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eBook

Powering Learning Platforms for **Personalized** Learning Journeys with Generative Al

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Introduction

Generative AI (GenAI) has the potential to reshape our world in ways we cannot yet imagine. Deep learning, with the ability to autonomously segregate and derive conclusions from massive datasets, has enabled the creation of textual, audio, and visual content on demand. The transformative potential of GenAl extends to the education sector, making learning more accessible and automating it for better reach and guality. Given its potential applications, generative AI is projected to witness a CAGR of 40.5% between 2023 and 2032 in the EdTech domain alone

Genrative AI is set to become a general-purpose technology, with an impact similar to that of the steam engine, electricity, and the internet.

Artificial narrow intelligence has proven to be a game-changer in transforming learning management systems (LMSs). It has enabled the automation of repetitive tasks and enhanced planning with the power of predictive analytics. Existing LMSs have freed up educators' valuable time by taking over the monitoring of learning progress and evaluations, providing immediate feedback, managing attendance, and generating insightful reports for multiple user roles.

Gen Ai is the next iteration of the AI evolution, disrupting all aspects of life and work. Education is among the most important sectors to be reformed dramatically by this technology.

Benefits of Al for I MSs

- Improved Efficiency Better Scalability Learner Engagement $\langle \cdot \rangle$
- Enhanced Content Delivery
- **Powerful Analytics**
- Immense Flexibility



What Does GenAl Bring to the Table?

GenAl is not just a testament to human imagination and innovation but is also proving to be a means to challenge the limits of creativity.

The impact of GenAl is so pronounced that UNESCO is steering the global dialog among policymakers, EdTech partners, academia, and the civil society on its applications, guiding principles, and frameworks in education and research. These discussions are scheduled to be held during the Digital Learning Week in September 2023.

Spectrum-Wide Benefits of Generative Al				
Learning	Education			
Personalized	Inclusive			
Immersive	Accessible			
Engaging	Impactful			

Core Focus Areas of GenAl-Powered LMSs

- ✓ Hyper-personalized learning delivery
- ♂ Virtual and intelligent pedagogy
- ✓ Collaborative learning experiences
- ✓ Interactive simulations
- ♂ Refined assessments

These features will facilitate dynamic learning evolution to meet the demands of the ever-changing education landscape.



Integrating GenAl with LMS

Technology is growing and transforming the education landscape, facilitating EdTechs to develop an ecosystem that fosters lifelong learning, where knowledge and creativity are not only valued but actively pursued. They are making all stakeholders aware of the prospects and challenges of the future within and outside the ecosystem. The best part is that transforming an LMS into an LXP does not require a complete technology overhaul. API and cloud-based integrations seamlessly enable a legacy LMS to transform into an LXP to revolutionize the experience for educators and learners. GenAI integrations can be carried out with minimal downtime and almost no data loss in 6 simple steps.







Identify the goals of LMS enhancement and gaps in learning delivery to define expectations from an AI upgrade.



Select a Technology Provider

Partner with experts that specialize in advanced, scalable and consistently evolving technology stacks, integrable across learning environments.



Leverage APIs to establish a communication channel between the existing LMS and AI tools to facilitate data and services exchange between the two. Install and Configure the Al Module

Customize the AI application based on the underlying LMS environment, including settings, access control, and data migration. Test and Evaluate the AI Applications

Ensure the achievement of desired outcomes for all stakeholders through a pilot run with a small group.

Go Live!

Build a Plan

To augment a learning management system (LMS) with Al-based technologies, we need to conduct an analysis, define goals, and identify the bottlenecks in the existing system. While online and blended learning have been gaining popularity worldwide, classroom education is evolving to make the most of rapid technological advancements. Therefore, an LMS should meet the requirements for all three modes of learning.

Empower All Stakeholders

A wide range of users interact with an LMS, including L&D teams, instructors, trainees, team managers, and organizational heads.

What learners expect from GenAI in education:

- Personalized and immediate learning support
- Writing and brainstorming support
- Research and analysis support
- Visual and audio multimedia support
- Administrative support

An LMS must empower:

- Learners with personalized learning paths and assessments.
- Seducators to deliver and assess learning progress.
- L&D teams to design relevant, accessible, inclusive, and consumable learning materials, aligned with learning goals.
- Solutions, L&D professionals, and businesses to assess learning progress, identify learning gaps, and plan the future course of education.

In addition, the LMS should facilitate the training of trainers and L&D teams to leverage technology to improve the learning experience.



Enhance Inclusivity

Accessible and inclusive training programs have become indispensable in an increasingly globalized world. It helps build a diverse workforce that is sensitive to cultural and individual differences. This fosters teamwork, collaboration, and productivity. It can also drive better innovation for the business, bringing together diverse perspectives.

Ensure Learning Outcome Achievement

It is critical that an LMS power learning outcome achievement by identifying gaps and suggesting remedial measures for the same. It should also offer tools to boost the engagement of all users via an intuitive interface. Engagement can drive users to make optimal use of technical assistance to enhance the overall educational experience. Outcome achievement should ideally be the by-product of friction-free and self-driven use of the LMS.

Facilitate Evolution

In the ever-evolving learning ecosystem, staying on top of the EdTech trends requires the LMS to be dynamic and flexible. It should be able to adapt to dynamic learning requirements amid global, national, and regional backdrops. Not just the learning process and admin automation, but also the complete technology framework should be scalable to accommodate growth and innovations in the learning domain.



Define Specific Goals for Al Integration

Clearly defining the goals for the LMS helps plan out relevant Al integrations. From the larger set of requirements, these can be translated to:

Creation, conversion, and curation of smart content:

Learning resources can be developed in multiple formats, and sizes to meet users' learning needs, styles, capabilities, and behaviors.



