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Artificial Intelligence and Employability Skills in Indian Higher Education: Bridging the Innovation–Employability Divide

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Abstract

The current advances in artificial intelligence (AI) are transforming the higher education and labour market landscape at a pace that Curriculum, faculty capability, and assessment systems are struggling to keep up with. This chapter attempts to map the current intersection of AI and employability skills in India's higher education sector and to situate that discussion within the policy framework of the National Education Policy (NEP) 2020, as well as recent industry insights on skill demand. Using secondary data from government publications, industry-academia collaborations, and recent empirical studies, this chapter presents the paradox of rising overall graduate employability in recent years, despite significant numbers of graduates being employed below their qualification levels and skill shortages in India's AI talent pipeline relative to industry demand forecasts. It suggests that this paradox is a product less of a lack of familiarity with AI tools but rather due to a lack of ecosystem support for translating AI awareness into meaningful and transferable employability skills like critical thinking, adaptability, and working alongside AI. The chapter then discusses three core areas where such a transition is being hindered: growing "AI gap" between institutes with and without access to AI resources, lack of faculty readiness to facilitate AI-enabled learning, and questions around academic dishonesty and ethical AI use in evaluating student performance. Recommending a cohesive approach towards curriculum reform, faculty development, academia-industry collaboration, and equitable infrastructure development linked to NEP 2020's focus on multidisciplinary, skill-linked, and competency-based education, the chapter ends with a set of key recommendations for administrators, policymakers, and industry players to ensure AI enables equitable graduate employability in Indian higher education. The chapter hopes to make two contributions to the book's mission of imagining a future-ready, creative, and inclusive India through the lens of higher education. Firstly, by framing AI-enabled employability skills development as a responsibility that must be collectively shouldered by government, academia, and industry rather than siloed into curriculum changes

by academia alone. Secondly, by centring equity as a fundamental consideration in shouldering that responsibility.

Keywords: Artificial Intelligence, Employability Skills, Higher Education, NEP 2020, Skill Development.

Introduction

India's higher education system supports one of the youngest and largest student populations in the world. This demographic advantage relies on how well institutions prepare graduates for an economy driven by AI. Artificial intelligence is expected to make a significant contribution to India's GDP and alter many existing job roles. Government and industry estimates link AI adoption to hundreds of billions of dollars in economic value and millions of new jobs (National Skills Network, 2025). However, this situation presents a paradox. Employability for graduates has risen from about one-third a decade ago to just over half today, according to national assessments (Wheebox et al., 2025). Yet, 50% of graduates and more than 66% of postgraduates report working in jobs that do not match their qualifications (National Skills Network, 2025). The difference between reported employability and actual job fit is the starting point for this chapter.

The gap is not only due to a lack of exposure to AI tools. Indian students are among the most engaged global learners of AI and machine learning on online platforms. India is already regarded as a leading contributor to open-source AI development (AI Spectrum India, 2025). Still, employers argue that knowing AI alone does not guarantee readiness for the workplace. They increasingly seek a blend of technical knowledge and human skills like analytical thinking, adaptability, communication, and a commitment to continuous learning (Shoolini University, 2026; World Economic Forum, 2025). This suggests that the main challenge for Indian higher education is not about access to AI technology but about building an educational system that transforms AI exposure into a vital employability skill.

It addresses this challenge in four steps. First, it reviews the conceptual and policy context, including how AI is being integrated into Indian higher education and how the National Education Policy 2020 highlights skill development as a key priority for institutions. Second, it summarizes recent findings on how AI is altering the demand for employability skills in India. Third, it examines structural barriers, such as inadequate infrastructure, faculty readiness, ongoing skills mismatches, and ethical issues regarding AI in assessments. Finally, it presents a framework and a set of recommendations for institutions, policymakers, and industry. The aim is to ensure that changes driven by AI in higher education help reduce employability gaps across India's diverse institutions.

