

# **International Education Forum**

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## International Education Forum

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# The Promoting Role of Artificial Intelligence Technology in the Ideological and Political Education Cultivation Mechanism of Vocational Colleges

Shang Wang, Jinru Ma\*

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**Abstract:** As the core pathway for cultivating high-quality technical talents, vocational education has shifted its educational objectives from imparting singular technical skills to cultivating comprehensive qualities. Ideological and Political Education (IPE), serving as the critical mechanism for this transformation, faces practical challenges such as low efficiency in case development and inadequate alignment with professional course content. Leveraging artificial intelligence (AI) technologies, this study constructs an efficient pathway for constructing an IPE case database. Firstly, a localized PC client was developed to enable API communication with Alibaba Cloud's Qwen model. Secondly, the Qwen large language model (LLM) underwent pre-training for IPE case generation. Thirdly, multi-dimensional feature annotation was implemented. Finally, pedagogical application validation was conducted. Empirical evidence demonstrates that AI enables teachers to generate cases rapidly and precisely, significantly reducing their workload. Furthermore, AI-generated cases have received high recognition from students in terms of engagement and intellectual stimulation.

**Keywords:** Educating mechanism; Ideological and Political Education; IPE; Vocational education

**Online publication:** July 4, 2025

## 1. Introduction

As the critical link between education systems and industrial sectors, vocational education serves as the cornerstone for driving the structural transformation and upgrading of real economies. It has emerged as a pivotal pillar in mitigating structural employment imbalances and forging viable career trajectories for skilled artisans. Amid global industrial chain reconfiguration, the strategic imperative of vocational education has intensified, with international benchmarks like Germany's dual vocational training system underscoring its

transformative potential. Through institutionalized school-enterprise collaboration, such models demonstrate how vocational education cultivates workforce capabilities that directly enhance national industrial competitiveness, bridging theoretical knowledge with practical skill demands in rapidly evolving economic landscapes. However, as societal demands for technical talent quality escalate, vocational education is undergoing a profound transformation from “skill-centric” to “comprehensive competency-oriented” paradigms. This transition necessitates not only mastering professional skills but also cultivating occupational ethics and social responsibility. IPE, serving as the practical pathway to achieve these objectives, has gained heightened strategic significance and urgency. Currently, IPE development in vocational colleges faces resource integration challenges. Despite the expanding volume of IPE case repositories, manual curation modes struggle to balance case relevance with professional course content. Educators must manually filter through massive datasets to identify materials aligned with course themes, duration requirements, and diverse media formats, a process that is time-consuming, labor-intensive, and prone to “empiricism” pitfalls. Moreover, existing cases often lack thematic coherence and logical progression, with repetitive content leading to suboptimal teaching outcomes. Harnessing AI’s powerful data processing and intelligent optimization capabilities offers innovative solutions to these IPE development dilemmas. Text generation technologies based on LLMs can rapidly produce IPE cases tailored to professional course requirements while reducing manual compilation costs. This study aims to establish an AI-driven IPE case database construction framework, enhancing both case generation quality and efficiency to provide intelligent solutions for ideological cultivation mechanisms in vocational education.

## 2. Literature review

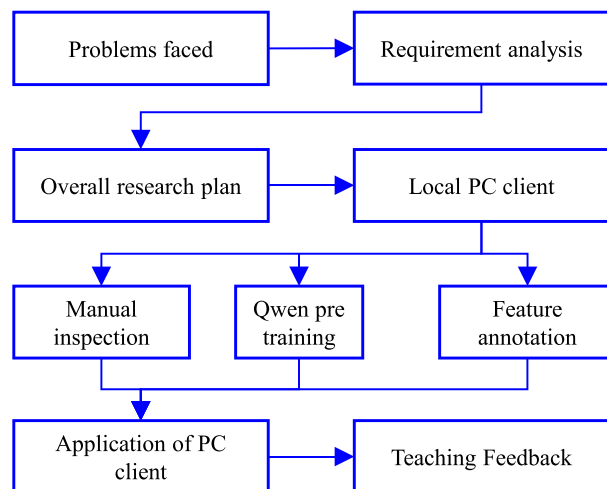
The theoretical exploration of IPE integration in vocational education curricula has evolved into a multidimensional supportive framework. From the perspective of educational digital transformation, Wang proposes a tripartite model for IPE implementation, advocating the convergence of ideological and technical thinking, digital content reconstruction, and digitized governance mechanisms <sup>[1]</sup>. Kang and Tian advance the “micro-IPE” theory, emphasizing contextualized case penetration to inform fragmented teaching scenarios, while Guo and Zhu expose the imbalance between instrumental rationality and value rationality in vocational education, calling for “sociality-centered” and “human-centric” pedagogical logics <sup>[2–3]</sup>. At the practical level, Kong et al. validate the efficacy of IPE resource repository construction, diversified pedagogy, and assessment frameworks through pharmaceutical analysis courses <sup>[4]</sup>. Zhou and Zhang propose resource integration strategies tailored to art and design disciplines <sup>[5]</sup>. However, prevailing studies predominantly focus on macro-level pathway design, leaving micro-operational challenges such as case development efficiency, content alignment precision, and systemic cross-session coordination underexplored. The application of AI technologies in education has progressively deepened, offering technical scaffolding for IPE development. Gao and Ren, alongside Tong, investigate the transformative potential of generative AI in translation systems and educational assessment <sup>[6–7]</sup>. Concurrently, Xu and Shen, along with Jiang et al., caution against ethical risks and governance deficits in “AI+education” implementations <sup>[8–9]</sup>. Yang and Hao further explore the synergistic possibilities between AI and human intelligence in knowledge production <sup>[10–11]</sup>. Yet, existing literature fails to systematically address how AI technologies can resolve the combinatorial optimization challenges inherent in IPE case development.

This study bridges this research gap through three innovative components: (1) a multimodal case

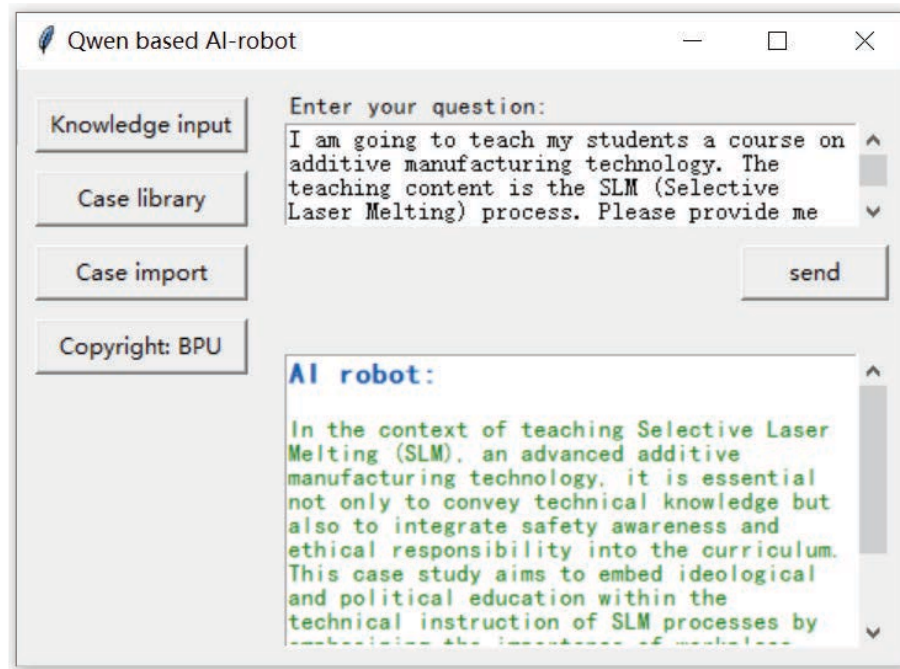
generation framework integrating genetic algorithms with IPE feature annotation systems; (2) a multi-objective dynamic optimization algorithm for adaptive case matching; and (3) a closed-loop iterative mechanism for continuous case-bank refinement. By operationalizing these technical solutions, the research not only advances theoretical understanding of AI-IPE integration but also provides actionable tools for vocational institutions to achieve systematic, curriculum-aligned ideological cultivation—a critical void in current scholarly discourse.

### 3. Technical framework

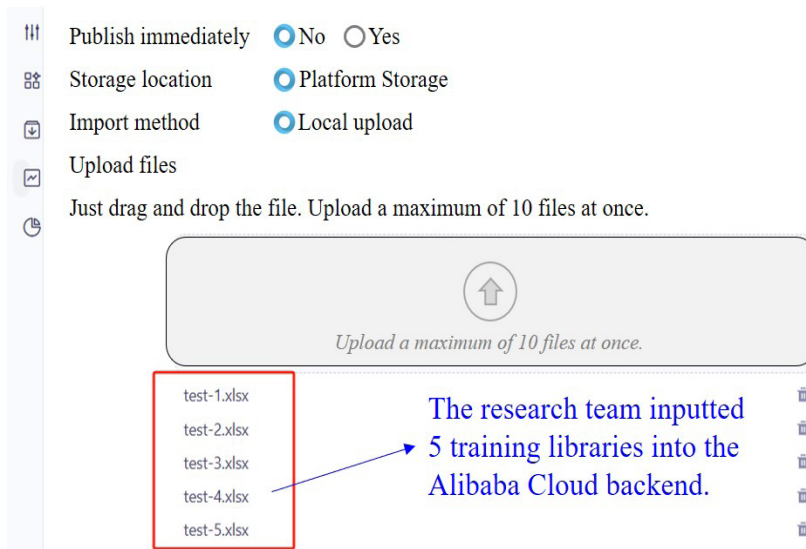
This study constructs a Qwen LLM-based technical framework for Ideological and IPE case generation (as illustrated in **Figure 1**), comprising three interconnected modules. Firstly, a localized PC client was developed using the PyCharm IDE, as shown in **Figure 2**, enabling efficient API-mediated communication with Alibaba Cloud’s Qwen LLM. This establishes a robust human-machine interaction interface for seamless technical integration. Secondly, a vertical-domain pre-trained model (as illustrated in **Figure 3**) was constructed by fusing multimodal datasets including professional textbooks, industry case studies, and inspirational narratives. This specialized training regimen enhances Qwen’s capacity to generate IPE cases that align with the unique pedagogical requirements of vocational education. The model architecture incorporates curriculum-specific knowledge graphs and contextual embedding techniques to ensure thematic relevance and professional applicability. Thirdly, an innovative multi-dimensional feature annotation system was designed, encompassing four major categories and 15 sub-dimensions (e.g., “High/Moderate/Low Relevance”, “Text/Image/Video Modalities”, “Pre-class Introduction/In-class Discussion/Post-class Extension”). This hierarchical taxonomy provides quantifiable metrics for case quality evaluation and contextual matching, forming the basis for adaptive recommendation algorithms. Through systematic technical integration and process optimization, this framework realizes a closed-loop pipeline from raw data ingestion to intelligent output generation. It offers a replicable technical pathway for AI-driven IPE development in vocational education, addressing the operational challenges of case generation efficiency, content alignment precision, and pedagogical adaptability. The modular design enables scalable expansion to accommodate emerging educational technologies and evolving industry requirements.



