

STUDENT PERCEPTIONS OF TRANSLATION LEARNING IN AI ERA: AN INQUIRY INTO THE NEEDS, MOTIVATIONS, EXPECTATIONS, AND PEDAGOGICAL IMPLICATIONS IN A CHINESE UNIVERSITY

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The objectives of this research were 1) examine undergraduate students' translation learning needs, 2) investigate their motivations, learning preferences, and pedagogical expectations, 3) integrate quantitative and qualitative findings to understand their developmental needs, and 4) develop and evaluate a Col-informed model for translation competence development. The study involved 359 foreign language students at Guangxi University of Foreign Languages (GUFL), China. Quantitative data on students' self-assessed translation competence across ten dimensions were collected through a structured questionnaire and analyzed using paired-sample t-tests and Pearson's correlation coefficient, while qualitative data were analyzed using reflexive thematic analysis. Significant gaps between current levels and desired levels were found across all dimensions ($p < .001$), with the largest gaps observed in language competence, strategic competence, and translation knowledge. Correlation analysis revealed critical thinking emerged as the most structurally central competence dimension. The thematic analysis generated seven core themes, including developmental progression, value-driven motivation, teacher guidance, communicative interaction, digital learning support, situated practice, and affective safety. Integrated findings led to the development of the Integrated Human and Digital Communication (IHDC) model, emphasizing pedagogical guidance, communicative interaction, and cognitive inquiry, with critical thinking functioning as the integrative core. Expert evaluation ($N = 20$) confirmed the model's appropriateness, particularly in contextual relevance, pedagogical suitability, and adaptability. The findings support AI-assisted translation learning, the integration of AI literacy and critical thinking into curricula, and authentic or scenario-based translation learning in multilingual university contexts such as GUFL.

Keywords: Translation learning, Critical thinking, Artificial intelligence, Community of critical inquiry, Human-AI collaboration



Introduction

The integration of AI in education has reshaped learning environments through adaptive support, interactive learning, and immediate feedback (Bozkurt, 2023; Karasaliu, 2024). In translation education, AI-powered tools and large language models can support draft translation, personalized practice, and learning efficiency (Škobo & Petričević, 2023; Zhou, 2023). However, studies consistently emphasize that effective AI integration depends on pedagogically grounded guidance to avoid overreliance on automated outputs and weakened critical thinking (Ma & Chen, 2025; Walter, 2024).

Recent studies have increasingly applied the Community of Inquiry (Col) framework to AI-supported foreign language learning, highlighting its potential to promote meaningful interaction, collaborative inquiry, reflective learning, and higher-order thinking through the interaction of teaching, social, and cognitive presence (P. Guo et al., 2025). Drawing on the Col framework, Stenbom and Garrison (2026) further argued that AI-supported learning should preserve human agency through collaborative inquiry, shared metacognition, and critical engagement rather than passive dependence on AI-generated content. Despite this potential, the application of Col in AI-integrated translation education remains limited.

These challenges are evident at Guangxi University of Foreign Languages (GUFL), where translation curricula remain insufficiently aligned with AI-integrated practices and students frequently rely on machine translation without critical evaluation. Therefore, a contextually grounded framework is needed to support AI-integrated translation learning, critical thinking, and authentic translation practice. Based on these gaps and the context of GUFL, the present study aims to address the following research objectives.



Research Objectives

1. To examine students' current and desired levels of translation competence and identify the gaps between them.
2. To analyze students' motivations, learning preferences, and pedagogical expectations based on qualitative responses.
3. To integrate quantitative and qualitative findings to develop a comprehensive understanding of students' developmental needs in translation competence.

To develop and evaluate a Col-informed model for translation competence development in AI-integrated learning environments.



Research Methods

1. Research Design

This study applied a mixed-method approach. Quantitative findings on competence gaps were previously reported in Liang et al. (2025), while the present study additionally analyzes qualitative data and integrates both datasets to develop and evaluate the IHDC model.

