

Chapter 7

Artificial Intelligence in the Workplace: The Future of Learning and Developments

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ABSTRACT

We all know that the world is driven by innovative technology and this transformation is towards Artificial Intelligence (AI). AI is the branch of science which deals with machine based on human intelligent and capabilities. These machines are upgrading the lives along with increased efficiency and profitability at low cost. AI is adding more and more value to our daily and professional lives; especially our workplace. In the domain of Learning and Development (L&D), AI is standing with open wings to revolutionize the way employees learn and develop their ability and proficiency. The current scenario for learning and development (L&D) is based on static data and training program. This method is outdated as it often shows failure for fulfilling the individual requirement of the learner, making it difficult to upgrading and reaching the workforce globally. In this chapter the author will discuss the mission and role of AI in L&D processes, factors leading to effective AI-based learning, benefits of AI adoption, challenges and opportunities of transformation of AI in workplace.

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INTRODUCTION

The advent of Artificial Intelligence (AI) is rapidly transforming industries across the globe, creating new opportunities and challenges. In the workplace, AI is not only automating routine tasks but is also reshaping how employees learn, develop, and engage with their roles. Since it is no longer a tool for automation, AI is increasingly becoming a strategic partner in reshaping how organizations approach learning and development (L&D). From personalized learning pathways to advanced predictive analytics, AI is becoming an essential tool in workforce development. As companies strive to remain competitive in a fast-changing global economy, they are looking to AI not only to streamline operational tasks but also to enhance employee skills, foster growth, and unlock untapped potential within their teams.

In the traditional model of learning, training programs were often rigid and standardized, offering the same content to all employees regardless of their individual needs or career goals. AI disrupts this approach by enabling personalized learning experiences that adapt to each employee's unique learning style, pace, and aspirations. With AI's ability to analyze vast amounts of data, organizations can now identify skill gaps, predict future learning needs, and create dynamic, tailored development plans for their workforce. Moreover, AI's integration into the workplace extends beyond just individualized learning. It has the power to boost employee engagement, provide real-time feedback, and offer new avenues for collaboration through intelligent tools like chatbots, virtual assistants, and gamified learning environments. These innovations are making learning more accessible, interactive, and motivating for employees at all levels.

However, the rise of AI in learning and development does not come without its challenges. From concerns about data privacy to the ethical implications of AI-driven decision-making, organizations must navigate a complex landscape as they incorporate these technologies into their L&D strategies. Employees, too, may feel apprehensive about how AI will affect their roles and job security, which necessitates thoughtful implementation and transparent communication from leadership. This chapter delves into the transformative role AI plays in the future of workplace learning and development. It explores the key opportunities AI offers for enhancing training programs, improving employee performance along with and organizational growth and shaping career trajectories. At the same time, it addresses the potential challenges and ethical considerations that organizations must tackle as they integrate AI tools into their L&D frameworks. As we look to the future, AI will undoubtedly continue to evolve, driving the next generation of learning and development practices in the workplace.

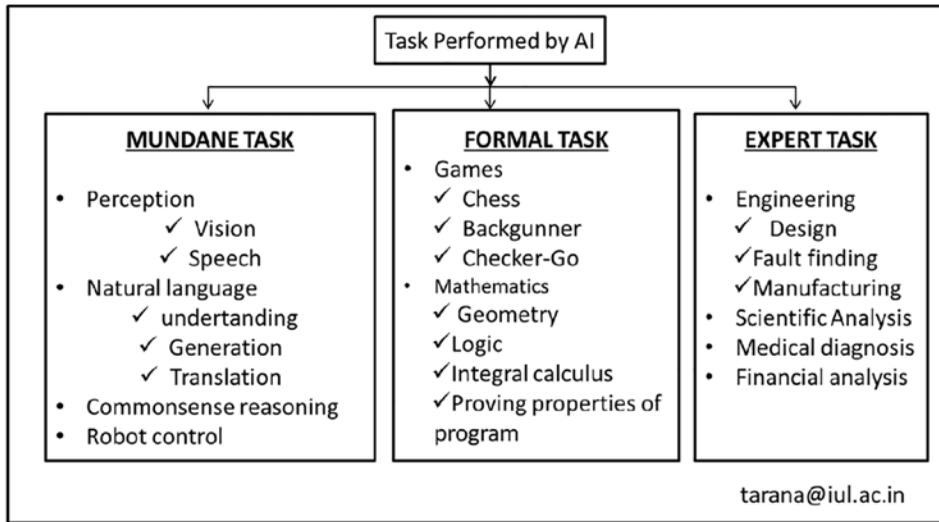
Background

In the beginning 1950s, there were numerous names in the field of “machines thinking” such as cybernetics, automata theory, and complex information processing (McCorduck, P., 2004). These names suggest many conceptual orientations (John McCarthy, 1956). In 1955, John McCarthy, Assistant Professor of Mathematics at Dartmouth College, planned to arrange a group to explain and build an idea about machines which can think like human brain (John McCarthy, 1956). He suggested the name as 'Artificial Intelligence (AI)' for this new thinking machine. AI was initiated by scientist John McCarthy (T. A. Chandel, 2023). He officially announced this name at Dartmouth Conference in 1956, in front of many organizations, official name of AI existed from 1956 (official birth).

