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AI Smarts:
Don't Freak Out, Geek Out.

Artificial intelligence is transforming jobs and training. Continuous learning and career management are key to future-proofing in the new era.

Reality checks, mindsets and strategies for: IT, Cybersecurity, Audit, enterprises, higher education, training providers and resellers, Learning & Development, Human Resources, Executive Leadership

1. Your new make-or-break mission.

Everyday AI has arrived. Guess who'll have a crucial role in ensuring its success?

In 2023, ChatGPT, DALL·E and other generative artificial intelligence tools burst into mainstream business and personal use. They joined smart service chatbots, web site recommenders, language translators, voice transcribers, personal assistants, navigators and other AI-driven applications developed over the last decade.

AI's continued growth looks inevitable (see section 2). Every day, smart capabilities are infused into more workflows and applications. The technology's ascent adds new gravity to the already weighty responsibilities of enterprises, HR and L&D, educators, training providers and resellers, and individual learners.

Why? Business success with AI tools, apps and capabilities will depend on smartly managing the massive training, upskilling and reskilling of AI builders and users that widespread adoption of intelligent technologies will require.

What you must do.

Reaping the full benefits of AI and future-proofing for the new era means meeting critical new challenges:

- Gaining acceptance and understanding of AI and where it can provide benefits
- Identifying key skills and effectively training for today and tomorrow
- Developing, scaling and managing new capabilities in training and career life-cycle management
- Vetting and partnering with trustworthy educational and tool providers.

To thrive, training organizations and providers must prioritize building modern, effective, scalable AI education programs. Both groups will play pivotal parts. First, in developing and providing the talent that can put intelligent technology to work advancing meaningful business goals. Second, helping smartly manage skills portfolios and careers to continue the impact and relevance of workforces in a technology landscape evolving at superhuman speed.

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It seems like a lot, but don't freak out! Instead of worrying or avoiding AI, it's smarter to learn as much as you can about this game-changing new partner, and make it work for you. Geek out! Lean into the challenge – before it leans into you!

Help starts here.

This briefing will give you a short reality check on AI adoption and its impact on jobs, training and workforce development programs. We'll draw on the best industry research and our expert analysis to cut through the current hype and fear.

The facts, understanding, mindsets and strategies will help you tackle the crucial work ahead. It won't be the last word, but we believe you'll find it a valuable grounding. Let's start with a quick, fun check of your current attitudes about AI.

Pop quiz

Which phrase (s) below best completes the statement:

"AI is …?"
a) A real thing, but way overhyped.

b) A cool "co-pilot" that can supercharge productivity, profitability, and higher functioning.

c) Terrifying technology that will disrupt, learn, and eventually steal my job and many others.

d) The foundation of an exciting new era of digital transformation.

e) A great opportunity to rebalance our workforce by closing skill and hiring gaps and maybe reducing headcount.

f) A huge training challenge and business opportunity.

g) An important first step towards transhumanism, Kraftwerk human robots, or the "The Matrix", in which intelligent systems enslave and drain humans in a grid that powers "reality".

h) All the above.

i) None of the above. I/we are in denial and want to hide.

What are we talking about?

Key terms used in this briefing

Artificial Intelligence: Often spoken of as a single thing, AI is actually a diverse cluster of technologies, approaches and tools: Machine learning, deep learning, neural networks, large language models, computer vision, robotics process automation (RPA), self-driving cars and more. AI has powerful abilities to collect, analyze, and quickly act on huge amounts of data or automate routine tasks.

AI models and applications: A set of algorithms and mathematical equations used to train a computer to recognize patterns, analyze data, and make decisions without explicit programming.

AI tools: AI tools are software applications, platforms or services that use AI techniques to perform specific tasks, automate processes, augment human decision-making and speed or improve worker productivity. They include general purpose tools like generative AI built on Large Language Models (LLMs) as well as speciality tools like CoPilot for computer programming.

AI capabilities: AI added to software, process, or workflow to make it smarter, faster, more automated, deliver better information and decisions.