2. Context and Participants

The study was conducted at Guangxi University of Foreign Languages (GUFL), a linguistically diverse institution in South China offering 12 foreign language majors. A total of 360 students were selected from a population of 3,514 undergraduates using multi-stage stratified cluster–quota random sampling based on Krejcie and Morgan (1970). After excluding one incomplete response, 359 valid questionnaires were retained.

For the model evaluation phase, two distinct expert groups were involved. First, a separate group of five experts specializing in education evaluation, translation teaching, and foreign language learning participated in an IOC content validity test of the evaluation form prior to its administration. Second, a different group of 20 experts, which comprised departmental heads and experienced instructors with over five years of teaching experience, was purposively selected to evaluate the Integrated Human and Digital Communication model using the validated form.

3. Research Instrument

Data were collected using a structured questionnaire comprising three sections. Section A gathered demographic information. Section B assessed ten translation competence dimensions adapted from established frameworks (PACTE, EMT, TransComp) using 56 items rated on a five-point Likert scale (1=very low, 5=very high). The dimensions included language, strategic, technological, intercultural, interpersonal, critical thinking competence, thematic, personal, project management, and translation knowledge competence. A sample item was: “You are able to evaluate the clarity, accuracy, ethical fairness, and coherence of machine translation output.” Reliability demonstrated strong internal consistency (Cronbach’s $\alpha = .86-.95$). Section C consisted of six open-ended questions exploring students’ motivations, learning preferences, and pedagogical expectations regarding translation learning.

4. Quantitative Data Analysis

Quantitative data were analyzed using SPSS. As current and expected competence ratings were obtained from the same participants, paired-sample t-tests were employed to examine differences between the two sets of scores. Pearson’s correlation coefficient was additionally used to explore relationships among competence dimensions. Detailed statistical findings regarding competence gaps were previously reported in Liang et al. (2025) and are referenced here for mixed-methods integration purposes. The present study differs from the previous publication by

incorporating qualitative findings, developing the IHDC model, and evaluating its pedagogical applicability.

5. Qualitative Data Analysis

Qualitative responses to the six open-ended questions were analyzed using reflexive thematic analysis following Braun and Clarke (2006; 2021). The first author conducted inductive coding by repeatedly reviewing the dataset and generating initial codes closely grounded in participants' responses. Similar codes were then grouped into broader conceptual categories through iterative comparison and discussion with co-authors. Themes were developed based on criteria of conceptual coherence, recurrence across participants, and relevance to the research objectives. Through multiple rounds of refinement, merging, and reorganization, seven final themes were identified to capture students' translation learning needs, pedagogical expectations, and perceptions of AI-integrated learning.

To enhance trustworthiness, peer debriefing with co-authors, audit trails, and member checking with five participants were employed. All data were analyzed in Chinese prior to translation of illustrative excerpts into English.

6. Model Development and Expert Evaluation

The IHDC model was developed through integration of quantitative and qualitative findings within the Community of Inquiry (CoI) framework. The model was evaluated by 20 experts using a structured evaluation form and semi-structured group discussions. Evaluation criteria included contextual relevance, pedagogical suitability, technological alignment, ethical considerations, feasibility, and adaptability, following established educational evaluation standards (Joint Committee on Standards for Educational Evaluation, 2011). IOC values ranged from .80 to 1.00, indicating strong content validity.

7. Ethical Considerations

Ethical approval was obtained from the Payap University Research Ethics Committee (Certificate COA No. 68-021). The research process adhered to ethical principles governing research involving human participants. Prior to data collection, participants were informed of the study's objectives, procedures, and expected benefits, and their participation was entirely voluntary. Participants were assured of their right to withdraw at any stage without any adverse consequences. All participants' identities and data were kept strictly confidential and anonymous, and all data were used exclusively for research purposes.



Research Results

1. Demographic Information

Student Participants

A total of 360 questionnaires were collected, with 359 valid responses retained for analysis. Most students (79.9%) had limited translation experience (1–5 projects). Language certification was concentrated in the College English Test (CET) (41.5% CET-4; 17.4% CET-6), with few certifications in other languages. Only 2.2% held professional translation qualifications, confirming the cohort as novice-to-intermediate learners.