**Figure 1.** Research logic diagram



**Figure 2.** Screenshot of the interface of the local PC client



**Figure 3.** Data pre-training of Alibaba Cloud Qwen big model

## 4. Results and analysis

### 4.1. Experimental design

This study selected the “Additive Manufacturing Technology” course at a vocational college as the pedagogical experimental platform, with 41 mechanical engineering students serving as the research cohort across 10 instructional sessions. The experimental group utilized AI-generated IPE cases from the Qwen LLM-based repository, while the control group continued with traditional, manually curated materials. Course content



integrated technical modules (“3D Printing Principles”, “Material Forming Processes”, “Equipment Operation Protocols”) with AI-generated IPE cases covering themes such as “Breakthroughs in Domestic High-End Machine Tools”, “3D Printing in Medical Applications”, “Green Manufacturing Practices”, and “Profiles of Industry Pioneers.” Six instructors with over three years of vocational teaching experience participated after standardized training to ensure pedagogical consistency, with pre-experimental surveys confirming no significant prior experience disparities between groups.

#### **4.2. Instructor feedback analysis**

Semi-structured interviews and teaching log reviews revealed unanimous approval of the AI casebank among instructors, with three advantages highlighted: (1) substantial workload reduction, as average weekly case screening time decreased from 2.5 to 0.5 hours (e.g., one instructor noted, “AI-generated cases now directly match knowledge points, requiring only minor edits compared to manual searching”); (2) enhanced professional relevance, with 89% rating AI cases as more aligned with course objectives, particularly in “Technological Ethics” and “Industry Trends” (e.g., the “Indigenous Development of 3D-Printed Aerospace Materials” case was praised for “seamlessly integrating materials science with patriotic technological commitment”); and (3) pedagogical flexibility enabled by dynamic case presentation adjustments (text explanations, video introductions, group discussions), with instructors noting “the multimedia labeling system significantly boosted classroom engagement through varied interaction modes.”

#### **4.3. Student perception evaluation**

Quantitative surveys and qualitative analyses revealed three dimensions of positive impact: (1) enhanced engagement, with 84% finding AI-generated cases “innovatively designed” and 72% reporting increased discussion participation (e.g., the “3D-Printed Prosthetics for Paralympians” case was cited as “a paradigm of technological innovation meeting humanitarian needs”); (2) cognitive expansion, where 91% acknowledged expanded industry perspectives and 89% credited cases with deepening technical comprehension (qualitative feedback highlighted value reinforcement, with 63% associating “Domestic Equipment Advancements” with “craftsmanship spirit” and 35% developing “dialectical perspectives on balancing innovation protection with knowledge sharing”); and (3) a critical caveat raised by three instructors regarding potential “over-reliance on AI diminishing pedagogical originality”, indicating needs for implementation refinement and longitudinal impact validation in future research.

### **5. Conclusions**

This study successfully constructed an AI-driven IPE case-bank framework integrating LLM, vertical-domain pre-training, and multi-dimensional annotation systems, demonstrating significant efficiency gains in case generation and pedagogical alignment. Empirical validation in vocational technical courses confirmed that AI-generated cases enhance student engagement and cognitive expansion through contextualized value integration, while maintaining professional relevance. The proposed technical architecture establishes a replicable pathway for AI-IPE synergy, addressing operational bottlenecks in resource matching and systemic optimization. However, instructor concerns about pedagogical originality preservation necessitate hybrid implementation strategies in future applications. Overall, this research advances both theoretical understanding of AI-education

integration and practical solutions for cultivating socially responsible technical talent in vocational settings.

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## Disclosure statement

The authors declare no conflict of interest.

## References

- [1] Wang WJ, 2024, Action Logic and Promotion Path of Vocational Education Curriculum Ideology and Politics under the Background of Educational Digitalization. *Education and Vocation*, 2024(24): 93–99. <https://doi.org/10.13615/j.cnki.1004-3985.2024.24.006>
- [2] Kang X, Tian MR, 2022, Research on the Construction of “Micro-Ideological and Political Education” in Public Foreign Language Courses in Vocational Education in the New Era. *Education and Vocation*, 2022(17): 108–112. <https://doi.org/10.13615/j.cnki.1004-3985.2022.17.007>
- [3] Guo HC, Zhu DQ, 2021, Value Rationality and Educational Logic of Vocational Education Curriculum Ideology and Politics. *Journal of Research on Education for Ethnic Minorities*, 32(5): 44–54. <https://doi.org/10.15946/j.cnki.1001-7178.2021.05.006>
- [4] Kong XX, Tian QQ, Zhang P, et al., 2023, Exploration and Practice of Ideological and Political Education in Pharmaceutical Analysis Courses in Higher Vocational Education. *Chinese Journal of Chemical Education*, 44(6): 67–75. <https://doi.org/10.13884/j.1003-3807hxjy.2022040296>
- [5] Zhou SL, Zhang Z, 2022, Research on the Construction of Ideological and Political Education in Art Design Majors in Higher Vocational Education. *Education and Vocation*, 2022(8): 89–92. <https://doi.org/10.13615/j.cnki.1004-3985.2022.08.013>
- [6] Gao YX, Ren DS, 2023, The Challenges and Countermeasures of Translation System Construction in the Era of Generative AI. *Computer-Assisted Foreign Language Education*, 2023(4): 9–15 + 114. <https://doi.org/10.20139/j.issn.1001-5795.2023.04.002>
- [7] Tong W, 2024, From Artificial Intelligence (AI) to Intelligent Assistant (IA): A Preliminary Exploration of Large Model Empowering Educational Examination Applications. *China Examinations*, 2024(11): 20–29. <https://doi.org/10.19360/j.cnki.11-3303/g4.2024.11.003>
- [8] Xu HX, Shen LX, 2023, Intelligent Plus Education: Application Scenarios, Risk Challenges, and Governance Countermeasures. *Fudan Education Forum*, 21(2): 24–30. <https://doi.org/10.13397/j.cnki.fef.2023.02.007>
- [9] Jiang H, Wang CX, Yang SD, 2023, The Application Potential, Risk Challenges, and Coping Strategies of Generative AI in the Field of Education. *Modern Educational Administration*, 2023(7): 66–74. <https://doi.org/10.16697/j.1674-5485.2023.07.007>
- [10] Yang F, 2023, Research on Educational Publishing in the AI Era: Taking Generative AI as the Technological Driving Force. *Publishing Journal*, 2023(16): 27–31. <https://doi.org/10.16491/j.cnki.cn45-1216/g2.2023.16.005>
- [11] Hao XJ, He X, 2022, The Game and Integration of AI and Human Intelligence in Knowledge Production and



Its Enlightenment to Education. Journal of East China Normal University (Educational Sciences), 40(9): 78–89.  
<https://doi.org/10.16382/j.cnki.1000-5560.2022.09.008>

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# A Comparative Analysis of Chinese Film Title Translation Guided by “Three-Dimensional Unity” and Mainstream Translation Strategies

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**Abstract:** Serving as an exceedingly popular way in the course of cultural communication in today’s era, films make great contributions to the spread of culture, and the translation of film titles is a lot essential for the exchange among different cultures. A wonderful film title translation can not only attract the audience’s attention, but also promote the spread of the country’s culture. Considering there are still many problems in the translation of film titles, such as mistranslation, over translation and inappropriate translation and most of the translators are guided by single theory such as Skopos theory, functional equivalence theory and the like, the author of this paper attempts to take the “three-dimensional transformation” translation method of eco-translatology proposed by Professor Hu Gengshen for reference, and make a comparison of the film title translation under the guidance between “three dimensional unity” and the current mainstream translation theories, trying to explore a multi-dimensional film title translation strategy. And finally, in this paper, it is found that in the process of translation, the translators should take into account all three dimensions of language, culture, and communication, so that the translated film titles can be accurate and proper as well as maximize the commercial value and cultural value.

**Keywords:** Film title translation; Eco-translatology; “Three-dimensional transformation”; “Three-dimensional unity”

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## 1. Introduction

These years have seen great progress in the Chinese film industry, with more and more excellent Chinese films gaining wide recognition across the globe. Among them, there are some Chinese films, with which people are familiar, such as “Nezha”, “Dying to Survive”, and “Hi, Mom”, boasting a very impressive translated film title when they are promoted to the world. So, it can be seen that if a film is well-known around the world, the translation title must have played a paramount role. And that is also the reason why the author of this paper pays much attention to the translation of the Chinese film titles.

### **1.1. Background and significance of the study**

The film title is the finishing touch of the film. However, in the process of international communication, it is very difficult to have an appropriate film title translation. In addition, due to the lack of supervision and cultural differences, and other reasons, there are still many problems in the translation of film titles, such as mistranslation and inappropriate translation, which hinder the spread of film culture. In addition, there are a few theories applied by the translators in the translation of Chinese film titles. According to other references, the author finds that most of them are from the perspective of Skopos theory, functional equivalence theory, and cross-cultural communication, lacking a systematic and macro theory<sup>[1]</sup>. The theory of eco-translatology, which has sprung up in the past decade, has brought great guidance to the translation of film titles.

Eco-translatology is a new translation theory proposed by Prof. Hu Gengshen, a domestic scholar. It focuses on the integrity and systematicness of the translation process from the perspective of ecological integrity<sup>[2]</sup>. The translation method of “three-dimensional transformation” (Linguistic Dimension, Cultural Dimension, and Communicative Dimension) requires the translator to make the translation meet the needs of many aspects of the target language audience from different angles. This method is now accepted by an increasing scholars and translators. On this basis, the author puts forward “three-dimensional unity.” This paper aims to explore the feasibility of “three-dimensional unity” by comparing it with the current major translation guiding theories through specific film title translation cases.

### **1.2. The functions of film titles**

The film title is the brand trademark of the film, which directly plays the role of guiding, which has an information function, an aesthetic function, and an imperative function<sup>[3]</sup>. The information function means that the film title should provide the audience with information about the film as much as possible, so that the audience can roughly understand the type and the theme of the film only from the title before watching the film. The aesthetic function means that the film title should fully consider the audience’s psychological reaction, stimulate the audience’s curiosity with a unique language form to attract them to watch the film, and at the same time, the film title should also give the audience the enjoyment of beauty. The imperative function stands for that the film title should give full play to its role of promotion and publicity so as to maximize the box office income.

### **1.3. The importance of good translations of film titles**

The translation of film titles is a lot essential for the exchange among different cultures, especially in today’s world with developed media. People across the globe can enjoy great access to various films from different countries, which means there is intense competition in the global film industry. A good film title translation can not only make the commercial value and aesthetic value of a film well achieved, but can also fully spread a certain culture in an area to the world, so that it can help sharpen a country’s competitive edge in the exchange of cultures. Besides, a good film title translation can condense the content of the film, highlight the film’s theme, and establish the emotional tone so as to attract the audience. Therefore, a good film title translation can serve as icing on the cake for a film.

