EMERGING TRENDS: L&D AND THE ARRIVAL OF AI

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Enter, AI

The age of Artificial Intelligence has arrived. But, with all its promise, how should we feel? Is AI something to be feared? Or is it something to be anticipated and embraced?

The AI-induced apocalyptic scenarios presented to us in movies and television tend to cultivate a sense of fear. Take films like *The Terminator*, *The Matrix*, and *2001: A Space Odyssey*, and you'll quickly see representations of worst-case scenarios of AI gone wrong. Alternatively, outside of the cinematic space, new developments in the field are exposing the endless possibility that AI and Machine Learning – which are two different concepts – open up for us[1]. Think smart automation of tasks, anticipated needs, and, ultimately, serving humanity in all its enterprises, including learning and development (L&D) and eLearning in particular[2].

That said, as much as we do know about the potential of AI, its growth and evolution remains a black box for the average person. Some believe that AI will remain well within the control of human execution and determination, while others harbor concerns that AI will achieve what is known as the technological singularity and abruptly trigger exponential and runaway technological growth, thereby completely changing the course of human civilization[3]. AI, the latter case suggests, will eventually overtake mankind in its endeavours and – in the worst case scenario – could ultimately replace mankind entirely.

However, as AI and its application evolves, it's important to assess how this new technology might be harnessed to positively impact human endeavours – in our case, with a particular focus on L&D.

[1] Bernard Marr, "What Is The Difference Between Artificial Intelligence And Machine Learning?", Forbes, Dec. 6 2016.
[2] Sara Smith, "The Future Of Artificial Intelligence In eLearning Systems", eLearning Industry, April 23, 2016.
[3] Luke Dormehl, "A beginner's guide to AI superintelligence and 'the singularity'", Digital Trends, Oct. 4, 2017.

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The AI State of the Union

The doomsayers who warn of the potential of AI in the long term must acknowledge that in its present incarnation, AI is limited by the engineers who program it. In its current state, AI requires the following parameters in order to provide output:

1 **Instruction**: AI's application in eLearning has yet to transcend instructional-based decision making. As it currently stands, AI requires a certain set of parameters within which it can make logic-based 'decisions' about automation, execution, and productivity. Without this human-provided instruction, AI cannot make sentient choices – as per the fears of its detractors[4].

2 **Goals and KPIs**: By nature, human beings ask questions and make decisions to better understand the world. We question our environment, adapt, and wonder 'what it all means' to be alive. Unlike us, AI is – fortunately or unfortunately – unencumbered by this existential question. Instead, AI is simply motivated by the explicit doctrine of achieving a specific end goal or else monitoring its achievement according to a specific set of key performance indicators (KPIs) that determine its effectiveness[5]. There's no reliance on intuition, feeling, or rationale. AI is simply designed to achieve what it was programmed to do.

3 **Metadata**: The importance of metadata and properly tagging content is paramount. The benefit is twofold: 1) because of how it enables users to discover and learn from relevant content they might not have otherwise been exposed to and 2) because metadata and content tagging enables AI to learn where to find relevant content – quickly and effectively. When we tag content effectively, we teach AI to understand what content is relevant, where to find it, and why we need it. Without effective eLearning content tagging and high-quality data, AI engines are unequipped to intuitively deliver the right content to the right user at the right time[6].

Yes, it is bold to say that AI and computers – in their present state – are "powerless", but right now, AI needs the guiding hand of human minds to tell it where to go within certain contexts. Will this be the case forever? No. With smart engineering, AI will catch up. However, the notion that AI is about to overrun the sphere of learning is somewhat premature.

"Without effective eLearning content tagging and high-quality data, AI engines are unequipped to intuitively deliver the right content to the right user at the right time."

[4] Bobby Azarian, "The Myth of Sentient Machines", Psychology Today, June 01, 2016.
[5] Ben Lamm, "AI solutions are only as effective as their KPIs", VentureBeat, Sept. 25, 2017.
[6] Ronald Van Loon, "Enterprise AI needs high data quality to succeed", ReadWrite, Oct. 9, 2017.