Source: https://www.centumlearning.com/insights/lms-software-enterprise-learning-management

Enhance Analytics and Communication: An LMS can be enhanced to bridge space and time gaps between learners and instructors. It can also streamline administrative tasks to enhance collaboration between teaching, L&D, and education planning groups.

Personalized Education Delivery: One of the most pressing needs of AI automation is to foster self-driven and learner-centric education. This requires transitioning from static curricula to adaptable and flexible learning paths for effective assimilation of skill and knowledge, aligned with individual learning goals.

Intelligent Tutoring: Smart tutoring systems can have multiple implications, including learning assistance, virtual tutors, robotic guidance, learning bots, and more. Such techniques can ensure continued learning in the absence of human educators.

Accessibility: Ensuring accessibility can include multilingual access, inclusive tech for the specially labeled, and cultural sensitivity in learning materials. The goal is to break down silos in the learning ecosystem.

Automation: This involves automating repetitive tasks, from attendance management to curriculum design, with the help of analytics. Automation can also encompass grading, feedback, reminders, and much more.

Analyze Organizational Readiness for AI Adoption

Al-readiness of an organization involves technology readiness, operational readiness, and people readiness. The common goal for all is to facilitate the application and evolution of Al models to maximize impact.



Optimal use of AI tools relies on the quality and often the quantity of data available to train AI models. Ensuring the accuracy and integrity of data is of utmost importance here. AI algorithms parse data to form connections, draw conclusions, predict and generate content, etc. AI models continue to update and refine themselves with the help of real-time data. Therefore, mature data management functions are crucial to establishing AI readiness in an organization across the technology, operational, and human levels. Optimal use of AI tools relies on the quality and often the quantity of data available to train AI models. Ensuring the accuracy and integrity of data is of utmost importance here. AI algorithms parse data to form connections, draw conclusions, predict and generate content, etc. AI models continue to update and refine themselves with the help of real-time data. Therefore, mature data management functions are crucial to establishing AI readiness in an organization across the technology, operational, and human levels.



While technology and operations can be transformed with adequate resources, the biggest challenge is to get the people on board. The first step is to foster a data-driven culture across all operations. Data-driven analytics help bring the LMS and stakeholders up to speed with the current status of education and accordingly recalibrate learning programs to optimize impact.

A few ways to instill data readiness among people are:

- 🔗 Promote data literacy among all stakeholders.
- Sensure the privacy and security of all information.
- Oemocratize data access with multiple user-level controls.
- 🕑 Develop a culture of making data-driven decisions.
- Seward data-first approaches and initiatives across business functions.

Finally, businesses can integrate AI readiness into the AI adoption process via strategic alignment, resource procurement and allocation, capacity and culture building, and integration with data management subsystems.



Transforming LMS with Generative AI

Generative AI (GenAI) is a broad term that encompasses technology and techniques to enhance learning paths and learning experiences for trainees, and improve pedagogy, learning dissemination, learning planning, and goal setting for L&D teams. The underlying technique is to use generative adversarial networks (GANs) and variational auto encoders (VAEs) to generate new instances of data and structures using patterns learned and inferences drawn from training data. The most notable feature of GenAI is its ability to deliver human-like experiences using natural language.

A 2023 webinar poll by Gartner revealed that the top business functions where organizations employ GenAl are:

- 🕑 Customer experience and retention
- 🕑 Revenue growth
- 🕑 Cost optimization
- 🕑 🛛 Business continuity

In the words of Andrej Karpathy, Director of AI at Tesla, "The hottest new programming language is English."

Primary Focus of Generative AI Initiatives



- Customer Experience/Retention
- Cost Optimization
- None of the above or not applicable (e.g. vendor or investor)
- Revenue Growth
- Business Continuity

Al-Driven Features Enriching the Modern-Day LMS

GenAl is enhancing LMSs in multiple ways.

Personalization of Learning Paths

Al models assess learner patterns, behaviors, and preferences to identify their learning style and suitable content delivery mechanisms. These are then used to curate unique learning paths with best-fit pedagogies, based on individual and educational goals.

- Adapting learning pace, styles, and instruction mechanisms.
- ✓ Offering micro- and nano-learning materials for spaced learning to improve learning assimilation.
- Personalized feedback and targeted remedial suggestions.
- Solution Incorporation of assistive learning technologies to meet fast, slow, and special learning requirements.
- Series Personalized recommendations for knowledge expansion and reinforcement.
- Chatbots and learning assistants for democratized learning experiences.

Dynamic Assessment and Evaluation

GenAl is consistently setting new benchmarks of tailored assessment modes and criteria. It enables effective and efficient evaluation of learning progress and identification of trainees' strengths and weaknesses.



Expedited Content Creation

Content creation with GenAI-powered tools includes two aspects.

 Empowering lesson creators to accelerate, customize, and align content with educational goals.

Ensuring DEI, web access, privacy, and security compliance via suggestions and content design restrictions.

These are goals are achieved with:

- Automation of quizzes, games, flashcards, and summary creations.
- Use of learner and organizational and standardized data to standardize content and assessments.
- Dynamic content transformation to meet learner requirements, such as teaching language, image/video captioning, etc.



Real-Life Examples of Al-Powered Learning

Al and its applications are revolutionizing learning across industries. Simulations, predictive analytics, and real-time assessments are significantly enhancing learning outcomes. It is an elegant application of experiential learning theory combined with learning assistance and powered by the optimal use of technology.



Here are a few examples from across the world:

MIP Politecnico di Milano Graduate School of Business is using FLEXA to assess professional skills and provide personalized suggestions to bridge skill gaps between career goals and existing curricula.

