

AI-Empowered Transformation of University English Teachers' Roles and Pedagogical Approaches in the Digital Era

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Abstract: The rapid integration of artificial intelligence (AI) into university English education has prompted a profound rethinking of language teachers' professional identities and practices. Based on a systematic review of recent empirical studies, this paper addresses two core questions: how teacher roles are reconfigured under AI-enabled instruction, and what pedagogical innovations are needed to sustain the humanistic essence of education. Grounded in AI-TPACK, double stimulation theory, and collaborative knowledge creation, this study identifies six emerging teacher roles: AI Collaborator, Learning Architect, Humanistic Guide, Data Interpreter, Ethical Mediator, and Epistemic Agent. It also proposes a three-dimensional pedagogical transformation model. The paper argues that although AI improves instructional efficiency and personalized support, human elements—including empathy, critical dialogue, moral guidance, and situated interaction—remain irreplaceable. Practical pathways for teacher development are provided, including tiered training, virtual knowledge-building communities, and institutional support. This framework offers actionable guidance for university English teachers to achieve human-AI collaborative teaching while upholding educational values.

Keywords: Artificial Intelligence; University English Teachers; Role Transformation; Pedagogical Innovation; Human-AI Collaboration; Teacher Professional Development.

1. Introduction

The emergence of generative AI, especially large language models such as ChatGPT and DeepSeek, has triggered a paradigm shift in global education. In university English education, AI has evolved from a supplementary tool to a core component of the teaching and learning ecosystem, supporting intelligent tutoring, automated essay scoring, real-time pronunciation feedback, and adaptive learning path design[5]. Nevertheless, this technological revolution also brings severe challenges to teachers' professional identity, instructional approaches, and long-term development.

Policy documents, including China's New Generation Artificial Intelligence Development Plan (2017)[13] and teacher Digital Literacy Standards (2023)[14], highlight the urgency of enhancing teachers' digital competence. However, gaps remain between technology availability and meaningful pedagogical integration. Many university English teachers lack sufficient AI operational skills, conduct superficial technology-curriculum integration, and struggle with learning analytics[4]. Techno-anxiety, role ambiguity, and concerns about professional devaluation are also widespread.

This study addresses two interrelated research questions:

- 1) How have university English teachers' professional roles been reconfigured in AI-supported environments?
- 2) What pedagogical transformations are needed to leverage AI while preserving the humanistic core of language education?

2. Theoretical Framework

2.1. AI-TPACK: An Extended Framework for AI-Affected Teaching

The TPACK model emphasizes the integration of content knowledge, pedagogical knowledge, and technological

knowledge[6][11]. Given the unique features of AI, including natural language processing and generative capacity, Yan et al. (2020) proposed the AI-TPACK framework, which reframes technological knowledge as AI-specific understanding. Liu (2025)[9] further operationalized this framework for English teachers, covering AI model awareness, AI-mediated task design, and critical evaluation of AI outputs. This framework supports teachers in moving beyond simple tool operation toward contextually appropriate and educationally sound AI integration.

2.2. Double Stimulation and Epistemic Agency

From Vygotsky's double stimulation perspective[12], teachers respond to AI-related challenges (first stimulus) by using supportive resources such as training and collaboration (second stimulus) to develop professional agency. Wu (2025)[2] identified four phases in EFL teachers' epistemic agency development: stimulus conflict, motive conflict, connection to secondary stimulus, and sustained implementation. Teachers with strong epistemic agency actively experiment with AI and redesign instruction, whereas those with low agency remain dependent on conventional teaching methods[15].

2.3. Collaborative Knowledge Creation

The knowledge creation approach regards learning as the production of new artifacts rather than passive absorption of existing knowledge. Damsa et al. (2010)[3] distinguished knowledge-related actions and process-related actions in collaborative epistemic agency. Chu and Wang (2024)[2] found that teachers initially focused on idea sharing and gradually shifted to regulation and reflection. Collaborative platforms and peer learning communities therefore play a vital role in supporting effective AI integration.

3. Transformation of University English Teachers' Roles

3.1. AI Collaborator: From Solo Teacher to Human-AI Partner

AI Collaborators strategically delegate routine, repetitive tasks including grammar checking, vocabulary testing, and draft scoring to AI systems[1][7], freeing time for high-value instructional activities. They also use generative AI to brainstorm teaching ideas and develop materials while maintaining critical oversight: verifying accuracy, cultural appropriateness, and pedagogical suitability. In this partnership, teachers remain decision-makers rather than passive recipients of AI outputs[8].

3.2. Learning Architect: From Lesson Implementer to Personalized Designer

Learning Architects use AI analytics to identify student learning gaps, design adaptive learning paths, and organize multimodal resources. They shift from standardized whole-class teaching to differentiated, evidence-based support that responds to individual student needs.

3.3. Humanistic Guide: From Instructor to Whole-Person Educator

Humanistic Guides provide emotional support, cultural mediation, and value education. Unlike AI systems, teachers can perceive subtle emotional changes, offer timely encouragement, and foster students' cultural awareness and identity[10]. Such affective and humanistic guidance constitutes an irreplaceable dimension of language education.