AI Infrastructure: AI infrastructure refers to the technology stack hardware and software) needed to build, test, train, and deploy AI-powered apps. It includes specialized databases, servers, processors, cloud computing, networks, frameworks, environments and more.

2. Reality check: Like it or not, AI is here to stay.

AI is not a passing fad. Or just another over-hyped miracle technology. Consider:

Open AI's ChatGPT enjoyed the fastest adoption of any technology in history. The LLM tool reached a record-breaking 100 million active users in just two months.[1]

An estimated 350,000 AI projects are underway, according to Stanford University.[2]

Companies worldwide will spend $154 billion on AI in 2023, $300 billion by 2026.[3]

It's early, but already clear:

75%
of organizations adopting or planning AI[4]
World Economic Forum

Businesses everywhere are stoked.

Industry surveys show widespread enthusiasm for AI as a strategic, essential set of technologies. Investment and adoption span industries, geographies, job titles and seniorities. Many view AI's ability to analyze and process vast amounts of data, identify patterns and make better predictions as key to improved competitiveness, innovation, lower labor costs and higher productivity.

22%
of workers fear job loss from AI[5]
Gallup

More workers express Fear of Being Obsoleted (FOBO).

Unsurprisingly, people worrying that AI might soon take their job hit a record 22% in 2023, up 7% since last year, a Gallup poll reports[6]. A high profile example: The Hollywood Writers strike, where AI use in creative and production was a key issue. In the survey, concerns were highest among college graduates (up 12 points), people aged 18-34 (up 11 points) and households with incomes under $100,000 (up 10 points). Men and women voiced equal anxiety. Other polls[7] reflect similar dread, especially around generative AI.

92%
of developers use AI tools[8]
GitHub Survey

Despite dangers, tech workers have eagerly adopted AI productivity tools.

GitHub's Co Pilot, ChatGPT, Tabnine and others are widely used to write and debug code. A Stack Overflow survey[9] of 90,000 developers found 80% of all respondents using or planning to use AI tools this year. (Interestingly, people learning to code are heavier users than professional developers). According to a GitHub study, developers using its AI tools reported working faster (90 %), more productively (88%) and feeling more fulfilled (74%)[10].

AI is also monitoring and optimizing infrastructure and security, handling data collection, preparation, analysis and training and more. A Pew study found a third of IT workers say AI will help their careers more than hurt[11].

Bottom line: The genie is out of the bottle. AI is here and not going away.

3. Jobs: More disruption than destruction?

Nobody, of course, has a crystal ball showing how AI will transform work, careers, companies and industries over the long term. Many jobs, especially in knowledge work, are already changing. Some will disappear. Interesting new (and lucrative) roles like Prompt Engineer will emerge. The impact promises to be widespread.

40% ⭕
working hours potentially impacted by generative AI and LLMs[12]
Accenture

Unlike past technology revolutions, AI will heavily affect white-collar workers. Skilled workers in IT, HR and other knowledge professions will take the heaviest losses and see the biggest gains, predicts consulting giant McKinsey[13]. A Pew analysis says college grads, women, Asians, and high earners face greatest exposure[14].

40% ⭕
### increase in demand for AI and ML specialists by 2027[15]
World Economic Forum

Demand will continue to surge for AI, ML, and Big Data roles. Despite reports of modest hiring slowdowns in 2023 versus 2022, the need for trained and qualified professionals is expected to keep growing. The WEF forecasts a 40% jump in the number of AI and machine learning specialists by 2027, along with a 30-35% rise in demand for roles such as data analysts and scientists or big

data specialists, and a 31% increase for information security analysts[16].

It's not a "someday" thing. A scan of job listings today reveals thousands of high-paying openings for ML engineers, AI data scientists, data architects and engineers, data visualizations specialists and many others. Shortages of each are expected to persist.

