentives, and learning partners that support employees in this way, building strong foundational knowledge in new areas and paving the way to deep, effective skills development for greater impact on the job and business.

It's a win-win with impressive returns for both employees and businesses.

Learn more about [Coursera for Business](#) or talk to a learning consultant today.

Request a consultation

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New neurons are born every day, especially in the hippocampus. But to ensure these new neurons survive, thrive, and grow, you must continue learning.

Barbara Oakley
Distinguished Professor of Engineering,
Oakland University

Endnotes

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[Barbara Oakley](#) is a Distinguished Professor of Engineering at Oakland University in Rochester, Michigan. Her work focuses on the complex relationship between neuroscience and social behavior. She created and teaches Coursera's "[Learning How to Learn](#)," one of the world's most popular massive open online courses, along with other popular "Top MOOCs of All Time."

Barb is a New York Times best-selling author who has published in outlets as varied as the Proceedings of the National Academy of Sciences, the Wall Street Journal, and The New York Times—her book "[A Mind for Numbers](#)" has sold over a million copies worldwide. She is a Fellow of both the Institute of Electrical and Electronics Engineers and the American Institute for Medical and Biological Engineering.

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