- "Teacher bot," developed by MIT experts, responds to student emotions during learning and provides appropriate feedback and learning support.
- Immersion Lab, created by Rensselaer Polytechnic Institute of China, creates a 15-foot tall 360-degree projection of the streets of Beijing. It helps students to master vocabulary, pronunciation, and cultural knowledge by interacting with virtual AI characters on the streets of the city. There is evidence that this reduces foreign language anxiety among learners.
- At McGill University, Montreal, a neurosurgical group developed a Virtual Operative Assistant (VOA) that assesses the skill level of medical trainees and provides personalized feedback in relation to expert proficiency performance benchmarks.
- Marine biology students in Lysekil, Sweden, use AI-powered virtual tools to explore the marine ecosystem of Gullmar Fjord on the Swedish West Coast. A simulated acidification laboratory helps them conduct studies on the acidification of the marine environment.
- GenAl-based Law and Judge bots are used by legal practitioners to assess their legal prowess. The "emergent behavior" technique allows them to develop new strategies and discover stronger arguments to put forward their case. Further, judge bots simulate expected outcomes and refine strategy.

Identifying Suitable AI Solutions

With the proliferation of AI-enabled corporate LMS providers, it can be overwhelming to zero in on the one that meets your unique learning requirements, business vision, and budget.

The first step is to determine the areas where Al augmentation is needed. Once the goals are clear, identify the elements of the learning process you would like to upgrade with Al tools, such as:

Course Creation

Standalone resource creation tools may hinder continued learning since they are unable to cope with the changing organizational and worker needs. Augmenting the course creation process with generative AI tools facilitates suggestions for content alignment with not just immediate but also future needs. It empowers the L&D team to develop bite-sized content that can be repurposed for different needs and used by multiple teams within the organization. Further, it facilitates the personalization of learning journeys, allowing managers and team leaders to pick and choose eLearning modules for their team members.

Learning Management

Identifying the strengths and weaknesses of individual employees, making space for learning in their schedules, and dynamically adjusting schedules with business requirements can be a daunting task when carried out manually.

An AI-powered LMS, integrated within business functions, can automate such tasks, allowing managers and L&D teams to focus on more value-added activities.

The tool must foster a collaborative and collective growth mindset among learners via group activities or Al-medicated discussion forums.

- Automated alerts and notifications help employees stay on their learning schedule and keep managers updated on employee progress and additional learning support requirements.
- Automated and targeted assessments personalize assessments to learner and training goals while also evaluating learning efficacy and assimilation. This helps track learner progress as well as refine the learning resources.
- Solution Predictive analytics is possibly the most impactful feature of an AI-powered LMS. It enables the creation of targeted learning journeys and leadership pipelines for long-term succession management using organization-wide skill and knowledge data.

User Interaction

One of the most important aspects of digital learning is the user experience. Remote working makes anywhere, anytime, self-driven learning opportunities necessary. While seamless experiences across platforms and offline accessibility are crucial, intelligent virtual tutors and learning assistants deliver personalized instruction and immediate feedback, on-demand. Such Al-driven tools can host multimedia content and make content recommendations. The content is tailored to real-time requirements for improved learning outcomes.

By offering a human-like experience and adjusting the pedagogy to individual needs, speed, and learning styles, virtual tutors adapt seamlessly to ensure higher engagement and motivation among learners. This is accomplished via a combination of predictive and generative analysis, and data-driven insights. All interactions are driven by learners and carried out in a way that improves learning assimilation and translation to productivity at work.





Analytics and Reporting

One of the most effective ways to incorporate AI into an LMS is to identify the knowledge and skill gaps, assess the organization's immediate and long-term learning requirements, and offer insights into the efficacy of the training initiatives. For this, the LMS is augmented with a flexible and customizable analytics and reporting system, armed with deep learning, neural networks, and more. The visual representation of analysis results makes understanding easier, driving better decision-making at the leadership level. This helps define goals and assess the extent to which they are being achieved. For instance, if the goal of a training session is certification, then course completion is necessary, whereas if the goal of training is skill acquisition, practical application of the skill needs to be assessed. In both circumstances, an Al-powered learning efficacy evaluation system can assess the extent to which training goals have been achieved, quantitatively and qualitatively.

Look For a Suitable Provider

A detailed understanding of requirements allows you to clearly communicate with third-party AI experts and enhance the outcomes of the collaboration. Once the learning requirements are finalized, go back to your technical team to learn about the existing infrastructure, its extensibility, and integration capabilities. Partnering with an AI transformation provider will expedite the transition, save you effort and costs and eliminate barriers to AI transition. The service provider will customize their technology solution and provide skilled professionals to manage the change seamlessly, with minimal disruption to your business.

Many LMSs are designed to adapt to the evolving digital learning ecosystem with the help of simple API integrations. This not only makes the system easy to upgrade but enhances scalability. Assessing your tech stack and needs can help you look for a technology partner or AI transformer whose offerings align with your company's objectives. Start by conducting a technology infrastructure survey for your company and then evaluate the LMS capabilities. An ideal situation would be an LMS designed with a vision for the future.

- It should maintain and organize learner data since Al expansion relies on the availability of data to train models and gather insights.
- Cloud integration facilities are critical for increasingly remote and hybrid workspaces.
- Al extensibility simplifies the integration process and allows a friction-free transition experience for both the technology and the organization.

Questions to Ask Before Choosing an Al Transformer

- 01. What is my training philosophy?
- 02. Who are the learners and what are their preferences?
- 03. How do I intent to deliver and manage learning content?
- 04. What are my Must-Have and Nice-to-Have features?
- 05. Will the solution scale as I grow?
- 06. How important are social learning and collaboration in training?
- 07. Will the solution easily integrate with my existing platform?

Determining the Best Fit

Now that the technology compatibility requirements are set, here are the steps to look for a suitable solution.

Start with Some Demos

Look for solutions by asking for demos of potential tools to understand the AI landscape. This allows L&D teams to learn about the breadth of the solutions available. The organization can then conduct an internal technology feasibility study and refine the requirements accordingly.