17,322
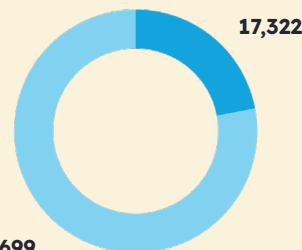
48,699

Top states for AI job postings

	SEP	vs.	AUG
California	2,883		-435
Texas	1,304		+111
New York	1,030		+19
Massachusetts	944		+78
Virginia	924		+55

Source: CompTIA analysis of Lightcast job posting data[17]

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Many analysts believe more jobs will be created than destroyed.
But projections vary. Over the next few years, the World Economic Forum predicts AI will obsolete 2 million jobs and create 2.6 million – a net gain of 600,000[18]. Nearly half (49%) of global enterprises surveyed expect adopting AI to create jobs, the organization found, more than double the 23% who expect it to displace jobs. As the technology continues to improve, some organizations will inevitably use AI to reduce headcounts. In the long term, Goldman Sachs estimates 300 million jobs[19] could be lost or "diminished" by AI. Whatever the actual figure, it's likely to be large.

Jobs likeliest to be eliminated[20] most quickly include routine, lower-skill work: service reps, cashiers, bank tellers, clerks, admins, bookkeepers, etc. Other reports[21] predict significant losses in PR, marketing, communications, media, law, finance[22] and other white-collar areas. A common thread: tasks and roles that can leverage AI's awesome abilities to collect, analyze, and quickly act and make predictions on huge amounts of data or automate routine tasks.

Here's one of the most detailed rankings[23] of at-risk positions.

New, augmented and transformed positions will emerge.
AI Engineers[24] are advanced software developers who create intelligent algorithms capable of learning, analyzing and predicting future events. AI/UX designers[25] have unique skills to create intuitive and seamless interactions between humans and smart systems. AI automation and robotics specialists engineer and implement intelligent systems across industries. Prompt engineers[26] specialize in posing chat queries that elicit the most useful results. AI trainers fine-tune systems to improve performance and accuracy. AI business strategists identify opportunities to leverage smart technology and develop approaches for its successful adoption. AI ethicists[27] ensure safe, responsible deployment by addressing algorithmic bias, data privacy and transparency. Many new roles have yet to be invented.

56%
Entry-level jobs eliminated[28]
edX AI survey of CEOs

Beginners will have to climb higher on the skills ladder. Generative AI offers an excellent way to learn basics in many fields. So it's ironic that novices are highly vulnerable to the "AI-ification" of workplaces. That's because AI is increasingly proficient at handling lower-skilled coding, data entry and analysis, writing, research and more, reducing the need for entry-level workers. The writing is already on the wall: Many lower-level, routine IT jobs such as data entry and clerks are quickly becoming obsoleted by AI. It's likely many more junior programmer and data analysts jobs will be negatively impacted by growing adoption. It's a powerful impetus for building advanced skill sets.

Gen Z workers are countering high risk by embracing AI.
Younger workers aren't waiting to get shut out or picked off. According to edX[29], they're the most enthusiastic – and crafty – group embracing AI tools. Gen Z is secretly using generative AI to get ahead of coworkers (62%), work multiple full time jobs (61%), do part time work for another company (57%), and secretly claiming AI work as their own (55%). Many organizations will rightly see this activity as evidence of the need for new AI policies and ethics training.

Bottom line: AI is expected to augment, transform but not trash many knowledge jobs – at least for now. Skilled humans will continue to play a key role in the oversight of intelligent systems – especially generative AI delivering incorrect answers or fabricated answers ("hallucinations") for the foreseeable future.

4. Prepare for continuous learning and career management.

It should be clear: Widespread embrace of AI means that a LOT of people will need training. Technical and non-technical workers alike must be skilled, upskilled and reskilled on how to use, build and operate AI-powered systems and tools.

