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# Optimization Path for AIGC-Empowered Cultivation of Multilingual Translation Talents Based on Language Service Market Demand Under the "Belt and Road" Initiative

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## Abstract

The continued advancement of the Belt and Road Initiative (BRI) has led to a significant increase in demand for high-quality multilingual language services. Existing models for training translation professionals often fall short in addressing the complexity and diversity of these demands, particularly in terms of the systematic integration and application of AIGC (Artificial Intelligence Generated Content) technology. Grounded in Competency-Based Education (CBE), Functionalist Translation Theory, and the Sociology of Technology, this paper constructs an integrated analytical framework to systematically examine the core needs of the BRI language service market, objectively assess the potential and limitations of AIGC, and propose a set of concrete optimization strategies. Central to these strategies is the design of a curriculum system tailored to multilingual and multi-domain challenges. Through an in-depth case study of a university-enterprise collaboration project, the paper further validates the effectiveness of the proposed path in enhancing students' technological application skills and cross-cultural practical abilities. The study concludes that a synergistic approach, which deeply integrates AIGC as an enabling tool within a pedagogically sound framework, is essential for cultivating future-ready translation talents who can navigate the intricate demands of the BRI language service landscape.

**Key words:** Belt and Road Initiative; AIGC technology; Multilingual translation talents; Language service market; Cultivation path

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## 1. INTRODUCTION

Since its introduction in 2013, the Belt and Road Initiative (BRI) has evolved into a major strategy for fostering global economic growth and international cooperation. It has substantially facilitated trade and economic exchanges among participating countries and supported the international expansion of Chinese enterprises. As of 2023, China has signed over 200 cooperation documents with 152 countries and 32 international organizations under the BRI framework, creating an unprecedented scale of intercultural and interlingual communication. As the Initiative deepens and broadens, the demand for translation services in critical areas such as international law, finance, engineering technology, and cultural exchange has undergone a fundamental shift. This evolution moves beyond simple language conversion towards a demand for comprehensive, value-added language services that deeply integrate specialized domain knowledge, sophisticated technological application, and strategic cross-cultural communication competencies.

Traditional translation talent cultivation models, which primarily focus on linguistic skills and basic translation competence, are increasingly revealing their limitations. These models tend to produce homogenized graduates who struggle to adapt to the evolving market's urgent need for interdisciplinary, technology-savvy professionals. The

disconnect between the output of academic institutions and the dynamic needs of the industry poses a significant challenge to the smooth implementation of BRI projects, where accuracy, cultural appropriateness, and efficiency are paramount.

The emergence of AIGC technology, particularly advanced large language models (LLMs), offers new possibilities for addressing this gap. AIGC not only significantly improves translation efficiency and consistency but also demonstrates unique advantages in managing large-scale multilingual projects, simulating complex real-world communicative scenarios, and providing personalized learning pathways. However, current applications of AIGC within translation education often remain superficial and fragmented, lacking systematic integration into the curriculum design and pedagogical philosophy. The technology is frequently used as a convenient tool rather than a transformative element that reshapes the learning ecosystem.

Thus, the central research question addressed in this paper is: How can we construct a future-oriented translation talent cultivation system that effectively responds to the complex demands of the BRI language service market while critically and sustainably integrating AIGC technology? To answer this question, this study introduces an integrated theoretical framework, combining educational, translational, and sociological perspectives, to systematically explore and propose an optimized cultivation path. This research aims to contribute both theoretically, by bridging these perspectives, and practically, by providing actionable strategies for educational institutions.

## 2. THE SIGNIFICANCE OF THE BELT AND ROAD INITIATIVE AND THEORETICAL PERSPECTIVES

### 2.1 Significance

The Belt and Road Initiative is a visionary development plan aimed at promoting global economic prosperity and connectivity through enhanced international cooperation. Its significance extends far beyond infrastructure development, encompassing policy coordination, unimpeded trade, financial integration, and, crucially, people-to-people bonds. Li Keqiang (2017) analyzed its strategic background and policy implications, highlighting how the Initiative strengthens multilateral relations between China and participating countries through deepened economic cooperation and cultural ties. The success of this multifaceted cooperation is fundamentally dependent on effective communication. Wang and Li (2020) further pointed out that the Initiative directly drives a growing and diversifying demand for high-quality multilingual translation services. Hu (2018) emphatically stated that high-quality, culturally intelligent language services are not merely a supportive element but a crucial guarantee for the successful implementation of the Initiative, mitigating risks arising from miscommunication and cultural misunderstandings in high-stakes environments.

