

Innovative Exploration of Teaching Paths for the Overseas Dissemination of Chinese Culinary Culture Empowered by AR Technology

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Abstract: Under the national strategy of actively promoting the "Going Global" initiative in vocational education, the international dissemination of Chinese culinary culture still faces problems such as language barriers, cultural differences and limitations in hands-on teaching. Viewing it from the aspect of technology-enhanced teaching, this paper aims to investigate a novel way of combining AR technology and a bilingual corpus for foreign language learning. It constructs a teaching mode of "structured content with immersive experience", making the previously abstract culinary skills and cultural knowledge transform into interactive perceptual learning materials. In practice, this model has helped promote cross-cultural Understanding and Skills Acquisition effectively, providing a new Path for The International Communication of Vocational Education. It helps promote the dissemination and recognition of Chinese culinary culture in foreign Teaching.

Keywords: Augmented Reality (AR) Technology, Bilingual Corpus, Cross-Cultural Teaching.

1. Introduction

Under the proposal of the "Belt and Road" initiative, the "Going Global" strategy in vocational education has become a key approach for promoting the national influence of education. Chinese culinary Techniques are a specific manifestation of Chinese culture. The international transmission of their influence is both the spread of techniques and cultural exchange. It is not only a craft, but also an important component of Chinese culture, carrying rich cultural value and historical accumulation [2], and playing the role of a link among people from all over the world [3]. Traditional teaching methods for overseas students have been plagued by problems such as semantic distortion caused by language barriers, cultural differences, and a lack of sense of presence in hands-on training in remote situations for a long time.

At present, some new Immersive Technologies have emerged, such as Augmented Reality (AR); Also, Corpus Linguistics research developments offer an effective way to address this problem. AR technology can create a sense of interaction that cannot be achieved through other means of communication, and systematically build a bilingual corpus as the basis for precise cross-cultural Communication. Therefore, this study does not stop at the level of application. To explore, from both the theoretical and Design Principle levels, how AR Technology and a Bilingual Corpus can be deeply integrated into an effectively applicable Model for teaching Chinese Cuisine to International Learners. It will also demonstrate the operation rules by taking some projects as examples, providing theoretical support and reference value for the innovation of related courses. Based on the practical results achieved at the university level in "Foreign Language Empowerment for Vocational Education Going Global Aesthetic Education Practice Base" and the 2025 Fujian Provincial College Students' Innovation and Entrepreneurship Projects. Through the practice of the Chinese cuisine "Vocational Education Going Global" course bilingual simultaneous interpretation project carried out

through the World Skills Development Alliance platform, a teaching model for overseas dissemination that includes translation, instruction and exercise has been established. On this basis, the project is also working hard to apply AR technology to improve the effectiveness of cultural dissemination and provide new support for achieving the dual output of "skills with culture" in Chinese culinary culture.

2. Theoretical Basis and Principles

Teaching model updates need to be based on an established theory and a Design framework. Based on the theories of Immersive Learning, Situated Cognition and Knowledge Structuring, this paper attempts to build a new Teaching Model for integrating AR and Bilingual Corpus.

2.1. Principles of AR Technology Empowerment

The educational application value of Augmented Reality technology is rooted in constructivism and situated learning theory. AR seamlessly overlays virtual information onto the real world, creating a manipulable and accessible mixed-reality learning space. Such spatial characteristics align perfectly with the embodied experience essential for skill acquisition. For culinary concepts unique to Chinese cuisine that are difficult to articulate accurately in foreign languages, such as "huohou" (heat control) and "daogong" (knife skills), AR technology can "present abstract or difficult-to-understand knowledge in a vivid, intuitive, and comprehensive manner, thereby enhancing student engagement" [4]. The core principle of its empowerment lies in using technological immersion to reduce the cognitive load associated with cross-cultural understanding, leveraging interactivity to facilitate knowledge internalization and transfer, and constructing a bridge for learners from observation and imitation to genuine comprehension.