Here are some realities pushing AI training into the spotlight:

60+%
Workers needing to be retrained for AI[30]
McKinsey

For both generative AI and "traditional" enterprise AI, continuous learning will be required by individuals and organizations to keep up with emerging technologies and best practices in the fast-evolving sphere. Workers will require training in two board, sometimes overlapping areas:
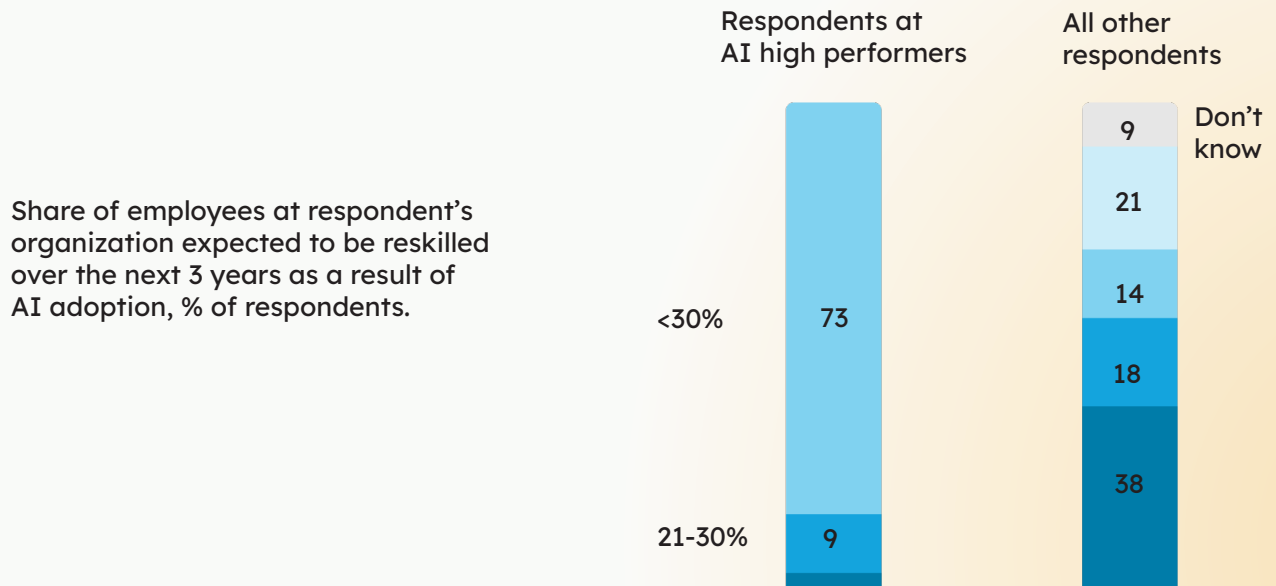
General skills.
Everyday, non-tech workers will need to know how to use AI-augmented tools, systems and software products to do their jobs better and faster. Basic competency will become table stakes, just like office apps a generation earlier. Examples: ChatGPT, Google Suite, Excel etc.

Technical skills.
Needed to design, build, operate AI models, systems, applications and workflows infused with AI. The huge category includes deep, specialized knowledge of development databases, networking, application development, storage, security systems, and other key parts of AI infrastructure.

AI "high-performer" organizations expect to reskill more of their workforce than others.

Respondents at AI high performers

All other respondents

Share of employees at respondent's organization expected to be reskilled over the next 3 years as a result of AI adoption, % of respondents.

Don't know 9

21

14

18

38

<30%   73

21-30%   9

Source: McKinsey

Self-learning has limits.
Many people teach themselves about generative AI, often by using it. The technology also offers a powerful tool for learning about AI, security, auditing and other subjects. Even so, many workers will require additional instruction about how to most effectively use AI or build and operate smart tools and applications. That could mean learning how to formulate better prompts, for example. The need will grow and become more important as companies expand use of specialized generative AI models, including those built or customized for their organizations.

Similarly, vendors of word processors, spreadsheets, databases, email and many other everyday applications have generally done a good job integrating intuitive AI capabilities into a growing variety of programs. Many of these are easily learned in context. So while in-depth courses probably aren't needed, brief training can help users maximize productivity of these smarter programs.