3.4. Data Interpreter: From Intuitive Decision-Maker to Evidence-Based Practitioner

Data Interpreters transform AI-generated learning analytics into targeted pedagogical interventions. They interpret performance patterns, recognize data limitations, and combine analytical insights with professional judgment to improve teaching.

3.5. Ethical Mediator: From Tool User to Responsible AI Steward

Ethical Mediators safeguard student data privacy, raise awareness of algorithmic bias, establish academic integrity norms, and guide students in using AI responsibly. They help students distinguish appropriate AI support from academic dishonesty.

3.6. Epistemic Agent: From Knowledge Receiver to Knowledge Creator

Epistemic Agents conduct classroom-based action research, develop localized AI teaching resources, and contribute to professional knowledge sharing[2][15]. They evolve from passive technology users to co-creators of AI-enhanced pedagogical practice.

4. Transformation of Pedagogical Approaches

4.1. Technology-Cognition Integration: From Tool Use to Cognitive Partnership

AI-enabled pedagogy moves beyond instrumental tool use

to genuine human-AI cognitive collaboration[7]. AI undertakes pattern recognition and rapid feedback, while teachers focus on logical development, rhetorical effectiveness, and deep thinking.

Table 1. Emergent Teacher Roles in AI-Integrated Contexts

Role	Core Function	Key Competencies	Distinctive Value
AI Collaborator	Strategic human-AI teaming	Task delegation, prompt design, critical evaluation	Frees time for high-order teaching
Learning Architect	Personalized learning design	Data literacy, adaptive planning, resource curation	Supports student-centered differentiation
Humanistic Guide	Emotional and cultural guidance	Empathy, motivation, value education	Provides irreplaceable human support
Data Interpreter	Evidence-based decision-making	Analytics comprehension, pattern recognition	Translates data into teaching actions
Ethical Mediator	Responsible and fair AI use	Privacy awareness, bias detection, integrity guidance	Ensures ethical and equitable application
Epistemic Agent	Professional knowledge creation	Action research, resource development, peer sharing	Advances the field of AI-assisted teaching

4.2. Data-Driven Instructional Design: From Intuition to Evidence

Teachers employ a continuous cycle: data collection → analysis → intervention → re-evaluation. AI captures fine-grained learning data, while teachers provide professional interpretation and instructional decision-making.

4.3. Human-AI Collaborative Classroom: From Teacher-Centered to Distributed Instruction

Table 2. Traditional vs. AI-Transformed Pedagogical Approaches

Dimension	Traditional Approach	AI-Transformed Approach
Lesson planning	Experience-based, static	Data-informed, dynamic
Content delivery	Teacher-dominated	Human-AI distributed
Feedback	Delayed, general	Instant, personalized
Differentiation	Group-level	Individualized paths
Assessment	Summative-dominated	Continuous formative
Teacher role	Knowledge transmitter	Learning architect, facilitator
Student role	Passive receiver	Active, AI-supported learner

Blended and flipped models are enhanced by AI. AI supports pre-class skill practice, and teachers focus on in-class application, discussion, and creative expression[1][8]. Assessment becomes multi-sourced, combining automated

feedback, peer review, and holistic teacher evaluation.

5. Pathways for Teacher Professional Development

5.1. Tiered Training Systems

Foundational level: AI literacy and basic operational skills
Intermediate level: Pedagogical integration and data interpretation
Advanced level: Action research, instructional innovation, and leadership[9]

5.2. Virtual Knowledge-Building Communities

Online communities reduce professional isolation, facilitate resource sharing, and enable cross-institutional peer mentoring[2][3].

5.3. Institutional Support

Infrastructure, policy incentives, and a supportive culture that encourages innovation are essential for sustainable transformation[4][14].

5.4. Ethical and Reflective Practice

Training should cover data privacy, algorithmic bias, academic integrity, and structured reflective practice to ensure responsible AI use [5][13].

Table 3. Components of Professional Development for AI Integration

Component	Focus	Typical Activities	Expected Outcomes
Foundational training	AI literacy	Tool tutorials, basic practice	Operational skills
Pedagogical integration	Curriculum design	Lesson redesign, task creation	AI-enhanced teaching
Data literacy	Analytics application	Report interpretation, diagnostics	Evidence-based practice
Ethical awareness	Responsible AI use	Case studies, policy design	Equitable and safe integration
Action research	Knowledge creation	Classroom inquiry, sharing	Professional contribution
Community learning	Collaborative growth	Online forums, peer observation	Collective capacity building

6. Preserving the Irreplaceable Human Elements

Despite AI’s efficiency, human teachers remain indispensable in four core areas: emotional connection and empathy; situated, generative classroom dialogue; value cultivation and identity formation; and creative adaptability[10]. These dimensions rely on human judgment, morality, and relational presence that cannot be replicated by algorithms.

7. Conclusion

AI integration in university English education represents professional evolution rather than teacher replacement. This study identifies six emerging roles and three pedagogical dimensions to guide systemic reform. Effective AI-enabled teaching combines machine efficiency with humanistic wisdom. Future research may investigate longitudinal teacher development, cross-context comparisons, design-based pedagogical innovation, and equity implications. The ultimate goal is human-AI collaboration that enhances, rather than diminishes, the quality and humanity of language education.

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