Technology feasibility includes assessing the following for AI transformation of the LMS:

- ♂ Hardware and software components
- ✓ Technical risks and constraints
- ✓ Compatibility with other IT systems
- ✓ Capabilities of the in-house IT engineering team
- Sexisting third-party dependencies and the impact of Al transition on them
- Scalability and expandability concerns
- Implementation complexities and legacy technical blind spots

Feasibility study as a part of Pre-development



Image Source: https://content.altexsoft.com/media/2022/01/word-image-2.jpeg.webp

Evaluate the Overall Viability of the Project

However, only a technology feasibility study is not enough. The TELOS framework for software feasibility analysis is designed to assess the overall viability of a technology upgrade. Analyzing these may improve the AI augmentation and future experience. It can also help assess AI integration from multiple perspectives. All stakeholders, L&D teams, technical experts, CXOs, and team managers, get to take a look at how well the AI tool aligns with the organization's granular requirements.

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The TELOS Framework in 5 Simple Questions

01. Technical Feasibility is the project technically possible?

02. Economic Feasibility

Does the cost of AI integration align with learning and technology investments and can it meet the ROI expectations?

03. Legal (Compliance) Feasibility

Does the AI solution ensure DEI-Web access, GDPR, SCORM, xAPI, FERPS, IDEA and the US NETP requirements for mass adoption?

04. Operational Feasibility

How hard is the additional tool to maintain and manage? Will it scale with business requirements?

05. Scheduling Feasibility

Can the inregration keep up with business timelines to prepare the team for required skills and equip them with qdequate knowledge while maintaining business contiuity?

Conduct Pilot Tests

First of all, assemble an internal AI integration team that includes members from all relevant functions. Then, using an initial integration with minimum features, gauge how the complete interaction will proceed and the outcomes post execution. **Technology:** Assess the technology by conducting pilot tests to ensure that once the process begins, there will be minimal downtime and the integration process will remain frictionless. One of the common reasons for the failure of AI extension is not performing sufficient testing and validation encompassing all applicable use cases.

Customization: Relying on a blackbox AI model may seem cost-effective in the short term, but it could lead to scalability inefficiencies and may miss addressing some of the requirements of the learning solution's AI upgrade. Verify the technology solution and customize its interface to your brand seamlessly, with no or low code requirements.

Data Security: Since data is money in business today, conduct a thorough data security and learner privacy analysis. Ensure that the organization's data network can be protected from vulnerabilities during the data migration and technology integration processes.

"Data is becoming the raw material of business."

- Craig Mundie, Senior Advisor at Microsoft

Performance: The team can also assess how the pilot project is performing over a few days or weeks, and share feedback with the technology partner to expedite and improve the technology upgrade. Assess performance and compare it with expectations. Fine-tune the pilot and use the insights to:

Weigh Your Support Requirements

Technology transition requires time and effort and there can be glitches due to internal and external technology or process differences. This may include technical and training support. Make sure that your AI technology provider consistently supports you through the lifecycle of the solution and future upgrades to remain relevant in a rapidly changing world. This eliminates the need and expense to internally create and manage a team of technology experts to handle any new maintenance or upgrade requirements.

Here's how an organization can prepare a comparison matrix to evaluate all available tools for artificial intelligence augmentation for employee training:

Metric	Option 1	Option 2	Option 3
Business alignment			
Performance			
Scalability			
Expandability			
Customizability			
Support available			
Compliance readiness			
Data and network security			
Ease of implementation			
Ease of maintenance			
Time to completion			
Cost efficacy			
Potential risks			

Initiate the Technology Transition

After assessing the viability and practical implications of the Al integration, start with the process by integrating APIs and plugins across LMS and business touchpoints and interfaces. The best technology partner will provide an implementation team to ensure a seamless transition. Create a single line of communication to streamline the process. The internal teams can create strong data pipelines to train the ML subsystem, while the partner team integrates the technology.

Al capability of any system can only mature as fast as data management does. Therefore, building a roadmap for parallel growth of the two is the minimal requirement.

To expedite the transition, verify data availability and define the use cases to test the accuracy of the AI transformation. Initiate data migration to the cloud. Centralization of all learning resources and machine learning databases expedites learning delivery, content curation, and assessment.

Validate your requirements at every step and ensure that the improvements in course design, learning management, analytics, and user experience are apparent and testable.

Overcome Potential Compatibility Issues

Al transformation requires unique expertise and off-the-shelf methodologies don't usually suffice. The chosen technology partner can maximize the use of legacy data and technology while their proprietary solutions leverage Al optimally.

They will help:

- Manage network access by replacing closed firewalls with open doors for cloud-based data management.
- Maintain and improve legacy data quality, accessibility, and usability for the AI system.
- Workaround any complications that arise during the transformation.

Partnering with an experienced technology provider ensures a tailored transition process, in the best interest of your business continuity and expedited ROI extraction from the transformation. They take care of all transformation-related technology and data management challenges.



Overcoming Organizational Barriers

An organization faces three-dimensional challenges during any technology transformation. These include technology, change, and talent.

Exhibit 2 - Key Barriers That Incumbents Face when Adopting AI



Source: BCG and BCG Henderson Institute 2022 survey of 600 industry incumbents in six countries (China, France Germany,India,UK and US).

While the AI technology provider will take care of the AI transformation of the employee LMS and technology change; organizational challenges are best met internally.

Here are a few challenges and ways to address them.

Gaining Stakeholder Buy-In and Support

While L&D teams recognize learning requirements and team managers back them up, getting stakeholder and financial approvals can be challenging. The best way to go about it is to prove the benefits of integrating AI with the LMS. For instance, studies have highlighted the benefits companies that have already begun investing in AI for L&D are reaping.



Additionally, making stakeholders aware of the multifaceted benefits of AI integration on the overall business operations can help expand L&D and AI adoption budgets.