### 2.2 Theoretical Perspectives

#### 2.2.1 Competency-Based Education (CBE)

Competency-Based Education (CBE) is an outcomes-oriented educational model focused on cultivating students' demonstrable professional competencies rather than mere knowledge accumulation. Its core philosophy advocates for a shift in educational goals from mastering a rigid disciplinary knowledge system to developing the specific, measurable capabilities required for success in professional roles. This approach provides clear, actionable guidance for identifying the core competency requirements—such as advanced bilingual proficiency, technological application literacy, project management skills, and cross-cultural communicative competence—that BRI construction places on translation professionals. In the context of this paper, CBE guides the entire curriculum design, ensuring that every learning module is aligned with a clearly defined competency needed in the BRI language service market.

#### 2.2.2 Functionalist Translation Theory

Functionalist Translation Theory, particularly the Skopos theory pioneered by Vermeer, revolutionized translation studies by viewing translation as a purposeful, cross-cultural communicative act. It stresses that the form and strategy of a translation should be determined by the intended function or "skopos" of the target text within the target culture, rather than being solely constrained by the source text. This perspective offers key criteria for evaluating the applicability and effectiveness of AIGC-assisted translation outcomes in the context of BRI-related cultural exchanges. It moves the evaluation benchmark from "absolute equivalence" to "functional adequacy," which is particularly relevant when assessing AI-generated translations that may require human post-editing for cultural nuance and functional alignment. It also informs the teaching of how to strategically brief and guide AIGC tools to achieve specific communicative purposes.

#### 2.2.3 Sociology of Technology

The Sociology of Technology, drawing from the work of scholars like Bijker and Pinch, posits that technology is not a neutral tool but is deeply embedded in social structures, institutional arrangements, cultural practices, and power dynamics. This view urges a move beyond instrumental uses of AIGC (seeing it as just a more efficient dictionary or TM tool) to examine how it interacts with and reshapes the entire translation education ecosystem, the evolving role and identity of translators, ethical norms in the industry, and the distribution of value

in the language service supply chain. This theoretical lens ensures that the proposed optimization path considers sustainability and foresight, addressing critical issues such as algorithmic bias, data privacy, the changing nature of translators' expertise, and the ethical implications of human-AI collaboration, thereby ensuring that talent cultivation is not only technologically advanced but also socially responsible.

## 3. ANALYSIS OF LANGUAGE SERVICE MARKET DEMAND UNDER THE BELT AND ROAD INITIATIVE

The global language service market has demonstrated robust growth. A 2011 report by the U.S.-based CSA Research indicated that the global market reached 31.4*billion*,*withanaverageannualgrowthrateof*7.4160 billion, underscoring its expanding importance. Asian agencies have seen their share grow significantly, reflecting the region's increasing economic and diplomatic activities. The role of language services is evolving from a supportive function into a strategic industry with strong managerial and technological characteristics. Sectoral classifications are becoming increasingly refined, now encompassing not only translation and interpretation but also localization, transcreation, multilingual content marketing, and language technology consulting. This evolution calls for professionals who possess not only domain expertise and foreign language skills but also technological adeptness and business acumen. Below we analyze the language service market demands under the BRI from two interconnected aspects.

### 3.1 Language Distribution and Translation Needs in BRI Countries

Wang Kefei (2020) aptly noted that the Belt and Road Initiative promotes intensive economic cooperation and cultural exchange among participating countries, generating an urgent and sustained demand for multilingual translation talent. The language landscape across these countries is vast and complex, encompassing approximately 50 official languages, with hundreds of actively used local languages and dialects. This linguistic diversity means that translation demand is not only pressing but also exceptionally broad in scope. It spans from technical documents for trade and investment agreements (e.g., contracts, feasibility studies), and specialized materials for infrastructure projects (e.g., engineering blueprints, safety manuals), to content for people-to-people exchanges (e.g., tourism brochures, cultural heritage documentation, public health information). Each domain requires a large number of specialists who are not only proficient in multiple languages but also possess a deep understanding of local cultures, social systems, legal frameworks, and business etiquettes. The challenge is not just linguistic transfer but also cultural and contextual adaptation.