AI is a branch of science and engineering for designing intelligent thinking machines (Mathur, S. et al., 2016). He also defined AI as the simulation of human intelligence in a machine, manufactured to for working accordance to human behavior. Brynjolfsson and McAfee have texted in their book “*The Race against the Machine*” (Brynjolfsson & Andrew, 2012). The task domain of AI is shown in figure 1 (shoeb Mathew, AI, Cetin; 2024)

Marvin Minsky, founder of the MIT AI Lab, wrote in 1992 a novel titled “The Turing Option”, i.e. situated in 2023, discussing artificial general intelligence (AGI). Think about it next time you chat with ChatGPT and wonder what the next 30 years might bring (Philippe Delanghe, 2023). Artificial general intelligence (AGI) is based on software programs that allows machines to sense and detect the environment and utilize intelligence learning to take decisions that enhances the possibility of achieving specific aims and objectives (Russell Stuart J., 2021; Rich, Elaine, 2010).

Figure 1. Task performed by AI



Today, the world is having a significant transformation in their work-style driven by emerging technologies. This emerging technology that is shaping this transformation is the artificial intelligence (AI). This technology is revolutionizing the ways the employees learn and develop their skill in workplace. In today’s world, impact of AI on individuals learning experience, content creation and skill development is more conspicuous than traditional approach. Conventional approach of learning and development depend on training programs. This method is outdated today as it doesn’t fulfill the requirement of individual learning. Apart of it, providing training to individual person according to their need becomes expensive as well as time-consuming, thus, difficult to reach the workforce globally. AI is a useful tool which can address the challenges and upgrade the effectiveness of L&D action plans. AI is replacing human potential at macroscopic level with intelligent duties. AI is merging with computer science thus producing intelligent machines. With the utility of AI, organization can develop its own learning experience that can customize the learning technique of their employees. It also makes administrative work automated, providing free time for focusing on their strategic initiatives. For institutions and organization, to remain competitive in present changing work environment, it is necessary to update oneself with recent advancement (Marcos Guevara, 2023). AI is a useful tool which can address the challenges and upgrade the effectiveness of L&D action plans. With the utility of AI, organization can develop its own learning experience that can customize the learning technique of their employees. It also

makes administrative work automated, providing free time for focusing on their strategic initiatives.

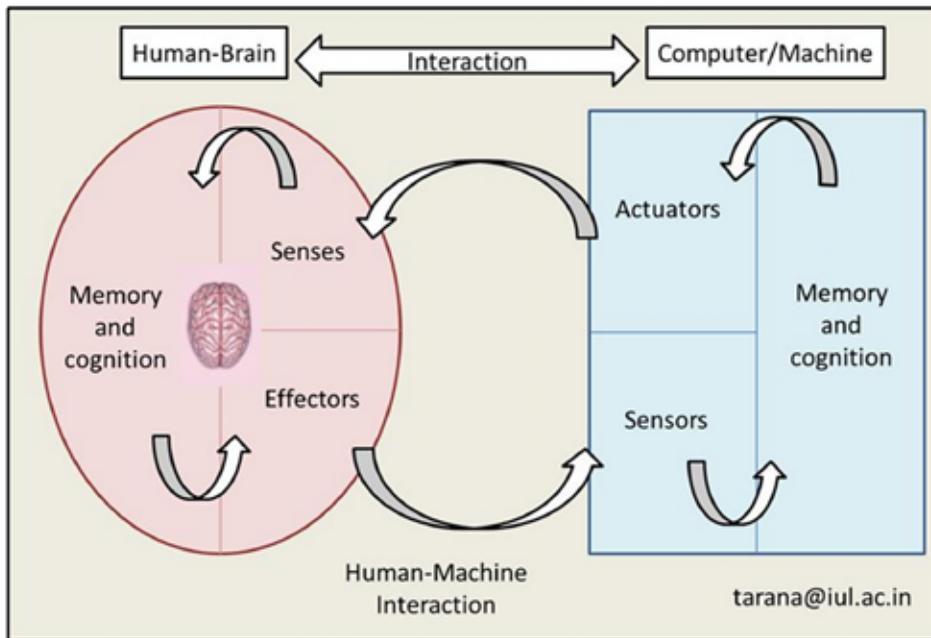
Today, entrepreneurs have experimented on technology intelligence for successful transformation in their organization (Wamba Taguimdje, 2020). Decision and frame makers are now relying on AI, allowing machines to sense and perform in same manner as human has knocked the door of corporate organization with enhanced effectiveness and efficiency (D. Pavitra and B. Surajit, 2019; Dhamja and Bad, 2020). Entrepreneurs have started utilizing AI for optimizing their product value. COVID-19 pandemic, pushed the institutes and organization towards digital pathway of teaching, working and training (Bozkurt and Sharma. 2020).

Beginning of AI in Education

According to Moore's law (Moore, 1998) the development of digital technologies doubled every year. It didn't only enhanced the speed and efficiency of electronics appliances and gadgets exponentially, but also upgraded their operations and performances by adding multiple features. (Nicolae Moroianu, 2023; Jiahong, Weipeng, 2022). Thus, technologies played a vital role in transmuting human perception and execution toward sustainability with the capability to upgrade skill & educate individuals about the ecological footprint., hence, affecting the opinion and action (George et al., 2021; Schroder et al., 2021; Dwivedi et al., 2022). On the other hand, lack in alertness to environment change and correlation with digital innovations, requires implementing green Information Technology curriculum at colleges and university levels to efficiently talk on these challenging issues (Perkins et al., 2018; Marques et al., 2019; Miller J., 2020).

Moreover, the effect of COVID-19 pandemic globally had propelled colleges and research institutions to investigate innovative shortcoming speedily within a limited duration (Tam, El-Azar, 2020), while all the traditional / offline teaching methods were diverted towards online because of lockdown globally (T.A. Chandel, 2023; Sloan, 2020). Due to lockdown, schools and colleges were closed to maintain social distancing and decline the spreading of the diseases, thereby disturbing the learning process globally (UNESCO, 2020; M.A Mallick). Every educational institute followed e-learning platform such as Google classroom, Zoom, WebEx and Skype (Chandel, T.A. 2023). The educational paradigm shifted from traditional teaching system to the online teaching mode (Chandel, T.A. 2023), embracing new innovations in education with open arms (Akimov et al., 2023). As the result, educational infrastructure incorporates the provision of software and applications, nurturing an innovative education paradigm, modeled by machine learning/ human-machine interaction, giving rise to Education 4.0 (Gennari et al., 2023; Chandel, T.A, 2023) is shown in figure 2.