Addressing Employee Concerns and Providing Training

Employee pushback is another critical challenge to be addressed. Once, the stakeholder approval is received, making employees available for the upcoming transition and preparing them for the same can be instrumental in eliminating resistance to change. There can be inhibitions due to fear of the unknown, or too much comfort with the existing processes.

A great idea is to take their inputs regarding the improvements and ask for suggestions in the skill-building and learning process. Another way to manage employee anxiety is to start introducing the training and assessment modifications gradually and in parallel with the LMS transformation. Including core team members in the pilot tests can also add value when the AI transformation is executed at a larger scale. An early heads-up gets half the job done.

Using a top-down approach, so that leadership can demonstrate the benefits of AI-powered learning, can also motivate employees to leverage the capabilities of AI.



Establishing a Culture of AI Adoption and Innovation

Organizations worldwide are adopting AI across business processes. Introducing AI augmentation with simple process automation to assist decision-making can build a positive attitude toward the technology. Building an organization-wide culture of technology adoption and innovation in general makes adapting to change easier. It inculcates a habit of staying ahead of the competition and on top of market trends.



Image Source: https://www.ibm.com/downloads/cas/GVAGA3JP

Al adoption ensures relevance and industry leadership for the long term. It drives initiatives for growth and expansion forward. According to a study by IBM, many companies have experienced multiple benefits of using Al to automate IT operations, and business and network processes.

What benefits are organizations gaining from using AI to automate IT, business or network processes?

54%	Cost savings and efficiencies
53%	Improvements in IT or network performance
48%	Better experiences for our customers
46 %	Employees are freed to focus on higher value
41 %	Delivering and scaling new services more quickly
39%	Mitigating labor and skills shortages
33%	Reduction in outages
28%	Reduction in data center emissions

Image Source: https://www.ibm.com/downloads/cas/GVAGA3JP

A key aspect is to enable employees to appreciate and trust AI. In fact, 84% of IT professionals believe the ability to clearly state how the decision-making capabilities of the technology have benefitted the team or the organization reasserts the importance of AI. This includes employing AI-mature strategies and practices. Maintaining transparency in the techniques of data usage and security is also of great importance.

Implementing AI-Driven Features in LMS

Al engagement in L&D increases the velocity of information processing and enhances understanding to improve productivity and business outcome achievement.



Image Source: https://blog.infodiagram.com/wp-content/uploads/2018/10/

Integrating AI into an LMS can be challenging for small or medium-sized businesses. This is where leveraging the expertise of professional AI technology facilitators can streamline and expedite the process while saving costs and optimizing resource utilization. The professional AI team and your own AI integration team will work together to implement the solution seamlessly, tailored to the organization's needs.

Here's a step-by-step guide to implementing AI transformation for a learning solution.

Step 1: Planning

Develop a comprehensive integration plan and timeline in collaboration with the AI transformation provider. Essentially, build a company-wide transition roadmap. This plan should consider the requirements gathered via business analysis and the implementation details available in the comparison matrix.

Step 2: Prepare the Data

Before ML solutions can be put to use, data must be prepared for accessibility and easy conversion to gather insights. This involves collecting, cleaning, and structuring the data. And if it is still sitting on local servers, then migrating the data to a cloud-based DBMS. Segregate the data as training data and testing data for Al automation models.

Step 3: Model Selection

Based on the business requirements and suggestions from the internal team and the AI consultants, choose an AI model by comparing the strengths and weaknesses of each available option. Consider factors such as speed, accuracy, and interoperability.

Step 4: Model Training

After selecting the model, integrate it with the database to train the AI system. Use optimized and customized algorithms to meet the requirements as completely as possible.



Step 5: Model Evaluation

Once the model has been trained, it is time to evaluate it with test data. This involves providing both test and simulated data as input and assessing the output for its quality, and accuracy.

Step 6: Customization

Once the machine learning model passes the tests, it is ready for customization. The model is enriched with specific business and learning objectives for personalization requirements. Simultaneously, user interfaces, security set-ups, and analytics sub-systems are aligned with the objectives of the AI transformation of the LMS.

Step 7: Deployment

The final stage is using API-based plugins to integrate AI capabilities with the existing LMS. This requires careful technology upgrades to minimize downtime.

Step 8: Training

The next step is to train the trainers and employees to make the most of the revamped LMS. Additionally, educating all stakeholders to maintain data continuity and extract relevant insights from the LMS can be of great help for business growth.



Step 9: Monitoring

The AI model continues to evolve with the dynamic business ecosystem. However, consistently monitoring the system and assessing learning metrics ensure high-quality employee education. Businesses can continue to iteratively add new features and upgrade the AI system by developing long-term maintenance and evolution protocols. The best AI providers also offer a dedicated support team for ongoing maintenance.

Recommendation for desired qualities of AI tools and systems in education



Image Source: https://www2.ed.gov/documents/ai-report/ai-report.pdf

Umbrella Activities

Certain activities need to be performed throughout the AI technology transformation to ensure the best results. These are called umbrella activities. A few actionables from the Office of Education Technology to be undertaken Certain activities need to be performed throughout the AI technology transformation to ensure the best results. These are called umbrella activities. A few actionables from the Office of Education Technology to be undertaken throughout the implementation of AI-driven learning solution enhancement are:

- Aligning AI models to a shared vision for business and individual goals. Keeping in mind the needs of all stakeholders and learners builds a sense of being valued among employees. Also keep the business vision, trainee goals and schedule planning at the fore.
- Design AI tools and learning solutions with modern learning principles. Harnessing the complete potential of AI involves leveraging the technology at each stage of the learning process, including learning planning, design, delivery, assessment, feedback, and improvement.
- Prioritize strengthening trust among educators and employees that AI integration is essential for remaining relevant rather than for doing away with manpower. Instill confidence and safety for the AI-augmentation goal to enhance skill and knowledge capacity in the company.