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The Good, The Bad, and the Mediocre

As with AI in all its applications across diverse industries, there will be many positives, negatives, and…unknowns. This will manifest in a number of key ways.

Consider that L&D professionals are used to sitting down at their desks and designing course catalogues (not to be confused with course content). This is the meat and bones of a lot of their time on the job. It's a job function that can be sufficiently mitigated by AI, which is able (through the application of the right metadata) to develop and provide course catalogues to specific users based on roles and habits, and through recommendation engines.

The good thing about this is that it affords L&D leaders a lot more time to develop great course content – be it in-house or alongside content partners. It also provides them with the time to work with the executive team to develop a learning strategy that better aligns with the overall corporate strategy, something we have seen is essential to both L&D improvement and organizational growth.

It is also interesting to note that AI in L&D is becoming increasingly important because it can use proper metadata and xAPI-driven intelligence to determine which users ought to take a certain course based on behaviours and situations. It can, in the best examples, tell a learner a certain course is useful given certain parameters and apply rules accordingly. This is the infancy of AI learning to understand the learner, and the potential of this is vast.

But with all positives comes some negatives.

As AI's reach within an organization grows, legacy L&D employees could feel that they are relinquishing a piece of their job scope and autonomy to automation. This idea of "letting go" won't be easy, however, it is important to understand that AI is not a magic wand. It will not fix garbage content – it's just an algorithm.

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The Impact on Learners

The impact AI can have on learners is fundamentally important. The more a user actually uses the system, the more the AI learns about a user's needs. When the AI can anticipate what learners want to know and need to know, it can develop an understanding of what to suggest to users.

But, by allowing the AI to make these decisions and enabling it to recommend content to learners, it frees up time for L&D to improve the quality of content and thereby boost retention. Best practices that are typically difficult to apply, including tasks associated with reinforcing ideas through same, similar, and different content can be automated. For example:

By analyzing usage patterns a good system can know that a certain retention rate can help it make preemptive judgments on how certain segments will absorb and retain course information

The bottom line is that an AI needs a lot of time to acquire information. When you enter a clean system without a lot of information, it has to make a lot of assumptions, and the more assumptions it has to make, the less reliable it is.

That's why improving user experience through more enriching content is critical and – here's where AI won't own L&D anytime soon – you need humans to create and enhance great learning content on an ongoing basis. As they say, Content is King.

How AI will shape the future of learning technologies

Today, we are surrounded by AI based technologies without even knowing it. Recommendation engines (Spotify, Netflix, Gmail), text/image/face/video recognition and tagging (e.g. Facebook), Conversational UI (e.g. Alexa), Bot & Virtual Agent Software, and even teaching assistants (Georgia Tech's AI, Jill, which passed the Turing Test – a test of a machine's ability to exhibit intelligent behavior equivalent to, or indistinguishable from, that of a human – and fooled her students). However, these products and technologies don't provide much value to the learning industry per se. At least, not yet. However, AI looks very promising for learning platform technology in the near future – even as soon as 2018.

Automation & Content Suggestions

No longer will LMS admins need to spend the majority of their time on labor-intensive, error prone, and repetitive tasks such as managing users, enrolling users to courses, or tagging content. AI will automate most of these tasks and, even more importantly, will do a better job at it. Below are a few examples:

As opposed to an admin making decisions using manual steps, AI will be able to suggest or assign learning assets to learners based on a set of criteria like:

- **Learning objectives**: Identifying the most relevant learning objectives and topics for the role and the task at hand

- **Skills data**: Suggesting what has worked in the past to increase specific skills in similar roles

- **Performance Data**: Suggesting what has worked in the past to increase specific KPIs (e.g. reach 80% of sales quota in 6 months)

- **Learning style**: Suggesting preferred format based on learning style: e.g. a full course or a collection of small content bytes

- **Preferred channel**: Suggesting the use of mobile for people that are constantly on the go or full desktop for highly technical and detailed instructions

- **Personal interests**: Taking into account user preferences

- **Organizational behaviour**: Taking into account the traits of the organization the learners are a part of

- **Learning interventions**: Triggered based on a change in regulations, compliance, or in company policy

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These time-saving automations will create time for administrators to focus on high value added activities like content creation, determining new ways to increase retention, and curating user-contributed content, all of which will be used to teach the AI by providing criteria.