Expert Participants

For model evaluation, 20 key informants, which comprised university departmental heads and teaching staff with over five years of experience, participated in structured evaluation using a rating form and focus-group discussions. A separate group of five experts in education evaluation, translation teaching, and foreign language learning conducted an IOC content validity test of the evaluation form prior to the main evaluation phase.

2. Key Quantitative Results

Students' self-perceived current translation competencies were generally moderate, whereas their expected competence levels were consistently high across all dimensions. Paired-sample t-tests revealed statistically significant gaps between current and expected competence levels across all dimensions ($p < .001$). The largest gaps were observed in Language Competence (Mean Difference=1.48), Strategic Competence (Mean Difference=1.43), and Translation Knowledge (Mean Difference=1.40).

Table 1 Gaps Between Current and Expected Translation Competence (N = 359)

Dimension	Current mean	Expected mean	Mean difference	t-value	p-value
Strategic competence	2.71	4.14	-1.43	-30.415	< .001
Critical thinking	2.99	4.17	-1.17	-25.777	< .001
Language competence	2.69	4.17	-1.48	-31.037	< .001
Intercultural competence	3.13	4.28	-1.15	-28.352	< .001
Translation knowledge	2.87	4.27	-1.40	-27.713	< .001
Thematic competence	2.75	4.04	-1.30	-26.900	< .001
Technology competence	2.83	4.11	-1.28	-26.189	< .001
Personal competence	3.35	4.39	-1.04	-27.016	< .001
Interpersonal competence	3.10	4.36	-1.27	-25.879	< .001
Project management competence	3.09	4.25	-1.16	-24.348	< .001
Total	2.97	4.22	-1.25	-34.45	< .001

Furthermore, correlation analysis demonstrated that Critical Thinking occupied a structurally critical central position among sub-dimensions.

3. Qualitative Results

Thematic analysis of the six open-ended questions generated seven core themes. Table 2 illustrates the analytical pathway from initial codes to final themes.

Table 2 From initial codes to final themes

Theme	Sample initial codes	Illustrative quotations
Theme 1: Translation competence as a developmental process	“gradually progress from easy to difficult,” “accumulate experience over time,” “continuous learning”	P113: “Extensive practice, first learn skills and methods, enhance one's own ability, then conduct extensive simulation training, and then internship in related work.”
Theme 2: Value-driven motivation	“translation gives me a sense of achievement,” “employment preparation,” “improving language proficiency”	P18: “Because of my love for translation, I believe that translation is a bridge connecting different cultures.” P226: “For my career development. Interpretation and translation are in demand in many fields...”
Theme 3: Teacher Guidance and Pedagogical Mediation	“provide detailed feedback,” “offer suggestions for improvement,” “(teachers should) show us how to use AI properly”	P7: “After students complete (the translation task), teachers should provide detailed feedback, pointing out the strengths and existing problems (such as grammatical errors, inappropriate word usage, cultural mistranslations, etc.), and offer suggestions for improvement.”
Theme 4: Communicative Interaction	“encourage me to ask questions,” “classroom discussion,” “teacher and classmates jointly comment,” “dividing students into groups,” “interaction makes learning more effective,” “group activities,” “dialogue,” “questioning”	P174: “Interactive teaching method, organizing classroom discussion and group activities... Teacher-student interaction: Encourage me to ask questions actively and promptly answer the confusion and problems I encounter during the translation process. Meanwhile, the teacher can also raise targeted questions based on my translation situation to guide me to think deeply...”