Conceptual and Policy Background

- **AI in Higher Education: Global and Indian Context**

Globally, higher education institutions are integrating AI across teaching, administration, and student services, from adaptive learning platforms to automated academic support systems. In the Indian context, a nationwide survey of higher education institutions conducted for the FICCI–EY Parthenon Knowledge Report 2025 describes 2025 as an inflection year in which AI-powered tools have moved beyond experimentation into embedded use in classrooms and administrative functions, reshaping pedagogy, personalised learning, student services, and research (EY & FICCI, 2025). This institutional shift is occurring against a backdrop of rapid AI adoption in the broader economy: nearly half of the Indian workforce across sectors reported encountering AI use in their organisations within a single year, and major IT employers have each trained hundreds of thousands of employees in AI-related skills (Deloitte India & NASSCOM, 2024). Higher education institutions are thus under pressure to prepare graduates not for a future AI transition, but for a labour market in which AI use is already commonplace.

- **Conceptualising Employability Skills in the AI Era**

Employability skills are commonly understood as the transferable competencies, distinct from discipline-specific technical knowledge, that enable graduates to secure and sustain meaningful work. The World Economic Forum's Future of Jobs Report 2025, based on a survey of over a thousand employers across 55 economies, finds that employers expect nearly forty percent of workers' core skills to change by 2030, with AI and big data, technological literacy, and analytical thinking ranked among the fastest-growing skill demands, alongside human-centred skills such as creative thinking, resilience, and curiosity (World Economic Forum, 2025). This dual emphasis, technical AI fluency combined with human-centric skills, reframes employability in the AI era as a composite capability rather than a single skill set. Empirical research within India supports this framing: a study of AI-based skill development training among graduates in Andhra Pradesh found that critical thinking, communication, and interpersonal skills, alongside AI-technology exposure, jointly influenced employability outcomes, suggesting that AI training is most effective when paired with human-centric skill development rather than delivered in isolation (Lakshmi Devi et al., 2024).

- **NEP 2020 as a Policy Foundation**

The National Education Policy 2020, India's first comprehensive education policy in over three decades, provides the regulatory foundation for integrating skill development and emerging technologies into higher education (Ministry of Human Resource Development, 2020). The policy explicitly recognises the growing importance of mathematics, computational thinking, and fields such as artificial

intelligence, machine learning, and data science to India's future economic leadership, and calls for increased emphasis on these areas from the foundational years of education onward (Ministry of Human Resource Development, 2020). At the higher education level, NEP 2020 mandates the integration of vocational and skill-based courses within undergraduate programmes, promotes multidisciplinary learning through flexible credit structures, and shifts assessment away from rote memorisation toward competency-based evaluation (Wagons Learning, 2025). This policy shift responds directly to long-standing concerns about graduate readiness; a widely cited 2019 industry study found that roughly four-fifths of Indian engineering graduates were not employable for core technical roles, underscoring the gap NEP 2020 was designed to close (Wagons Learning, 2025). NEP 2020 therefore functions less as a standalone AI policy and more as an enabling framework within which AI-integrated employability skill development can be institutionalised.

AI-Driven Transformation of Employability Skills in India

- **Evidence from Industry and Policy Reports**

Multiple independent data sources converge on a similar picture of accelerating, AI-linked skill demand in India. The India Skills Report 2025, prepared jointly by Wheebox, the Confederation of Indian Industry, the All-India Council for Technical Education (AICTE), and the Association of Indian Universities, draws on responses from over 650,000 candidates and more than a thousand employers across fifteen industries, and finds rising demand for skills in AI, cybersecurity, and green energy alongside continued strength in management and engineering employability (Wheebox et al., 2025). Government skilling data reinforce this trend: over one lakh candidates have enrolled in digital skills courses between 2021-22 and 2025-26 through partnerships with major technology firms, and a dedicated introductory AI module has been added to the employability skills curriculum for vocational training trades (Press Information Bureau, 2026). At the same time, industry analyses caution that supply is not keeping pace with demand. Deloitte India and NASSCOM project that India's AI talent requirement will roughly double between 2022 and 2027, from under 700,000 to over 1.25 million professionals, even as the domestic AI talent base remains an estimated fifty percent short of immediate industry requirements (Deloitte India & NASSCOM, 2024; AI Spectrum India, 2025). This demand-supply gap is not primarily a shortage of interest or aptitude: India is estimated to lead global enrolment in AI and machine learning online courses and ranks among the top countries globally for AI skill penetration (AI Spectrum India, 2025). The bottleneck instead lies in converting this exposure into industry-ready, employable capability at scale.