Figure 2. Human-Machine interaction



On this basis artificial intelligence has become an interesting discipline for an educators and researchers, having the ability of self-educating (Tahiru, 2021; Lee, Yeo, 2022; Liu et al., 2022; Mizumoto, Eguchi, 2023; Ray, 2023; Wand et al., 2023). As the utility of AI technology in education sector has increased, there has been a continuous growth in the publications in this discipline. Chiu et al (2023) has discovered four major functions executed by AI in education, thus increasing the value of audio and video learning and development, training, evaluation, and administration. They disclosed that AI is a human-machine, that enhances flexibility and interconnect the digital world, and support versatile teaching approaches, enhances teachers' instructional skills, uplift teachers' professional development, come up with automatic assessment, analyse students performances, assess student artefacts for constructive reviews, provides self-convenient service, support accurate decision making. A part of it, it has been revealed that before COVID-19 pandemic, AI tools has already been adopted and used in education system in developed countries such as USA, South Korea, Japan, Hong Kong, Estonia (Tahiru, 2021).

Previous studies also had fragmental contribution toward AI in Education 4.0 and innovative technological expertise. Importance of AI tool in education was emphasised for advance teaching and learning practices (Mollick, E. and Mollick, L., 2023). User-friendly and serviceable AI application can upgrade teacher's skill,

increase learning capabilities and support empirical and research-based practices. AI tool such as Chabot's provide golden opportunities in teachers career to elevate their educational expertise (Lee and Yeo, 2022).

Moreover, Jiahong and Weipeng in 2022 examined the effect of AI on children in play group education or having nursery education/ early childhood schooling (ECS). They observed children having conceptual education using AI tools showed considerable change in their emotional behaviour, collaboration within other children with learning and development enhancing their competitive efficiencies. In 2023, Iku-Silan high-lighted in his research has proved identical intelligent learning outcomes along with confident and self-assurance.

RISE OF AI IN L&D

COVID-19 pandemic fast-tracked macro trends such as digital transformation and ever increasing skill gap, propelling one-self and corporates to rethink how to grow them. Living and working individually throughout the crucial time of pandemic, social and economic turmoil has effected individually to prioritise flexibility and achievement. Entrepreneurs are reviewing their business strategies and work frame to fulfil their new demands. Amidst this period, learning and development became a new mandate in making one-self the best.

Our lives are increasingly powered by Artificial intelligence (AI), a silent companion that has been quietly integrated into our world since the early 1960s (Michael Vaughn, 2023). AI in L&D enhances training and development programs in collaborations with organizations, improving personalised learning, decision-making skills virtual guidance and mentoring (Akshay Birje, 2024). AI involves numerous technologies likewise ML, natural language processing, facial recognition, computer vision and robot on your smartphone, and weather forecast on your favourite app, AI and AI-reminiscent processes have seamlessly become an intrinsic part of our daily routines. These innovative technologies empower machine to explore data, identify pattern and make self-decision with the assist of human. The use of AI in L&D has gained popularity due to its personalized, efficient, and data-driven learning experiences. AI has the potential to remodel L&D. With swift development of AI tools, it is understood that organization has the ability to increase the training programs and provide more efficient, novel and productive experiences. According to Asma A Sheikh Co-Founder & Director of Enthral.ai says "***AI enables training and skill development for all learners—from employees to extended enterprise***" (Akshay Birje, 2024).

In many applications, AI is only a software agent that assists the user or applicants while functioning independently (Michael Vaughn, 2023). It simulates intelligently as human brains would advance to solve a problem. It makes decision on behalf of the observations and data collected from the environment and performs action based on observed data collected, reaching to its desired conclusions or outcomes (Michael Vaughn, 2023).

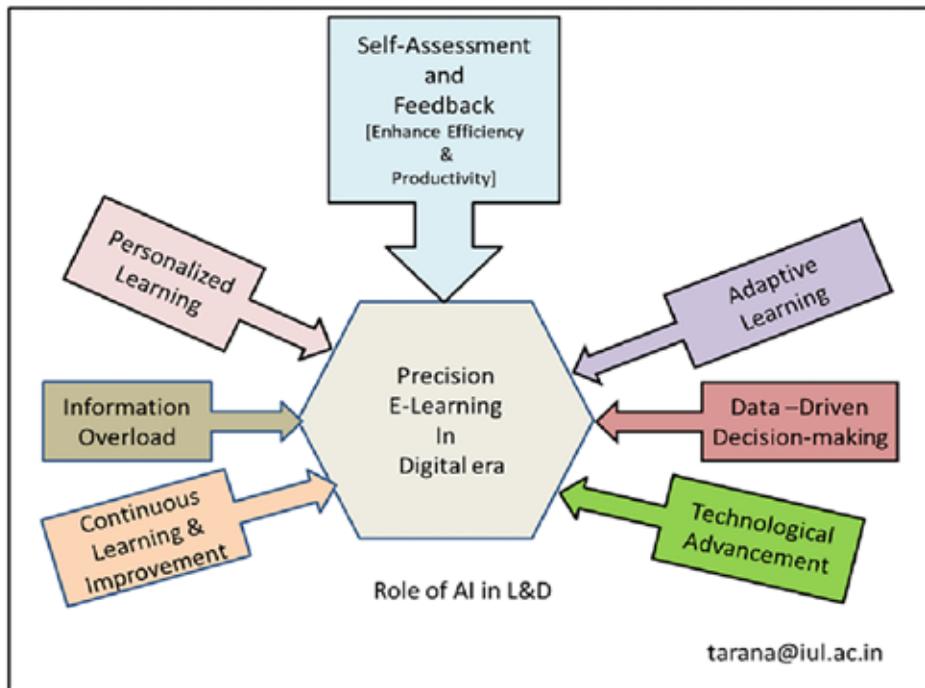
Today AI is not only a silent agent as said earlier. AI had added more features to perform active roles as chatbot examples are ChatGPT and Bard. These applications can involve human level conversation along with coding and creative content writing. Apart of it image designing tools such as *Midjourney and Stable Diffusion* can develop high quality images and art-like pictures from text inputs (Michael Vaughn, 2023).