Seven essemtials for achieving trustworthy AI

Trustworthy AI should respect all applicable laws and regulations, as well as a series of requirements: specific assessment lists aim to help verify the application to each of the key requirements:

01. Human agency and oversight:

Al systems should enable equitable societies by supporting human agency and fundamental rights, and not decrease, limit or misguide human autonomy

02. Robustness and safety:

Trustworthy AI requires algorithms to be secure, reliable and robust enough to deal with errors or inconsistencies during all life cycle phases of AI systems

03. Privacy and data governance:

Citizens should have full control over their own data. while data concerning them will not be used to harm or discriminate against them

04. Transparency:

The traceability of AI systems should be ensured

05. Diversity, non-discrimination and fairness:

Al systems should be used to enhance positive social change and enhance sustanability and ecological responsibility

06. Societal and environmental wellbeing:

Al Systems should be used to enhance positive social change and enhance sustainability and ecological responsibility

07. Accountability:

Mechanisms should be put in place to ensure responsibility and accountability for AI systems and their outcomes An L&D imperative and often overlooked part is involving trainers and educators in the AI transformation and decision making process. Disengaging educators from learning design and course development is a common mistake.

As AI models are increasingly becoming context-sensitive,

Sensuring their safety, effectiveness, and trustworthiness is important before employing and updating learning models.

The organization must develop education-specific guidelines and guardrails. The L&D and technical teams

Should remain in sync with local and national updates on Al regulations and education and learning management policies.

Emphasize humans in the loop. The AI vision should look more like an electric bike and less like a robo-vacuum. That

Means humans can drive, control, and navigate through the learning design and development process and not be excluded from it.

Listening session attendes prioritized involving practitioners, research, and



Image Source: https://www2.ed.gov/documents/ai-report/ai-report.pdf

Measuring Success and ROI

The success of any enhancement in learning programs is measured by how well it engages learners and how much they benefit from it. In the corporate learning domain, it is visible as:

- Employees produce better and faster results.
- Improved retention of knowledge among trainees.
- Learners can apply their acquired knowledge and skills in their work functions.
- Better opportunities to provide feedback and reinforce learning.

However, clearly defining and measuring the benefits is critical for a business to evaluate the true ROI.



Setting Key Performance Indicators (KPIs) for AI-Enhanced LMS

Whether the AI-enhanced training program is effective or not boils down to defining and measuring its KPIs.



Here are the top KPIs to assess the efficacy of a refurbished training plan:

Trainee Attendance

Effective training starts with the participation of learners. To gauge the efficacy of a training program, calculate training attendance using:

- ✓ Total number of signups/allocations for a module
- ✓ Number of attendees for each course
- ✓ Time spent by trainees on each course
- ✓ Total attendance per module and per course for each participant

Training Completion Rate

Learning is a process that is complete only after the assessment of knowledge or skill acquisition. Determining whether and to what extent employees have completed training can be instrumental in driving efficiency. This also helps discover if any mandatory training is being missed that may translate into poor quality of work, missed timelines, or non-compliance.

Activity Rate or Pass Percentage

Al-powered assessments generate immediate results. Assessing how many employees are receiving minimum acceptable scores and comparing their scores against the average scores provides insight into the effectiveness of a learning program. Breaking it down further to areas of good and poor performance, time taken, whether the training was imparted by an instructor or virtual assistant, etc., can further offer insights into areas of improvement.

Time to Proficiency

Imparting any skill or application of knowledge acquired may have an application curve. Assessing the time taken by learners to translate the learning into practice can help gauge the absorption tendencies of the training module. Here too, it is a good idea to compare individual and average scores across employee experience levels.

Job Impact

Business impact is the most valuable metric for evaluating the efficacy of an AI upgrade to the training program. It requires choosing specific metrics to serve as trailblazers of employee performance.

These include:

- 🕑 Customer satisfaction ratings
- ⊘ Average deal sizes
- ✓ Number of customer interactions per day
- 🔗 The ratio of deals closed to missed
- ✓ The number of follow-ups conducted post-sales

These can be customized according to your business domain and specific job roles.

Analyzing Data and User Feedback to Measure Impact

Even if employees are attending and completing training modules regularly, it does not automatically mean they're satisfied with the training imparted or the learning experience. Evaluating learner satisfaction is essential to foster a culture of continued and self-driven learning. Post-training surveys can help understand if learners connect with the knowledge imparted and are able to ascertain ways to apply the knowledge to specific tasks.



Feedback can be taken immediately after training or assessment, and even after trainees have had some time to put the training to use. High learning satisfaction translates to improved engagement, retention, and productivity.

Calculating the ROI of AI Integration on Training Effectiveness

The ROI of any training can be observed in terms of:

- Business results, such as conversion rates, and customer satisfaction
- Enhanced quick thinking among employees
- Higher rate of innovation
- Improved quality of work and performance efficiency among employees

Business outcomes provide the strongest evidence of a training program's efficacy.

How to Get the Required Data to Calculate Training Efficacy?

Look at the following to get training metrics:

- Solution The LMS: It records the course completion rates, drop-out rates, engagement levels, and pass percentages.
- Surveys: Use surveys to get feedback and qualitative data.
- Focus Groups: Conduct open and honest conversations among focus groups, such as team managers, employees, L&D professionals, and trainees.

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- Solution Section 2014 Content of the section of the

Steps to Calculate the ROI

- ✓ Choose the training goals for a training program or course
- ✓ Pick the most suitable training metrics
- ⊘ Pick employees to be trained
- ✓ Impart the training
- Solution Assess employees immediately after training, and their work after a predefined duration after the training is completed.