## **2. Literature review**

### **2.1. The main translation theories of current Chinese film titles**

There is a majority of scholars and translators studying Chinese film translation. Most of them do this study under the guidance of translation theories of Skopos theory and functional equivalence theory, and from the perspective of cross-cultural communication. In this part, the introduction to these theories will be made.

#### **2.1.1. Skopos theory**

Skopos theory, proposed by German functionalists Fermi and Nord, is the core of functional translation theory. According to Skopos theory, translation is a kind of communicative behavior<sup>[4]</sup>. The purpose of translation behavior determines the whole process of translation behavior, that is, “the purpose determines the means”, and the translation strategy must be determined according to the purpose of translation. Under this principle, the original text only plays the role of providing information in translation. In order to adapt to the new environment and the needs of the target readers, and to realize the function of the target text more effectively, the reference frame of the translator in the whole translation process should not be the original text and its function that the “equivalence” theory focuses on, but one or more kinds of communication function that the target text expects to achieve in the cultural environment of the target language. Skopos theory includes three important principles: Skopos rule, coherence rule, and fidelity rule. Among them, the Skopos rule is the first principle, the coherence rule and fidelity rule are subordinate to the Skopos rule, and the fidelity rule is subordinate to the coherence rule<sup>[5]</sup>.

#### **2.1.2. Functional equivalence theory**

Functional equivalence theory is proposed by Eugene A. Nida from the perspective of linguistics and based on the nature of translation. The purpose is to set a standard on the conversion from the source language to the target language, thus narrowing differences. According to this theory, he pointed out that translation is to use the most appropriate, natural, and equivalent language to reproduce the source language information from both semantics and stylistics’ perspectives. However, he did not combine it with the current situation of Chinese film title translation for research, so the research did not go deep<sup>[6]</sup>. The well-known translation scholar He Ying also defined functional equivalence in the article Theories and Methods of Movie Title Translation. The so-called functional equivalence means that the target language audiences will have nearly the same feelings that the source language audiences have when receiving information. From semantics to style, the source language information should be reproduced with the most appropriate natural equivalent in the target language.

#### **2.1.3. Cross-cultural communication**

It is also a major strategy used in the translation of film titles. When translating film titles from this perspective, translators should conform to the following basic principles: try to convey the cultural information that the film should convey, and keep the literal meaning and cultural connotation of the film title to the maximum extent<sup>[7]</sup>. Based on the above principles, the foreignization strategy should be used to highlight the uniqueness of Chinese culture, that is, choosing literal translation according to the literal meaning of Chinese words, so that Westerners can appreciate the true meaning of Chinese culture and the humor of Chinese people. When it comes to translation methods, literal translation should be used as far as possible, and transliteration can be used for the names of people and places. If free translation is necessary,

the cultural information contained in the film should be fully explored, and the original content should be appropriately conveyed by means of addition and other translation methods.

## **2.2. Introduction to eco-translatology studies, and “three dimensions”**

In recent years, an original translation theory called eco-translatology has gained wider and wider recognition in the academic translation community. Proposed by the domestic professor Hu Gengshen, the eco-translatology stems from the knowledge of the ecosystem, which emphasizes the wholeness in the process of translation. In this theory, people can see many novel conceptions about its translation principle and method. “Three dimensions” weigh a lot in this theory. Besides, based on its translation method, the author also put forward a new translation method called “three-dimensional unity.” Here are the introductions to eco-translatology, “three dimensions”, and “three-dimensional unity” respectively.

## **2.3. Eco-translatology studies**

The concept of eco-translatology is a brand-new translation theory put forward by the domestic scholar Professor Hu Gengshen in recent years. It is developed on the basis of “translation adaptation and selection theory.” Compared with other translation theories, this theory focuses more on macroscopic and systematic research, expanding new horizons and providing new ideas for translation<sup>[8]</sup>. Professor Hu Gengshen pointed out that “eco-translatology” is a translation study based on an ecological approach, or from an ecological perspective. It takes “natural selection” and “survival of the fittest” and other basic principles of “biological evolution” as the theoretical cornerstone<sup>[9]</sup>. In other words, eco-translatology emphasizes the integrity of the translation ecosystem and makes new descriptions and explanations of the nature, process, standards, principles, and methods of translation, as well as translation phenomena. According to this study, the essence of translation is embodied in its definition: translation is the activity that translator makes their choices to adapt to the translation ecological environment<sup>[10]</sup>. The translation process is an alternating cycle of the translator’s adaptation and selection. The translation principles are multi-dimensional selective adaptation and adaptive selection, and the translation method is called “three-dimensional transformation.”

## **2.4. Three dimensions**

Eco-translatology believes that translation is a process that involves communication of various languages, cultures, and ideas under a certain cultural background, rather than a simple conversion of language codes between texts. During the process of translation, it is necessary to transform the different dimensions selectively. The dimensions here mainly mean “three dimensions”, namely, “linguistic dimension”, “cultural dimension”, and “communicative dimension”<sup>[11]</sup>.

### **2.4.1. Linguistic dimension**

“Linguistic dimension” means that in the process of translating film titles, the translator often needs to make adjustments in vocabulary, sentence structure, language, and rhetoric, so that the translator can translate popular film titles in authentic language. In the process of translating film titles into English, translators should take full account of the adaptability of language expression forms and make choices according to the language expression habits of English audiences, so as to make the translated titles concise and vivid. For example, the English translation of “Tangshan Earthquake” omitted the place name “Tangshan” and was

translated into “Aftershock”. The author thinks that it is quite correct to choose such an expression. English audiences know little about the Tangshan earthquake, so the translation is not suitable. “Aftershock” means “aftershock” in Chinese. The author thinks that the translation is a pun, which not only shows the real content of the earthquake, but also implies the great impact of the earthquake on the lives in Tangshan.

#### **2.4.2. Cultural dimension**

Cultural dimension means that the translator should fully consider the cultural factors such as the values, ways of thinking and aesthetic concepts, social customs, religious beliefs and historical allusions of the film importing country, and try to avoid using some words or images with cultural taboos, so that the translated film title can be recognized by the audience, and the commercial value and cultural value of the film can be better realized. The ideal translation of a film title should be not only the transmission of information, but also the transmission of culture. Due to the great cultural and linguistic differences, translators should translate film titles appropriately to convey the same information. The title of the film “Luo Ye Gui Gen” is a Chinese idiom. The leaves get nourishment from the roots and eventually return to the land as fertilizers for the roots after withering. It means that things always have a certain destination. It mostly means that people who visit other places will eventually return to their hometown. The English translation of “Getting Home” takes the cultural meaning of “falling leaves will return to the ground”, thus achieving the resonance between Chinese and English cultures.

#### **2.4.3. Communicative dimension**

The communicative dimension means that the translator pays attention to the adaptive choice of bilingual communicative intention in the process of translation. Because film is a very commercial art form, the communicative intention of the film title is to highlight the content of the film, to convey the theme information, to attract the audience, and to increase the box office. For example, “Zhan Lang 2”, a popular Chinese film, is translated into “Wolf Warriors II”. In the film Wolf Warriors II, the theme is to describe Chinese soldiers’ bravery and invincibility, and warrior means “Yong Shi” in Chinese. Therefore, “warrior” can make the English audience easily understand the key content and the central idea of the film, and it is easier to stimulate their desire to watch the film.

### **3. Comparison of film title translation under the guidance of “three-dimensional unity” and the main translation theories**

In order to make clear the reasonable points of “three-dimensional unity”, and further analyze its practical points. In this part, the comparison between “three-dimensional unity and some mainstream translation theories will be made by analyzing some Chinese film title translation cases.

#### **3.1. Three-dimensional unity**

“Three-dimensional unity” stems from “three-dimensional transformation” in eco-translatology, and this term is proposed by the author. In the process of translation, he thinks that a translator can not only choose the most suitable translation method according to different dimensions in the translation environment, but also fully combine all its dimensions, namely “linguistic dimension”, “cultural dimension”, and “communicative dimension”, to translate film titles properly. For example, some translators translated the famous Chinese



film “叶问” into “Ye Wen”. From the perspective of “communicative dimension”, this version can directly make the English audiences understand that this movie is about a guy called Ye Wen. However, considering the combination of all dimensions, the author prefers another version, “IP Man.” IP comes from Cantonese (yip) which means “Ye”, and “Man” will make English audiences remind of “Spider-Man”, “Iron-Man”, and the like, thus they can more easily get the meaning of the film. This version is a great example of meeting all dimensions. Some other examples will be shown in the following, guided by “three-dimensional unity” compared with the mainstream translation theory.

### **3.2. Comparison of film title translation under the guidance of “three-dimensional unity” and Skopos theory**

According to Skopos theory, the translation of film titles is a purposeful, communicative, and cross-cultural act. Its ultimate goal and main function is to stimulate the audience’s desire to watch. Therefore, translators should adopt a variety of translation strategies and methods to achieve the three basic functions of film titles, so as to achieve the ultimate goal. Under the guidance of this theory, transliteration is a common translation method.

For example, in the domestic animation film “Ne Zha”, some translators translated it into “Ne Zha” directly through transliteration. One advantage of this translation is that it will not cause ambiguity and misunderstanding, and can stimulate English audiences’ interest in understanding Chinese cultures to a certain extent. From the perspective of “three-dimensional unity”, there is a more appropriate version, namely “I am the destiny”. The advantage of this version can avoid the audience’s strangeness to “Ne Zha”. In addition, the translation fits perfectly with the theme of the film story. Because the film is about Ne Zha not succumbing to his destiny, as a magic pill, he is doomed to be killed after three years, and at the end of the film, Ne Zha tries his best to face the god’s trial, and successfully survives. This is quite different from the fate set for Ne Zha at the beginning of the film, which echoes the translation “I am the destiny.”

In addition, there is another well-known domestic film, “Jin Ling Shi San Chai”, which is translated into “The 13 Women of Nanjing” by a translator from the perspective of Skopos theory. This translation adopts literal translation, which fits Chinese very well and is in line with the fidelity rule of Skopos theory. Because this movie actually describes the stories in the anti-Japanese war period happened to 13 women who were in Nanjing. Therefore, this translation version virtually reflects the main contents of the film, which shows fidelity to the film’s story. However, the word “women” is too plain and lacks charm. From the perspective of “three-dimensional unity”, it applauds another version of “The Flowers of War”. First of all, the translation can not only add beauty and charm to the original text, but also emphasize the center of women in the film, which meets the requirements of the language dimension. Secondly, the translation accurately grasps the differences between Chinese and Western cultures and abandons the “thirteen” in the Chinese film title. The reason is that Westerners taboo the number “13”, so it meets the requirements of the cultural dimension. Finally, the word “war” points out the background of the story, and the word “flower” reminds people of beautiful women. When the two are shown together, the theme of the film is obvious<sup>[12]</sup>. At the same time, comparing the ruthlessness of “war” with the charm of “flower”, it can achieve a great propaganda effect, which meets the requirements of the communication dimension.