The rise of AI in L&D has disturbed the corporate L&D operation. Previously, the employs took long time even months to complete their task, but now it can be accomplished within an hour by machine. Resulting, enhanced demand on AI in L&D shifted gradually. AI is prepared to update the skill, moving towards a time ahead where learning can become more personal, efficient and affective.

Role of AI in L&D

The role of AI in L&D is to boost learning and development programs within an organization (Matt Burr, 2024). Some important role of AI in L&D is shown in figure 4, rest are explained in text. Its basic role is shifting towards continuous learning rather than traditional training and learning. It contributes numerous aspects of L&D; examples are personalized learning, decision making on ground collected data, virtual/ online counselling and guidance and many more (shiv Nadar, 2024).

Figure 3. Role of AI in learning and development



Personalized Learning

Education is the foundation of individual development and community growth, enhancing knowledge and talent of the students for bright future. Personalised knowledge signifies that each and every individual students learning is customised for their needs as shown in figure 5. Personalised learning allows every individual to fulfil their goal through innovative technology, the quality of materials they utilize for learning, speed of their learning. In current digital world, AI plays an important role in increasing educational knowledge. AI enables academicians to personalize their knowledge, to nourish the requirements of the students and strengthening them. An AI algorithm collects the data and analyse each employee about their talents, interest and the way they preferred learning. This method of analysis provides thorough understanding of individual learners identity. AI boosts personalized learning by analysing huge data of students. With intelligent algorithm AI can analyse students' performance and highlights differed patterns of learning issues or differences in understanding. With these applications, forecast of AI in education is to exceed 10% in between 2023 and 2032 (Sruthi Santhakumar, 2024).

Figure 4. Personalized learning



Observation shows that AI is remodelling the education system. Evidences show that such advancements are shaping the future of education. Ms Anju Wal (Director Principal at Shiv Nadar School Faridabad) also shared; how AI permits more personalizes, qualitative and quantitative teaching, thus enriching the experience of the classroom (Shiv Nadar, 2024). By automating the task repetitively, AI provides spare time for teachers to focus and interact with student's activity and creating effective learning atmosphere. As technology interweaves its path into every individual's lifestyle, educational geography is transforming towards integrity of AI. AI is speedily reshaping the education system especially in personalized learning. (Trigyn technologies, 2023;Meehrr K, 2023). As we are embracing the revolutionary power of AI, the futurity of education hold a grip toward personalize, involving and engaging into potential learning, thus penetrating into new era of education system globally.

Impact of AI-Personalized Learning on Student Outcomes

Researchers constantly highlight the improvements in academic performance when engagements are considered through AI-driven personalized learning (Sruthi Santhakumar,2024). 75% of learners are utilizing AI-driven learning methodology. This field of vision seems encouraging with emerging innovative technology,

exploring transformation toward learning process. It is not far away when future of every learner has its own unique way and path to achieve success.

Adaptive Learning

Adaptive learning method use machine learning (ML) and artificial intelligence algorithm to access performance of students or employees based on collected data. Figure 6 shows AI-driven adaptive learning (Mudit Khandelwal, 2022). This information's helps to evaluate the strength and weakness of employees/ students. Adaptive learning platform think about learning style of individuals likewise audio and video learning approach. Students following adaptive learning driven by AI has been observed scoring 62% much more in their test score.

Figure 5. AI-driven adaptive learning



Figure 6 shows comparison between traditional learning and adaptive learning (Claned, 2024). Adaptive learning method increases the engagement of students toward learning. This approach not only boosts the academic career but also develops creativity and creative thinking skills, brainstorming, enhances decision making skills and analytic reasoning's which is essential to succeed in competitive

exams. Educational organizations can support meritorious and talented students by providing them resources and tools required to flourish globally. Every individual believe that adaptive learning has lot of potential.

Figure 6. Traditional and adaptive learning



AI chatbot such as ChatGPT and Bard can maintain human dialogue (Michael Vaughn, 2023) and can help complicated task such as coding and creative writing. Some other AI tools such as Midjourney and Stable Diffusion are used to generate high quality image. With these tools one can generate images with text input (Michael Vaughn, 2023). AI can think like human, and this is possible with machine learning with an algorithm that helps in achieving through feedback. Feedback is given by human worker that gives the rating, example is chatbot interaction. Observation and feedback can also be done through self-assessment of AI if coding or programing is done accordingly. Adaptive learning has numerous advantages which are mentioned below:

- It allows learners to be self-focussed and successful. They are free to master themselves software as well as in skills they are untrained.
- It permits learners to study, making their own pace in practicing and reviewing their skills gradually.
- It enhances the efficiency and engagements of learners with activities and lessons they require to improve their skills and experiences.

- It is cost-effective compared to expensive text-books.
- It has proper course structure and learners can study according to course objectives
- It supports the administrators/ faculties in identifying the skill of individual employs/ and students as well.
- It also support faculties as well as an administrator to judging the improvement in the performances by comparing the data collected continuously.

