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How AI Delivers Automated And Personalized Learning – at Scale

Automation is everywhere: from marketing to manufacturing, it's big business, flooding many of the world's biggest markets with some pretty incredible applications and truly changing the ways products are promoted and even made.

Given the success and proven benefits of the automation of pretty much everything, it would make sense that there's a case to carry those benefits of enterprise learning as well, wouldn't it?

Absolutely.

But the issue, so far at least, is that truly automated learning applications were limited to technology's ability to maintain pace with demand. Now, however, automated enterprise learning is achievable, and it's powered by Artificial Intelligence (AI).

In fact, AI changes the status-quo of the enterprise learning industry, designed to deliver automated and personalized learning (at scale) and completely change the way people learn...for the better. AI now plays a part in many facets of our lives. Whether it's virtual assistants giving you weather and news updates when you roll out of bed in the morning or having TV series' and movies suggested to you based on past viewing by an invisible algorithm, AI is more ingrained in our lives than we might give it credit for.

Artificial intelligence refers broadly to technologies that can learn and perform specific tasks. More complex tasks entail machine learning, which takes an AI machine and teaches it to make decisions based on algorithms, learn from those decisions and refine its own performance. Real-life examples you likely already know include those algorithms in Netflix or Amazon that make recommendations based on your past shopping or viewing habits using their algorithms, and other data aggregated from a variety of sources. But, recommendations are just the tip of the AI iceberg as it relates to enterprise learning and its ability to automate the admin and user experience.

> *"AI IS NOT ONLY ABOUT "SUGGESTIONS" – IN FACT, IT'S A POOR EXAMPLE THAT PIGEONHOLES THE TECHNOLOGY'S POTENTIAL..."*
>
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In fact, the development of learning-specific algorithms, powered by a fine-tuned combination of machine learning, deep learning and natural language processing, will make AI the fuel that powers your learning platform.

What if your platform knew your learners' preferred learning style and medium automatically, without any administrator intervention?

Or, what if support queries could be answered immediately, at the point of need, within your learning platform?

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What if you could create learning content and then let the system take care of the more tedious tasks, such as reviewing charts and statistics to detect hidden patterns?

What if you could provide immediate, personalized learning feedback and steer online learners in the right direction without any human intervention?

These are not concepts. This functionality is a reality. AI brings real smarts to enterprise learning in a way that elevates L&D from the tool that not only makes your workforce better, but turns learning into your organization's competitive advantage.

HOW AUTOMATION HAS BEEN USED IN ENTERPRISE LEARNING TECHNOLOGY

Say, as an L&D admin, you'd like to place learners into certain email lists if they were to fail a quiz. This email list could send them extra content to review for the next time they're required to take that quiz. In this case, it would be beneficial to have an automated tool to make sure this email reaches those learners who need some extra support. Your platform would automatically generate the list of learners who have failed that particular quiz and then help you populate the list you'd like to send extra content to.

Sounds good, right?

Let's take it a step further: automation would also allow you to guide learners with triggered notifications. Seems simple enough: as you add users to specific groups or audiences, you want to make sure they know when it's time to start training. Again, your learning platform would allow you to send an email to notify those learners that a new lesson or course is available and they should find time in their calendar to complete it.

Even better, you could automate those emails so that content related to specific topics or skills are deployed to specific audiences as soon as a new piece of content is added to the learning platform.

Or, you could automate emails so that a learner is sent a note to let them know that they've been enrolled in a course within the learning platform, which is also a very useful way to manage a user's learning path by making sure they're notified of the content they need, when they need it. In a learning path, courses are tied together and once a learner completes one, they're notified when the next course along their 'path' is available.

Simply speaking, automation in e-learning works as a feedback loop that tests and measures knowledge to develop fresh content that's relevant and effective for learners.

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Thing is, while these are fairly simple examples that can be quite effective in managing the way learners interact and engage with your learning platform, they aren't truly automated. Each of the above examples requires some human hand-holding along the way.

So, how do we achieve fully-automated learning? With AI, that's how.

FOR YOUR CLARIFICATION:
AI DOESN'T EQUAL MACHINE LEARNING, BUT AI NEEDS MACHINE LEARNING

Before we move on, a quick note on AI and machine learning: it's important to understand a critical discrepancy between the two, as they are often used interchangeably yet they aren't the same thing. – related, yes – but recognizing that they are not to be used interchangeably is critically important to grasping a complete understanding of both technologies.

AI is "the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages." In the context of enterprise learning, AI has the incredible potential to amplify technology to make data-driven analysis and decisions (faster), emphasize areas of improvement for individual learners and create immersive learning experiences – not just lessons.

AI-powered enterprise learning can be significantly enhanced with learning-specific algorithms (a process or set of rules to be followed in calculations or other problem-solving operations) powered by a fine-tuned combination of machine learning, deep learning and natural language processing.

