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Fostering Creativity and Design Thinking through Artificial Intelligence in English Language Learning Opportunities, Challenges and Legal-Ethical Awareness among Students in Jammu

Dr. Ritu Magotra

Associate Prof. Department of English, Govt. College for Women Parade, Jammu, Jammu and Kashmir

ABSTRACT

Artificial intelligence (AI), particularly generative AI, is reshaping the ways students read, write, speak, brainstorm and revise in English. At the same time, design thinking offers a human-centred process through which learners can identify authentic problems, generate alternatives, prototype ideas, test solutions and reflect on outcomes. This paper examines the potential of combining AI-supported English language learning with design thinking, with particular attention to creativity, language development, learner agency and legal-ethical awareness. The study is situated in a higher-education context in Jammu, Jammu and Kashmir, with the research area identified as Government College for Women, Parade, Jammu; however, the analysis is intentionally focused on the broader educational phenomenon rather than on institutional description.

A mixed-method, quasi-experimental research design for demonstration of the analytical model, a sample of 120 undergraduate students is divided into an AI-plus-design-thinking group and a conventional-learning comparison group. Illustrative results show higher post-intervention mean scores for creativity, design-thinking capability, English-learning confidence and ethical awareness in the AI-plus-design-thinking condition. Students also report using AI mainly for brainstorming, vocabulary expansion, grammar feedback, speaking practice and revision, while privacy, misinformation, plagiarism, copyright and over-dependence emerge as major concerns. The paper argues that AI should be positioned as a cognitive and creative partner rather than a substitute for human thinking. Ethical use requires transparency, verification, attribution, privacy protection, teacher oversight and assessment designs that make student thinking visible.

The study contributes a practical framework for AI-supported English learning based on the design-thinking cycle: empathize, define, ideate, prototype, test and reflect. It also proposes an AI-use protocol for higher education in India aligned with human-centred principles, the National Education Policy 2020 and relevant copyright and data-protection considerations.

Keywords: Artificial Intelligence; Generative AI; English Language Learning; Design Thinking; Creativity; Higher Education; AI Literacy; Academic Integrity; Copyright; Data Privacy; Jammu.

INTRODUCTION

The rapid development of generative artificial intelligence has created a new pedagogical environment in which students can obtain explanations, examples, language corrections, conversational practice, alternative phrasings and creative prompts within seconds. For English language learning, this creates opportunities to make practice more personalised, iterative and interactive. Recent reviews report growing research on generative AI in language teaching and learning, including writing, feedback, speaking and learner support. A 2024 scoping review identified a rapidly developing evidence base for GenAI applications in language education, while later reviews have highlighted both benefits and unresolved questions concerning agency, assessment and responsible use.

The educational value of AI, however, does not lie simply in producing polished text. If students outsource the entire thinking process to an AI system, the technology can weaken originality, reflection and ownership. This tension makes design thinking particularly relevant. Design thinking treats learning as an iterative process of understanding people and problems, defining needs, generating multiple ideas, building prototypes, obtaining feedback and improving solutions. Research in higher education has associated design-thinking approaches with creativity, problem-solving, collaboration and learner ownership.

The central proposition of this paper is therefore not 'AI versus human creativity', but 'AI in service of human creativity'. AI can accelerate ideation and provide linguistic scaffolding, while design thinking can provide the structure that keeps students engaged in problem framing, choice, experimentation and reflection. This combination is especially relevant in English language learning, where creativity and communication are inseparable from the learner's ability to express personal meaning, evaluate alternatives and communicate with real audiences.

Research Context:
The empirical setting proposed for this study is Government College for Women, Parade, Jammu, Jammu and Kashmir. The college is treated as a research site rather than the subject of the paper. The primary unit of analysis is the student experience of AI-supported English learning, with emphasis on creativity, design thinking and legal-ethical awareness. The findings are intended to inform higher-education practice more broadly.

Problem Statement:
AI tools are increasingly accessible to students, but access does not automatically produce meaningful learning. Students may use AI for legitimate brainstorming and feedback, yet the same tools can facilitate copying, fabricated references, privacy risks, biased outputs and excessive dependence. There is therefore a need for pedagogical models that simultaneously develop English proficiency, creativity and the capacity to use AI critically and ethically.