### **3.3. Comparison of film title translation under the guidance of “three-dimensional unity” and functional equivalence theory**

As mentioned above, the theory of functional equivalence is one of the main guiding principles in the translation of Chinese film titles. Many scholars have published many papers under the guidance of the theory and discussed in detail the role of functional equivalence in the translation of film titles. He Ying, a famous scholar, once pointed out that functional equivalence means that the target language audience has roughly the same feelings as the source language audience when receiving information. From semantics to style, the closest natural equivalence is used to reproduce the source language information in the receiving language. However, in the actual translation process, the principle of functional equivalence does not seem to be able to fully express the connotation of film titles. For example, the film “Nu Ren Bu Huai”, which tells the lives of three women, has been translated into “Women Are Not Bad” by some translators according to the principle of functional equivalence. From a formal point of view, the translation belongs to literal translation, which fits the sentence pattern of the original text and achieves formal equivalence. However, from the point of view of the film’s content, when the audience sees the translation, the first impression is that the three women are bad women at first, and then change into good people. The audience will be deeply attracted by the translation of the film title. However, the plot mainly talks about the romantic, funny, and fashionable love adventures of the three women, and does not belittle the three heroines. Therefore, this translation is slightly inappropriate. From the perspective of “three-dimensional unity”, another version of “All about Women” is more appropriate. From the perspective of language, the translation is simple and concise, and from the perspective of culture, it fits the content of the film. From the perspective of communication, the word “all about” can fully arouse the curiosity of the audience, because they want to know what the film tells about women.

Another well-known Chinese film, “Hua Pi”, also has many versions. Among them, from the perspective of functional equivalence theory, some translators translate it directly into “Painted Skins.” From the stylistic point of view, the translation also pursues formal equivalence. At the same time, literal translation retains the language features of the original text, which can also stimulate the audience’s interest in watching the film to a certain extent. However, the translation seems to have neglected the film content to a certain extent. Because the film is about the fox demon’s attempt to resurrect through the human body. From this point of view, under the guidance of “three-dimensional unity”, another version of the translation “The Resurrection” highlights the connotation of the film. In addition, the word resurrection in Christianity refers to the resurrection of Jesus, which is more in line with the theme of the fox demon’s resurrection, and more likely to arouse the resonance of English audiences. The famous Chinese film, “Wo Bu Shi Yao Shen”, enjoys many versions, too. But the most extraordinary version goes to “Dying to Survive”, not the “I am the God of Drug.” The analysis is similar to that of the Chinese film “Hua Pi.” Although in the latter version, “I am the God of Drug” retains the language features of the original text, it fails to express the true stories of the film. To some extent, some foreign audiences might even feel cheated after watching the film if the latter version is used.

### **3.4. Comparison of film title translation under the guidance of “three-dimensional unity” and cross-cultural communication**

As mentioned above, cross-cultural communication is also one of the guiding principles in the current translation of Chinese film titles, whose purpose is to maximize the expression of the unique cultural connotations contained in the film titles. However, under the guidance of this theory, translators often pay



too much attention to the differences between different cultures, resulting in inappropriate translation of film titles. For example, when translating Chinese film titles, some translators will pay special attention to the background knowledge of the audience in the target language countries, so that there are some film title translations that Chinese people do not understand and English audiences do not know (Wen Jing, 2012).

For example, the English title of the comedy movie “Da Hua Xi You Zhi Yue Guang Bao He” is translated as “Chinese Odyssey 1: Pandora’s Box”; that is, “Zhong Guo De Ao De Sai 1: Pan Duo La Bao He.” With such a title, it should be easy for English audiences to guess the general content of the film, because Odyssey is one of Homer’s epics, which tells the adventure story of Odysseus at sea. But the film was shot on the basis of Journey to the West, a representative work of Chinese classical literature. The translator chooses Odyssey to attract Western audiences to watch the film, which is inappropriate. From the perspective of “three-dimensional unity”, the translation does not meet the requirements of the “communicative dimension.”

However, from the perspective of cross-cultural translation, some Chinese film titles fit the “three-dimensional unity.” For example, some translators have translated the movie “Po Fu Chen Zhou” into “No Retreat” from the perspective of cross-cultural communication. It can be said that it is quite appropriate. The film is about a classic battle in the history of ancient Chinese war: Qin army encircles Zhao in Julu (a county in Hebei province), but Xiang Yu leads the army to rescue. In the face of the great disparity between the two armies’ scale, Xiang Yu only let the soldiers march forward with three-days rations to show his determination not to retreat. Under the leadership of Xiang Yu, the Chu army bravely defeated the Qin army and broke the siege of Julu. The literal meaning of “No Retreat” is “leave no way behind”, which is consistent with the content of the film. The word “retreat” can also make English audiences easily associate with the scene of the army’s retreat. At the same time, with a simple but powerful negative word, “no”, it can fully express the spirit of bravery and fearlessness of the soldiers in the film. From the perspective of “three-dimensional unity”, it not only conforms to the language conciseness of the “linguistic dimension” but also echoes the “cultural dimension” and the “communicative dimension”, so as to make the translation appropriate and attract the audience.

## 4. Conclusion

The title of a film is of paramount importance. A good translation of the title will bring huge benefits to a film and highlight its cultural value. The translation method of “three-dimensional adaptive transformation” in Eco-translatology has been accepted by more and more scholars and applied in a variety of Chinese film title translation practices, and has helped translators make many outstanding achievements. In this paper, from the perspective of “three-dimensional transformation”, the author puts forward “three-dimensional unity”, and uses some specific Chinese film title translation cases to further expound the rationality of the “three-dimensional unity” translation method compared with the current major film title translation guiding theories. That is to say, in the process of translation, people should take into account the dimensions of language, culture, and communication, so that the translated film titles can be accurate and proper and maximize the commercial value and cultural value.

## Disclosure statement

The authors declare no conflict of interest.

## References

- [1] Yu F, 2012, A Study on the Translation of English Film Titles from the Perspective of Eco-Translatology, thesis, Wuhan University of Science and Technology.
- [2] Yu Z, 2016, On Chinese Translation of English Film Titles from the Perspective of Ecological Translation Theory. Results of the 2016 International Conference on Culture, Literature and Art (Culture, Literature and Art). Information Technology & Industrial Engineering Research Center.
- [3] Wang J, 2018, English Translation of Chinese Film Titles from the Perspective of Skopos Theory. *Campus English*, 2018(36): 229–231.
- [4] Yuan LY, 2020, An Analysis of the English Translation of Chinese Film Titles from the Perspective of Skopos Theory. *Journal of Luoyang Normal University*, 39(4): 90–94.
- [5] Hua YJ, 2016, Skopos Theory and the Translation of Chinese and Foreign Film Titles. *Education Teaching Forum*, 2016(25): 146–147.
- [6] Yan M, Liang MH, Liu WJ, 2015, A Study on the English Translation of Contemporary Chinese Film Titles from the Perspective of Functional Equivalence. *Overseas English*, 2015(20): 198–199 + 204.
- [7] Wang QJ, 2013, The English Translation of Chinese Film Titles from the Perspective of Cross-Cultural Communication. *Film Literature*, 2013(7): 155–156.
- [8] Yang Z, Zhang RQ, 2019, A Brief Analysis of Subtitle Translation of Documentary Wild China from the Perspective of Eco-Translatology. *Theory and Practice in Language Studies*, 9(10): 1301–1308.
- [9] Hu GS, 2008, An Interpretation of Eco-Translatology. *Chinese Translators Journal*, 2008(29): 11–15 + 92.
- [10] Hu GS, 2011, Research Focus and Theoretical Perspectives of Eco-Translatology. *Chinese Translators Journal*, 32(2): 5–9 + 95.
- [11] Wang MY, 2013, A Study on the English Translation of Chinese Film Titles from the Perspective of Eco-Translatology. *Movie Review*, 2013(23): 98–99.
- [12] Kuai L, Kuang XH, 2013, An Analysis of Film Title Translation from the Perspective of Eco-Translatology. *Science & Technology Information*, 2013(1): 221 + 433.
- [13] Wen J, 2012, Mutual Translation of Chinese and Western Film Titles Under Cultural Differences. *Literary World (Theory Edition)*, 2012(11): 269–270.

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# Examining the Development of Undergraduate Chinese Language Teacher Education at Kenyan Universities: A Case Study of the University of Nairobi

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**Abstract:** The integration of the Chinese language into Kenya's national education system, particularly its inclusion in primary and secondary school curricula, has led to a significant increase in demand for qualified Chinese language teachers. Meeting this demand requires the systematic development of locally trained professionals who are equipped to teach Chinese as a foreign language. In response to this need, the Faculty of Arts and Social Sciences, the Confucius Institute, and the School of Education at the University of Nairobi launched Kenya's first undergraduate program in Chinese language teacher education in 2023. This interdisciplinary program combines intensive Chinese language instruction with pedagogical training in line with national teacher certification standards, with the aim of supplying well-qualified Chinese language teachers for Kenya's secondary education sector. This study employs the University of Nairobi's undergraduate program in Chinese teacher education as a case study to critically examine its foundational prerequisites, interdisciplinary design strategies (the integration of Chinese language studies and education), and mechanisms for enhancing program quality. The research provides evidence-based insights and a replicable framework for other Kenyan higher education institutions seeking to establish or refine similar Chinese language education programs.

**Keywords:** Undergraduate Chinese teacher education; Local language teachers; Teacher certification standards; Curriculum development; Pedagogical training in Chinese language

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## 1. Introduction

Chinese language education in Kenya dates back to the early 2000s, when the first Confucius Institute on the African continent was established at the University of Nairobi. Over the subsequent two decades, this milestone

catalyzed the creation of three additional Confucius Institutes across the country and encouraged several local universities to offer Chinese language courses as electives. These initiatives have collectively played a critical role in cultivating a cadre of professionals proficient in Chinese, thereby facilitating economic cooperation and intercultural engagement between Kenya and China.

However, the recent formal integration of Chinese into Kenya's national curriculum has exposed a significant systemic shortfall: the growing demand for qualified Chinese language educators far exceeds the available pool of certified instructors. This discrepancy highlights the urgent need for Kenyan higher education institutions to establish specialized teacher training programs that adhere to nationally recognized teaching qualification standards and pedagogical competencies.

## **2. The imperative for developing a Chinese language teacher education program in Kenya**

### **2.1. Increasing demand driven by curriculum reform**

In 2017, the Chinese language was officially introduced into Kenya's competency-based curriculum (CBC) as an optional foreign language, alongside Arabic, French, and German. In response, the Kenya Institute of Curriculum Development (KICD) has developed comprehensive Chinese language syllabi for grades 4 to 11. This policy shift has resulted in a growing number of primary, secondary, and international schools incorporating Chinese language instruction into their academic programs. Consequently, there has been a substantial increase in learner enrolment and the corresponding demand for qualified Chinese language teachers.

### **2.2. Inadequate number of local certified teachers**

Currently, Kenyan educational institutions heavily rely on visiting instructors from China to provide Chinese language instruction. This is a short-term measure that does not support long-term sustainability. As Zhao Jinming suggests, localizing Chinese language teaching is essential for developing a resilient, contextually grounded educational framework <sup>[1]</sup>. The absence of locally trained and certified teachers, particularly those who meet the standards set out by the Teachers Service Commission (TSC) and other regulatory bodies, poses a significant challenge. In light of these realities, establishing an undergraduate teacher education program specializing in Chinese language pedagogy within Kenyan universities is both a strategic and necessary intervention. This would institutionalize the training and certification of local educators, ensuring a steady supply of qualified personnel to meet national needs.