Table 2 From initial codes to final themes (Continued)

Theme 5: Situating and Practice-Oriented Competence Construction	“simulating business negotiations,” “enterprise cooperative translation projects,” “simulating actual translation projects,” “role-playing scenarios”	P174: “Group translation project. Divide students into groups to complete a large-scale translation project together, such as translating a booklet, a set of promotional materials or the content of a website, etc.”
Theme 6: Digital Tools as Learning Support	“AI-assisted learning can help us translate better,” “hope to know how to make use of AI,” “distinguish my translation from AI translation,” “learn to use CAT tools,”	P65: “Hope to know how to make use of AI but distinguish it from AI translation.” P244: “Making reasonable use of AI-assisted learning can help us translate better.” P317: “Training on the use of online translation tools, such as CAT tools and terminology management software.”
Theme 7: Affective Safety and Supportive Learning Environment	“relaxed atmosphere,” “translation games reduce anxiety,” “teacher encouragement matters,” “not afraid of making mistakes,” “fun and interesting,” “lively and interesting, not boring”	P174: “Organize some interesting translation games, such as translation chain, word guessing games, etc. In the game, students can consolidate the vocabulary and translation skills they have learned in a relaxed and pleasant atmosphere, and improve their reaction speed and adaptability.”

Theme 1: Translation Competence as a Developmental Process

Students viewed translation competence as a gradual and experience-based process requiring sustained practice, simulation, and authentic engagement. Participants emphasized step-by-step progression rather than immediate mastery and consistently regarded structured human-guided practice as essential. As one participant explained, the ideal learning trajectory involves a sequential progression: “first learn skills... then conduct simulation training, and then internship” (P113).

Theme 2: Value-Driven Motivation

Students’ motivation combined intrinsic interest with professional orientation. Translation was described as culturally meaningful, intellectually engaging, and closely connected to employment opportunities. Participants viewed translation both as a means of intercultural communication and as preparation for future careers. Several participants framed translation as an act of cultural ambassadorship: “a bridge connecting different cultures” (P18) and a means to “promote Chinese culture to the world” (P5). On the extrinsic side, career-oriented thinking was

prominent. One student noted that “interpretation and translation are in demand” (P226), while others referenced China-ASEAN trade and cross-border employment opportunities.

Theme 3: Teacher Guidance and Pedagogical Mediation

Teacher guidance emerged as the most frequently and emphatically cited expectation across all six questions, even when the question did not explicitly ask about teaching.

Participants described the teacher in multiple roles: as a feedback provider who should “provide detailed feedback, pointing out the strengths and existing problems (such as grammatical errors, inappropriate word usage, cultural mistranslations, etc.) , and offer suggestions for improvement” (P7); as a quality assurer who should ensure instructional standards (“ There shall be good teachers to guide,” P134); as a learning architect who should “after explaining the theories and methods, some corresponding exercises are provided to help theoretical knowledge be put into practice more quickly” (P281); and as a bridge to professional practice (“ Opportunities to communicate with professional translators, understand their experiences and suggestions,” P317). In language programs involving less commonly taught languages, students specifically requested specialist support: “Have Japanese foreign teachers to help” (P199).

Students also emphasized that AI-generated outputs required teacher-mediated evaluation rather than passive acceptance. One student expressed, “ Hope to know how to make use of AI but distinguish it from AI translation” (P65).

Theme 4: Communicative Interaction

Students emphasized learning through discussion, questioning, peer collaboration, and teacher–student interaction. Group projects and collaborative evaluation activities were viewed as important for negotiating meaning, defending translation choices, and developing professional judgment. As one participant suggested, “...encourage me to ask questions... and guide me to think deeply” (P174). Another student proposed, “each student presents their translation achievements, and the teacher and classmates jointly comment” (P154). The interactive component of AI was acknowledged. Students noted that “AI-assisted learning can help us translate better” (P244). AI was primarily viewed as a supplement to human interaction.

Theme 5: Situated and Practice-Oriented Competence Construction

Participants strongly preferred authentic and contextualized learning activities, including simulation tasks, enterprise projects, internships, and case-based instruction. Students consistently associated translation competence with situated practice rather than decontextualized exercises. One student stated, “...simulating scenarios such as business negotiations and international conferences... and then comment and discuss” (P226). Another participant advocated for “enterprise cooperative translation projects” (P317) that would bring real-world demands into the classroom. Students expressed a desire for “opportunities to communicate with professional translators”

(P317) and to attend “lectures on industry trends” (P206). Task variety was also valued, with suggestions for “translation tasks of different types and difficulty levels” (P7).