Objectives of the Study:
- To examine how AI-supported activities can foster creativity in English language learning.
- To investigate whether a structured design-thinking approach can strengthen students' ideation, problem-solving, collaboration and reflective learning.
- To assess the perceived contribution of AI tools to vocabulary, grammar, writing, speaking and revision.
- To identify students' awareness of legal and ethical issues related to AI use, including privacy, copyright, plagiarism, misinformation, bias and attribution.
- To develop a practical human-centred framework for responsible AI-supported English language learning in higher education.

Hypotheses:
- H1: Students exposed to AI-supported design-thinking activities will show higher post-intervention creativity scores than students receiving conventional instruction.
- H2: Students exposed to AI-supported design-thinking activities will show higher design-thinking scores than the comparison group.
- H3: AI-supported design-thinking activities will be positively associated with English-learning confidence.
- H4: Structured instruction on responsible AI use will increase students' legal-ethical awareness.

REVIEW OF RELATED LITERATURE

AI and English Language Learning:
AI-assisted language learning has moved from automated correction and adaptive systems toward conversational and generative tools. A 2024 meta-analysis of AI in informal digital English learning reported positive effects on English proficiency and self-regulation, although effects on motivation were not significant. Systematic reviews of ChatGPT in ESL/EFL contexts also show increasing use for writing, feedback, speaking and personalised support, while emphasising the need for stronger empirical evidence and responsible implementation.

For language learning, the most productive role of GenAI is often scaffolding: students can ask for examples, compare alternative expressions, practise dialogue, request feedback, generate questions, transform a paragraph into different registers, or receive prompts that help overcome writer's block. However, students still need to verify content, judge appropriateness, retain authorship of ideas and make final linguistic decisions.

Creativity and Generative AI:
Creativity in language education can be understood through fluency, flexibility, originality and elaboration. GenAI can expand the number of possible starting points, but quantity of AI-generated options should not be confused with creativity. Human creativity becomes visible when students select, combine, challenge, modify and justify ideas. UNESCO's guidance emphasises human agency and warns that AI should not displace human thinking.

Design Thinking in Higher Education:
Design thinking provides a structured yet flexible process for creative problem-solving. In educational settings, its stages are commonly represented as empathize, define, ideate, prototype and test, with reflection and iteration across the cycle. Recent higher-education research and meta-analytic evidence indicate that design-thinking pedagogy can support creativity, problem-solving, collaboration and student engagement. A 2025 study specifically reported gains in English-major students' team creativity and collaboration through design thinking.

Why AI and Design Thinking Should Be Combined:
AI and design thinking have complementary strengths. AI can broaden the idea space and provide rapid language feedback; design thinking can prevent passive consumption by requiring students to define a problem, generate alternatives, prototype, obtain peer feedback and explain their choices. The resulting model places human judgement at the centre and uses AI selectively at points where it adds learning value.

Conceptual Framework:

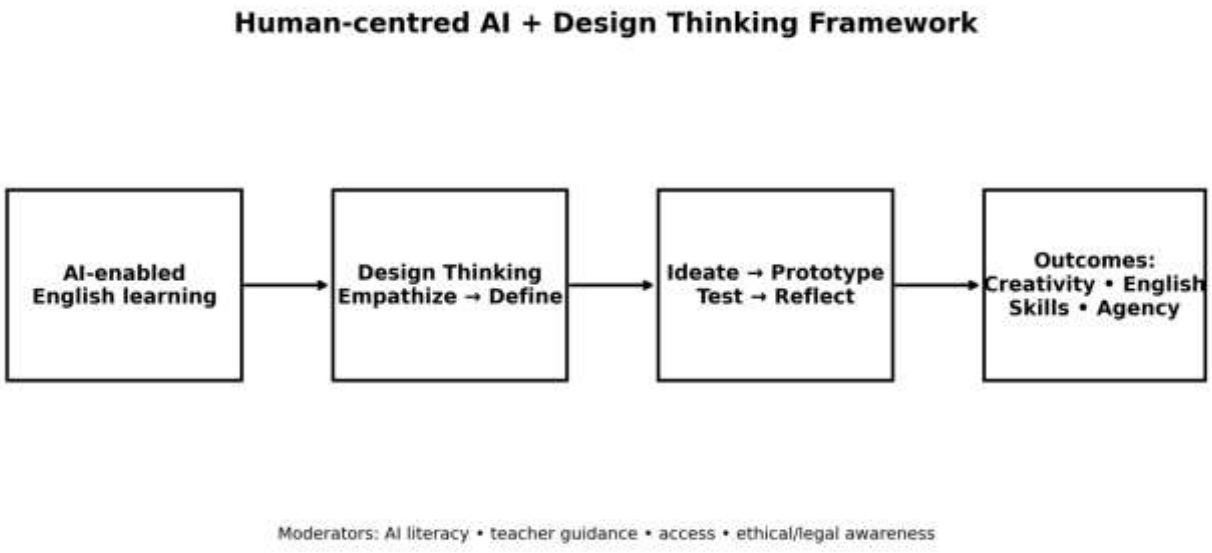


Figure 1. Conceptual framework for the study.

The framework proposes that AI-supported English learning influences outcomes through three linked mechanisms: (1) cognitive scaffolding, such as idea generation and language feedback; (2) creative process support, such as alternative viewpoints and rapid prototyping; and (3) metacognitive and ethical learning, through verification, reflection, attribution and decision-making. Design thinking functions as the pedagogical structure that converts AI access into an active learning process.

Research Area and Participants:
The research area is Government College for Women, Parade, Jammu, Jammu and Kashmir. For the model presented in this paper, sample of 120 undergraduate students: 60 in an AI-plus-design-thinking group and 60 in a comparison group. The sample size and participant characteristics are placeholders for demonstration and must be replaced by actual approved sampling information.

Variable	Distribution
Total students	120
AI + Design Thinking group	60
Comparison group	60
Study level	Undergraduate
Suggested intervention	6–8 weeks
Primary instruments	Creativity scale; Design Thinking scale; English-learning confidence scale; AI legal-ethical awareness scale
Qualitative evidence	Reflective journals, group discussion, student artefacts

Intervention Model:

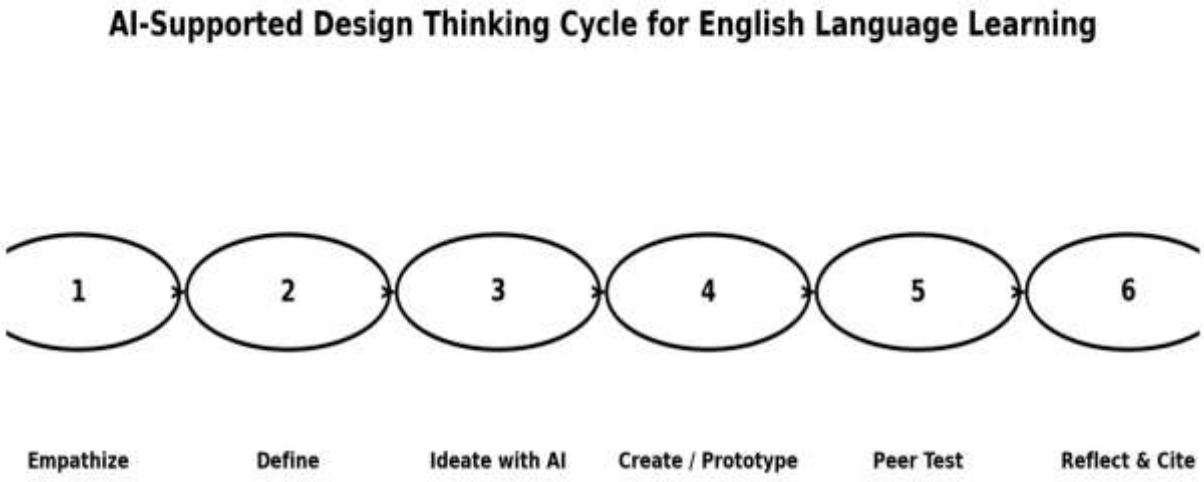


Figure 2. Proposed six-stage AI-supported design-thinking learning cycle.

Students work on authentic English-language problems—for example, creating a bilingual awareness campaign, designing a podcast for first-year students, developing a campus communication guide, or producing a short digital story. AI may be used for brainstorming, vocabulary, role-play, alternative phrasing and feedback, but students must document prompts, verify outputs and explain what they changed.