## **3. Developing an interdisciplinary “Chinese + Education” curriculum in collaboration with local universities**

### **3.1. Prerequisite: Existing Chinese language undergraduate program**

The establishment of an interdisciplinary Chinese language teacher education program in Kenya depends on the existence of an undergraduate Chinese studies curriculum. The University of Nairobi pioneered this initiative in 2009 by introducing the country's first Bachelor of Arts in Chinese within the Department of Linguistics and Languages, which is part of the Faculty of Arts and Social Sciences. This program is similar to others in the field, such as French, Arabic, and German, and is integrated into a broader social sciences framework. The revised curriculum, implemented in 2019, comprises 32 core and elective courses, emphasizing linguistic

proficiency, cultural competence, and literary appreciation (**Table 1**).

Kenya's higher education framework, characterized by a general education model, permits students in the Faculty of Arts to study three subject areas in the first two years, before specializing in one or two in the third year. Students who choose Chinese as their sole major complete a total of 24 Chinese-focused courses and graduate with a Bachelor of Arts in Chinese.

**Table 1.** Chinese language undergraduate program

	Major 1: Chinese	Major 2: Sociology	Major 3: psychology	University-mandated common courses
First year	4 courses	4 courses	4 courses	
Second year	4 courses	4 courses	4 courses	
Third year	8 courses			4 common courses
Fourth year	8 courses			

### 3.2. Establishment of the teacher education program in 2023

In response to the growing demand for locally trained Chinese language educators, the Confucius Institute at the University of Nairobi began implementing curricular reforms in 2022, aligning the existing Chinese program with national teacher education standards. These efforts culminated in the official approval and implementation of the Bachelor of Education (Arts) program, which includes Chinese as one of the teaching subjects, and it commenced in September 2023. This is a significant development, as it is the first undergraduate program in Kenya designed specifically to train local Chinese language teachers for deployment within the national education system.

### 3.3. Institutional requirement: Integration of Chinese into the faculty of education

In accordance with the Teachers Service Commission (TSC) regulations in Kenya, a Bachelor of Arts in Chinese alone does not qualify one to teach at the secondary school level, unless supplemented by professional teaching training. Therefore, the Chinese teacher education program must be part of the School of Education's institutional framework. The Bachelor of Education (Arts) degree prepares future educators by offering training in two teaching subjects, alongside core pedagogical and practicum components (**Table 2**).

Chinese is currently offered as an optional teaching subject within this framework, enabling students to combine it with subjects such as Geography, Kiswahili, Mathematics, or Business Studies. The program comprises a total of 55 courses, including general education courses, pedagogical theory and practice, and subject-specific modules. Students selecting Chinese as their major teaching subject must complete 20 Chinese courses.

This integrative model ensures that graduates are fully qualified for registration with the Teachers Service Commission and thus eligible for employment within Kenya's public secondary school system. Aligning language acquisition with professional pedagogical training represents a significant advancement in local capacity building for Chinese language education.



**Table 2.** Bachelor of Education (Arts) degree framework

Year	Common courses	Education courses	Major teaching subject	Minor teaching subject	Total
First year	3	5	4	4	16
Second year	0	5	4	4	13
Third year	0	7	6	2	15
Fourth year	0	3	6	2	11
Total	3	20	20	12	55

**Table 2** illustrates that, in order to graduate with a Bachelor of Education (Arts) degree, students must complete a total of 55 courses. For students who select Chinese as their main teaching subject, the program includes 20 Chinese language courses spread over four years.

The University of Nairobi currently offers a variety of subjects as part of its Bachelor of Education (Arts) program, including English, Literature, Kiswahili, Religious Studies, History, Geography, Mathematics, Physical Education, Business Studies, Economics, and Chinese. Students can select combinations of two teaching subjects based on their academic interests and career goals. However, English and Literature must be taken together and cannot be separated. Among students pursuing the Chinese teacher education program, popular combinations include Chinese with Geography, Kiswahili, Mathematics, or Business and Economics.

Therefore, the development of a Chinese language teacher education program in Kenya must be anchored in the existing Bachelor of Education framework. Integrating Chinese as an official teaching subject within this program is essential to cultivating a locally accredited teaching workforce. Graduates will then be eligible for registration with the Teachers Service Commission, qualifying them for employment as formally appointed teachers in Kenya’s public secondary schools.

In summary, developing a Chinese teacher education program at the undergraduate level in Kenya involves creating an interdisciplinary curriculum that integrates Chinese language studies with teacher education, an academic model best described as “Chinese + Education.” Wang Zhimin and Hu Shui argue that international Chinese education should emerge as an independent, distinctive interdisciplinary field <sup>[2]</sup>. Accordingly, the establishment of overseas Chinese education programs should be pursued through robust collaboration with local academic disciplines, with the aim of constructing a knowledge system that is both theoretically rigorous and interculturally integrative. Kenya’s Chinese teacher education program is a compelling example of this principle in practice.

#### **4. The paths to improve the quality of Chinese language teacher education in the process of development of a localized undergraduate program**

A strategic approach is required to establish a Bachelor of Education program in Chinese and enhance the quality of teacher training. As discussed in Section Two, both the general Chinese Studies undergraduate program and the emerging Chinese Teacher Education track operate within Kenya’s broad-based general education framework. While this system offers flexibility, it significantly reduces the proportion of coursework dedicated to Chinese language studies, posing challenges for the development of highly proficient local Chinese language teachers.

To address this, the Chinese teacher education curriculum must be designed to be integrative, multilayered,

and comprehensive. The aim is to nurture Chinese language teachers who have advanced linguistic proficiency and effective pedagogical competence.

#### **4.1. Curriculum design: Integrating language proficiency and pedagogical skills with supplementary courses**

The Chinese teacher education program is structured over four years. During the first two years, the focus is on foundational language acquisition and skills development. At the end of each semester, supplementary HSK preparation courses are offered to reinforce classroom learning and ensure that students attain the appropriate HSK proficiency levels. By the end of the second year, students are expected to have reached at least HSK Level 3.

In the third and fourth years, students undertake a combination of core and elective courses aligned with professional teaching competencies. Regular language immersion activities are organized each semester to extend learning beyond the classroom. In their final year, students participate in the International Chinese Language Teacher Certificate training program, which introduces them to global Chinese language teaching practices and provides them with foundational pedagogical skills. The aim is for students to pass the international teaching certification and gain practical teaching experience through classroom observation and micro-teaching. By graduation, students should demonstrate at least HSK Level 4 proficiency. Outstanding students may be awarded scholarships to pursue postgraduate studies in China through the International Chinese Language Teachers Scholarship Scheme.

#### **4.2. Enhancing teacher preparation through Sino-Kenyan joint training programs**

Based on this foundation, Sino-Kenyan institutional collaborations offer a promising model for improving the quality of Chinese language teacher training. In December 2023, the University of Nairobi signed a 2+2 joint training agreement with the Center for Language Education and Cooperation (China) and Tianjin Normal University. Under this arrangement, students complete the first two years of training in Kenya and the final two years in China, with full scholarship support. The program combines advanced Chinese language and education coursework, leading to dual degree certification from the University of Nairobi and Tianjin Normal University upon successful completion. This collaborative model significantly improves the standard of Chinese language teacher education, with students graduating with HSK Level 5 proficiency or above.

### **5. Conclusion**

The establishment of the Bachelor of Education (Chinese) program at the University of Nairobi is a direct response to the Kenyan government's decision to integrate Chinese into the national curriculum. Built upon two decades of Chinese language education at the university, it is designed in accordance with Kenya's teacher qualification standards. Now in its second cohort, the program has successfully implemented a 2+2 Sino-Kenyan joint training mechanism and demonstrated promising results.

Importantly, the University of Nairobi's experience has served as a model for other institutions. Several other Kenyan universities are now planning their own Chinese teacher education programs based on this replicable framework. The program has great potential to address the shortage of locally qualified Chinese language teachers and support the sustainable integration of Chinese into Kenya's secondary school education system.

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## References

- [1] Zhao JM, 2014, What is “Internationalization” and “Localization” of International Chinese Language Education. *Journal of Yunnan Normal University (Teaching and Research of Chinese as a Foreign Language)*, 12(2): 24–31.
- [2] Wang ZM, Hu S, 2022, The Dilemma and Way Out of the Development of International Chinese Language Education Disciplines in the Cross-disciplinary Context. *Chinese Language Teaching and Research*, 2022(1): 86–95.

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# Research on the Reshaping Path of the Curriculum Teaching System Focusing on Ability Growth

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**Abstract:** In the context of the growing demand for application-oriented talent training, the traditional curriculum mode is difficult to meet the requirements of comprehensive ability in real positions. Based on the existing problems in the current curriculum teaching, this paper proposes a reform strategy with ability improvement as the core, discusses the updating of teaching content, innovation of teaching methods, and reform of assessment mechanism, and explores the path in combination with practice, aiming to build a teaching system of “knowledge + ability” and improve students’ ability to solve practical problems.

**Keywords:** Competency-oriented; Pedagogical reform; Teaching content; Assessment method; Practical skills

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## 1. Introduction

At present, the demand for compound and practical talents is increasing, which prompts universities and vocational colleges to shift from traditional knowledge-based teaching to ability-oriented teaching. Competency-oriented not only emphasizes the mastery of professional knowledge, but also pays more attention to students’ comprehensive ability to apply knowledge to practice. Therefore, curriculum reform around competency generation has become an important way to improve the quality of teaching and the adaptability of talents.

## 2. Typical problems in course teaching

At present, the traditional curriculum system mainly faces three problems. First, the teaching content emphasizes the theoretical framework but ignores the connection with the needs of real jobs or industries and lacks the support of cases and practical situations, which makes it difficult for students to transform knowledge into the ability to solve practical problems<sup>[1]</sup>. Secondly, the teaching method is mainly teacher-centered, with limited teacher-student interaction, low student participation, and a lack of opportunities for

independent inquiry and collaboration, which inhibits the cultivation of innovative thinking and critical thinking. Thirdly, the assessment method relies on closed-book examination and pen-and-paper test, focusing on memory and comprehension, ignoring practical operation and process evaluation, and it is difficult to comprehensively evaluate students' comprehensive application ability and teamwork ability. These problems seriously restrict the generation and growth of students' abilities, and it is difficult to adapt to the requirements of future jobs for compound talents, so it is urgent to realize the deep integration and collaborative innovation of curriculum content, teaching methods, and assessment mechanisms through systematic reform <sup>[2]</sup>.