Biggest challenges: mastering models, tools and finding talent.
Nearly one-fourth of top-performing companies identified overcoming these two obstacles as crucial to capturing maximum value from AI, McKinsey reports. Both challenges fall squarely into the purview of HR, L&D and training providers.

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Skills-based learning and hiring can close AI talent gaps.
Advanced research, model development and other key functions will continue to require college and advanced degrees. As a complement, skills-based training[31], certifications, and badges continue to grow in popularity. Quality, non-traditional programs can provide targeted, timely, cost-effective development for a variety of AI tools and related roles. Savvy organizations will use a strategic mix.

A simple two-step approach can benefit organizations and individuals and training providers.
First, focus on AI skills that can improve productivity and speed on current jobs. Then develop new, higher-level skills that help workers to become AI's handler, not its victim.

Training for AI won't be "one and done".
AI never sleeps. Technology and best practices will continue to rapidly evolve. Needs will grow more complex, as enterprises continue to move from experimentation into production and fuller integrating AI and its insights in workflows.

Identifying and engaging trusted partners is crucial.
The AI goldrush has attracted scores of new, sometimes questionable providers of AI tools, training providers and certifications. Given the strategic stakes, it's smart to be super careful and discerning.

> " Avoidance is hardly an option. But blindly accepting and using AI is not acceptable either. It's crucial to find suitable, trusted vendor partners, then mindfully adopt only vetted products and services.

Dr. Hernan Murdock, CIA, CRMA, VP, Audit Content at ACI Learning
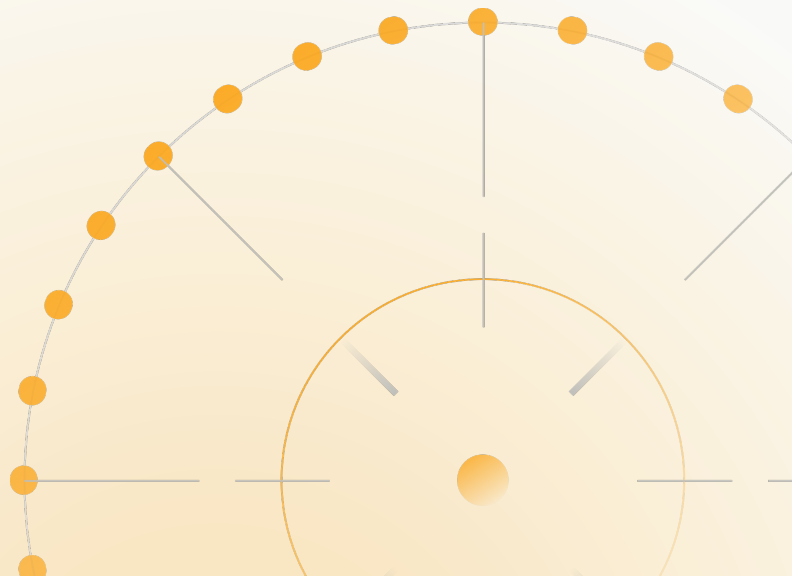
5. Close-up: AI in IT, Cybersecurity and Audit.

We've talked about why AI training will grow in importance. Now let's take a closer look at the what of training for key roles.

General workers, including executives

AI is going to be part of every job. Even if you're not in tech, pretty much everyone will have to at least know how to use AI and AI-enhanced products in their daily work and life. Basic facilities, for workers and customers, will soon become table stakes, just like PC skills in an earlier era.

Because AI appears here to say, building familiarity, acceptance and comfort with it is crucial for organizations, especially those creating a "learning culture."

IT and AI

For decades, programming was the computer-age's "plastics" -- a sure path to a lucrative career. AI is already radically transforming software development. Low/ code-no code lets people with no programming experience easily create highly functional software. Many organizations are using LLMs to generate and test code.

Workers need specific, deep technical skills to design, build, test, integrate, scale, operate, maintain and manage a wide variety of AI types (ML, LLMs, neural networks, etc.) for products and services.