AI-Driven Adaptive Learning with Real-Time Content Streaming

- **AI-Driven Adaptive Learning with Real-Time Content Streaming**

E-learning digital platform provide live streaming content ideas according to their learning needs and performances. With AI-Driven adaptive learning, learner receives personal content blocks containing practical exercises, explanatory text and other materials, assisting in achieving their goals (Shahid Shan,2024).

Here are some different ways, how AI-powered adaptive learning solves educational challenges (Mudit Khandelwal,2022; Shahid Shan,2024)

- **Saves training resources to minimize the budget:**

People learn much faster in AI-driven adaptive learning. It is observed that 97% of learner has found this platform more valuable. Big organization cannot hire trainer for individual employee. Individual trainer of each employee will lead to larger expenses. Adaptive learning minimizes the training cost and enhances the training resources. Software generates appropriate task and related tools after analysing the data for the employee. This innovative technology in education makes provision of the program according to their requirement. It behaves as personal mentor on digital platform

- **Enhances knowledge retention to improve learners' long-lasting skills**

If someone doesn't apply brain for long duration, it shifts towards passive mode. The same behaviour is with the employees. They forget the courses and trained skills provided to them for their future of themselves and organization. AI-driven technology assures that the employees are ready to manage any issue/ business matter happening. AI-driven learning technology continuously analyses and detects the knowledge gaps in employees and suggests appropriate trainings so that employees are always ready to accept the challenges.

- **Boosts learners' engagement to help and create a continuous learning culture**

Traditional training courses would propel all the employees to follow same curriculum structure which doesn't apply for every employee, as different employees have different experience. Thus same training given to all employees is simply waste of time and money. AI-driven adaptive learning provides training to each employee according to their requirement and experience. Each employee chooses its own path to improve its skills. Each employee can also access its weakness and continuously improve their knowledge thus keeping every one focussed towards their work and activities. Resultantly, every employee enhances its qualification and organizations gets skilled employee.

- **Increases time efficiency to reduce training time**

Traditional education takes 40-60% more time than e-learning. By making provision of AI-driven learning technology in the organization, employee's starts educating themselves accordingly

And enhance their skill efficiently.

- **Performs deep analytics to track training efficiency and learners' performance**

AI tool analyses the data of the employees and provide progress record of the employees in metrics to the training manager.

Efficiency and Productivity

We all know that "Time is Money" in every sector. Precision e-learning and micro learning (i.e. educational strategy that focuses on learning new information in small units) lead towards more efficient learning and high efficiency task performance. Micro education demand is very high among corporate sector to optimize employee productivity.

Intelligent Tutoring Systems

AI-driven education tools guide and supports students individually, help them in understanding the area of interest, access learner understanding, identifies difficult areas and provide learning content accordingly.

Individualized Learning Paths/ Facilitating Inclusive Learning

AI-driven educational tools provide individual learning pathways for learner according to their interest, objectives and knowledge. By choosing the curriculum and fulfilling their requirements, AI supports the challenges and optimizes learning environment that strengthens every learner.

Now a day, traditional teaching cannot provide creative, supportive, interactive and inspiring learning environment. Human expertise along with AI leads towards constructive, effective and personalized leaning for everyone.

Predictive Analytics

AI can predict the capabilities of learning difficulties at early stage. Algorithm in machine learning can also predict the challenging areas of students facing during learning and can change the resource to ensure learner continuous to stay on the path towards success.

Data-Driven Insights

AI-driven educational tool collect and assess students data regarding their involvement levels, results and behaviour. By extracting these collected data, educator can keep eye on learner activities and understand them and make personal decision to optimize their learning and experience efficiently.

Continuous Learning and Improvement Through Data Analysis

AI data can analyse the potential to move beyond learner ability thus advising wider education framework. Once educational framework/ strategies are decided through the dataset, institutions can design their curriculum for continuous improvement in overall learning skill of the students

Gamification and Engagement

AI supports learning through riddles/ puzzles and games making it enjoyable and motivates the learning process through challenging and interactive sessions. This approach of leaning, not only engage the learner but also enhance brainstorming.

Assessment and Feedback

With the help of AI, learner can easily assess and evaluate themselves. AI also has automatic grading system featured by AI algorithm which can provide immediate feedback on puzzles/ games, quizzes, and exams. This reduces the load of educator and provides valuable feedback within short time period, aiding the learner for their sustained improvement.

Multimodal Learning

AI technologies drive multiple mode of learning experience through different framework examples are audio and video content, text and other interactive sessions. They allow the student to opt the method of learning they better prefer, making learning more personalised. AI technologies facilitate multimodal learning experiences by incorporating various formats, such as text, audio, video, and interactive elements. This allows students to engage with content in ways that suit their learning preferences, making the educational experience more personalized and engaging.

