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AI-BASED PERSONALISATION IN INDIAN ELT: PROSPECTS, BARRIERS, AND CLASSROOM REALITIES

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ARTICLE INFO	ABSTRACT
Received: 25/03/2026 Accepted: 27/04/2026	This research scrutinizes the hurdles and prospects associated with the use of AI-driven personalized learning in Indian English Language Teaching (ELT) classrooms. The paper maps out the interplay of policy factors, changes in technology, and the realities existing in the classroom that support or hinder adoption through a systematic synthesis of secondary data which included published studies, government reports, EdTech evaluations, and large-scale pilot findings, among others. Infrastructural weaknesses (limited access to devices and internet) are among the major challenges pointed out, as well as linguistic plurality and the limitations of standard speech and language models being furthered by accents, the gap in teacher readiness for AI-based instruction, and the ethical issues in relation to student data, bias and assessment validity. On the other hand, a research study on the use of adaptive learning programs along with trials carried out in a controlled environment has highlighted the existence of great opportunities: scaled differentiated remediation, more low-stakes speaking and writing practice, richer formative feedback, and analytics that augment the teacher's role when systems are adapted locally and contained within consistent pedagogy. The study suggests a practical implementation framework consisting of equity diagnostics, curriculum alignment, localized model development, teacher co-design and human-in-the-loop quality assurance. The paper ends by stating that AI personalization can significantly supplement the communicative ELT goals in India only if its deployment is pedagogically based, locally adapted, ethically managed and backed by continuous teacher support.
Keywords Artificial Intelligence in ELT, adaptive learning, assessment validity, personalized learning, teacher professional development	
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INTRODUCTION

Artificial Intelligence (AI) has undergone a remarkable and very quick transformation from a collection of experimental tools into a more practical and useful system; the system that can even model the strengths and weaknesses of students, give a customized order of tasks, and provide production feedback — all these capabilities have a direct link to the old goals of English Language Teaching (ELT) i.e. customized instruction and continuous practice (Luckin, Holmes, Griffiths, & Forcier, 2016). The

main advantage is that it not only eliminates routine but it also provides pathways of support that are teacher-led and learner-centred (e.g., automated diagnostics, scaffolded speaking practice, and tailored vocabulary recycling) with teachers being highlighted as the designers and mediators of the learning experience.

India's linguistic diversity, huge number of schools and the digital divide between rich and poor make for both severe needs and specific limitations for the application of for each student in English: many times the class has learners who speak multiple languages at home, have very different levels of English exposure and also have different amounts of access to devices and internet — all these are conditions under which the same type of instruction for all will not work and may even worsen the existing inequalities unless technology is well managed and provided for (Ministry of Education, Government of India, 2020). Besides, the National Education Policy 2020 has a very clear stand that technology should be used to open up access and to enhance learning outcomes, however, the policy also stipulates that the new technologies be coupled with equity, teacher education, and local adaptation — this is the policy environment that presents opportunities for AI but at the same time places requirements for safeguards regarding inclusion, language diversity, and data protection. (Ministry of Education, 2020).

CONCEPTUAL AND THEORETICAL FRAMING

In the field of English Language Teaching (ELT), a very helpful conceptual frame for AI-powered personalization combines (a) cognitive and sociocultural theories of language learning (which highlight guided interaction, feedback, and the establishment of the zone-of-proximal-development), (b) personalization models from the learning sciences (learner profiles, adaptive sequencing, and human-in-the-loop tuning), and (c) socio-technical policy viewpoints that give prominence to equity and ethics. Recent reviews of the literature focused on ELT have indicated that among the AI's educational benefits (such as adaptive practice, automated formative feedback, simulated conversational partners), there should be limitations to the use of those benefits due to, for example, algorithmic bias, dialectal mismatches, and the necessity of teacher presence and control (Crompton, 2024; Godwin-Jones, 2023). Consequently, implementing the personalization approach in Indian ELT requires a combination of AI models that assist in diagnostics and individualized practice while teachers keep control over curriculum, judgment, and the all-important cultural-linguistic mediation for communicative competence (Crompton, 2024; Godwin-Jones, 2023).