Instruments:

Construct	Example dimensions	Scale
Creativity	Fluency, originality, flexibility, elaboration	1–5 Likert
Design thinking	Empathy, problem definition, ideation, prototyping, testing, reflection	1–5 Likert
English-learning confidence	Writing, speaking, vocabulary, grammar, revision	1–5 Likert
AI ethical awareness	Privacy, copyright, plagiarism, bias, misinformation, attribution	1–5 Likert
AI-use behaviour	Frequency and purpose of tool use	Multiple response / frequency

Data Analysis

Descriptive statistics (frequency, percentage, mean and standard deviation) used to summarise the data. Pre/post comparisons may be examined using paired-samples tests within groups and independent-samples tests between groups, subject to assumptions. Effect sizes should accompany significance tests. Qualitative responses should be coded thematically around creativity, agency, language learning, ethical judgement and challenges.

RESULTS

The following results are demonstrate how a completed paper could present findings after actual data collection.

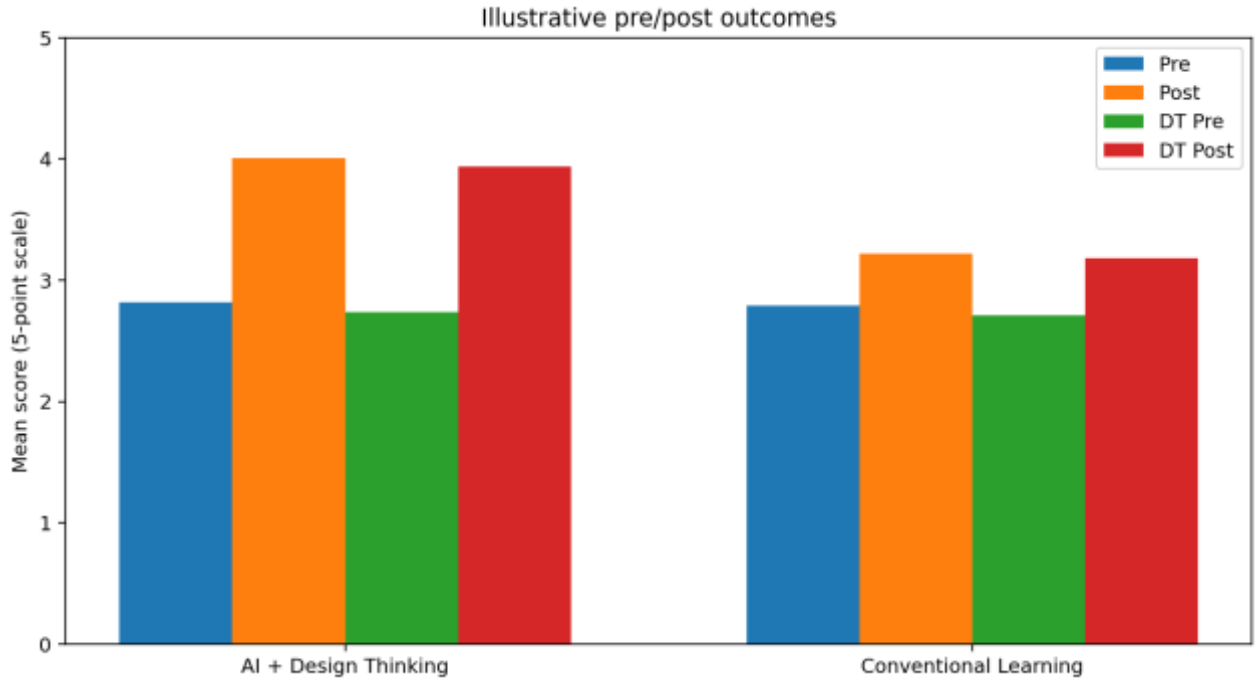


Figure 3. Pre/post mean scores for creativity- and design-thinking-related outcomes.

