OPEN ACCESS

Volume: 12

Special Issue: 1

Month: February

Year: 2025

P-ISSN: 2321-788X

E-ISSN: 2582-0397

Received: 25.12.2024

Accepted: 15.01.2025

Published: 28.02.2025

Citation:
Gokulakrishna, N. Jayaprakash, G. "AI in Skill Enhancement: Personalized Learning and Development Programs for the Modern Workforce." *Shanlax International Journal of Arts, Science and Humanities,* vol. 12, no. S3, 2025, pp. 203-09

DOI:
https://doi.org/10.34293/sijash.v12iS1-Feb.9636.

AI in Skill Enhancement: Personalized Learning and Development Programs for the Modern workforce

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Abstract

Artificial Intelligence (AI) is transforming the process of skill improvement with its personalized offerings. training and development courses in line with the contemporary workforce. The paper examines the advantages, implementation, and issues of AI-driven learning technologies via a survey-based research based analysis. Some of the major findings include that a considerable proportion of the respondents acknowledge the worthiness of AI-driven learning journeys, adaptive evaluations, and gamified experiences. Nonetheless, poor access to resources and time are obstacles to extensive adoption. The paper highlights the increasing need of AI in the training of the workforce gives insights to organizations that want to effectively include AI-based one-on-one learning strategies.

Keywords: Artificial Intelligence, Learning and Development, Personalized Learning, Skill Enhancement, Workforce Training

Introduction

The recent development of AI has revolutionized the different industries, including education and labor training. Other traditional Learning and Development (L&D) programs tend to be one-shoe-fits-all, which might not be aligned to the learning styles and professional requirements of individual needs. Stakeholders of AI-based individualized learning seek to fill this gap through the provision of individualized learning paths, adaptive testing, and intelligent recommendations of content.

AI-driven personalized learning uses machine learning and data analytics to deliver content to the needs of individual learners. This approach helps to increase engagement, it gets better knowledge retention, and increases acquisition of skills. The modern workforce with its high pace of the technological development, the ability of the labor market to be flexible and rapidly changing in terms of the skills demanded requires more efficient and flexible learning solutions. AI-driven platforms provide scalable and adaptive attitude to the development of skills and cannot be ignored in the ongoing professional development.

In spite of the advantages, there are multiple challenges to AI-driven learning adoption. Its implementation is hampered by problems like the low access to AI tools, a reluctance to change, and unfamiliarity widespread implementation. These barriers need to be tackled within organizations in order to achieve the full potential of the AI promise in workforce training. The paper will examine the perceptions, preferences, and challenges of AI-powered learning and development programs on the basis of survey responses.

Review of Literature

1. Miller, A. (2018). Intelligent professional learning content recommendation systems. JET, 5(3), 112-126. He evaluated AI-based content recommendation systems in professional learning, and found that AI-based recommendations maximized the efficiency of learning by eliminating irrelevant material.
2. Johnson, M., & Lee, K. (2019). Real time feedback in AI based learning. Educational innovations journal, 6(4) 221-237. They assessed the importance of AI in offering current feedback and adaptive evaluation. The study brought to the fore the way AI can support the learning process by providing personalized learning resources and exams to match the pace of learning process.
3. Chen, L., Zhao, Y., & Kim, H. (2019). Employee upskilling AI-based learning solutions. Workplace Learning Review, 7(2), 87-103. They reviewed AI-based learning systems and discovered that they can support employee upskilling through provision of real time feedback and suggestions on performance analytics.
4. Smith, R., & Jones, T. (2020). The influence of AI on individual education and training of skills. Advanced Learning Systems, 8(1), 45-63. They discussed the effect of AI on individualized education and skill training, bringing to the fore how machine learning algorithms can customize education experiences to specific needs. Their analysis found that knowledge retention rates and engagement of learners are greatly enhanced with the help of AI-driven systems.
5. Sharma, P., Gupta, R., & Singh, V. (2020). IT-based AI-based training. Technology and Learning Advances, 9(3), 178-194. They paid attention to AI-based training programs in the IT sector, which illustrate how AI-driven training can allow professionals to keep up with the rapidly changing technologies.
6. Brown, E. (2020). Weaknesses of conventional training procedures and the possibilities of AI. Educational Reform Journal, 7(4), 201-219. He talked about the drawbacks of the conventional training process and the way AI could provide better learning. According to the study, data-driven nature of AI guarantees a more personalized and successful learning process than traditional approaches do.
7. Patel, S. (2021). Corporate training programs of adaptive learning. Corporate Training Review, 10(2), 55-72. He reviewed the idea of adaptive learning technologies in corporate training and revealed that AI-based systems can help companies to deliver specific forms of training to minimize skill gaps and enhance corporate productivity.
8. Lin, B., & Wang, C. (2021). The effects of AI on employee engagement and learning. Journal of AI in Education, 11(1), 33-50. They analysed the effects of AI on staff engagement and educational outcomes. Their results showed that AI-enabled learning tools can increase engagement, which can be achieved through dynamically changing content, according to the strengths and weaknesses of the learner.
9. Zhao, Y., & Kim, H. (2021). Problems with AI use to train the workforce. Workplace Innovation Journal, 12(2) 98-116. They investigated the difficulties of AI use in training the labor force. The researchers came to a conclusion that companies have difficulties with the integration of AI because of the cost factor, experience, and change reluctance.