- **Institutional Responses**

Indian higher education institutions and policymakers have responded through several parallel initiatives. The MeitY–NASSCOM FutureSkills PRIME programme has enrolled over 1.8 million learners in courses covering AI and other emerging technologies, and government-industry collaborations have established AI-focused research centres and doctoral fellowships in partnership with state governments and universities (AI Spectrum India, 2025). A 2025 industry survey of academic institutions found that more than eighty-five percent reported an increased focus on skills-based hiring by employers, with rising demand for AI and machine learning analytics alongside design and cybersecurity skills, prompting institutions to revise curricula accordingly (NASSCOM, 2025). However, the same survey noted that Indian institutions have struggled to translate this activity into globally competitive outcomes, with no Indian institution reaching the top fifty in a major international collegiate programming contest in 2025, suggesting that curriculum revision has not yet been matched by depth of technical training at the highest levels (NASSCOM, 2025). This pattern, broad-based initiative activity alongside uneven depth and reach, recurs across the challenges examined in the next section.

Challenges to AI-Integrated Employability Skill Development

- **The Emerging AI Divide**

Meaningful AI integration in higher education depends on reliable infrastructure, including broadband connectivity, cloud access, and computing capacity, that remains unevenly distributed across Indian institutions. While elite campuses experiment extensively with generative AI and advanced learning platforms, many state universities and rural colleges continue to operate with limited connectivity and outdated technology, a disparity that widened visibly when institutions were forced online during the pandemic (Policy Circle, 2026). Commentators describe this as an "AI divide" layered on top of the pre-existing digital divide, in which students at well-resourced institutions receive what is described as cognitive augmentation from AI tools while others are left further behind (Policy Circle, 2026). Broader digital infrastructure data support this concern: despite national programmes to extend rural broadband, progress has been slow, and India's overall higher education access still shows measurable gaps in digital infrastructure and equity for marginalised student groups (Education for All in India, 2025). State-level efforts to introduce structured AI curricula, such as recent initiatives in Punjab and Odisha, illustrate both the promise and the risk of this moment: without deliberate equity safeguards, mandating AI education risks widening the very gap it is meant to close, as better-resourced institutions adapt fastest while under-resourced ones fall further behind (Policy Circle, 2025).

- **Faculty Readiness and Pedagogical Gaps**

A second constraint is the readiness of faculty to teach with and about AI. Faculty are increasingly expected to integrate AI tools into instruction, redesign assessments to account for generative AI, and manage the ethical implications of AI use in the classroom, often without structured training or institutional support (Policy Circle, 2026). Survey evidence on digital learning more broadly confirms that many faculty members lack sufficient digital literacy and pedagogical preparation for technology-integrated teaching, a gap that became especially visible during pandemic-era online instruction and that dedicated faculty development investment has only partially addressed (Education for All in India, 2025). Because faculty capability directly shapes how effectively AI tools are translated into employability-relevant learning experiences, this gap represents a structural bottleneck that curriculum reform alone cannot resolve.

- **Persistent Skills Mismatch and Underemployment**

Even where employability metrics show improvement, a considerable share of Indian graduates remain mismatched to their qualifications. National data indicate that a majority of graduates and more than a third of postgraduates work in roles that do not correspond to their level of education, even as headline employability rates rise (National Skills Network, 2025). This mismatch is particularly acute in fast-evolving technical fields: industry analysis suggests that India's installed AI talent base met barely half of immediate industry requirement in the recent past, despite strong enrolment in AI-related coursework (AI Spectrum India, 2025). Recent industry research grounded in extensive interviews with academic, industry, and policy leaders warns that fragmented or delayed coordination between education, skilling, and hiring systems could leave a large share of graduates structurally unprepared for an AI-reshaped labour market if current gaps are not addressed with urgency (Zee News, 2026). This points to a coordination failure, rather than a single institutional shortfall, spanning curriculum design, industry engagement, and labour market signalling.