Computer Security

Double opportunity! Security and AI are two of today's biggest job growth areas. Cybercriminals, nation states and other bad actors have aggressively adopted AI to breach security, disrupt operations of companies and countries, and steal, destroy and tamper with sensitive and valuable data. AI systems themselves are new vulnerability vectors that must be successfully understood and protected.

Auditing

Using AI to reduce organizational risk – including risk from AI itself – has emerged as a top use case for both traditional and generative AI. Coupled with improved compliance, these new capabilities could transform auditing over the next ten years.

42%

of companies are prioritizing AI and Big data training[32]

World Economic Forum

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	IT, Developers, AI	Cybersecurity	Audit
Big picture	"I think it's conservative to say that (AI development tools) will make a developer twice as productive, if not more." Forrester Research[33] "The conventional idea of 'writing a program' is headed for extinction .. for all but very specialized applications. Most software… will be replaced by AI systems that are trained rather than programmed." Communications of the ACM[34]	"As organizations struggle with security breaches, cyber-AI can be a force multiplier, enabling security teams not only to respond faster than cyber-attackers can move but also to anticipate these moves and act in advance. Deloitte[35]	"In the next decade, AI will fundamentally transform the audit through automating procedures and enhancing audit quality." KPMG[36]
How AI is used (examples)	Write and debug code. Monitoring and optimizing infrastructure Data collection, preparation, analysis, Model training	Improved, accelerated, proactive threat detection Force multiplier Containment and response countering nefarious AI usage, i.e. WormGPT, DarkBert, etc.	Audit planning Project management Fieldwork (Identify Patterns, trends, best practices) Risk assessment Operational quality fraud Reporting Compliance monitoring
Risks: Inaccuracy, privacy and security, breeches, IP infringement, bias, non-compliance			
Key training topics	AI basics vary by position. They include: algorithm and modeling design, Large Language Models (LLMs), data engineering, ML DevOps, neural networks, certifications for AI Engineers, Consultants and Data Scientists.	AI basics, security concepts in AI, languages, architectures, tools, network security, computer forensics and cryptography, malware detection and defense, and data protection	AI basics, statistical and data analysis, data science and data management. Governance, compliance, risk management, testing, transparency, modernizing the "three lines of defense" model, and reporting responsibilities for risk management
Key skills, tools, and tech (examples)	GitHub's Co Pilot, ChatGPT, Tabnine Master Python, R, Scala, other languages. Frameworks[37] including Torch, Tensorflow, Cafe.	Wide range of commercial software for advanced threat analytics, detection, and mitigation AI-driven network and asset mapping and visualization Zero Trust, including ISACA Digital Trust Ecosystem Framework Custom advanced analytics and algorithms for proactive and predictive protection	NIST Artificial Intelligence Risk Management Framework (AI RMF 1.0) ISO/IEC 23053:2022 Framework for Artificial Intelligence (AI) Systems Using Machine Learning (ML) The European Union (EU) Artificial Intelligence (AI) Act, The OECD AI Principles.
Soft skills, personal attributes: Creative thinking, analytical thinking, dependability, attention to detail			
Learn more	How Chat GPT is changing the way developers work [38]	Supercharge your cybersecurity career [39] Cyber AI: Real Defense [40] ChatGPT is About to Revolutionize Cybersecurity [41]	AI and auditing: Risks and opportunities[42] AI and internal audit [43] ChatGPT in a World of Digital Trust [44]

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ACI Learning helps organizations blend the usefulness of innovative AI and IT skills and tools into a culture of learning. That goes a long way to helping make sure that the rapid adoption of transformational technology also has the proper guardrails and "soft" human skills needed to ensure responsible, productive use.

Don Pezet, Chief Product Officer, ACI Learning

6. AI is revolutionizing training and career lifecycle management.

AI is not only redefining what workforces need to know to prosper in the dawning new era. It's also profoundly transforming how people learn.