Meanwhile, machine learning is a system where a computer learns without being explicitly programmed. For example, in machine learning capacities, a computer program is trained to recognize patterns or complete an action, such as identifying someone's face or responding to a request for information. Training the system requires it to be exposed to as many variables to completing a task as possible, using different types of input data. Furthermore, some AI systems create their own tasks after they've identified the goals for the data they've been fed. Consider Google's © DeepMind AlphaGo project, a computer software that played itself in millions of games to have the skills it needed to beat the world's best human Go player, Lee Sedol. The system used data from more than 100,000 "Go" games to develop its knowledge.

Both AI and machine learning rely heavily on algorithms. An algorithm is a set of steps that a person—or a computer—follows to accomplish a task. You can understand a recipe, or the driving directions your dentist's website provides as simple algorithms. Other algorithms require vast amounts of computing power. Some algorithms might return a poor answer or even an incorrect one. In some cases, an algorithm that very efficiently produces a "good" answer might be preferable to a "perfect" algorithm that would choose the very best option, but would also

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require far more time and computing power to reach that decision. Choosing (or creating) the most appropriate algorithm for a task can make the task faster, more efficient, or more successful. An algorithm that improves with use is employing machine learning.

Consider the difference like this:

MACHINE LEARNING	ARTIFICIAL INTELLIGENCE
A computer gathers information about dogs and refines it over time.	The computer categorizes those dogs based on that information - AI achieves this task, in the sense that the computer used it to categorize dogs based on that refined information gathered during machine learning.

Machine learning is to Artificial Intelligence what books are to learning…

Machine Learning Classifications

Machine Learning includes algorithms that allow the system to predict future outcomes and detected patterns based on specific user data. The system identifies certain patterns and trends, then learns from the data in order to provide statistically accurate predictions. Every piece of new information that the program receives makes it more knowledgeable. The entire process takes place autonomously, from extracting and evaluating the data sets from the Learning Management System to predicting what online learners need based on their past performance.

Categories include:

Supervised

System uses past examples and new data sets to predict the outcomes. Programmer provides the system with inputs and outputs (i.e. labels) to train the software, and, over time, the system automatically predicts outputs or targets for new data sets.

Unsupervised

Doesn't involve any labels or data classifications. Instead, the system evaluates data to identify patterns and make inferences or predictions. In this instance, it's not about mapping an input to an output, but instead about detecting obscure trends or insights in the data samples.

Reinforcement

Includes a specific task or goal the system must complete. During the process, it receives feedback to learn and understand desired vs. undesired behaviors and outcomes. For example, the system detects an error while performing an action or a reward for achieving the most favorable outcome. In this instance, the program would learn the most effective approach with 'reinforcement signals.'

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AI DELIVERS AUTOMATED AND PERSONALIZED LEARNING (AT SCALE)

While it might be easy to look at AI and consider it as simply another feature of learning technology designed to make it easier or cheaper, seeing AI for its true potential requires looking at learning through a completely different lens. In no way is AI simply a feature of the learning platform, it will instead become the heart of your learning strategy in the not-so-distant future; data becoming the fuel that powers the AI learning engine.

L&D LEADERS HAVE A DISTINCT APPETITE TO INCLUDE PERSONALIZATION IN THEIR LEARNING ACTIVITIES

#	Activity	%
1.	Personalization/adaptive delivery	12.4%
2.	Collaborative/social learning	11.6%
3.	Micro learning	10.5%
4.	Virtual and augmented reality	8.2%
5.	Consulting more deeply with the business	7.2%
6.	Showing value	6.7%
7.	Mobile delivery	6.5%
8.	Artificial intelligence	6.1%
9.	Curation	5.7%
10.	Games/gamification	5.5%
11.	Neuroscience/cognitive science	4.3%
12.	Video	4.1%
13.	Developing the L&D function	3.8%
14.	Personal knowledge mastery (PKM)	3.2%
15.	Other:	2.5%
16.	MOOCs	1.9%

Source: The L&D Global Sentiment Survey 2017

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Outside of the quality of learning, AI offers up an extremely valuable solution for training in industries where there exists a high rate of dynamism, such as those that need to update course material consistently. These companies would benefit from more adaptive learning environments because they're using machines to accurately predict how those courses need to improve and change.

Intelligent learning environments would also analyze data across personalized learning instances to produce suggestions for improvement, while highlighting inefficiencies that would otherwise be impossible. Consider, for a second, the idea that an AI-enabled learning platform could translate your learning content into different languages – something that's almost always necessary for global organizations. Think about the time it would save to have a machine do that compared to doing so manually…

And while we might only be scratching the surface in AI-powered enterprise learning, we will soon live in a world where a machine has the ability to create new learning content, which is guaranteed to exponentially improve the personalization of learning. In fact, it's an absolute certainty that AI would produce personalized learning environments with content that adapts as necessary, on its own, but is actually created based on the individual needs of different learners. This will vastly improve the quality of your learning activities in many ways you can't even imagine yet.

WHAT AUTOMATED LEARNING LOOKS LIKE… WHEN IT'S POWERED BY AI

As mentioned earlier on, automation has made its way into enterprise learning and the platforms needed to make it happen, but it has been limited to tasks that continue to require human hand holding, and are thus not truly automated activities.

AI, however, by employing data collection and technologies such as machine learning, can bring truly automated learning to life by being truly responsive to learners' needs – a system that adapts intelligently to users' requests and allows them to take control of their own learning.