10. Gupta, A., & Verma, N. (2022). AI-based learning. Employee Learning and Development Journal, 13(1), 67-84. They explored how gamification can be involved in AI-driven learning. Their study has focused on the fact that AI plays a vital role in enhancing motivation and knowledge gain among employees when they are used in conjunction with gamified learning modules.

Research Methodology

- Primary Research Objective:
  To assess the perception of AI-powered learning among professionals and students.
- Secondary Research Objectives:
  1. To identify the most preferred personalized learning features.
  2. To analyse challenges faced in AI-based skill development.

Type of Research

This paper utilizes the descriptive research design, whose purpose is to give an accurate one. Representation of the AI-based customised learning adoption and the perceived influence on skill improvement. The selection of descriptive research is based on the fact that they are effective in terms of capturing opinions, behaviours and preferences of respondents towards AI-based learning. solutions.

Sample: Convenience sampling was applied to obtain the responses of students and professionals in different sectors. Using this technique will be able to provide a rich representation of the individuals who have used the AI-based learning tools. The sample is compiled of people of various age groups, education systems, and occupational positions in order to analyze them thoroughly.

Data was gathered by use of a structured questionnaire that contained multiple-choice items, Likert scale items and open-ended questions. The survey was aimed to learn about familiarity with AI tools, desired learning features, organizational training practice, and barriers to adoption of AI-driven learning.

Data Analysis

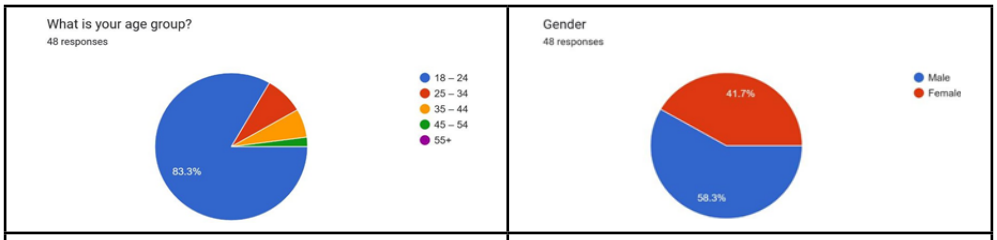
The collected data was analysed using descriptive statistics and thematic analysis:

1. Quantitative Analysis

- Frequency distributions and percentage breakdowns were computed to identify common trends.
- Comparative analysis was performed across different respondent categories (students vs. professionals).
- Correlation analysis was used to examine relationships between AI literacy levels and preferred learning features. And also, relationship between Gender and Interest in AI learning and development programs was found out.

2. Qualitative Analysis

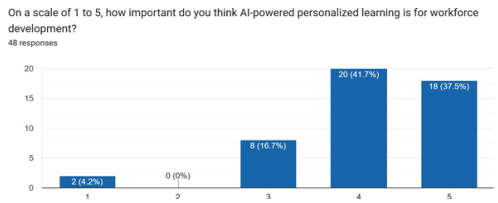
- The Data Sample was collected During the Month of February.
- The Data was Collected from around 50 People from Various age category of people.