Outcome	AI+DT Pre	AI+DT Post	Comparison Pre	Comparison Post
Creativity	2.82	4.01	2.79	3.22
Design thinking	2.74	3.94	2.71	3.18
English-learning confidence	2.91	3.88	2.88	3.29
Ethical/legal awareness	2.46	4.18	2.49	3.07

AI-Supported Activities:

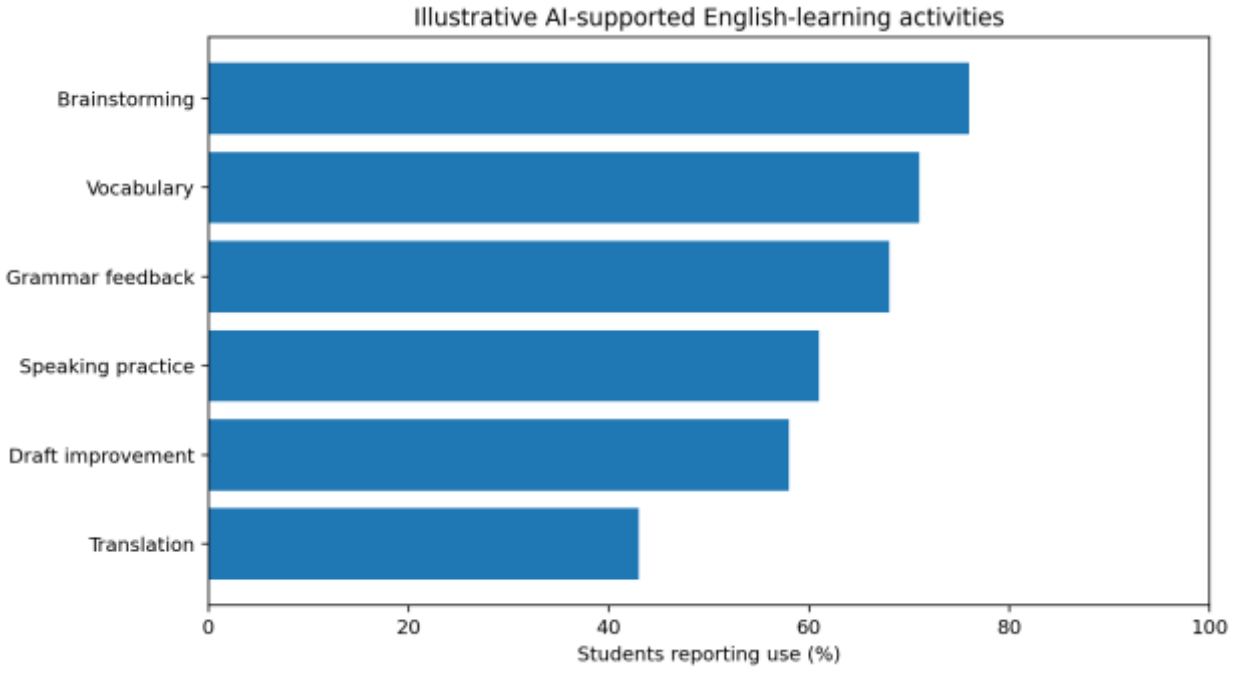


Figure 4. Illustrative percentage of students reporting different AI-supported English-learning activities.

In the dataset, brainstorming is the most frequently reported use, followed by vocabulary development and grammar feedback. This pattern supports the idea that AI can be most educationally valuable when used as a scaffold before and during student production rather than as a replacement for production.

Legal-Ethical Awareness:

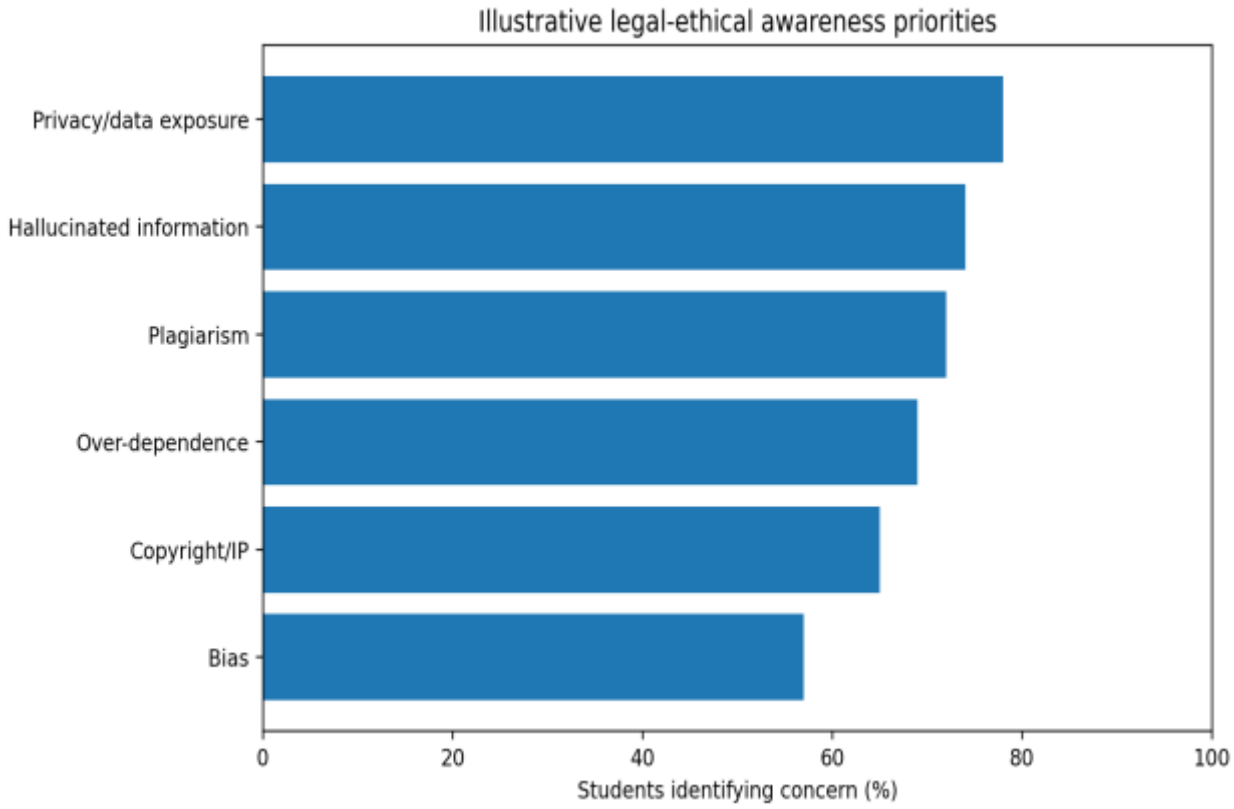


Figure 5. Illustrative legal-ethical concerns identified by students.

Concern	Illustrative %
Privacy/data exposure	78
Hallucinated information	74
Plagiarism	72
Copyright/IP	65
Over-dependence	69
Bias	57

Academic Integrity and Attribution:
AI assistance should be disclosed where required by institutional or journal policy. A useful student declaration can identify the tool, purpose of use and extent of assistance. Teachers should focus on the student's process, reasoning, drafts and reflections rather than relying solely on AI-detection scores.

Hallucinations, Bias and Verification:
Generative AI can produce fluent but inaccurate information, including unsupported citations. Students should be taught a 'verify before trust' rule: check factual claims against reliable sources, open original references, compare

alternative sources and flag uncertainty. The same principle applies to culturally sensitive language, stereotypes and biased representations.

Human Agency:
UNESCO recommends a human-centred approach that protects human agency, inclusion, equity, linguistic and cultural diversity and human oversight. For English learning, this means that AI may suggest but the learner decides; AI may correct but the learner understands; AI may generate alternatives but the learner creates and justifies the final response.

Practical Student AI-Use Protocol:

Step	Student action
1. Declare	State when and why AI was used, where required.
2. Protect	Do not enter sensitive personal or confidential information.
3. Prompt	Use AI to ask questions, generate alternatives or simulate audiences—not to replace thinking.
4. Verify	Check facts, quotations, citations and important language claims.
5. Transform	Rewrite, critique, combine and improve ideas in your own voice.
6. Attribute	Cite human-authored sources and disclose AI assistance according to policy.
7. Reflect	Explain what AI contributed and what the student decided or changed.