Addressing Ethical Considerations

While AI enhancement is bound to redefine corporate education, ensuring diversity, equity, and inclusivity are essential for best results. Certain other ethical considerations must also be managed to satiate the modern learner.

The goals of ethical considerations for employee education are:

- 🔗 Protect human rights and dignity
- ♂ Ensure quality and effectiveness of learning
- 𝔄 Foster accessibility, and inclusion

UNESCO considers ethical considerations crucial for learning to benefit from AI implementation. Through 4 use cases, the organization highlights 4 key considerations for the ethical use of the technology. Although the organization focuses on young learners, most considerations also apply to adult trainees.

1. Impact on Creativity

Creativity allows humans to use their imagination for innovation. It is a critical asset that distinguishes humans from other species.

With the proliferation of Gen AI, assessing the impact and minimizing creativity deterioration is critical. Additionally, building capacity and adequate remuneration for human and AI creations is vital.

2. Eliminating Biases

ML models are trained on data sets. This means any bias within the data set or limitations of diversity in the data set may lead to induced prejudice in the model. Assessing the societal and cultural ramifications of adopting an AI model should also be considered carefully.

This requires carefully picking the data to ensure diversity. Plus, designing algorithms that can identify data gaps or lack of diversity will produce better outcomes and lead to more trust among users. Leveraging multilingual and culture-sensitized models can help maintain the fairness of access and opportunity and prevent social injustice.

3. Ensuring Compliance

Ensuring compliance with regulatory and ethical standards is essential for AI-powered content generation and simulations. This requires ensuring that AI models are adaptive and designed to update their suggestions and creations based on regulatory changes.

This requires maintaining decision-making transparency, surveillance of data gathering and training mechanisms, and including human rights and fairness in the AI model. In the digital learning domain, there are several industry standards and regulations, such as SCORM, WCAG, IDEA, etc., that need to be complied with at every stage, from content generation and design to distribution.

4. Fostering an Al-Ready Ecosystem

UNESCO uses the example of an autonomous car to demonstrate the need for an effective ecosystem. For instance, a self-driving car will need well-functioning traffic lights, a safe driving environment, and enough sensors and filters to get through all kinds of road situations and terrains.



In addition to the above, companies may also want to consider the following.

Data Protection and Privacy

Guidelines, such as FERPA, COPPA and GDPR, have been established to ensure data privacy for all users. While Al models collect and use massive datasets, maintaining the transparency of use and getting consent are prerequisites to ensuring regulatory compliance. Additionally, bolstering network and system security is critical to preventing unauthorized access or misuse of learning and performance data of employees.

Balancing Learner Autonomy and Agency

With greater personalization and learner-driven education practices, it is essential to ensure that trainees do not misuse machine learning algorithms. For instance, they could apply slow down education delivery or simplify assessments by projecting themselves as slow learners.

Adequate team manager intervention and building high-value teams are essential to ensuring that the learning goals are achieved. Multiple user access levels with automated rights management and regular learning progress reports are helpful for this.

All these can be ensured with a combination of human oversight, accompanied by automated and manual technology audits.

Embracing Ongoing Improvement and Innovation

The artificial intelligence market is forecasted to grow 20x by 2023. The scale of growth highlights the magnitude at which the technology is evolving. The 4th Industrial Revolution is set to demonstrate the applications of technology that have not yet even been imagined. Companies need to embrace innovation to unlock the full potential of their employees with the help of AI-powered learning solutions.



Encouraging Continuous Feedback and User Input

With analytics becoming increasingly powerful and employees valuing learning and growth opportunities, smile sheets are not enough to gauge either their satisfaction or LMS efficacy. Businesses are required to identify and leverage fault finders via technology to flag inefficiencies, inaccuracies, and other shortcomings of a training program.

This requires taking continuous feedback for and from employees. To elaborate, after training is conducted, consistent monitoring of how well the knowledge and skills are retained can provide feedback to the employee and L&D teams. Employee performance and their takeaways from the learning session can work as feedback for the LMS.

The user interface governs the user experience, and a lot of feedback could be about this part. Although important, it may not be sufficient to effectively improve the training program. Leveraging AI tools to design targeted quantitative and quantitative feedback forms for employees and their team managers can be helpful. NLP-powered analytics tools scan the filled forms and deliver reports with insights on required improvements in the LMS.

Taking trained' backgrounds, preferences, and experiences into account can help personalize and refine learning paths to meet personalization and inclusion goals.

Monitoring AI Performance and Making Iterative Enhancements

Getting feedback is only beneficial if it is assessed and the insights gained are effectively utilized to enhance the training program. These may help align the program better to learner needs and learning styles, job roles, and business goals. The below approach can be useful to extract maximum value from user feedback:



Analyze Feedback Data: The analysis helps reveal the strengths and weaknesses of the training resources, methods, and curriculum.



Prioritize Feedback Actions: Use analytic insights to improve training programs by prioritizing insights according to relevance, urgency, and business impact.

(Light)

Implement Feedback Changes: Start implementing feedback-based changes from the highest priority to the lowest. While doing so, ensure training continuity. Allow all stakeholders to review the changes and users to validate if their expectations are met.



Test Feedback Results: For each iteration of the learning program enhancement, start with a pilot test and then propagate the changes further across the learning space.

B

Review Feedback Outcomes: This is the final step to measure whether the feedback metrics helped improve the learning process. It estimates the extent of translation of education to competency or productivity.

Staying Abreast of Evolving Al Technologies and Opportunities

Did you know there are speculations that even human-level intelligence can be simulated via advanced thinking training models? About 50% of AI experts believe that by 2061, super AI will have achieved 50% maturity. Most technology forecasters have shortened their target timelines over the last few years. This speaks volumes about the need to catch up with the speed of AI evolution to stay ahead of the competition and keep LMSs at the leading edge of innovation. Additionally, the transformative impact that AI technology will have across the world is deepening with every forecast.