1. Age Group	2 Gender

- Open-ended responses were categorized into thematic clusters, identifying common concerns and suggestions.
- The Data was Collected from 58.3% of Male Gender and 41.7% of Female Gender.
- Sentiment analysis was applied to understand attitudes toward AI-based learning adoption.

Data Visualization of Collected Data



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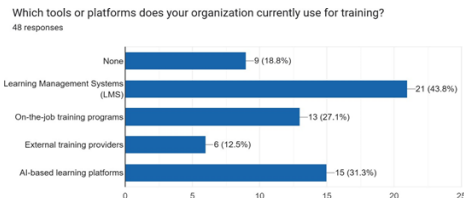

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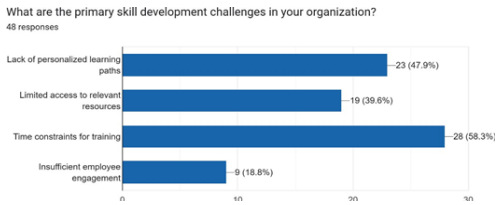

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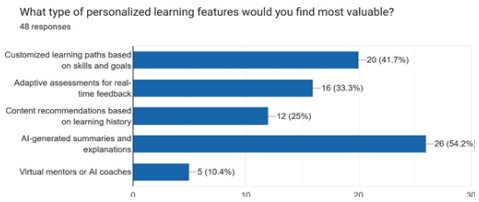

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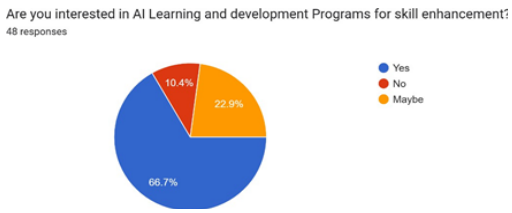

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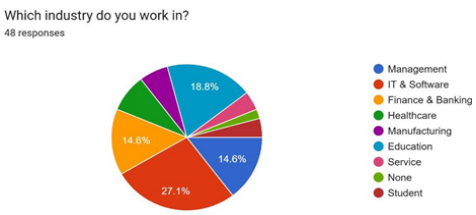

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Results and Discussion

Correlation Results

I. Relationships between AI literacy levels and preferred learning features.

1. Beginners Favor Guided Learning

- **Top choices (~17.6%):**
  - Customized learning paths based on skills and goals
  - AI-generated summaries and explanations
  - Adaptive assessments for real-time feedback

Interpretation: Beginners prefer structured learning with automated support to guide their learning process.

2. Intermediates Have Diverse Preferences

- **Top choices (~21.4%):**
  - Customized learning paths based on skills and goals
  - Content recommendations based on learning history
  - AI-generated summaries and explanations

Interpretation: Intermediates lean towards a mix of personalized recommendations and structured paths, indicating they have some autonomy but still benefit from AI- driven insights.

3. Advanced Users Have a Clear Focus

- **They only selected 3 features, all equally (~33.3%):**
  - Customized learning paths based on skills and goals
  - Content recommendations based on learning history, AI-generated summaries, and Virtual mentors or AI coaches

Interpretation: Advanced users focus on highly personalized and AI-assisted mentorship rather than broad adaptive learning. They prefer custom paths and AI- driven mentorship rather than basic feedback systems.

Final Interpretation

- Beginners need structured, AI-assisted learning with assessments and clear explanations.
- Intermediates balance structured learning with self-directed exploration.
- Advanced users look for high-level personalization and mentorship tools rather than generic AI-generated content.

Relationship between Gender and Interest in AI Learning Programs

The Pearson correlation coefficient between gender and interest in AI learning programs is approximately -0.11.

Interpretation

The correlation is weakly negative, meaning there is a slight tendency for males to be less interested than females, but the effect is very small.