### 3.2 Market Requirements and Challenges for Translation Professionals

Market demands for language services are growing increasingly diversified, specialized, and complex. A survey conducted by the China Translators Association (2022) among language service providers working on BRI projects revealed that over 80% of employers prioritize candidates with combined skills in a specific domain (e.g., law, finance, engineering) and technology application. Consequently, training should emphatically shift towards practical skills, innovation, and cross-cultural communicative competence. Furthermore, market expectations are becoming more stringent: translators must possess strong language skills alongside specialized knowledge, often needing to function as subject matter experts. Cross-cultural awareness is also essential, as a minor cultural misstep can jeopardize international negotiations or project implementations. While machine translation and AI significantly improve efficiency for bulk, repetitive content, human expertise in post-editing, cultural adaptation, quality assurance, and strategic communication remains indispensable. Translation professionals thus face the dual challenge of continuously enhancing their specialist linguistic and domain skills while simultaneously adapting to rapid technological changes and navigating immense cultural diversity.

## 4. APPLICATION POTENTIAL AND LIMITATIONS OF AIGC IN MULTILINGUAL TRANSLATION TALENT CULTIVATION

### 4.1 Potential Applications

#### 4.1.1 Improving Translation Efficiency and Quality

According to the China Translators Association White Paper (2022), AIGC technology can profoundly assist in translation teaching and practice. It can improve practical efficiency by automating repetitive tasks and, through big data analytics, identify students' recurring weaknesses to offer customized learning resources and targeted exercises. Using natural language processing (NLP) and machine learning (ML) algorithms, AIGC can process large volumes of text rapidly, dramatically shortening project turnaround times. Generative models, such as GPT-4 and its successors, can automatically produce high-quality first drafts for a wide range of text types, allowing students and professionals to focus their cognitive efforts on more demanding tasks such as stylistic refinement, cultural adaptation, and creative transcreation. Furthermore, integrated real-time grammar, terminology, and style proofreading features can enhance the overall

accuracy and consistency of the final output, serving as a powerful assistant throughout the translation process.

#### 4.1.2 Innovating Translation Teaching Models

Garcia and Arnaiz (2021) explored the innovative use of AI technology in translation training, noting that AIGC can dynamically optimize teaching content and methods, significantly increasing interactivity and personalization. Intelligent translation tools and virtual assistants can provide instant feedback and adaptive learning experiences tailored to individual student's pace and level. More importantly, AIGC can be used to create highly realistic virtual environments simulating multilingual and multicultural scenarios—such as international business negotiations, conference interpreting booths, or community localization projects—that would be difficult or costly to replicate in a traditional classroom. These simulations help students develop not only practical translation abilities but also critical problem-solving skills, crisis management, and intercultural sensitivity, making translation education more dynamic, immersive, and effective.

#### 4.1.3 Cultivating Interdisciplinary Talent

Lee and Kim (2023) specifically explored the application potential of AIGC in multilingual translation education for the BRI, suggesting that it can help students master language skills and domain knowledge through structured, multilingual, multi-domain practice. AIGC technology inherently promotes the cultivation of interdisciplinary talents. For instance, to effectively leverage AIGC, translation students need to develop skills in data literacy, prompt engineering, basic AI principles, and information technology management. This technological integration facilitates interdisciplinary learning, enabling students to build a cross-boundary knowledge structure that combines linguistics, a specialized domain (e.g., law or finance), and technology. This comprehensive skill set significantly enhances their employability and competitiveness to meet the complex market demands of the BRI era.

### 4.2 Limitations

Despite its potential, the integration of AIGC is not without significant challenges. Current AIGC models, primarily trained on data from dominant languages like English, demonstrate notably poor performance in handling low-resource languages that are common in many BRI participant countries (e.g., Central Asian or Southeast Asian languages). Their outputs are often prone to "hallucinations" (generating plausible but incorrect information) and reflect the cultural biases present in their training data, which can directly compromise the quality of translation teaching and practice if not critically assessed. Moreover, an overreliance on technology may lead to the degradation of students' critical thinking, creative translation abilities, and ethical judgment. There is a tangible risk of the translator's role being reduced to that of a mere post-editor, potentially devaluing their expertise. Therefore, while promoting technology integration, it is essential to establish corresponding risk prevention, critical evaluation, and ethical constraint mechanisms within the curriculum.