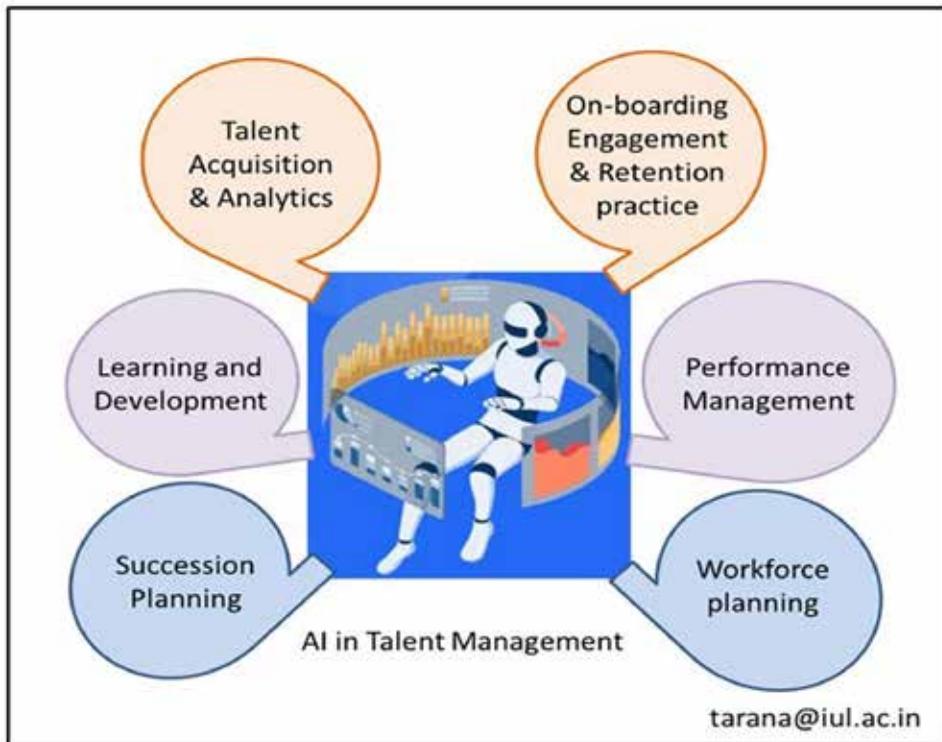
AI in Talent Management

Talent management is a discipline that utilizes human resource planning to enhance business market values making it possible to reach their business goal (Skills Caravan, 2024). The digital era of AI and automation is remodelling the geography of talent acquisition and management. It has become easy for HR manager to exploit AI based recruiting software, making them ahead from others. AI-driven talent management modernises recruitment process, fulfilling the requirements of candidate talents and provide insight data-driven for stronger decision-making. As organisations welcome this transformation, it is essential to adapt these profound changes for managing human capital among trending workforce globally. AI-Talent management has different models as shown in figure 9 (Skills Caravan, 2024).

Different models of AI-Talent management are mentioned below

- Talent acquisition and analytics
- On-boarding engagement and retention practices
- Learning and development
- Performance management
- Succession planning
- Workforce planning

Figure 7. AI in talent management



Talent Acquisition and Analytics

Talent acquisitions AI can affect the recruitment policies in the organization, thus supporting modernize employment process. AI plays a vital role in talent acquisitions in the following ways;

- **Resume screening and candidate matching:** AI can analyse curriculum vitae (CV) based on the defined parameters. AI-driven resume scanning tool saves time and energy at initial stage of screening, assuring that screened and selected candidates can be processed for advance evaluation. AI-driven tools can analyse the experience and skills, matching the parameters of the job requirement.
- **Sourcing and Talent Pool Management:** AI-driven tools can identify the skills of the candidate by the analysis of numerous sources of data as profiles available on social media, LinkedIn, online job board and many other professionals' sites. Thus, AI-driven management software's can automatically

identify and select strong candidates, supporting recruitment manage talent team for further hiring requirements. They can further expand the talent-acquisition effort and identify candidates who are not actively on the outlook for job opportunities.

- **Interview and Assessment Process:** AI can also help during interview and assessment process with the utility of natural language processing (NLP) and machine learning-algorithms in analysing response of the candidates in their skills, field of expertise and cultural congruence. AI-driven interview and assessment tools can furnish insights and approve candidate leading toward additional motives and regular assessment
- **Candidate Experience:** AI driven software for recruitment can increase the employees experience by automated routine task and feedback. Such software tools provide interaction within time regardless of recruitment process outcomes, heading toward confident candidate experience and promoting the organization brand and influencing top-talent.
- **Diversity and Inclusion:** AI- driven software reinforce diversity and inclusion in talent acquisition by identifying inequity in CV screening, evaluation processes and job offer. This software tool also ensures fair judgement during recruitment and upgrade diversity in hiring process.
- **Analytics and Data-Driven Decision Making:** AI driven software tools helps in decision making during recruitment process. It also analyses data on hiring metrics such as quality of recruitment, cost per recruitment and time duration within which vacancy has to be filled. This analysis supports the recruiter in making decision and reaching their optimised hiring strategies.

On-Boarding Engagement and Talent Retention Practices

Newly appointed candidates on their first day of joining set a stage of success among other employment with their full mind-set. Innovative technologies support custom learning from the beginning of their journey in their employment for success. AI can supports in the following ways

- **Lighten the administrative burden**

It reduces administrative work with unnecessary paperwork.AI tools can track each and every documents that are read, capture e-signatures once process is completed, thus not required to follow manually.

- **Reduces Productivity Time**

AI-driven learning tools can help the employees in enhancing job-related based learning such as journals or book at the same time doing their assigned task.

- **Allow on boarding to occur 24/7**

AI-driven tools can help newly recruited employees by guiding required on board steps and suggesting next step to to ramp up smartly in their roles.

- **Talent retention**

It is basically the practice of keeping skilled and talented employees in the organization. Employees are valuable assets for an organization and importance of employee increases with time. Retention of employees is essential for organisational growth, thus maintaining healthy relationship among employer and employees. Methods to retain talents are as follows

- Encouraging flexibility at the workplace
- Levelling up the employee engagement strategy
- Creating a program for College graduates
- Providing frequent praise
- Investing in technology
- Eliminating unnecessary barriers in the workplace
- Offering opportunities for professional development
- Nurturing the employees

Learning & Development

This method allows individual learner to acquire knowledge and develop their skills. Some of the methods such as personalised learning, adaptive learning, content curation and recommendation, assessment and feedback, virtual reality and simulation, learning analytics and insights, employment engagement and motivation

Performance Management

AI-driven recruiting process has great impact on performance management in the organization by simply automating and maximizing many aspects of performance management process. AI can be used for performance management in the following ways

- **Performance Tracking and Analysis**

AI-driven talent management software track and analyse performance data of employees automatically, such as productive and goal outcome along with managers feedback. Performance tracking software tool provide real-time insight into employee performance, identifying their strengths and weakness area for improvement, thus supporting managers in making decision regarding performance evaluation and feedback.