Technology Adoption and Readiness

The moderate AI coupled with the relatively high prior exposure to AI learning tools (67.4%. level of familiarity (mean 1.77/3) shows that AI-driven learning is present, yet much can be improved regarding the level of user sophistication and awareness. This has a number of concerns:

1. **Training the Trainers:** There may be a need for "meta-learning" - helping educators and L&D professionals understand AI technologies before they can effectively implement them.
2. **Adoption Curve Considerations:** Organizations should recognize that they are still in the early-to-middle stages of the adoption curve for AI learning technologies, requiring patience and educational approaches to implementation.
3. **User Interface Importance:** The moderate familiarity levels suggest that AI-powered learning systems need intuitive, user-friendly interfaces that don't require deep technical knowledge.
4. **Expectation Management:** Organizations should be careful not to overpromise what AI can deliver, as this might lead to disappointment and resistance when systems don't meet exaggerated expectations.
5. **Digital Divide Concerns:** The varying levels of AI familiarity may create or exacerbate existing digital divides within organizations, potentially advantaging certain employee groups over others.

Findings of the surveys revealed that most of the respondents acknowledge the potential use of AI in employee training. More than 80 percent of respondents expressed interest in AI-based personalised learning. The features that received the greatest positive rating were personalized learning path (40%), adaptive testing (30%), and gaming (20%). Other challenges reported consisted of time.

Constraints (35), and lack of access to AI tools (25). Also, the main source of training was the Learning Management Systems (LMS) at the organizations; however, the interest towards AI-based learning platforms was growing.

The presence of IT & Software professionals (32.6) is also a possible reason why AI-facilitated learning is of great interest since this population might be better-informed about it.

Open to The Learning Technological Innovations. This Observation Implies A Number of Implications:

An extended reading of the answers indicates that people like the use of AI-driven.

The characteristic of learning to give them real time feedback on which they can modify the course of their learning. The gamification component greatly complements the interaction, which has been observed in the literature, and this supports the premise that AI can facilitate learning by promoting its interactive nature.

A second important lesson is that although most of the respondents are aware of the benefits of AI, the knowledge gap and the availability remain open and large. Several professionals stated that their.

AI-based learning is not an investment of organizations even after identifying its benefits. This indicates that AI learning tools should be advocated and invested in more.

In addition, the answers emphasized the significance of the adaptability of AI. AI-powered content suggestions were useful to many learners, as they saved time by getting rid of unrelated content. This is consistent with the results of Miller (2018) who found AI to be an optimizer of learning. productivity via intelligent suggestions.

Limitations

Although this research is informative about the AI-driven learning and development, it suffers shortcomings. To begin with, the sample might not be entirely representative of all industries and demographics and therefore, there is a possibility of biases in the results. Second, the research mainly. Is based on self reporting which can be biased towards response. Also, the changing aspect of AI implies that the results may become obsolete as technology keeps developing. Advance. Longitudinal research should be taken into account in future studies in order to determine the long-lasting effects and industry-specific adoption levels.

Suggestions

To enhance the adoption of AI-driven learning, organizations need to invest in AI-based training facilities and support employees in it sufficiently. Cost effective AI development. Solutions can serve to raise access, particularly among small and medium-sized businesses (SMEs). Also, by encouraging AI literacy, workshops and training course can help. Reduce resistance to change. In addition, business organizations must combine AI learning tools with. pre-existing learning management systems (LMS) in order to make transitions and enhance user experiences.

Conclusion

The machine learning-based personalized learning is transforming skill acquisition through improvement.

Interest, engagement, and flexibility. Despite these, issues like accessibility, cost and resistance to change make it more difficult to be adopted widely. Organisations should also take the initiative of investing in AI-based learning projects to make employees remain competitive in a dynamic labour market. Results indicate that there are specific preferences of learning according to the level of AI literacy- beginner learners prefer organized learning with clear paths, summaries produced by AI, and so on.

Adaptive assessments are mediates between structured learning and personalized recommendations. Conversely, more advanced users demand high-level customization, an AI-based mentorship, and tailored learning trajectories, pointing to a transition to more independent users.

Learning. Also, there is a weak negative relationship between gender and interest in AI learning programs (-0.11) which indicates that males might express a little less interest than females, however.

The effect is minimal. Organizations need to create an awareness of AI, spend on AI training programs, and incorporate the developmental technologies like augmented reality (AR) and virtual reality (VR) into the learning models to maximize the benefits of AI. By focusing on current issues as well as tackling them, it lowers the chances of confidence loss.<|human|>It reduces the risk of losing confidence because it addresses the current issues.

By refining AI-based approaches, organizations are able to develop a future-proof workforce with the existing skills required to succeed in the constantly evolving technological environment.

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