- **Ethics, Academic Integrity, and Responsible AI Use**

The same generative AI tools that support personalised learning and skill acquisition also raise unresolved questions about academic integrity, over-reliance, and the erosion of foundational reasoning skills if AI use is not pedagogically structured. These concerns are reflected in broader debates about how AI literacy should be sequenced within education systems, with scholars cautioning that students enter higher education with widely unequal prior exposure to AI tools and that instructional design must account for this variation rather than assume a uniform starting point (Policy Circle, 2026). Within Indian institutions specifically, the absence of consistent institutional policy on permissible AI use in assessment creates

inconsistency in how academic integrity is enforced, even as government guidance simultaneously encourages AI adoption in teaching and administration (EY & FICCI, 2025). Resolving this tension, encouraging AI fluency while safeguarding independent reasoning and assessment integrity, is a precondition for AI-integrated employability skill development to be credible and sustainable.

Towards an Integrated Framework

The evidence reviewed above suggests that AI-integrated employability skill development in Indian higher education requires simultaneous action across four interdependent dimensions, rather than isolated interventions in any single area. The first dimension is curriculum design, embedding foundational AI literacy and structured human-AI collaboration skills within existing disciplinary programmes, consistent with NEP 2020's mandate for multidisciplinary and skill-integrated undergraduate education (Ministry of Human Resource Development, 2020), rather than treating AI as a standalone elective. The second is faculty capacity-building, providing sustained, structured training that enables instructors to use AI pedagogically and to redesign assessment for an AI-enabled environment, addressing the readiness gap identified in Section 4.2. The third is industry-academia partnership, extending existing models such as FutureSkills PRIME and corporate-sponsored AI training (AI Spectrum India, 2025; Deloitte India & NASSCOM, 2024) into structured curriculum co-design, so that institutional output better matches evolving employer demand rather than lagging behind it. The fourth is equity-focused infrastructure investment, prioritising connectivity, computing access, and faculty support in under-resourced state universities and rural colleges to prevent the AI divide from hardening into a permanent employability divide. These four dimensions reinforce one another: curriculum reform without faculty readiness produces inconsistent delivery, and industry partnership without equitable infrastructure benefits only already-advantaged institutions. Framed this way, AI-integrated employability skill development becomes a systemic institutional capability rather than a discrete curricular add-on.

Recommendations

Based on this analysis, four recommendations follow for the principal stakeholders in Indian higher education. For institutions, embedding applied AI literacy and human-centric employability skills, communication, critical thinking, and adaptability, within core disciplinary courses is likely to be more effective than offering AI as an isolated add-on subject, given evidence that these skills jointly influence employability outcomes (Lakshmi Devi et al., 2024). For policymakers, sustained investment in digital infrastructure and faculty development for under-resourced institutions should be treated as an equity priority, not an efficiency afterthought, given the documented risk that AI adoption could otherwise widen existing institutional disparities (Policy Circle, 2025, 2026). For industry, deepening structured

partnerships with a broader base of institutions, beyond established urban and elite campuses, would help extend existing skilling initiatives to the state universities and colleges where the majority of Indian graduates are educated. For accrediting and regulatory bodies, developing clearer institutional guidance on responsible AI use in assessment would help resolve current inconsistency in academic integrity practice while still encouraging AI fluency. Collectively, these steps align with NEP 2020's foundational goal of developing graduates who are both technically competent and ethically grounded (Ministry of Human Resource Development, 2020).

Conclusion

Artificial intelligence is transforming both the content and the delivery of employability skill development in Indian higher education, but the evidence reviewed in this chapter indicates that the central challenge is one of institutional and systemic translation rather than technological access alone. Rising aggregate employability statistics coexist with persistent underemployment, a widening AI divide between well-resourced and under-resourced institutions, uneven faculty readiness, and unresolved questions of academic integrity. NEP 2020 provides a supportive policy architecture for addressing these gaps, but its implementation requires coordinated action across curriculum design, faculty development, industry partnership, and equity-focused infrastructure investment. If pursued in an integrated and inclusive manner, AI-driven change in higher education has the potential to strengthen graduate employability across India's diverse institutional landscape; if pursued unevenly, it risks deepening the very disparities it is often assumed to resolve. Ensuring the former outcome, rather than the latter, will require sustained collaboration between academic institutions, policymakers, and industry, consistent with the broader vision of building an innovative, skilled, and inclusive future-ready India.

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