Theme 6: Digital Tools as Learning Support

Students viewed AI and digital technologies as supportive learning resources that could enhance translation efficiency and language exposure when used appropriately. At the same time, they emphasized the need to distinguish independent translation competence from AI-generated outputs and requested training in CAT tools and AI-assisted translation platforms. As one participant explained, “Hope to know how to make use of AI but distinguish it from AI translation” (P65). Students acknowledged “making reasonable use of AI-assisted learning can help us translate better” (P244). Digital platforms are valued for getting more language exposure: “Language communication platform, through communicating with native speakers of the target language...” (P154).

Theme 7: Affective Safety and Supportive Learning Environment

A supportive emotional environment was identified as important for sustained learning engagement. Students valued relaxed classroom atmospheres, teacher encouragement, and interactive activities that reduced anxiety and increased willingness to participate and take risks in translation tasks. “Translation games” were frequently mentioned because they provide “a relaxed atmosphere” (P174) in which to practice.

4. Integration of Findings

The convergence of quantitative and qualitative findings revealed systematic relationships between perceived competence gaps and students’ expressed learning needs. The largest quantitative gaps, namely Language Competence, Strategic Competence, and Translation Knowledge, corresponded with qualitative themes emphasizing developmental progression, authentic practice, detailed teacher feedback, and systematic guidance.

Although the critical thinking gap was not the largest, qualitative findings consistently highlighted evaluative judgment, reflective inquiry, and teacher-guided questioning across multiple themes. This convergence suggests that critical thinking functions as an integrative cognitive mechanism linking multiple competence dimensions, consistent with its quantitatively central position.

Collectively, students’ expectations regarding teacher guidance, communicative interaction, authentic practice, digital support, and affective safety indicate that translation competence development is socially mediated, practice-oriented, and cognitively demanding. The findings further suggest the need for an instructional framework integrating human communication, critical inquiry, and digital support in AI-integrated translation learning environments.

5. The Integrated Human and Digital Communication Model

Based on the integrated quantitative and qualitative findings, the Integrated Human and Digital Communication (IHDC) Model was developed. The model conceptualizes translation competence development as a pedagogically mediated process involving interaction among teachers, peers, and digital technologies. Grounded in the Community of Inquiry (Col) framework, the model operates through three interconnected mechanisms: pedagogical guidance, communicative interaction, and cognitive inquiry, corresponding respectively to teaching presence, social presence, and cognitive presence (Garrison, 2016; Garrison et al., 2000). The model is presented in Figure 1.