Not only will some task will be automated but, using AI, the learning system will be able to produce higher quality content recommendations that humans are able to. Think of the incredible volume of data that needs to be analyzed: learner interactions with the system, social learning exchanges, offline activities, Q&A with experts – resulting in millions of xAPI records – and more. AI will be able to identify patterns and correlations in this data that the human brain might simply miss. Best of all? The system will continuously learn by analyzing this data without the need for human intervention.

Content Discovery
Beyond automating processes, AI will also be able to discover new learning content for a given population of learners by analysing what is available through online systems, such as video platforms (e.g. Youtube, Vimeo, Kaltura) and online learning and teaching marketplaces (e.g. Udemy, Lynda, Coursera). Similarly, AI will be able to crawl social platforms, like Slack, learning how specific content or Q&A threads generated positive outcomes that can then be applied to new tasks. This ability provides learners with new, highly personalized learning opportunities that a human-centered system would never be able to identify.

Chatbots
AI algorithms – or robots – will be trained so that they can provide learners with answers. Subject matter experts (SME) will no longer train people at regular intervals, they will train robots who will, in turn, train the end users. SMEs will provide chatbots with instructions on how to learn, after which point the bots will analyze, learn, and answer questions. Chatbots can be specific to the job at hand. Imagine an Onboarding Chatbot who train new employees during the first few days on the job using conversational UI. Similarly, picture a Security Chatbot, a Sales Enablement Chatbot, and so forth. A chatbot can interact with the most convenient channel for the user. It can be voice, or a Slack channel, or a feature embedded in your platform of choice.

Keeping Humans in the Loop
In addition to providing questions to answers, chatbots can also identify subject matter experts in the organization to meet learners' needs. For example, when a chatbot is not able to provide an answer, it could direct the question to someone who has been identified as an expert on the topic at hand (and in doing so, the bot will listen and learn more in order to better serve the next user with the same questions, down the road).

Content Creation
Consider even the authoring of content. If you think every article you have read online in recent years was authored by a human, think again[7]. Although AI today is immature compared to its ultimate and eventual impact, we can already see its potential in learning content creation. Imagine the capacity to scour an instructional article and automatically produce a new learning

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asset drafted by combining video pills derived from previously published content. The resulting augmented learning asset can be automatically adapted to specific channels (e.g. mobile vs. desktop) for specific usage scenarios. Furthermore, AI can be used to extract and summarize key points from a longer article and enrich each section with relevant multimedia content – content validated as high performing by the AI.

Key Takeaways

- **The first LMS mover will have a HUGE advantage**: This is an inevitable, required step for any LMS that is going to survive in the marketplace.

- **Adapt or fall behind**: As soon as AI is applied to eLearning, everything will change and we will need agile, adaptable organizations to respond effectively.

- **Acceleration is not possible without AI**: If AI is not in the lexicon of a vendor, that vendor is not worth engaging.

- **AI will leverage multiple sources of content**: It could scour YouTube and find content related to what one user needs and your organization could supplement your content with other content that could be useful to users.

- **Build digital institutional memory**: Succession planning could become a thing of the past because AI will identify all the content that needs to be consumed and purveyed.

[7] Jeo Keohane, "What News-Writing Bots Mean for the Future of Journalism", Wired, Feb. 16, 2017.

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Conclusion

The impact of AI in eLearning may be nebulous at this point, but there's no doubt that AI has arrived and, in the coming years, will affect the sphere in a big way. It will contribute to how we learn and how we teach and, increasingly, it will affect how we delegate learning to automation and, eventually, artificial intelligence. Although AI in eLearning is already here in many ways, it is important to consider how it will manifest itself in the near future, and to understand that the associated implications will come very soon. Don't let your organization fall behind - start considering the impact of AI on your industry today.

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