### **2.1. Teaching content: Theory disconnected from practice, lacking applicability**

The current teaching content in many courses tends to be overly theoretical and lacks practical relevance. Most curricula remain centered on disciplinary knowledge systems, emphasizing the explanation of concepts, principles, and formulas while neglecting alignment with real-world job requirements. For example, in engineering courses, students may master extensive mathematical derivations but struggle to apply them in actual projects. Similarly, in management courses, theoretical frameworks dominate over the analysis of real business cases. This disconnect makes it difficult for students to translate acquired knowledge into problem-solving skills. Additionally, teaching content often lags behind industry advancements, failing to incorporate emerging technologies and updated standards, which further diminishes the practicality and timeliness of courses. Therefore, there is an urgent need to restructure teaching content by adopting task-driven and project-oriented approaches to enhance applicability, enabling students to learn by doing in authentic or simulated work scenarios.

### **2.2. Teaching methods: One-way instruction, insufficient student engagement**

Traditional teaching methods rely heavily on teacher-centered lectures, where students passively receive knowledge with limited classroom interaction and few opportunities for independent inquiry or collaborative learning. This spoon-feeding approach stifles students' innovative and critical thinking, hindering their ability to analyze and solve problems independently. For instance, in theoretical courses, instructors often adopt a one-way delivery model, e.g., PPT plus blackboard lectures, requiring students to memorize and regurgitate information rather than deeply understand and apply it. Moreover, interactive methods such as group discussions, case analyses, and project-based learning are underutilized, leaving students with underdeveloped communication, teamwork, and hands-on skills <sup>[2]</sup>. To address this issue, diversified teaching approaches—such as flipped classrooms, project-based learning, and scenario simulations—should be introduced to increase student participation and foster comprehensive skill development through active exploration and collaboration.

### **2.3. Assessment methods: Overly simplified, neglecting competency evaluation**

Currently, most course assessments still prioritize closed-book written exams, focusing on memorization and comprehension of knowledge points while overlooking the evaluation of practical skills, innovative thinking, and teamwork. For example, final exams carry excessive weight, while regular performance assessments are limited to attendance and simple assignments, lacking dynamic monitoring of the learning process. This “one-exam-determines-all” model encourages last-minute cramming rather than genuine mastery and application of knowledge. Additionally, assessment content is often confined to textbook material, rarely incorporating

real-world case analyses, project presentations, or hands-on tests, making it difficult to reflect students' true competency levels. Therefore, it is essential to establish a diversified evaluation system that combines formative and summative assessments, increasing the weight of process-based evaluations such as class participation, project outcomes, and lab performance. Clear competency standards should also be developed to ensure assessments are more scientific and comprehensive, ultimately fostering students' skill development <sup>[3]</sup>.

### **3. Teaching reform strategy with capacity improvement as the core**

#### **3.1. Update the content system and closely follow the practical application**

The design of teaching content should focus on the actual abilities required by the post, focusing on task-driven and project-oriented learning. For example, when designing course tasks, teachers should consider the typical work scenarios that students may undertake in the future, and enhance the sense of the times and adaptability of the course by introducing real cases, industry standards, and emerging technology content. At the same time, the content arrangement should be comprehensive and systematic, and guide students to master the method of learning by doing and applying what they have learned.

#### **3.2. Reconstruct teaching methods and enhance classroom participation**

Teaching reform should break the traditional single teaching mode and build a diversified teaching method system. First, the flipped classroom. Through pre-class material learning, in-class problem-oriented teaching, and after-class reflection, students can be deeply involved. The second is project teaching. Integrate knowledge points into practical projects, such as simulation management, decision-making, design development, and operation optimization

#### **3.3. Construct the assessment and evaluation system**

The assessment method should be changed from the traditional "final examination" to a mode combining formative plus final. Specific practices include: First, formative evaluation. Throughout the whole process of teaching, covering after-class homework, group cooperation, project achievement display, classroom performance, etc., accounting for up to 60%; The second is summative evaluation <sup>[4]</sup>. At the end of the course, a closed-book test, a comprehensive report, or a practical examination is organized, accounting for about 40% <sup>[4]</sup>. In addition, the competency list standard should be constructed to clarify the key competency indicators and have evidence in the assessment to ensure the fairness and scientificity of the evaluation system.

#### **3.4. Integrating new technological approaches**

Modern technological advancements provide robust support for teaching reform, with digital and intelligent tools significantly enhancing pedagogical effectiveness. For instance, virtual simulation platforms can replicate real-world work scenarios, allowing students to practice complex operations in a risk-free environment. Online learning platforms offer extensive course resources and interactive features, enabling students to engage in self-directed learning anytime, anywhere. Artificial intelligence can facilitate personalized learning recommendations and intelligent assessments by analyzing student performance data to tailor individualized learning paths. Additionally, big data analytics empower instructors to monitor student progress and identify challenges in real time, allowing for timely adjustments to teaching strategies. The integration of these technologies not only enriches teaching methods but also improves precision and efficiency, providing a solid

foundation for competency-oriented teaching reform.

## **4. A preliminary study on the path and effectiveness of reform practice**

In order to verify the effectiveness of the reform strategy, the curriculum team of a university has carried out pilot reforms in several professional basic courses, and the main methods are as follows. First, modular teaching content design. Reorganize the knowledge system based on “task + project.” The second is the formation of a double-teacher teaching team. Invite industry experts to participate in the co-construction of the curriculum to enhance the depth of practice. The third is the integrated application of a simulation platform + real case <sup>[5]</sup>. Use the data and tools provided by the enterprise to carry out virtual operation training. Fourth, the construction of an intelligent assessment system. Automate learning process tracking, homework analysis, and aptitude assessment through an online platform. After the implementation of the reform, students generally reported that the practicality of the course was enhanced, their participation increased, and their satisfaction with the course was significantly improved. Through the comparison of teaching evaluation data, the teaching and research team found that students’ ability to analyze and solve complex problems showed significant improvement.

### **4.1. Modularized instructional content design**

Traditional course content is typically structured linearly according to academic logic, often lacking organic connections between knowledge points, which makes it difficult for students to apply theory to practice. To address this issue, curriculum reform adopts a modular design approach, reorganizing the knowledge system around tasks plus projects. For example, in computer science courses, originally fragmented topics such as programming languages, databases, and algorithms are integrated into a Web Application Development module. Students systematically master front-end and back-end technologies, data interaction, and deployment processes by completing a full website development project. This design emphasizes the comprehensiveness and practicality of knowledge, making learning objectives clearer. Practice has shown that modular teaching significantly enhances students’ ability to integrate knowledge and solve problems, with course satisfaction increasing by over 20%. Additionally, modular design allows for flexible content adjustments, enabling the timely incorporation of new industry technologies to ensure alignment with job requirements.

### **4.2. Formation of dual-qualification teaching teams: Industry experts enhancing practical teaching**

While university teachers often possess solid theoretical foundations, they may lack up-to-date knowledge of industry trends and hands-on details. To bridge this gap, curriculum reform introduces dual-qualification teaching teams, inviting industry experts such as corporate engineers and project managers to co-develop courses. For instance, in marketing courses, corporate marketing directors collaborate with instructors to design content, guide students in analyzing real market data, develop promotion strategies, and participate in student project evaluations. The involvement of industry experts not only closes the divide between classroom learning and practice but also provides students with professional networks and career advice. Feedback from pilot courses indicates that this model deepens students’ understanding of industry standards and significantly improves their employability. Moreover, teachers benefit from collaboration with industry experts by updating their own knowledge, which in turn enriches theoretical teaching, creating a virtuous cycle of “industry-education mutual promotion.”



### **4.3. Integration of simulation platforms + real cases**

To address the challenge of limited practical resources, curriculum reform combines simulation platforms plus real cases. On one hand, virtual simulation technologies are used to create realistic work environments, such as 3D assembly simulations for mechanical engineering or stock trading sandboxes for finance, allowing students to practice complex operations in a risk-free setting. On the other hand, real corporate cases are incorporated as teaching materials. For example, students might analyze a company's logistics optimization problem using actual data, with outstanding solutions potentially adopted by the business. This approach resolves issues of high costs and risks associated with hands-on training while avoiding the pitfalls of overly abstract simulations. Data shows that students participating in such courses achieve a higher pass rate in job adaptability tests, and employers significantly recognize their practical skills. As VR/AR technologies become more widespread, immersive learning will further break time and space constraints, emerging as a key pathway for competency development.

## **5. The direction of deepening teaching reform**

Curriculum and teaching reform with capacity improvement as the core is the key for the education system to adapt to the needs of economic and social development in the new era. Looking ahead, teachers should continue to make efforts in the following five aspects.

### **5.1. Improvement of teachers' professional ability**

Teachers are the core drivers of teaching reform, and their professional competence directly impacts the effectiveness of reform efforts. Currently, many university teachers excel in theory but lack practical experience, making it difficult to implement competency-oriented teaching effectively <sup>[6]</sup>. To address this, a systematic teacher development system must be established. First, regular on and off-campus training mechanisms should be implemented, including workshops on teaching skills and enterprise internships, to help teachers master innovative methods like project-based and case-based teaching. Second, teachers should be encouraged to participate in industry-academia collaboration projects, such as undertaking applied research or serving as corporate consultants, to accumulate practical experience. Third, teacher development communities should be formed to facilitate peer learning through activities like classroom observations and experience-sharing sessions. Moving forward, a teacher competency certification system should be established, incorporating practical experience into promotion criteria to fundamentally incentivize professional growth.

### **5.2. Construction of the curriculum resource platform**

Build a digital, open, and shared course resource library, integrate case libraries, micro-course videos, simulation software, and toolkits, and provide convenient self-service learning and teaching support for teachers and students.

In the digital age, the co-construction and sharing of high-quality curriculum resources is essential for improving teaching quality <sup>[7]</sup>. Currently, teaching resources are often fragmented, duplicated, and underutilized. A unified digital curriculum resource platform should be developed, integrating three core types of resources: (1) a foundational resource library, including course standards, e-textbooks, and teaching materials; (2) an extended resource library, featuring micro-lecture videos, virtual simulations, and industry cases; and (3) a tool resource library, offering specialized software and data analysis tools <sup>[8]</sup>.

### 5.3. School-enterprise cooperation and application scenario expansion

Deepening industry-academia collaboration is key to cultivating application-oriented talent. Current partnerships often remain superficial and need to evolve in three dimensions: (1) Content: Shift from basic internship arrangements to co-developing courses, building training bases, and collaborating on technical projects <sup>[9]</sup>. (2) Model: Implement a dual-mentor system pairing corporate experts with academic instructors for holistic student development. (3) Mechanism: Establish industry-academia councils to ensure long-term collaboration. For example, one applied university partnered with a leading IT firm to create a “Software Development Factory”, where students work on real commercial projects as early as their third year, graduating with an average of three project experiences. Future efforts should also expand global partnerships to introduce international certification programs and industry standards, enhancing the global competitiveness of graduates <sup>[10]</sup>.

Through the systematic implementation of the above measures, the barriers between knowledge transfer and ability generation will be truly broken, and the in-depth integration of teaching content, methods, and evaluation will be realized.