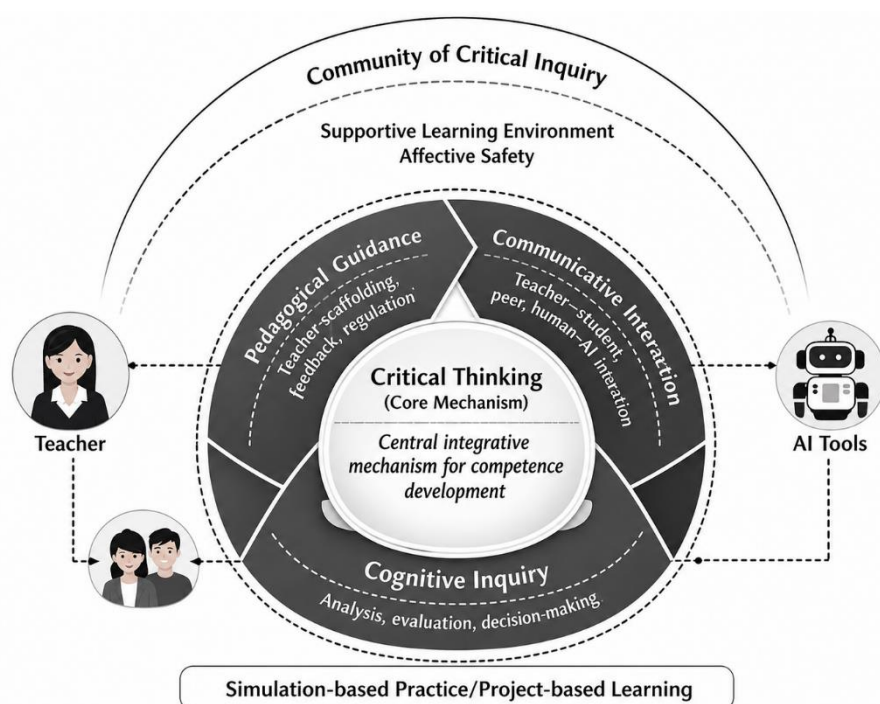


Figure 1 Integrated Human and Digital Communication (IHDC) Model

Pedagogical Guidance regulates learning through explanation, feedback, scaffolding, and emotional support. Teachers facilitate students' engagement with translation tasks and AI tools while supporting reflective and critical use of technology rather than passive dependence on automated outputs. This also involves creating a safe, supportive, and engaging learning environment in which cognitive inquiry and communicative participation are encouraged, thereby promoting sustained learner engagement and active knowledge construction.

Communicative Interaction refers to competence development through interaction among teachers, peers, and digital tools. Curriculum emphasizes the importance of discussion, collaboration, and situated learning activities such as project-based translation and scenario-based practice, which support meaning negotiation and collaborative problem-solving.

Cognitive Inquiry represents the process through which learners transform communicative input into translation competence through analysis, evaluation, reflection, and strategic decision-making. Within this process, critical thinking functions as the central integrative mechanism that connects pedagogical guidance and communicative interaction while activating reflective and adaptive learning processes.

6. Results of Expert Evaluation

Quantitative Results of the Evaluation Form

The overall mean of six evaluation dimensions was 4.50 (0.66), with 90.79% of ratings falling in the “Agree” or “Strongly Agree” range. Contextual relevance 4.72 (0.49) and Adaptability 4.67 (0.51) received the highest endorsements, each with 98.3% agreement. Pedagogical suitability 4.46 (0.70) and Technological alignment 4.47 (0.70) demonstrated strong but slightly more varied endorsement. Feasibility 4.15 (0.81) showed the lowest mean and agreement rate (76.7%), indicating that while experts viewed the model as conceptually sound, implementation within existing structures and resource constraints remained a concern.

Table 3 Descriptive Statistics of Expert Ratings for the IHDC Model (N = 20)

Dimension	$\bar{X}$ (S.D.)	Min	Max	% Agree(4-5)
Contextual relevance	4.72 (0.49)	4	5	98.33
Pedagogical suitability	4.46 (0.70)	3	5	88.75
Technological alignment	4.47 (0.70)	3	5	88.33
Ethical considerations	4.55 (0.60)	3	5	95.00
Feasibility	4.15 (0.81)	3	5	76.67
Adaptability	4.67 (0.51)	4	5	98.33
Overall	4.50 (0.66)	3	5	90.79

Note. % Agree=proportion of all ratings within the dimension scored 4 or 5.

Qualitative Insights from Focus Group Discussions

The focus group discussions provided explanatory depth for the quantitative ratings. Experts attributed the high scores for Contextual relevance 4.72 (0.49) and Adaptability 4.67 (0.51) to the model's grounding in student data and the well-recognized Col theory, which is needs-driven and theoretically based. One department head noted, “This is not an imported framework; it grew out of our students' voices.” The lower Feasibility scores 4.15 (0.81) reflected concerns about teacher readiness, time constraints, and the challenges of scaling across all 12 language programs, despite promising pilot evidence. Experts identified the model's conceptualization of AI as a communicative participant as its most distinctive contribution, while recommending that the critical thinking pathway be more explicitly operationalized for different instructional levels. Some additional valuable suggestions

indicated the model application for future research in the “AI Agentic Transform” for human and digital communication systems in the university and school teaching and learning process.