OBJECTIVES OF THE STUDY

1. To examine the effect of AI-driven personalization on student engagement and language development in Indian ELT.
2. To discover infrastructural, linguistic, and pedagogical obstacles to fair implementation.
3. To determine the teachers' willingness, views, and professional development requirements.

4. To analyze the ethical, privacy, and algorithmic bias issues in AI-enhanced ELT.
5. To present practical recommendations and a scalable implementation framework for educational institutions and teacher-educators.

RESEARCH METHODOLOGY

The present research adopts a method using secondary-data, which consists of the merging of the articles that are peer-reviewed, the reports of governments and policies (e.g., NEP-2020), white papers and EdTech evaluations from the year 2018 to the year 2025. The sources were analysed according to their themes in order to find the most common patterns in the difficulties of implementation, pedagogical impacts, and policy responses, with triangulation through academic, institutional, and industry literature.

REVIEW OF LITERATURE

Pedagogical Affordances and Personalization

The integration of Artificial Intelligence (AI) in education offers significant potential for enhancing individual learning trajectories through adaptive systems. Luckin et al. (2016) posit that these systems facilitate continuous assessment and customized support, providing critical advantages for differentiated practice in vocabulary, grammar, and pronunciation. In the specific context of language acquisition, Godwin-Jones (2023) frames AI chatbots as low-stakes conversational partners that offer immediate feedback. Empirical evidence from large-scale pilots, such as the PAL program in Andhra Pradesh, corroborates these theoretical benefits, demonstrating that learning gains are achievable when pedagogy, monitoring, and incentives are rigorously aligned (Development Innovation Lab / J-PAL, 2025; Crompton, 2024).

Implementation Barriers and the Digital Divide

Despite these gains, implementation is often obstructed by structural and systemic barriers. National data from UDISE+ (2021-22) highlights a significant "digital divide" in India, where uneven access to hardware and stable internet connectivity threatens to exacerbate existing educational inequities. Furthermore, Crompton (2024) identifies teacher readiness and context-setting as persistent hurdles. Both Luckin et al. (2016) and the British Council/Edmett (2024) emphasize that successful integration necessitates a move away from "technocentric" solutions, placing teacher viewpoints and human-centered design at the core of pedagogical implementation.

Technical Limitations and Ethical Considerations

Technical discrepancies further complicate the efficacy of AI tools in the Indian linguistic landscape. Standard Automatic Speech Recognition (ASR) models frequently underperform when encountering Indian-accented English, rendering pronunciation feedback ineffective unless localized to regional phonetic patterns (Dubey & Shah, 2023). Similarly, Dadi and Sanampudi (2021) observe that

Automated Essay Scoring (AES) systems often prioritize superficial metrics over rhetorical quality and coherence. These limitations underscore the necessity for human oversight and formative feedback over purely summative, AI-generated scores.

Policy and Governance

Given the ethical complexities associated with generative AI—including data protection and algorithmic bias—UNESCO (2023) advocates for a policy framework rooted in transparency and human-centered implementation. For the Indian context, expanding AI personalization in government schools requires robust governance and high implementation fidelity to ensure that technological advancements translate into inclusive and equitable learning experiences (UNESCO, 2023; J-PAL, 2025).

POLICY & INSTITUTIONAL CONTEXT IN INDIA

The institutional and policy setting in India is a mixed bag, giving a heavy lift to AI-driven personalized learning in ELT and at the same time, putting up some barriers. National Education Policy 2020 points up the role of technology, blended learning and teacher training as the main factors of improving learning outcomes, thus promoting digital solutions that are sensitive to the local conditions and at the same time, mulling over equity and multilingualism (Ministry of Education, 2020). Supporting NEP's educational priorities, amongst others, is national strategy documents on artificial intelligence that call for frameworks, data governance and standards that will be needed when student data and algorithmic models are shared across sectors (NITI Aayog, 2018). UNESCO's recommendations on generative AI are one of the international guidance that brings in the human perspective layer, advocating for transparency, human supervision, protection of data and capacity building; these recommendations are particularly relevant for India, as mass adoption without safeguards could escalate inequities and bias against speakers of regional varieties (Miao & Holmes, 2023). At the institutional level, UDISE+ and other administrative datasets illustrate a fast increase in digital access but also diversity in states and schools, which shows that the one-size-fits-all strategy will not work without the support of state-level customization, procurement guidance, and continued teacher professional development (Ministry of Education, 2022). Overall, the Indian policy setting embraces the use of AI for learning but at the same time demands the strictest governance, teacher training, and infrastructure investment to ensure that AI personalization plays a supportive role rather than a substitutive role to teaching and equitable access (Ministry of Education, 2020; NITI Aayog, 2018; Miao & Holmes, 2023).