Integrated intelligence can help ensure that the right people get trained on the right things in the right way – efficiently, quickly and cost effectively. It's begun revolutionizing Learning Management Systems (LMS's) and enabling innovative, cloud-based, Software as a Services (SaaS) offerings for AI and other technology education.

While first-wave products are just appearing, their value is already clear. ACI Learning's Insights, for example, offers AI-driven data and performance-based guidance that helps L&D leaders make the smartest training decisions. You can compare the performance and needs of individuals and teams to industry averages, ensuring you can take the shortest path to top performance. Our upcoming AI-driven offerings, incorporating ChatGPT-4 LLM, will make it even easier to analyze and plan for your team's next level of growth.

$30 billion
Global market for AI in education 2032 (10X CAGR from 2023)[45]

Global Insights

Today's applications are just the beginning. A new generation of AI-driven training and development products will bring numerous benefits to learners, organizations, and training providers:

- **Personalized Learning**
  Training materials and intelligent tutors customized to individual learning styles and needs.

- **Adaptive Content Creation and Delivery**
  Difficulty and pace of training adjusted based on learner progress. Content Creation and Curation: Generate and curate training content.

- **Analytics**
  Predicts and intervenes for employees who may struggle with specific topics.

- **Real-time Feedback**
  Immediate learner support and coaching via AI-powered chatbots. Individual and team skills review.

- **Natural Language Processing (NLP)**
  Human-like interactions without special commands.

- **Language Translation and Accessibility**
  Breaks language barriers and enhances accessibility.

- **Gamification and Engagement**
  Integrates game elements enhance motivation.

- **Remote and Virtual Reality (VR) Training**
  AI-driven VR offers realistic simulations

- **Continuous Learning and upskilling**
  Recommend courses based on career goals.

- **Workflow Automation**
  Creates automated campaigns, nudges and messages for engagement and efficient administration

- **Compliance Monitoring**
  Tracks and ensures completion of compliance training.

- **Predictive Maintenance Training**
  Analyzes equipment data for maintenance training.

What's more, these AI-driven capabilities and others can integrate with a cloud-based Software as a Service (SaaS) platform, solutions, plug-ins, and ecosystem that can solve large, complex career lifecycle management challenges.

Bottom line: AI-powered training delivery and career-long development platforms are crucial strategic tools for organizational learning. Thanks to exciting new advances, the market stands poised to take off in 2024.

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7. Conclusion: Master or be mastered.

The "Future of Work" is happening now. Its name is AI.

AI is neither an enemy or a savior. Its impact will not be black and white. It can be a smart helper, freeing workers from routine tasks so they can focus on higher-value work. AI will help deliver customer service and propel new industries like self-driving vehicles. Jobs will be lost, others created. Will we all end up training our machine replacements before being shown the door? Unlikely. Many roles will become more like producers, overseers instead of doers.

Getting the most value from the nascent revolution will require massive training across the workforce, akin to and perhaps surpassing previous shifts to PCs, the Internet and mobile work. The need will only grow, as organizations further integrate AI at scale into enterprise systems and workflows, including powerful generative tools for a wide variety of workers. Individuals, enterprises, training and development groups and companies must adapt to survive.

Advances in AI-powered training delivery will give L&D and organizations an invaluable chance to close the skills and staffing gap. For training service providers, it's a huge competitive opportunity and market. Organizations and individuals that invest wisely in AI training and continuous career development will maximize their chances of success. Both will be better positioned to leverage AI to boost productivity, profits and fill staffing and hiring gaps.

Bottom line: AI has emerged as a strategic must for business and learning. You have a key role to play. The technology keeps learning and gets smarter every day. Will you and your teams?

65%
Chief Human Resources Officers saying AI will have a positive impact on human capital over the next two years [46]
The Conference Board

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AI can be the next, exciting chapter for careers, L&D groups, and training providers. Or it can be the last chapter. The choice is yours.

Brett Shively, CEO, ACI Learning

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Thank you.

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