Overall, the model was endorsed as contextually relevant, pedagogically sound, and adaptable, with feasibility requiring institutional support for successful large-scale implementation.



Discussion

1. Critical Thinking as the Core of Translation Competence in the AI Era

The findings suggest that critical thinking functions as a pivotal dimension of translation competence. Quantitative results also revealed substantial gaps in critical thinking competence, while qualitative findings consistently emphasized the need for guided evaluation, reflective judgment, and teacher feedback. Qualitative results highlighted the importance of teacher guidance to evaluate translation quality, justify translation decisions, and compare alternative outputs. These pedagogical needs echo recent research indicating that over-reliance on AI and machine translation tools may weaken students’ independent decision-making, creativity, and analytical reasoning (Nguyen et al., 2025; Pham & Luong, 2025).

These findings indicate that competence development extends beyond linguistic accuracy or technological operation toward evaluative and interpretive capacities. This aligns with previous studies that emphasize that AI-integrated learning requires active cognitive engagement rather than passive technological reliance (Kasneci et al., 2023; Walter, 2024).

Research consistently demonstrates that meaningful learning depends on reflective judgment, metacognitive monitoring, and teacher scaffolding rather than automated output acceptance (Ma & Chen, 2025). However, the present study extends prior research by demonstrating that students themselves recognize critical thinking as a mediating mechanism between AI support and meaningful translation learning. Within the IHDC model, critical thinking, therefore, functions not merely as an additional competence dimension but as the central mechanism that enables learners to critically evaluate AI outputs, negotiate meaning, and maintain human agency.

2. Human-centered Pedagogy with AI as a Supportive Tool

The qualitative findings suggest that students perceive AI as a supportive tool in translation learning. Students consistently emphasized the importance of teacher guidance, critical evaluation, and human judgment when using AI. The findings further support the view that AI should enhance translator competence. This aligns with recent human-centered AI perspectives in translation education, which advocate a shift from “human replacement” toward “human augmentation.” Jiménez-Crespo (2025) argues that AI-augmented human-machine collaboration should enable learners to critically engage with their own agency, autonomy, and decision-making processes in producing high-quality translations. Moreover, the IHDC model positions AI as a participant under

continuous human guidance and critical oversight, which is also echoed by Kasneci et al. (2023)'s emphasis on continuous teacher oversight.

Affective safety emerged as a distinct theme, with students highlighting enjoyment, encouragement, and supportive relationships. Psychological safety was presented as a necessary condition for engagement with the cognitively demanding process of learning translation, particularly when students are asked to expose their work to peer and teacher critique. This finding resonates with research on teacher caring behavior and emotional support, which have been shown to enhance engagement and persistence (Lin & Rahim, 2025; W. Guo et al., 2025). The importance of nonverbal immediacy and supportive interpersonal dynamics (Abekah Keelson et al., 2024) in classroom further reinforces the irreplaceable role of human communication in maintaining motivation and confidence.

3. Theoretical Contribution of the IHDC Model

The IHDC model extends both the Community of Inquiry (Col) framework and traditional translation competence models by incorporating human-AI communication into translation pedagogy. While Col emphasizes the interaction of teaching, social, and cognitive presence in online learning environments (Garrison, 2016; Garrison et al., 2000), the IHDC model further adapts these dimensions to AI-integrated learning environment. Teaching presence includes regulation of human-AI interaction, ethical guidance, and critical evaluation of AI-generated translations; social presence involves collaborative engagement in AI-supported learning environments; and cognitive presence is strengthened through reflective evaluation and problem-solving in translation tasks.

The model further positions critical thinking as the coordinating mechanism linking technological use, communicative interaction, and competence development. This aligns with recent studies emphasizing higher-order thinking and ethical engagement with translation technologies (Ramírez-Polo & Vargas-Sierra, 2023; Wang & Yang, 2023).