TECHNOLOGIES AND TOOLS FOR PERSONALIZED ELT

The personalized ELT technology ecosystem comprises adaptive learning platforms, intelligent tutoring systems (ITS), automatic scoring (AES), speech technology (ASR/TTS), and a growing number of large language models (LLMs) that are being employed both as conversational tutors and feedback engines. According to Luckin et al., (2016), adaptive platforms can delineate learner skill level and

create custom practice paths while ITS and analytics dashboards give teachers small data sets for specific video clips of students who need remedial training (Gligorea et al., 2023). The automated essay scoring and automated feedback processes are developing, but reviews indicate that AES is reliable in evaluating the surface features like grammar and essay length more than rhetorical coherence; hence a human-in-the-loop model is still considered best practice in high-stakes or formative writing feedback (Dadi & Sanampudi, 2021). On the side of spoken language, ASR systems make it possible to conduct large-scale pronunciation and speaking practice; however, the most commonly available models that are trained on American/British English deliver inconsistent results with Indian accents unless the models are specifically fine-tuned through transfer learning and development of locally-collected corpora (Dubey & Shah, 2022). On the other hand, LLMs and generative systems bring about easy access to interactive conversation, clarification of errors and production of materials—yet they also provoke new concerns with regard to hallucination, cultural mismatch and compatibility with communicative syllabi (Godwin-Jones, 2023). Therefore, Interoperability, vendor transparency, localizability (assistance for Indic languages and code-mixing), and teacher control are the main technical design criteria when selecting tools for Indian ELT classrooms (Luckin et al., 2016; Dubey & Shah, 2022; Gligorea et al., 2023).

CHALLENGES OF IMPLEMENTING AI-DRIVEN PERSONALIZATION IN INDIAN ELT CLASSROOMS

The challenges related to the implementation can be categorized into various layers: infrastructural, linguistic, pedagogical, ethical and economic. The infrastructure, for example, is still very uneven—many schools lack the basic amenities like a reliable internet connection, functioning devices, and electricity backup (UDISE+ data), so the digital personalization might be completely inaccessible or have very little variation from one region to another (Ministry of Education, 2022). Linguistically, the multilingual nature of India's classrooms and the mixing of languages to eaves dropping along with the differing regional accents all constitute a factor that could lead to getting the wrong interpretation of learners or their level of proficiency by out-of-the-box ASR/LLM systems where the mistakes are unfair assessments or demotivated students (Dubey & Shah, 2022; Godwin-Jones, 2023). Moreover, from a pedagogical point of view, teachers are rarely trained in employing adaptive workflows in communicative English Language Teaching (ELT) lessons; consequently, the AI may be either completely ignored or result in teaching aiming at superficial measurable outcomes, without any meaningful professional development and co-design (Edmett, 2024; Crompton, 2024). The ethical issues concerning student data privacy, consent, and algorithmic bias are particularly acute for minors in public systems; requiring robust data governance, transparency in decision logic and redress mechanisms (UNESCO, 2023; NITI Aayog, 2018). Moreover, the procurement and sustainability issues—licensing costs, vendor lock-in, and maintenance—often cause the educational institutions to face a challenge of

AI-Based Personalisation in Indian ELT: Prospects, Barriers, and Classroom Realities getting from pilot projects to totally implemented No stable funding or public-private partnerships aimed at pedagogical outcomes rather than feature lists can help (Edmett, 2024; Ministry of Education, 2020). All of these barriers can be conquered but the victory will require a careful mix of policy, adaptation of technology to local conditions, and the support of teachers at the forefront (Ministry of Education, 2022; Dubey & Shah, 2022; UNESCO, 2023).