- **Performance Reviews and Feedback**

AI can review performance by analysing performance data and summarizing feedback. This tool can also manage objectives and feedback from the analysis of performance data, thereby, eliminating biasing and assuring justice in evaluation process.

- **Goal Setting and Alignment**

AI tool can assist in aligning performance goal with the analysis of organizational vision and objectives along and departmental mission target along with individual performance records. These data provide a platform with definite real-time achieving goals.

- **Feedback Analysis and Sentiments Analysis**

AI tool can analyse data collected from other sources such as social media, survey of employees, employee's remarks and generate an images of sentiments. This AI sentiment analysing tool supports the manager in gaining employee perception, sentiments, involvement level in activities concern for improvement in their performance.

- **Performance Prediction and Early Warning Systems**

AI- driven tool can use performance data along with other relevant data to find out the future performance and potential performance issues. These data can alert the manager and guide the employee to take relevant time to improve his performance in achieving his goal

- **Recognition and Rewards**

AI tool after analysing the performance of the employee, give recognition and awards depending upon the performance data and fostering the environment of motivation and appreciation

Succession Planning

Even with excellent retention policies, an organization faces some ROI as employee takes decision for retirement. When employees having excellent skills or field expertise leave the organization, creating a large gap and hinder organization success, leaving behind negative involvement amongst the left employees. It is vitally important that organization should have firm succession plans for replacement in order to assure smooth functioning. Thus we can say that succession planning is sensitive part in talent management. AI can support in the following ways

- **Identify flight risk**

Prediction of the escape risk depend upon different parameters such as sentiments of employees, influence of mentor, duration of working at same designation/ position, salary history and potential career on their way ahead. These are some of the factor leading towards predicted rate of attrition.

- **Uncover most capable successors**

Leveraging AI driven data model, analyse the behaviour and leadership quality in the employees who would readily step forward and fulfil the gap of previous successors.

Workforce Planning

Workforce planning means organizational present and future planning in utilizing correct talent in correct job position in achieving planned objectives. AI can be used in many ways to enhance productivity and effectiveness of the workforce planning process. Some of them are mentioned below:

- **Workforce Scenario Planning**

With different AI simulating tools, organization can change the business goals and marketing strategies to regulate the demand, having affective impact on the human resource.

- **Demand Forecasting**

AI-driven software can identify and analyse, previous and contemporary real time data such as production data, consumer demand and sales data for forecasting the workforce demand accurately. Workforce forecast maintains employee shortage or excess.

- **Skill Gap Analysis**

With the help of AI-driven software tools, organization can analyse skill gaps in the workforce, and arrange them accordingly with future business requirements. This can be achieved by providing additional trainings, fulfilling the skill gaps and assuring workforce readiness

- **Workforce Segmentation and Analysis**

Workforce can be segmented based of different factors such as skills and learning experience, work potential and performance and many more. This can be done with AI tools in developing goal objectives for talent acquisition, progress and retention. AI can analyse insight data for the requirement of different segments, supporting organizational workforce planning strategies accordingly.

AI CHALLENGES ON LEARNING AND DEVELOPMENT

Policies and regulations lag much behind for adapting new innovations. With the growth of AI and uncontrollable use of it, organizations should be aware of ethical implementation on working with new technologies especially in the domain mentioned below (Michael Vaughn, 2023; Claned, 2024, Marcos Guevara, 2023):

- Importance of Striving for Unbiased Data
- Intellectual Property (IP) and Data Collection
- Misuse of Personal Information
- Digital gaps
- Ensuring ethical use of AI
- Job loss

Importance of Striving for Unbiased Data

As AI is introduced globally and we incorporate AI in workplace in order to analyse the data available from workforce. These data are analysed through algorithm, achieving the goal in most effective manner. These data serve as the base of AI learning, leading towards either positive or negative outcome of the organization.

An investigation was done by ProPublica in 2016 (Michael Vaughn, 2023) claimed that AI algorithm's utilized by the judges were recommending strict punishment for black race individuals. Resultantly, suggested that algorithm cannot be biased. Rather, they are affected by the data under observation. Thus, concluded that AI data utilized by the judges on training was unfair for minorities.

Data Collection and Intellectual Property (IP)

As, we are aware that organizations never disclose their actual data used for training, rather than providing a broad conceptualized dataset. ChatGPT was trained on 300 billion-word dataset, and Midjourney utilized hundreds of millions of images. For both i.e. ChatGPT and Midjourney got the data from the public domain available online (Michael Vaughn, 2023). Plenty of information's are available online but major issue is copyright. Did these AI tool used legal information's. No clear crystal answer was given by organization behind ChatGPT, while Midjourney CEO replied that they used the copyright image material. But today both the organization is facing similar legal challenges. Many writers and artist has filed the lawsuit against OpenAI.

Personal Information Misuse

Ethical use of learner data in AI-driven personalised learning system is a major issue. As AI requires numerous data for individual suggestion, personal information's of students are misused, violating rules and policies. Consequently, the ethical ramifications of collecting and analysing student's data should be precisely considered by the mentors and policy makers, ensuring correct laws protects and conserve students' rights and safety.