4. Initial Implementation and Impact of the IHDC Model

In July 2025, the undergraduate translation program at GUFL was restructured into a competency-based framework emphasizing ten graduate attributes, particularly language competence, critical thinking, strategic competence, technological competence, and market-oriented service competencies. All translation courses were redesigned using a curriculum mapping matrix. Nine instructors received IHDC model training supported by a TPACK-based scheme, shifting teaching toward pedagogically mediated human-AI interaction. Three specific changes were introduced: (a) AI-assisted translation critique sessions; (b) scenario-based collaborative projects with peer and AI feedback; and (c) a teaching guideline positioning AI tools as communication partners rather than answer providers. The reform was officially executed in September 2025.

A Focus Group Discussion found that all instructors shifted from AI avoidance to structured AI integration, redesigning activities such as AI-assisted translation critique, human-machine comparison

tasks, and role-play projects where AI served as a communication partner. The most challenging mechanism was cognitive inquiry, as students initially resisted questioning AI outputs, which means that cognitive presence requires sustained scaffolding. Instructors also noted increased student engagement, reduced AI anxiety, and improved prompting flexibility, though some students remained overly reliant on AI suggestions, reflecting Göpferich's (2013) view that cognitive restructuring takes time. Institutionally, the IHDC model has been extended to translation courses across all 12 language majors through a lecture delivered by the director of the translation department in the GUFL faculty training; a university-level "AI+ Language Teaching" reform has been implemented, and instructor AI teaching competence will be included in teaching performance evaluation criteria. These outcomes demonstrate an innovation beyond conventional R&D to active deployment within a Chinese university and suggest that this education research can generate bottom-up pedagogical change even within China's traditionally top-down administrative culture.

5. Conditions for Transferability

According to expert evaluation and initial implementation, the model is applicable to multilingual universities with professionally oriented translation programs, basic digital infrastructure, and faculty readiness for AI-integrated pedagogy. However, adaptation may be needed in resource-constrained settings using alternative digital resources, phased implementation, or smaller-scale instructor-led applications. Learner proficiency and institutional support should also be considered, as the model was primarily developed for novice-to-intermediate translation learners and may require adjustment across different educational contexts.



Conclusion and Suggestions

This study set out to examine translation competence development in AI-integrated learning environments and to propose a theoretically grounded model. First, students' needs, motivations, and preferences were identified as multidimensional, shaped by intrinsic interest, career orientation, and emerging professional identity. Second, qualitative analysis revealed that competence development is driven by teacher guidance, communicative interaction, authentic practice, and digital support. Third, the integration of qualitative and quantitative findings demonstrated that perceived competence gaps, particularly in language, strategy, and technology, are closely associated with insufficient opportunities for guided inquiry and interaction. Finally, the study developed the IHDC model, which conceptualizes competence development as an outcome of pedagogically mediated communication among human and digital agents and driven by critical thinking at the core.

Recommendation for Using to Benefit

1. Instructor Level: Translation instructors should design activities that encourage students to evaluate, compare, and revise AI-generated translations. Translation critique, human-AI comparison tasks, and guided prompting can strengthen critical thinking and interaction.

2. Curriculum Level: Translation curricula should integrate AI literacy, critical thinking, and human-AI collaboration as explicit learning outcomes. Consistent with the IHDC model, authentic translation tasks, scenario-based activities, and interdisciplinary learning to enhance competence development.

3. Institutional Level: Institutions should strengthen teachers' capacities in AI-integrated pedagogy through faculty development, interdisciplinary collaboration, and institutional support. Shared digital resources and AI teaching experience may also be incorporated into professional evaluation systems to support sustainable pedagogical innovation.

Recommendation for Future Research

1. Future studies could examine the effectiveness of the IHDC model through quasi-experimental or longitudinal research designs to evaluate its long-term impact on translation competence development, critical thinking, and human-AI collaborative learning outcomes across different educational contexts.

2. Further research could test and refine the IHDC model across different institutional contexts, learner populations, and language pairs to enhance its generalizability and applicability, signifying the Agentic AI transform (Russell & Norvig, 2021) for the university's and schools' teaching and learning paradigm shift in integrating the digital and human communication systems.



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