2.2. Principles of Content Support via Corpus

A bilingual corpus plays an essential role in Teaching. Construction and Underlying Principles draw upon

terminology studies and Translation Studies. By systematically collecting, aligning and annotating concepts, procedures and background knowledge in the field of Chinese culinary arts, a knowledge network is thus formed. On the one hand, to ensure the professionalism and consistency of terminology translation [5]; On the other hand, it organises dispersed knowledge points into an organised system. After integration with AR technology, each knowledge node in this system can be visually presented as a specific 3D demonstration that transforms the static text explanation into an animated presentation with context. In other words, it aims to systemically solve the problem of knowledge representation and meaning transmission during cross-cultural teaching by realising the convergence of content digitization and embodied experience.

3. Design Principles of the "AR-Corpus" Integrated Teaching Model

Based on the theoretical foundations outlined above, an integrated teaching model has been established in practice, featuring a bilingual corpus as the core content and AR interaction as the supplementary medium. The core of this model is the transformation of systematically organized knowledge units from the corpus into easily triggerable AR learning content.

3.1. Construction and Function of the Bilingual Corpus

The core of which is the close integration of the bilingual corpus in the domain of teaching practice. The project has built a Chinese-Western parallel corpus of Chinese culinary dishes. Through particular dishes, such as Kung Pao Chicken, Guobaorou and Double-cooked Pork slices, the essential culinary skills are demonstrated in detail, for instance, quick-braising technique, quick-frying method with sauce added, jidao carving knife technique; refer to Table 1. In addition to vocabulary association, this way also organises operational essentials and cultural connections according to the definition. Taking the "Jidao" (carving knife technique) for instance, the corpus offers its Spanish translation as "Técnica de grabado con cuchillo", explains that it involves making incisions of a certain depth on the surface of the ingredient without cutting through, forming patterns, and also states that this is done to improve flavour absorption and aesthetic display. This organised knowledge encapsulation offers precise, decomposable knowledge modules for teaching to ensure the accuracy and profundity of knowledge transfer. The corpus continually accumulates in every online culinary lesson at Spanish vocational schools to help overcome language barriers and cultural differences in teaching. At present, the project has utilised this corpus to build an AR-assisted teaching module and aims to provide more direct technological support for subsequent teaching. To serve as the content basis for all subsequent technologies-enabled improvements.

Table 1. Examples of Culinary Techniques and Corresponding Spanish Terms from the Bilingual Corpus

Culinary Technique	Corresponding Spanish Term
油爆 (You Bao)	salteado rápido en aceite a temperatura media
焦熘 (Jiao Liu)	"Jiao liu" (fritura crujiente con salsa)
剞刀 (Ji Dao)	técnica de grabado con cuchillo

3.2. Implementation Path for AR Interaction

In terms of technology implementation, given the team's technical foundation and considering the replicability of this project, this article selects image recognition as the technical path to realise light-weight AR. This module has yet to be developed. The Design concept is to convert key terms and operation steps in the corpus into two-dimensional schematic diagrams or special symbols that can trigger AR, which helps teaching practice. Students use electronic devices with AR application software installed to scan these trigger images, which then trigger and add a corresponding digital learning layer in the real world.

When scanning a trigger image associated with the "Jiao Liu" technique, the device screen displays the technique's name in both Chinese and Western languages, and also plays an animation demonstrating the complete process of "coating with batter, deep-frying, and pouring sauce." Scanning a schematic diagram of the "wheat ear pattern" within the "Ji Dao" technique reveals a decomposed animation showing the angle and trajectory of the knife cuts. This method of presentation instantly transforms the static, abstract textual descriptions in the corpus into dynamic, visual, three-dimensional simulations, greatly assisting learners in understanding implicit knowledge such as the trajectory of movements and changes in heat control in Chinese cooking. AR technology acts as the medium that transforms structured linguistic data into an immersive experience, achieving a significant leap from knowledge storage to experiential generation.