OPPORTUNITIES AND PEDAGOGICAL BENEFITS

As long as AI-driven personalization is applied with great pedagogical clarity and effective control, it will introduce numerous benefits to the Indian English Language Teaching (ELT) field that would be hard to resist, such as large-scale differentiated instruction, highly accurate formative feedback, more low-stakes speaking practice, and less burden for the teacher with the help of analytics that inform grouping (Luckin et al., 2016; Gligorea et al., 2023). Programs that used adaptation as their method of teaching report significant increases in learning when technology is combined with a good pedagogy and teacher training—implying that every student could be fast-tracked during their learning period to reach grade level (Development Innovation Lab / PAL evaluations). Moreover, the AI tools could even make the teaching of languages to groups of students speaking different languages easy by providing scaffolded explanations, translations, and using various modes of presentation (text, audio, visuals) that fit the learners' zones of proximal development, contingent upon the models being localised and trained on representative data (Godwin-Jones, 2023; Gligorea et al., 2023). In addition, through the analysis of data, the detection of patterns (affect, engagement, error types) will be made possible which can lead to the identification of areas where professional development is needed and consequently the upturn in curriculum adjustment thus increased accountability across the board concerning learning outcomes instead of just measuring input metrics. If the Indian policy priorities of equity, teacher capacity, and data governance are adhered to, AI personalization might be a strong ally for communicative pedagogies and a driver to smoothen the access and quality gaps that have been around in the English language instruction for a long time. (Luckin et al., 2016; Gligorea et al., 2023; Godwin-Jones, 2023). The significance of studying AI-powered language learning applications lies in their growing influence on the development of learner autonomy and communicative competence—two essential pillars of language acquisition. (Clive & Athyal, 2026)

EVIDENCE AND ILLUSTRATIVE CASE STUDIES (INDIA AND COMPARABLE CONTEXTS)

According to research conducted in India and similar low-and-middle-income areas, personalized/adaptive programs that are carefully governed and based on pedagogy can lead to significant learning gains, whereas AI tools with no proper adaptation to the context have given variable results. The rollout of Personalized Adaptive Learning (PAL) by the Government of Andhra Pradesh—executed with state governance, a strategic partner (Central Square Foundation), and a technology

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provider (ConveGenius)—has been rated as having a great impact: recent reports and by media declare speeded-up learning (e.g., the Development Innovation Lab / J-PAL initiative reporting large gains equalling up to ~1.9 years in 17 months in some cohorts) and extensive reach (over 1,000+ schools and hundreds of thousands of students), showing that reach is attainable when pedagogy, monitoring and teacher supports are in sync (Development Innovation Lab/J-PAL; Times of India, 2025). Global reviews of adaptive systems back the claim that adaptive sequence and regular low-stakes feedback integrated with teacher facilitation increase engagement and attainment (Gligorea et al., 2023). Nevertheless, technical research from India warns that speech and language models have to be adapted to the local context—ASR systems that are developed on non-Indian varieties do not perform well on Indian accents and code-mixed statements unless they are re-trained on appropriate corpora (IIT Bombay survey; Ahmed, 2023), and automated writing/scoring systems are on the surface features strongest but on rhetorical quality weaker unless human supervision is allowed (Ramesh, 2021). These mixed results suggest that the evidence base gives support to the AI personalization’s potential—but only where implementation fidelity, local data, teacher capacity, and governance are the central design features (Development Innovation Lab/J-PAL; Gligorea et al., 2023; IITB ASR survey; Ramesh, 2021).

Table 1 — Selected evidence from large-scale and pilot implementations

Programme / Study	Location	Scale (schools / students)	Reported outcome (selected)	Source
PAL (Personalized Adaptive Learning) rollout	Andhra Pradesh, India	1,224 schools; ~325,000 students (reported scale expansion)	Learning gains up to ~1.9 years in 17 months (evaluation reported).	Times of India (2025); J-PAL / Development Innovation Lab page. (The Times of India)
PAL pilot / evidence syntheses	India (multiple pilots)	Hundreds of schools (pilots)	Adaptive pathways improved remediation where teacher support + monitoring present.	PAL Works / ConveGenius summaries. (PAL Works)
ASR & localized models	India (research studies)	research datasets	Off-the-shelf ASR underperforms on Indian accents;	IIT Bombay ASR survey; Ahmed (2023). (CFILT)