### Disclosure statement

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### References

- [1] Huang Q, Chen YJ, 2023, Research on Blended Teaching Reform of Higher Mathematics Based on OBE Concept. *Research on Innovative Education*, 11(12): 3894–3899.
- [2] Huang FQ, Wang BL, 2018, *Modern Curriculum and Instruction Theory*. People’s Education Press, Beijing, 15–50.
- [3] Liu W, Shang JG, 2024, Research on the Teaching Reform of “Environmental Chemistry” Course Based on OBE Education Concept. *Education Progress*, 14(1): 110–115.
- [4] Deng QW, 2025, Exploration of General Education Course Teaching Reform Driven by Modular Projects. *Advances in Education*, 15(3): 555–561
- [5] Wu Y, 2022, *From Standardization to Innovation*. Jinan University Press, Guangzhou, 54–80.
- [6] Liao JH, You LH, 2024, The Practice of Independent and Open Teaching Supervision in Secondary Colleges of Higher Vocational Institutions. *Journal of Guangzhou City Vocational College*, 2024(2): 84–87.
- [7] Deng ZM, 2021, Research on the Development of Professional Competencies. *Chinese Vocational and Technical Education*, 2021(15): 5–12.
- [8] Ministry of Education of China, 2020, Guidelines on Deepening Undergraduate Education Reform to Improve Talent Cultivation Quality. Document No. 2020(6): 5–30
- [9] European Commission, 2020, *A European Approach to Micro-Credentials*. Publications Office of the EU, 10–50
- [10] Boud D, Soler R, 2016, Sustainable Assessment Revisited. *Assessment & Evaluation in Higher Education*, 41(3): 400–413.

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# Construction of Female Discourse in Tian Qinxin's Drama Creation

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**Abstract:** The study of the construction of female discourse in Tian Qinxin's dramatic creation aims to examine the presentation and innovation of female discourse in stage narratives, which holds significant academic and social value. Based on Tian Qinxin's works, this thesis explores the presentation of female discourse in dramatic texts and performances and the significance and implications of its construction methods. Through textual analysis, case studies, and other forms, this thesis deepens the understanding of the construction of female discourse on stage at the theoretical level and proposes the practical significance of Tian's plays for contemporary Chinese culture. This study enriches the research findings in the field of contemporary Chinese drama from a systematic perspective and enhances its guiding power in stage creation, holding significant importance for the development of related fields.

**Keywords:** Tian Qinxin; Female discourse; Dramatic creation; Stage performance; Construction of female images

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## 1. Introduction

The rapid development of information technology is changing the way human society operates and develops in various fields at an unprecedented speed, creating important preconditions for propelling modern society towards a higher level of civilization. In recent years, against the backdrop of the rapid development of technologies such as artificial intelligence, big data processing, and the Internet of Things, the ability to integrate and develop information resources has been significantly enhanced, bringing new challenges and opportunities to different fields. In the realm of academic research, fundamental changes have occurred in the productivity and complexity of data, providing new dimensions for the way scientific research is conducted and the form of academic achievements<sup>[1]</sup>.

This study focuses on the intersection of the above technological changes and academic research practices, aiming to establish a more efficient and representative text analysis framework by introducing innovative algorithms and tool designs. The goal is not only to improve the performance of text processing and

classification but also to deepen the understanding of the logic behind information extraction at the theoretical and methodological levels, serving the dual purposes of academic and social governance. This exploration holds significant academic and practical value for improving research efficiency and promoting social progress <sup>[2-3]</sup>.

## **2. The portrayal of female characters in Tian Qinxin's drama**

### **2.1. The presentation of traditional female images**

In many of Tian Qinxin's dramatic works, the portrayal of traditional female characters not only reflects the creator's in-depth exploration of the intersection between classical culture and modern perspectives but also embodies her artistic pursuit of re-presenting the individual experiences of historical women to modern audiences. The traditional female images she constructs often possess a profound sense of tragedy. These women, usually of ordinary birth or on the margins of society, find space for survival in complex situations with their tenacious character and exceptional abilities, demonstrating unique qualities beyond traditional gender roles. Tian Qinxin endows them with rich inner worlds and multidimensional life connotations through delicate depiction, breaking the stereotyped social assumptions and revitalizing the traditional images of virtuous wives and gentle, weak women. These female characters in the plays either metaphorically express the pangs of historical change or convey the struggles and compromises of individuals in the face of fate, highlighting the complex faces of historical women through a combination of narrative and imagery. From this perspective, Tian Qinxin not only continues the tradition of female creators expressing their own identity and culture but also enhances the value of historical women's images through stage performance. This feature gives the traditional female characters she portrays a distinct contemporary flavor while providing a new interpretive perspective for modern audiences, promoting the modern inheritance of traditional cultural spirit <sup>[4-6]</sup>.

### **2.2. The depiction of modern female images**

In Tian Qinxin's dramatic creation, modern female characters are endowed with profound artistic expressiveness. Through a diverse and complex narrative perspective, the playwright places female characters in the context of modern society's complex social structure and emotional entanglements, giving them distinct personality traits and social significance. When shaping modern female images, Tian Qinxin does not follow a linear path. The women in her works are neither entirely traditional in their gentle and modest demeanor nor purely idealistic in the modern sense; instead, they are composite characters that integrate the characteristics of the times and personal struggles. In the plays, the protagonists often carry the connotations of individual awakening, conveying women's perception and reconstruction of their roles in contemporary society through emotional conflicts, identity struggles, and choices of fate. These images are presented through delicate psychological portrayals and tense dialogue, allowing the audience to perceive the multiple contradictions of modern women and their efforts to break through. Moreover, her narrative structure breaks away from the traditional linear time mode, embedding modern social thinking into historical contexts, making the characters' images more three-dimensional and full, and bringing philosophical examination and exploration <sup>[7-8]</sup>.

## **3. The manifestation of female discourse in dramatic plots**

### **3.1. The connection between plot development and female discourse**

In dramatic works, the development of the plot is often not independently propelled but closely influenced



by various narrative elements. Among them, female discourse, as a core expressive force, directly shapes the dynamic of plot development in specific contexts. First, examining the functional aspect of speech, female discourse often takes on the central role of driving and regulating the narrative process. As the main expressive subjects within the dramatic space, women demonstrate unique strategies of expression at different plot nodes. For example, the expression of women in family contexts not only deepens the exploration of specific plot themes but also reveals the core of social and ethical issues <sup>[9]</sup>.

Second, exploring this verbal connection from the perspective of female identity roles, it can be seen that they play a crucial role in the structure of the plot, acting as a bridge between different sections. The emotional intensity and linguistic skills of female lines stand out in advancing key plot events (conflicts, compromises, reconciliations, etc.). Especially during the stage where dramatic conflicts are intensifying, specific female lines, with their delicate narrative style or strong emotional expression, become an important driving force for plot progression <sup>[10]</sup>.

### **3.2. Female discourse expression in conflict settings**

In dramatic plots, conflict settings are undoubtedly one of the core elements driving the development of the story. As an important source of narrative tension, the expression of female discourse holds a crucial position in the construction of these conflicts. Women often use the contradictions in drama, such as the conflict between individual emotions and social expectations or the game of different social roles, to convey their understanding and questioning of the real world in their unique ways. This narrative pattern not only enriches the expressiveness of drama but also highlights the gradual awakening of female subject consciousness. For example, in a series of famous historical works, female characters often confront social prejudices with their “outsider” status and fight against them. The rebellious actions of female characters are not only a response to external authoritative suppression but also an attempt to find identity and status for themselves. Their words are usually embedded in tense situations, completing emotional release and value exposition within limited space, allowing the audience to experience their dilemma between resistance and compromise towards reality. It is worth noting that while this textual structure intensifies the plot conflict, it also reveals to some extent the process of the expansion of women’s discourse power under the socio-cultural context. In the subsequent plot point design, these conflicts will also guide the escalation and deepening of other secondary or parallel contradictions, gradually revealing the deep-seated issues in the complex social relationships <sup>[11–12]</sup>.

## **4. Characteristics of female language in Tian Qinxin’s drama**

### **4.1. Language style and female traits**

In Tian Qinxin’s dramatic works, female language, as an important means of artistic expression, exhibits a unique style that is interwoven with character portrayal and cultural context, creating a distinct soundscape. Through dialogue and monologue, her creation highlights the struggles of women at the intersection of tradition and modern society, as well as their complex inner worlds and identity recognition. These languages contain rich emotional vocabulary and intuitive expressions, reflecting the characteristics of women as life nurturers and emotional bond bearers. In her works, everyday spoken language is not a simple reproduction of reality but an artistic narrative form refined through techniques such as repetition and parallel structure to form a unique rhythm, enhancing the expressiveness of the theme. The female traits further manifest in the language structure

as a multi-level pragmatic strategy, showing a tendency for indirect and reserved or decisive and candid language expression in specific situations. For example, in Tian Qinxin's early stage works, many female characters tend to use symbolic poems or ballads to express their emotions, revealing the constraints of social culture on women while expressing individual pain, thereby strengthening the language's role in shaping the context. Meanwhile, in her later works, she gradually modernizes this style by integrating traditional literary images into more avant-garde stage forms, making the expression of female language more open and diverse, and showing the integration and breakthrough of women's thoughts across time <sup>[13]</sup>.

## **4.2. Female perspective in dialogue connotations**

In the series of dramatic works created by Tian Qinxin, the female perspective is integrated into the core of the dialogue in a distinct and highly dynamic manner, constructing a unique female voice field through delicate language design and emotional expression. These expressions do not simply replicate the traditional female dialogue patterns in drama but are based on profound ideological connotations and social insights, presenting an internal logical relationship with subjectivity and self-reflective capabilities. For example, in "The Red Rose and the White Rose," the courtesan Wang Jiaorui uses her highly infectious words to show the self-restraint and awakening of women in specific times and cultural contexts to the audience; "Green Snake" reveals the complex mentality of individuals in the interwoven environment of identity recognition and social norms through the ingenious use of rhetorical metaphors in language, ultimately presenting a new model of examining female desire expression from a non-human identity <sup>[15]</sup>.

The integration of this perspective not only endows the dialogue with a stronger sense of hierarchy and dynamics but also strengthens the emotional and logical reactions of female subjects in different contexts to the constraints and oppression imposed by social norms on themselves. This multi-level content design makes the characters' language not only a medium for emotional communication but also a tool and cultural symbol for showcasing their inner worlds. Through these languages, the characters in the play are able to explore the potential opposition and resonance between the individual and the whole within the framework of gender, social relationships, and cultural traditions, thereby achieving a cognitive and reconstructive process of female self-identity and reflecting the value demands and spiritual exploration process of female subjects <sup>[14]</sup>.

## **5. Artistic techniques in the construction of female discourse**

### **5.1. The reinforcement of female discourse by stage performance techniques**

In the chapter on artistic techniques in the construction of female discourse, the section focuses on the reinforcement of female discourse by stage performance techniques, whose research value and practical significance cannot be overlooked. Stage performance techniques are an intuitive and rich language system and symbolic carrier that, through the collaborative action of various elements such as set design, lighting adjustment, body movements, vocal intonation, prop presentation, and costume design, build a bridge between female discourse in literature and stage performance. By dramatizing traditional literary works, the stage means can give the relatively implicit and internalized female consciousness in the text a distinct perceptibility. For example, on the classic adaptation stage, through changes in the layout of the stage space, the facial expressions and body language of the actors, and the emotional tension presented by the intonation and momentum of the lines, the unique psychology, rebellious consciousness, and development path of self-awareness of female

characters in a male-dominated environment can be further displayed <sup>[15-16]</sup>.