## 5. OPTIMIZATION PATH FOR AIGC-EMPOWERED CULTIVATION OF MULTILINGUAL TRANSLATION TALENTS

### 5.1 Building an Integrated AIGC Translation Teaching System

Universities need to proactively develop a holistic teaching system that seamlessly integrates theory, practice, and technology, moving beyond siloed approaches. Theoretical instruction should cover AIGC fundamentals, such as the principles of natural language processing, machine learning, and the ethical implications of AI use in translation. Practical teaching should involve critical analysis of technological developments and real-world cases, helping students understand the application scenarios, benefits, and limitations of different AIGC tools. In the technology integration phase, students should engage in hands-on exercises using a variety of AIGC tools for tasks like terminology extraction, draft generation, and quality assessment, and progressively participate in actual translation projects provided by industry partners. This tripartite approach ensures that students become not just users of technology, but informed and critical practitioners.

### 5.2 Designing a Multi-level AIGC Translation Curriculum

To effectively address the urgent market need for multilingual, multi-domain professionals, the curriculum system design must be distinctly targeted and multi-layered. A sample curriculum structure is proposed below:

**Table 1**
**Sample Multi-level AIGC Translation Curriculum System for the Belt and Road Initiative**

| Level | Course Category | Example Courses | Core Competency Focus |
|---|---|---|---|
| **Foundation** | Core Translation & Technology | Introduction to AIGC for Translators; Translation Theory & Practice; Core Language Skills | Basic translation competence, AIGC literacy, prompt engineering fundamentals |
| **Intermediate** | Domain-Specialization & Tool Application | Legal & Financial Translation with AI Tools; Localization Project Management; Terminology Management with AIGC | Domain-specific knowledge, application of AIGC in specialized contexts, project management skills |

| Level | Course Category | Example Courses | Core Competency Focus |
|---|---|---|---|
| **Advanced** | Advanced Integration & Innovation | Transcreation & AIGC; Managing Multilingual AI Projects; Ethics & Professional Practice in the AI Era | Strategic decision-making, critical evaluation of AI output, innovation, leadership, ethical reasoning |

This curriculum should be dynamic, regularly updated in consultation with industry advisors to reflect the latest technological trends and market needs.

### 5.3 Blending Online and Offline Teaching to Optimize the Learning Model

A blended learning model is highly recommended to maximize flexibility and effectiveness. Offline classrooms should focus on interactive activities that explain foundational knowledge, facilitate critical discussions on technology ethics, and provide guided skill training, such as collaborative post-editing sessions and role-playing simulations. Online platforms, leveraging MOOCs and specialized platforms, can provide self-paced AIGC technology courses, video demonstrations, and a repository of case studies, allowing students to learn flexibly. The blended approach should be supported by learning analytics from the online platform to provide personalized feedback and identify areas where students need additional support, thereby creating a responsive and adaptive learning environment that enhances overall learning outcomes.

### 5.4 Enhancing Teacher Training and Technology Updates

The success of this integrated approach heavily depends on faculty readiness. Teachers should receive ongoing, high-quality training in AIGC technology, covering not only AI principles and natural language processing but also practical workshops on integrating specific tools into their pedagogy and curriculum design. Universities must establish a mechanism for regularly updating teaching equipment and translation software to ensure access to the latest functionality. Furthermore, dedicated technical support and maintenance are essential for the smooth operation of technology-enhanced classrooms and for encouraging continuous innovation and optimization of teaching tools and methods.

### 5.5 Establishing a Comprehensive Assessment and Certification System

A multi-dimensional, process-oriented evaluation system must be established to replace traditional, product-only assessments. This system should cover not only the final translation quality but also technology application ability, collaborative skills, and project management. Crucially, the assessment criteria should incorporate dimensions such as the "rationality and efficiency of technology tool selection and usage," the "degree of achievement of the translation task's purpose" (aligning with Functionalist Theory), and "awareness and handling of technological ethical issues." This holistic approach helps cultivate well-rounded professionals who can thrive in an AIGC-enabled environment. Partnering with industry associations to develop a recognized certification for AIGC-empowered translators could further enhance the employability of graduates.

## 6. CASE ANALYSIS: UNIVERSITY-ENTERPRISE COLLABORATION IN AIGC-EMPOWERED TALENT CULTIVATION

Using the partnership between Chengdu University and the leading language service provider, Sichuan Language-Bridge, as an exemplar, this section provides an in-depth analysis of the experiences and challenges encountered in implementing AIGC-empowered multilingual translation training. This three-year project, initiated in 2022, integrates cognitive practice, online training, and offline internships, offering a robust model for industry-academia collaboration.