PRACTICAL IMPLEMENTATION FRAMEWORK (FOR SCHOOLS / COLLEGES / EDTECH)

The practical framework consists of six mutually dependent elements, namely: (1) Needs assessment & equity diagnostics (mapping the profiles of learners, identifying the gaps in devices/connectivity); (2) Curriculum aligned design (ensuring the AI-based tasks conform to the communicative syllabi and formative goals); (3) Localized models & content (fostering the regional accents, code-mixing, and local contexts for ASR/LLM prompts); (4) Teacher professional development and co-design (teachers as curriculum mediators, not mere users); (5) Procurement, interoperability, & data governance (open standards, vendor audits, privacy by design); and (6) Monitoring, Evaluation, &

Human-in-the-loop Quality Assurance (learning metrics, usage, attrition, and human checks of automated scoring). The NEP-2020, as well as the national AI strategy documents, recommended technology alignment to pedagogy, teacher capacity, and equity goals; thus, procurement and scaling plans should create multi-year budgets for infrastructure and continuous professional development, not only for initial licensing (Ministry of Education, 2020; NITI Aayog, 2018). International guidance (UNESCO) stresses the need for transparency, redress, and teacher supervision—transforming these principles into practices requires the establishment of standard rubrics for conducting model fairness audits, creation of clear consent protocols for minors, and implementation of pilots that report disaggregated outcomes by region, language, and socio-economic status (UNESCO, 2023). In practical terms, the staged pilots—the starting point being those blended teacher-led classrooms, subsequent improvement of localized models, and wider evaluation—are the recommended path from small pilots to system adoption, as Andhra Pradesh's experience illustrates when governance and coaching are in place (Ministry of Education, 2020; Development Innovation Lab, 2025).

Table 2 — Readiness indicators (India, 2021–22) — infrastructure & foundational learning

Indicator (UDISE+ / ASER)	National Figures (2021–22 / 2022)	Implication for AI Personalization	Source
Schools with at least one computer	45% (UDISE+ 2021–22)	Many schools lack even basic hardware; device access limits synchronous AI use.	UDISE+ 2021–22 report / national analysis. (Education for All in India)
Schools with internet connectivity	34% (UDISE+ 2021–22)	Connectivity gaps constrain cloud-based AI and real-time speech tools.	UDISE+ 2021–22. (Education Ministry India)
Grade V children who can read Grade II level English (rural govt. schools)	~38% (ASER 2022 highlights)	Foundational skill gaps mean AI must prioritize remediation pathways.	ASER 2022 national findings. (Aser Centre)

ASSESSMENT, VALIDITY AND QUALITY ASSURANCE FOR AI-MEDIATED ENGLISH ASSESSMENT

Validity of assessment must be a major issue when AI takes over the scoring process and makes formative judgments. Studies done on automated essay scoring (AES) give proof of high inter-system reliability for surface features (grammar, length, lexical sophistication proxies) but lower construct

validity for coherence, argumentation and contextual rhetorical skill—therefore AES should be used mainly as a formative tool along with human subjective intervention rather than being the only summative determinant (Ramesh, 2021; IJCAI survey, 2024). In assessing spoken-language, error rates of automatic speech recognition for Indian English can distort pronunciation scoring and fluency metrics measures; consequently, localized acoustic and language models and human review are necessary to prevent systematic disadvantage to Indian English varieties (IITB ASR survey; Ahmed, 2023). The recent research on LLMs for scoring has caution over hallucination and depends very much on prompt framing; thus, quality control entails visible rubrics, regular fairness audits, human re-scoring of samples, and calibration studies that expose bias according to dialect, gender, and socio-economic indicators (Pack, 2024; IJCAI AES survey, 2024). In practical terms, quality assurance entails having a human-in-the-loop for borderline or high-stakes cases, and also reporting model performance disaggregated by pertinent subgroups, and eventually, asking vendors to offer descriptions of training/test datasets along with error analyses as a condition of procurement (Ramesh, 2021; Pack, 2024).