A study by Deloitte revealed that 89% of executives believe that skills are becoming the criteria for defining work, developing talent, managing careers, and valuing employees.

Due to the penetration of technology, workplaces and job roles are transforming rapidly. Work profiles and recruitment are transitioning from focusing on mere titles to skillsets. Organizations are focused on making operations more scalable, manageable, and equitable to sustain and stay relevant in the rapidly changing business landscape. This means people decisions will be taken based on skills and their fluidity instead of job role titles in the organization. Further, with predictive analytics gaining higher accuracy, leadership pipelines and expansion plans will drive people decisions. This means the role of AI-powered LMSs will deepen as it gets integrated with core business operations and growth verticals as they become more "skill-centric."

Organizations and their L&D teams must remain prepared to tap into the potential of artificial intelligence at the earliest. As collaborative and immersive technologies evolve and virtual and real worlds converge, keeping pace with technology and training (or should we say skill?) enhancement can become a differentiator for organizations to attract and retain employees. The Deloitte study also found that 77% of business and HR executives say flexibly moving skills across roles is critical to navigating future disruptions. They also believe that work and employee education need to become more agile to address market changes. Al augmentation is key to fostering dynamism to meet market and skill requirements in real-time.



Al Catalyzing the Evolution of Corporate Learning

Intelligent platforms are revolutionizing how organizations educate and engage learners. All is paving the way for a more efficient, effective and inclusive education system with the help of analytics, personalization, and automation.

Here's a look at the various ways in which innovations in space-age technology are transforming teaching and learning experiences.

27% of organizations are employing AI to bridge existing skill gap.

Celebrating Success Stories and Learner Achievements

It comes as no surprise that the IT industry is the first and fastest adopter of AI-powered automation across business functions. The industry leverages the technology for diverse purposes, team upskilling and reskilling being one of the most important. The below image demonstrates how IT and other organizations apply the transformative technology to address labor skill shortage:



Image Source: https://www.ibm.com/downloads/cas/GVAGA3JP

Integra has had the honor of facilitating AI technology transformation for a leading educational institution serving the IT sector. This was possible with the help of strategic AI integration to analyze employee data, skill levels, and performance to provide personalized training recommendations

The esteemed client had the following goals:

- ✓ Offer personalized experiences
- Engage learners with conversational and interactive elements
- ✓ Foster a culture of adaptive and continued learning
- ✓ Deliver real-time feedback
- Leverage performance analytics to assess learner progress and refine learning materials.

Integra customized its AI-powered virtual tutor, SkillPilot, for the educational institution. The solution enabled the client to offer full-cycle digital learning solutions that helped achieve desired learning outcomes while keeping employees engaged and motivated. The virtual tutor dynamically recognized individual learning needs to define learning paths. In addition, NLP-based query resolution offered friction-free learning experiences.



Experts from Integra customized SkillPilot's AI-Powered Virtual Tutor to meet specific requirements of the eLearning provider to facilitate:

- Leveraging employee data and business goals to define individualized learning journeys.
- Promoting self-driven learning across platforms with gaming and interactive elements to enhance engagement.

- Oelivering targeted learning to enhance skill and knowledge acquisition in line with learners' job roles.
- Providing real-time feedback with recommendations for necessary interventions and learning outcome achievement.
- ✓ Optimizing resource utilization to boost productivity.

Business outcomes provide the strongest evidence of a training program's efficacy.

With Integra's ongoing support for the technology transition and personnel training, the client achieved significant quantifiable outcomes:

30%

Increaes in employee enagement 30% 25% Reduction in response time retention

20%

Reduction in training and skill acquistion time 15% Performance enhancement acroos kev

competency

areas



Value of Al Integration in LMSs for Organizational Growth

Today, 61% of companies are developing data fabric architecture to make the most of data-dependent AI technology. Also, the number of companies that have already employed data fabric-based AI enhancements is 283% higher than those who have not. Others are still working on designing simpler data approaches to enhance data accessibility (in terms of quality, quantity, and speed) for AI upgrades of their LMS and other processes.

Effectively trained employees have a better understanding of their work and the importance of continuously enhancing their skill sets. This makes them better teammates and employees overall. The convergence of AI and learning holds tremendous promise and is ushering corporate education into an era of personalized, autonomous, future-ready, and quantifiable learning.

It is empowering businesses to:

- Sen Al and NLP.
- Enhance learning delivery by highlighting learning preferences, providing better and automated assessments, and personalized learning journeys.
- Foster a culture of continuous learning using predictive and analytical capabilities for the LMS and employee skillsets.
- Soost learner engagement and motivation with interactive experiences using immersive and gamified courses and assessments.

- Eliminate dependency on human instructors using Gen Al-powered virtual tutors that facilitate 24x7 user-driven learning.
- Ease translation and localization to cater to the needs of a global workforce.
- Solution Foster inclusive and equitable learning with differentiated instruction.
- Enable continuous improvements and quick adaptability to rapidly changing market needs.
- Facilitate the assessment of learning efficacy to enhance learning outcomes.

However, with all these benefits, ethical considerations of Al transformation of the LMS are critical, such as:

- Solution Ensuring transparency regarding the extraction and use of user data.
- Maintaining the security of the organization's network and user data privacy.
- Focusing on fair and unbiased education delivery and assessment.

To harness AI's full potential, partner with an experienced tech provider. Their AI expertise not only accelerates adoption but also overcomes training hurdles, leading to dynamic learning environments and enhanced business outcomes, fostering innovation in the AI landscape.



Integra is a trusted partner in Business Process and Technology Services for many leading organizations worldwide. With a focus on providing end-to-end solutions for digital content, learning services, and content workflows, we help our customers realize transformational business value.

Awards



Certifications



For more information, please visit *integranxt.com*