4. Model Application Case Study and Preliminary Effectiveness Analysis

This paper presents a preliminary test of this theoretical model within the relevant project. The project targets students from Spanish vocational schools, constructing AR-corpus integrated teaching units focusing on culinary techniques from different regions of China in each session.

4.1. Case Implementation Overview

The project group used the structural knowledge of the "Bao Chao" technique in the corpus to generate AR-assisted content, such as 3D animation demonstration of key procedures, oil-temperature visualisation and cultural interpretation of knife patterns. This project has successfully introduced online culinary courses to several organisations, among which the Alcázar de San Juan vocational school in Spain is included; In total, there were 18 sessions of interpretation practice. It has attracted the attention of local Spanish media and achieved precise transmission and practical application of Chinese culinary culture in Spanish-speaking countries. AR technology will make the immersive experience during the teaching process more intuitive. Before class, learners can use the AR preview function to experience it first. In class, AR resources are additional materials for live online instruction that explain in detail what the teacher is demonstrating. After class, learners can use AR for independent review and virtual practice. This process transforms the traditional one-way remote Teaching into a technology-enabled learning Environment that is multi-sensory and immediately context-dependent [6].

4.2. Preliminary Effectiveness and Discussion

Analysis of qualitative feedback from learners of Chinese

culinary arts suggests a positive impact of this model. The intuitive and dynamic content brought by AR effectively increased learner interest and engagement, while also promoting cross-cultural understanding. AR scenarios incorporating cultural annotations from the corpus enabled learners to develop a deeper appreciation of the Chinese culinary philosophy emphasizing the harmonious unity of "color, aroma, flavor, and form," moving beyond mere recipe replication. This aligns with the view that language skills are foundational to cross-cultural awareness [7]. After repeated virtual deconstruction and simulation, learners could form a clear and accurate mental representation before actual hands-on practice, reducing inaccuracies in their initial attempts. Although this practice constitutes a small-scale case study, it preliminarily validates the theoretical concept of addressing challenges in cross-cultural skills teaching through the dual pathways of "structured content" and "immersive experience." It also provides a microcosmic teaching experiment reference for cultivating composite talents with "digital skills, professional skills, and cross-domain skills" demanded by new quality productive forces [8].

5. Conclusion

This paper uses a parallel approach of theoretical construction and preliminary case study, systematically expounding on the model principles, Design Logic And Practical Implications Of Integrating AR Technology With A Bilingual Corpus To Empower Chinese Culinary Teaching For International Learners. Research indicates that the main contribution of this model is to establish a new teaching framework characterised by "precise indexability of knowledge and deeply interactive experience", thereby providing an academically and practically valuable solution for addressing systemically the linguistic, cultural, and hands-on difficulties in imparting cross-cultural skills. Not only a fusion of tools, but also an exploration of a new educational model based on learning science, which aims to change the pattern of knowledge transmission and meaning construction.

The significance of this study is that the internationalisation of vocational education, especially the export of culture- and skill-based courses, should pay more attention to the concept of "deep integration" in teaching design, moving from one-way knowledge transmission to context-based meaning construction. By integrating the strengths of AR and knowledge organisation in corpora, it offers an excellent model for the practice of international vocational courses with Chinese characteristics. In this regard, the projects' researches will provide technical accumulation and reference paths for later teaching applications.

This model can be further deepened and expanded in

multiple ways. Theoretically, its design could be refined by integrating principles from multimedia learning to improve AR interaction and corpus information integration. Technologically, with the development of technologies like WebAR and AIGC, the construction and upgrading of this model will become increasingly intelligent and personalized, potentially finding wide application in various scenarios of vocational education going global and cultural dissemination. This would leverage more immersive and engaging digital educational intelligence to narrate the story of Chinese culinary techniques and convey the spirit of Chinese culture.

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