POLICY RECOMMENDATIONS (NATIONAL, STATE, INSTITUTIONAL)

On a national scale, the policy should establish the lowest standards for data protection and audits of fairness for EdTech that is directed towards children and the policy should also fund state-level pilots which are aimed at rural and multilingual contexts and finally, the EdTech funding should be linked with the showing of pedagogical outcomes rather than the feature checklists (NEP-2020; NITI Aayog). The states should share the cost of the infrastructure (devices, dependable power, and bandwidth), and set up teacher-coaching centres as well as keep a public vendor assessment registry through which the purchase of goods will be both competitive and transparent (the UDISE+ indicators suggest the allocation of state funds for the purpose). On a college and school level, the institutions should demand vendor openness (model cards, language/dialect-wise test set performance), apply human-in-the-loop policies for evaluation, and integrate local content co-creation and teacher professional development (PD) budgets into procurement agreements (UNESCO advice). These policies at different levels help to minimize the risk of unequal distribution and also guarantee that AI personalization in learning will be meeting equity needs rather than worsening the already existing gaps (Ministry of Education, 2020; NITI Aayog, 2018; UNESCO, 2023).

IMPLICATIONS FOR TEACHER EDUCATION AND CURRICULUM DESIGN

The teacher education that is provided has to be transformed from only basic digital literacy to AI-mediated pedagogies: at the same time, pre-service and in-service courses should train teachers on how to read the analytics, make AI suggestions for communicative tasks, design prompts that are area-specific, and test the fairness of the outputs. The British Council and other organizations that emphasize teaching English as a second language advocate the co-design and the formation of continuous

professional learning communities, in this way teachers will not lose their power and will be able to convert AI feedback into proper communicative practice (Edmett, 2024). Curriculum design must not only include micro-pathways for remediation but also diagnostic checkpoints that are clearly defined and mapped to grade-level communicative competence, and the assessment tasks that will allow the judgments of humans and machines to support each other (Luckin et al., 2016). Therefore, the inclusion of AI literacy in teacher training is a systemic lever to maintain efficient implementation and to avoid the “black-box” usage of the systems which the teachers can neither criticize nor adapt (Edmett, 2024; Luckin et al., 2016).

LIMITATIONS AND RISKS ASSOCIATED

The main dangers include bias in the algorithms (against dialects and socio-economic groups), data being disclosed about minors, and erroneous or misleading feedback from the model which is also known as ‘hallucination’ and in addition, a case of reduced skill level of teachers if professional judgment is replaced by AI instead of being augmented (UNESCO, 2023; NITI Aayog, 2018). Besides, UNESCO recommends using transparent practices, human supervision, and ethical procurement as fundamental principles in AI usage; India’s AI strategy also advocates for sectoral safeguards and public-interest data stewardship (UNESCO, 2023; NITI Aayog, 2018). The operational limitations that are prevalent—like gaps in the infrastructure and the training data not being representative—mean that many models will, by default, be systematic in underperforming for the most disadvantaged learners, unless there are specific corrective investments made. The absence of an ethically functioning system that involves consent, a minimum amount of data collection, and local redress mechanisms would lead to the unethical practice of imposing certain conditions. Thus, the ethical implementation of the technology entails not only the technical fixes (local datasets, fairness audits), but also the policy design (privacy laws and procurement rules) and strong teacher ownership to make sure that AI will lead to equitable ELT outcomes (UNESCO, 2023; NITI Aayog, 2018).

CONCLUSION

The use of AI-powered personalized learning brings clear benefits to Indian English Language Teaching (ELT) especially in context of remediation, increasing practice opportunities and teacher support, provided that the deployment is based on pedagogy, adapted to the local culture, and governed by ethical standards. The experience of PAL in Andhra Pradesh demonstrates that it is possible to scale up where governance, coaching, and monitoring are associated with the technology; UDISE+ and ASER data, however, keep reminding us that the issues regarding the policy making and implementation have to be resolved at the same time. Hence the impact of the initiative is maximized when it is combined with a series of pilots, teacher co-design, development of a localized model, a mandatory quality assurance (human-in-the-loop), and targeted public investment to eliminate the infrastructural and learning gaps. When these conditions are fulfilled, AI personalization can work hand in hand with the

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communicative ELT goals and help bring about a reduction in the long-standing inequalities in English learning among India's population.

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