### 6.1 Implementation Process

The project is structured in three phases:

**Cognitive Practice (Year 1):** Students visit the company's headquarters and operational centers to gain firsthand understanding of the industry's status quo, project workflows, and the practical application of AIGC technology in live projects, including its limitations.

**Online Training (Year 2):** Students participate in a 12-week online program using the company's proprietary Project-Based Learning and Training (PBLT) system. They complete authentic, scaled-down translation tasks using AIGC tools, allowing them to experience efficiency gains firsthand while receiving feedback from both instructors and project managers.

**Offline Internship (Year 3):** Top-performing students from the online phase undertake a 6-month paid internship at the company. They are integrated into project teams and participate in actual BRI-related projects, utilizing advanced translation management systems and the latest AIGC tools under the guidance of senior translators.

### 6.2 Outcomes and Success Factors

Project reports from 2022-2024 indicate that participating students demonstrated a marked improvement in their technological application abilities and confidence compared to their peers. From a CBE perspective, by completing real projects provided by the enterprise, students effectively honed their translation practice abilities targeted at specific domains and processes.

Analyzing from a functionalist standpoint, when handling real client orders, students were forced to consider the client's requirements, the target audience, and the ultimate purpose of the translation, which directly cultivated their ability to achieve specific communicative purposes, moving beyond literal accuracy. The success factors included strong commitment from both institutional partners, the authenticity of the tasks, and the mentorship provided by experienced professionals.

### 6.3 Existing Problems and Recommendations

Despite its successes, the project faced challenges. The online training phase was sometimes hampered by network stability issues and occasional inaccuracies in the training system's automated evaluation, necessitating more robust platform management and human oversight. Some students experienced difficulties adapting to corporate culture and demonstrated an over-reliance on AIGC-generated drafts, neglecting critical post-editing. To address these issues, it is recommended to enhance pre-internship training modules to include explicit guidance on professional etiquette and the critical use of technology. Furthermore, we strongly recommend embedding a dedicated module on the ethics, strategies, and cognitive aspects of human-machine collaboration into the curriculum. Establishing an assessment mechanism that evaluates the entire collaborative process, not just the final product, is crucial for fostering responsible use of AIGC.

## 7. CHALLENGES AND COUNTERMEASURES IN CULTIVATING MULTILINGUAL TRANSLATION TALENTS UNDER THE BRI

### 7.1 Challenges

Several systemic challenges persist. Firstly, current training models in many institutions remain homogeneous, focusing excessively on traditional language skills at the expense of technical and domain-specific training, leading to a significant mismatch with market needs. Secondly, the profound cultural differences across BRI countries can easily cause uneven translation quality, requiring a level of intercultural competence that is difficult to impart systematically. Thirdly, there is a severe mismatch between the supply and demand for AIGC-technical talents; educational institutions often lack the practical teaching experience and internal expertise with these new technologies, creating a bottleneck for curriculum reform.

### 7.2 Countermeasures

Through the integrated analytical framework presented, this study reveals the inherent limitations of traditional translation training models in meeting the new demands of BRI language services. In response, our core contribution is the proposal of an optimized path featuring the deep, critical integration of AIGC technology within a multi-level, competency-based curriculum. The case analysis of the Chengdu University-Sichuan Language-Bridge collaboration confirms that this approach is effective in empowering students and enhancing their technological application and cross-cultural practice capabilities. Looking forward, building a sustainable training mechanism capable of agile responses to continuous market and technological shifts—through ongoing industry-academia collaboration, dynamic curriculum design, and faculty development—will be crucial for the long-term success and relevance of translation education in the BRI context.

## 8. CONCLUSION

Under the Belt and Road Initiative, the demand for multilingual translation services is increasingly complex, diverse, and specialized, imposing new and rigorous requirements on translation training. AIGC technology demonstrates great potential in improving translation efficiency, innovating teaching models, and cultivating interdisciplinary talent. However, its integration must be pedagogical, critical, and ethical. This paper has argued that by building an integrated AIGC teaching system, designing multi-level and domain-specific curricula, blending online and offline teaching modes, strengthening teacher training, and establishing comprehensive, multi-dimensional evaluation mechanisms, we can cultivate a new generation of translation professionals with solid language skills, deep cultural intelligence, and sophisticated AIGC technical competence. The continuous optimization of this cultivation path, informed by ongoing research and industry feedback, will provide more efficient and effective language support for international exchanges under the BRI and contribute to the goal of fostering mutual understanding and global development.

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