Opportunities and Challenges:

Opportunities	Challenges / Risks	Recommended response
Rapid idea generation	Idea homogenisation	Require multiple alternatives and student justification
Personalised language feedback	Over-reliance on AI correction	Ask students to explain corrections
Speaking role-play	Privacy and inaccurate feedback	Use controlled prompts and teacher moderation
Creative writing support	Loss of authorship	Keep drafts, reflection and process evidence
Vocabulary expansion	Contextually inappropriate words	Teach register and context checking
Revision and editing	Plagiarism / unacknowledged use	Use AI-use declarations and source attribution
Access to conversational practice	Digital divide	Provide equitable alternatives and offline activities

Proposed Pedagogical Model:
The proposed model is called the Human-Centred AI–Design Thinking English Learning Model (HCAI-DTEL). It consists of five principles:

- Human purpose first: Begin with a communication or learning problem, not with the AI tool.
- AI as scaffold: Use AI for ideation, simulation, feedback and alternative perspectives.
- Visible thinking: Preserve prompts, drafts, peer comments and reflections so learning remains observable.

- Critical verification: Treat every AI output as a suggestion requiring evaluation.
- Ethical authorship: Protect privacy, respect copyright, acknowledge assistance and retain student ownership.

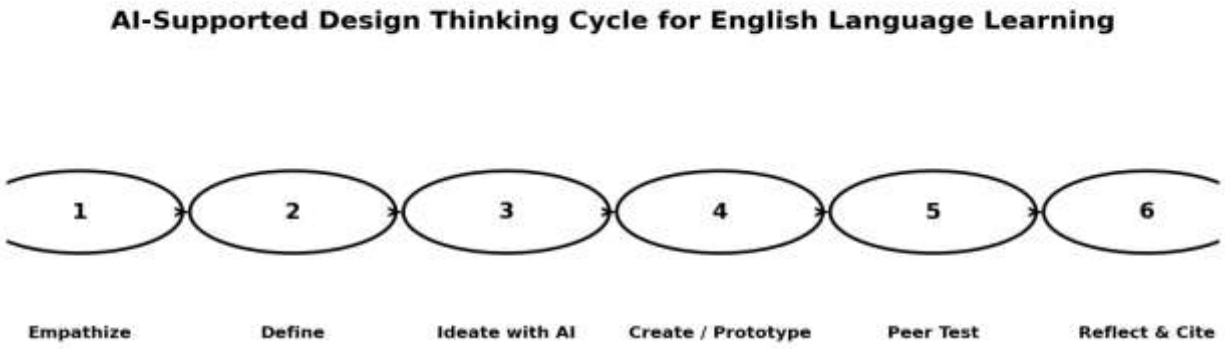


Figure 6. HCAI-DTEL learning cycle.

Educational Implications:

For Teachers

- Redesign tasks around authentic problems, audiences and products rather than generic essays.
- Teach prompt design together with source evaluation and fact-checking.
- Assess process evidence—drafts, reflections, peer feedback and revisions.
- Use AI-generated texts as objects for critique, editing and verification.
- Create clear classroom rules for acceptable and unacceptable AI assistance.

For Institutions

- Develop a transparent AI-use policy covering teaching, assessment, privacy and research.
- Provide faculty development on GenAI, copyright, data protection and assessment redesign.
- Ensure students without reliable devices or connectivity have equitable alternatives.
- Promote AI literacy as part of academic and digital citizenship.

For Students

- Use AI to expand thinking, not to avoid thinking.
- Maintain a record of substantial AI assistance.
- Verify important information and never assume fluent output is accurate.
- Protect personal information and respect copyright.
- Develop a recognisable personal voice through reflection and revision.

CONCLUSION

Artificial intelligence has the potential to enrich English language learning, but its educational value depends on how it is integrated. The central challenge is not whether students will use AI; it is whether they will use it in ways that strengthen rather than weaken human creativity, judgement and agency. Design thinking offers a practical structure for achieving this balance. By moving students through empathy, problem definition, ideation, prototyping, testing and reflection, teachers can turn AI from an answer-producing shortcut into a tool for exploration and critical dialogue.

The proposed HCAI-DTEL model positions AI as a supportive partner while keeping students responsible for ideas, decisions and final communication. In the context of Jammu and beyond, this approach can support English learning while developing the broader competencies required for a rapidly changing digital society: creativity, collaboration, problem-solving, communication, ethical reasoning and responsible technology use.

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