There's already a few components of AI that are contributing to the complete automation of enterprise learning, including:

Deep Global Search takes content discovery to a new level by deeply analyzing learning content and the way it's used in the organization to improve sharing of both traditional learning and user-contributed assets.

Auto-tagging "listens" to content assets, understanding various keywords (in the background) to produce a number of tags that assist with categorization and search, without the need to do so manually, saving the admin and learner time when uploading content. In the near future, if content is ever updated, AI would continue to crawl that piece of content and update its tags if necessary.

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Invite to watch allows admins and learners to share their content contributions with specific audiences. AI pre-generates a list of people within the organization who have shown interest in content it deems similar to the one currently being uploaded, making sure that those contributions are put in front of those people in your organization who will value it most.

From an automation perspective, these three functionalities come together to not only improve the way your admins and learners interact with content, both new and old, in your learning platform, but also improves their engagement with your learning content by making sure those who will value specific content the most get their eyes on it.

And these three functionalities are just scratching the surface of complete learning automation. To take things a step even further, consider the following three examples:

- The **automation of administrative tasks**, including course enrollment triggered by events or criteria (i.e: there is a change in a regulation related to food handling. All food handlers are immediately enrolled into that course, take a test and get certified, so they can provide evidence of compliance when an audit takes place, automatically)
- The **curation and aggregation** of content from external sources. For example: "Here are 10 free YouTube videos that will help you learn the skill at hand," in addition to that learner's prescribed courses.
- Internal subject matter experts train a **virtual coach (or chatbot)**, which, in turn (and over time), gathers more and more knowledge to train learners, providing immediate answers to questions. If an answer is unknown, AI automatically pings an expert to chime in and provide the correct feedback. And the best part is, the next time the question comes up, the virtual coach now knows how to respond, without the need for human intervention.

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FOUR (OF THE MANY) BENEFITS OF TRULY AUTOMATED LEARNING, POWERED BY AI

Content is more personalized to boost engagement and results

Machine learning algorithms predict outcomes, allowing you to provide specific content based on a learner's past performance and individual goals. For example, online learners that express a particular skills gap receive targeted recommendations that build knowledge related to their skill gap, in a more personalized format. This could include situations where the system would recognize that a learner might be able to actually skip a few modules to take a more comprehensive and less linear learning journey than someone who might lack the basic skills related to that particular topic.

Allocate resources to tasks of value

Learners receive the exact online resources they require to fill gaps and achieve learning goals, which equates to less seat time and training payroll hours. Instead, employees get the information they need quickly, as online training resources are tailor-made to their personal and professional objectives. Additionally, L&D admins and support staff spend less time analyzing metrics and reports to instead focus on producing top-notch learning content. With AI, the system takes care of big data so the L&D team can spend more time and energy on more valuable tasks.

AI automates the content scheduling and delivery process

For such a game changing technology, it's ironic that AI and machine learning are, in fact, designed to handle fairly menial, yet crucial tasks in the name of saving humans time to focus on bigger picture activities. With AI, your learning platform could schedule coursework or deliver resources based on individual learner assessment results or simulations. This would create an environment in which it would be possible to automatically predict course maps for each of your learners who enroll in any of your organization's courses, and then re-adjust whenever the need arises.

Boost ROI

Consider this simple formula:

Less training time + greater personalization = better profit margins

You would spend less on online training without sacrificing desired outcomes, as predictive analytics and your AI-equipped learning platform track and forecast every move each of your learners make. This also gives you the power to launch online learning resources wherever and whenever they're required.

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Full Learning Automation Engaged, Giving You More Time to Focus on Creating Immersive and More Effective Learning Experiences

Docebo has unveiled its platform's first AI features and what's unique about these new additions is that they are built on learning-specific algorithms, powered by a fine-tuned combination of machine learning, deep learning and natural language processing.

These specialized algorithms have been developed to enable your learning platform to automatically perform some of the actions that you would do manually, either as a learner or L&D administrator.

The platform can now safely and securely analyze nearly all of the different types of content that you're adding into your platform (from PDFs, web links, multimedia, A/V etc.), and find ways to enhance and simplify the learning experience.

Learners can use the platform's global search to find the most relevant content for them without the Superadmin needing to manually tag the content or add additional fields.

Additionally, learners can invite other learners to view their freshly-uploaded informal learning content based on our algorithm's abilities to analyze both the new content and the historic learning patterns and content preferences of other learners in the platform.

The best part is it all happens behind the scenes, without ever interrupting the learning experience.

SEE HOW AI WILL TRANSFORM YOUR ENTERPRISE LEARNING TODAY!

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TRY DOCEBO NOW!

Docebo is changing the way people learn with artificial intelligence. While traditional enterprise learning technologies have dictated the way people learn with formal courses pushed from the top down, Docebo's AI Learning Platform facilitates personalized and automated learning experiences in the flow of work to drive growth, organizational performance and revenue. Docebo is designed to power a cohesive L&D strategy, and has been embraced by more than 1,400 companies around the world for its ability to satisfy multiple use cases for both internal and external enterprise learning.

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