Ensuring Ethical Use of AI

Another major issue is the chances of algorithm biasing in AI-driven personalised learning. Insufficient design and training of AI-driven algorithm system must be reinforced pre-existing prejudices unintentionally. To ensure AI-driven algorithm

is not biased, mentors and developers must keep eye on the algorithm continuously providing safer zone to the students’.

Digital Gaps

For smooth and easy access of AI-driven personalised learning, it is important to minimize digital gap. All the learners may not have computer system or laptops with internet facilities with required speed due to which issues in learning may increase. It is important to solve this issue and ensure that the learners are benefited to some extent by providing proper resources and infrastructure making learning easier.

Job Loss

AI-driven learning and development software and other innovative tools can automate the working task, thus, creating a fear among employees in losing job. Thus organization should invest on training development programs for the security of employee’s job.

Organization using AI in L&D

Here are five big business enterprises that are successfully leveraging AI in L&D (Akshay Birje, 2024). These are as follows

- IBM
- Amazon:
- Google
- Microsoft
- McKinsey & Company

IBM

IBM as shown in figure10 has incorporated AI into its L&D for employees for customised learning. By analysing the real time employee’s data and interest of their choice, AI driven personalised learning and resources leads towards involvement and participation reaching towards improved learning outcomes. Apart of it, IBM uses AI-driven chatbot for supporting and guiding their emplys instantly inorder to incline the L&D process efficiently.

Amazon

Amazon use AI-driven adaptive learning for individual employees required in their job. AI-driven algorithm analyses employees performance data and suggest personalised skill development and career advancement programs for individuals. This is an exclusive method of L&D, where individual employ can train them and align with their career objectives, leading towards expertise in their field and retention.

Google

Google as shown in figure 12 utilises AI tool for their employees by providing access to the learning resources and opening the windows of opportunity. AI-driven algorithms also analyse employee's concern, liking lack of knowledge and skill, offering different courses, seminars and professionally skilled training, programs. Basic motive behind using AI-driven learning is to promote learning and teamwork through virtual mentoring programs and knowledge-sharing platforms.

Microsoft

Microsoft as shown in figure13 involves AI in L&D strategy to enrich training and techniques. AI leverages deep learning algorithm to examine employee's remarks and performance to highlighting areas for improvement and training accordingly. Microsoft also utilize AI-driven simulators for delivering hands-on-training for enhancing technical skills, thus elevating potential L&D programs.

McKinsey & Company

McKinsey & Company as shown in figure14 utilizes AI in L&D to improve learning and development activities in offices globally. AI-driven problem solver observes learning trend of employees and guide the customised learning path and resources. This enterprise also use AI for social alliances and interchanging information's through virtual societies and learning management system (LMS), thus, maintain the environment of continuous learning and progress.

FUTURE RESEARCH DIRECTIONS

The integration of Artificial Intelligence (AI) into workplace learning and development presents a wide array of future research opportunities aimed at enhancing employee growth, productivity, and organizational adaptability. A significant

direction involves the personalization of learning experiences, where AI can tailor training modules based on individual performance data, learning preferences, and career goals. Further research is needed to examine the long-term effectiveness of such adaptive learning systems. Additionally, the role of AI in fostering human-AI collaboration is gaining interest, especially in understanding how AI can support, rather than replace, human mentorship and coaching. Ethical concerns also demand attention, particularly regarding algorithmic bias, data privacy, and transparency in AI-generated learning pathways. Researchers are also exploring the impact of AI on informal and social learning, including how virtual platforms and AI tools influence peer-to-peer knowledge sharing and community engagement. Another emerging area is the use of AI for continuous performance assessment and feedback, which could revolutionize how employees receive support and guidance in real-time. Organizational culture and readiness remain crucial factors in the successful adoption of AI technologies, highlighting the need for studies on leadership, employee trust, and change management. Moreover, the global applicability of AI-enabled learning systems warrants investigation, as cultural and regulatory differences may affect their effectiveness and acceptance. Integrating AI with emerging technologies such as virtual reality (VR), augmented reality (AR), and wearables could further transform training delivery, meriting interdisciplinary research. Lastly, there is a growing need to evaluate the return on investment (ROI) of AI-driven L&D initiatives and to develop robust metrics that link learning outcomes with business performance. As AI continues to evolve, its potential to reshape workplace learning requires ongoing inquiry into both its technical capabilities and human implications.

CONCLUSION

Leveraging AI in personalised learning has transformed education in teaching-learning practices. The current scenario of learning and developments program gives equal opportunities to the entire learner through comprehensive and accessible learning globally. It is essential to ensure that all the ethical considerations are met and providing safeguards to students' personal information and rights before using AI in academics. Harnessing full capability of AI in academics requires continual research and an eye for vigilance assuring success and sustainability. Since enough tutors are not available to make learning more specialised, thus AI fulfils the gap in high quality education. Customised learning provides full control on the way of

individual learning, making their own pace and convenience. AI can figure out the skill required for target learner.

Employees can also use AI for personalised, adjustable and data-driven learning experiences that fulfil their progress needs. AI has transformed the way of conducting training programs and skill advancement for the employees in the organization. With AI in machine learning (ML), employees can improve their technical skills for better outcomes in their learning journey.

Multiple risk and challenges are linked with AI in L&D such as loosing of job, biasing, copyright related to data information. By adapting best practices such as utilizing correct AI problem solver/ simulators and promoting environment of personalised learning can upgrade employment skill, increase business and efficiency, leading towards organization growth and success. Ultimately, employees and students who do not explore AI in L&D are left behind because technology empowers their competitor's.

The future of L&D lies in using AI. L&D groups or teams should invest their time and capital in exploring generative and sustainable AI-driven tools in order to make employment easier, productive and progressive.

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