## **5.2. Character shaping techniques and the construction of female discourse**

In literary works, character shaping is undoubtedly one of the core elements in the construction of female discourse art. Creators use delicate brushstrokes to portray female images, making these characters more than just embellishments in the plot, turning them into profound cultural symbols. The artistic techniques used in the process of character shaping not only demonstrate the unique expression of female subject status but also show the diversity and complexity of female discourse in the portrayal of language, behavior, and inner world. Through the analysis of linguistic characteristics, it is found that the language of female characters often carries symbolic meanings, reflecting the gender cognition and social value orientations of specific historical periods; while in emotional shaping, their subtle gestures and complex streams of consciousness reflect the mirror of the group behind individual destinies. Moreover, the interaction between characters also provides a background for the construction of female discourse, such as the mother-daughter relationship often reveals the adjustment and reconstruction of traditional ethics to modern demands <sup>[17]</sup>.

## **6. The significance and impact of the construction of female discourse in Tian Qinxin's drama**

### **6.1. Contribution to the art of drama**

As an outstanding representative in the field of contemporary dramatic creation, Tian Qinxin's construction of female discourse greatly enriches the artistic expression connotations of modern Chinese drama. In her series of well-known works, whether in character settings or text creation, Tian Qinxin showcases the complex and multifaceted inner vitality of modern women through delicate and profound portrayal. She breaks through the limitations of the singular or stereotyped portrayal of women in traditional drama, focusing instead on the unique experiences of women in multiple dimensions such as identity, culture, and the times. This feature undoubtedly refreshes the audience's perception. By endowing characters with profound inner motivations, Tian's creations feature a large number of three-dimensional, vivid, and thought-provoking female images. Such portrayals not only break through the traditional narrative method's functional limitations on female characters in plot design but also inject strong aesthetic tension into the entire dramatic text, giving the artistic presentation a multi-layered interpretative space. Meanwhile, this female-centered narrative perspective also injects new aesthetic elements into the contemporary drama scene, redefining the more intimate and diverse connection between drama and the socio-cultural background of the times, and pioneering a new artistic dimension for the localization of Chinese drama narrative.

### **6.2. Implications for social culture**

The social and cultural system has a profound guiding role in the construction of female discourse. Therefore, an in-depth analysis of the impact of this construction in Tian Qinxin's drama can inject new vitality into social culture. Her works often reveal the complexity of women in the integration of tradition and modernity, showcasing the diversified living conditions and identity characteristics of women. For example, she skillfully injects individual voices into grand social scenes, making the audience realize the importance of female roles in the interweaving of history, gender, and culture. This not only prompts the audience to rethink the impact of traditional concepts on women but also triggers a broader cultural discussion — how to better achieve

equality and respect diversity. Tian Qinxin's works, by re-presenting these cultural issues, further promote cultural reflection, enabling society to pay more attention to individual experiences and the right to voice when examining history, and to understand and communicate with a more enlightened and tolerant perspective when facing current contradictions and conflicts. Meanwhile, her active exploration in the creative realm also paves the way for more possibilities in the field of social culture to explore diversified narrative forms and modes of expression. These works inspire society to more profoundly recognize that the self-expression power of women is an indispensable driving force for social development and the construction of a diverse culture, and also provide a new reference direction for contemporary society to deal with complex cultural issues.

## Disclosure statement

The author declares no conflict of interest.

## References

- [1] Wang R, 2024, "Art + Technology" Highlights the Great Beauty of Dunhuang. *Beijing Daily*, November 9, 2024.
- [2] Chen S, 2024, "Su Di Spring Dawn": Looking Back at Su Shi's Spiritual World. *China Women's News*, July 3, 2024.
- [3] Zhu YT, 2024, From Novel to Drama: Postmodernism and Tian Qinxin's Play Adaptation — Starting from "Beijing Fayuan Temple". *Dramatic Art*, October 15, 2024.
- [4] Zhang ZW, 2024, Play "Su Di Spring Dawn": A Different Historical Expression, A Different Su Dongpo. *China Drama*, August 5, 2024.
- [5] Deng MH, 2025, Extremes and Illusions: On the Adaptation Path of Tian Qinxin's Drama. *Central Plains Literature*, January 10, 2025.
- [6] Lv JR, 2025, Contributing to the Construction of a Clean Government Culture in the New Era with Literary and Artistic Strength. *China Discipline Inspection and Supervision News*, March 11, 2025.
- [7] Duan JL, Lu QJ, 2024, A Study on the Literary Adaptation of Tian Qinxin's Dramatic Works — Taking "Beijing Fayuan Temple" as an Example. *Playwright*, September 20, 2024.
- [8] Chen GL, 2025, The Application of Traditional Chinese Aesthetic Characteristics in Drama — Taking Tian Qinxin's "Green Snake" as an Example. *Comedy World (First Half of the Month)*, January 1, 2025.
- [9] Wang XL, 2025, There are "Terraced Fields" in the Old City, and the Performance World Theatre is Renewed. *Wenhui Daily*, February 22, 2025.
- [10] Wang Y, 2025, "Strengthening Artistic Exchange and Deepening New Era Cultural Diplomacy", Contributing to the Dialogue Between Chinese and World Civilizations with the Power of Drama. *China Art News*, March 7, 2025.
- [11] Lu ZW, 2024, A Re-discussion on the Adaptation and Creation of Classic Plays in the New Century — Taking Tian Qinxin's Directed Play "Longing" as an Example. *Playwright*, July 20, 2024.
- [12] Liu M, 2024, From "Legend of the White Snake" to Tian Qinxin's Play "Green Snake" — The Evolution of the Tragic Causes of the "Alien" Image. *Drama Home*, September 20, 2024.
- [13] Xing XF, 2025, "Su Di Spring Dawn": Renewing the Outline of Chinese Beauty. *Wenhui Daily*, March 4, 2025.
- [14] Wang XL, 2024, The Encounter of 600-year-old Kunqu Opera and 600-year-old Forbidden City. *Wenhui Daily*, November 19, 2024.

- [15] Wang Y, 2024, In Shanghai, Meeting the Cultural Call from Dunhuang. Wenhui Daily, December 16, 2024.
- [16] Lin FY, 2025, On the Artistic Charm of the Play “The Red Rose and the White Rose”. Famous Works by Famous Writers, March 11, 2025.
- [17] Hu FH, 2024, Story Retelling Under the Integration of Chinese and Western Cultures — On the “Alienation” Art of the Play “Green Snake”. Chinese Character Culture, September 30, 2024.

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# Innovative Research on the CIPP Evaluation System Empowered by Big Data and Artificial Intelligence

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**Abstract:** This study explores the application of big data and artificial intelligence in the CIPP evaluation system. The study outlines the definition and characteristics of the CIPP evaluation model, as well as big data and AI technologies. Subsequently, the study provides a detailed analysis of the application of big data and AI in each component of the CIPP evaluation system, including context evaluation, input evaluation, process evaluation, and outcome evaluation. The research reveals how big data and AI technologies empower educational evaluation, improving its accuracy and efficiency. Finally, it discusses future development trends and prospects, highlighting the potential and innovative directions of big data and AI technologies in the field of educational evaluation.

**Keywords:** Big data; Artificial intelligence; CIPP evaluation model; Educational evaluation; Intelligence

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## 1. Introduction

With the rapid development of big data and artificial intelligence technologies, their applications in the field of educational evaluation have become increasingly widespread, offering new approaches to solve problems in traditional educational evaluation<sup>[1]</sup>. On one hand, they enable multi-source data collection through diverse channels, integrating online and offline data to comprehensively reflect evaluatees' performance in academic achievements, emotional attitudes, physical and mental health, and other aspects. This lays the foundation for constructing a three-dimensional evaluation network covering the entire process and all dimensions, providing more comprehensive and abundant information for educational evaluation.

On the other hand, the deep mining function of big data helps achieve scientific and precise real-time evaluation. Supported by information technology, big data mining can perform comparative analysis, cross-verification, cluster statistics, and other operations on massive data, improving data quality and the accuracy of evaluation analysis results<sup>[2]</sup>. Meanwhile, deep mining can also uncover value from the correlation of data,



providing professional and scientific bases for educational decision-making and timely feedback for student learning. By establishing intelligent evaluation models, automatic evaluation of students' learning situations and teachers' teaching effects can be realized, with evaluation criteria and weights automatically adjusted according to students' performance and grades to ensure fairness and accuracy. Additionally, real-time tracking and feedback on students' learning processes can be conducted. Big data and artificial intelligence technologies have brought enormous opportunities to educational evaluation, driving it toward a more scientific, precise, and personalized direction.

## **2. Related theoretical foundations**

### **2.1. Overview of the CIPP model**

The CIPP model, proposed by Stufflebeam, is a comprehensive and systematic educational evaluation model comprising four components. Context evaluation: Focuses on analyzing the rationality of the educational environment, needs, and goal setting. Input evaluation: Concentrates on the feasibility of resource inputs, such as human, material, and financial resources, as well as curriculum design. Process evaluation: Aims to dynamically monitor and assess the teaching implementation process, including teaching methods and teacher-student interaction. Outcome evaluation: Focuses on the final achievements of educational activities, such as students' knowledge and skill improvement and literacy development. This model runs through the entire educational activity, with each component interrelated and influencing each other<sup>[3-4]</sup>. It not only provides a comprehensive judgment of educational effectiveness but also offers continuous and targeted information feedback for educational decision-making at different stages, strongly promoting the optimization and improvement of educational activities. It has been widely applied and deeply researched in many educational fields.

### **2.2. Applications of artificial intelligence in education**

Artificial intelligence technologies can collect and analyze student data, providing differentiated teaching content and methods based on each student's situation to help them better master knowledge and skills. They can also adjust teaching content and methods according to students' learning levels, speeds, and styles, ensuring that each student receives education tailored to their needs. In the evaluation process, artificial intelligence can avoid the influence of evaluators' personal experience, values, emotional factors, etc., making evaluations more objective.

### **2.3. Specific applications of artificial intelligence in CIPP educational evaluation**

Integrating big data and artificial intelligence technologies into the CIPP educational evaluation model covers the four components of context, input, process, and outcome evaluation. Context evaluation: Utilize big data and artificial intelligence technologies to analyze educational needs, problems, resources, and opportunities, providing a basis for determining curriculum objectives. Input evaluation: Leverage artificial intelligence to assess the feasibility and effectiveness of educational inputs, including teaching staff, curriculum, teaching methods, etc. Process evaluation: Monitor students' learning processes in real time through intelligent monitoring systems while adjusting and optimizing teaching methods. Outcome evaluation: Analyze students' learning achievements and educational quality using big data to provide references for educational decision-making<sup>[5-6]</sup>.

### 3. Application of big data combined with artificial intelligence algorithms in each component of the CIPP model

#### 3.1. Innovative context evaluation empowered by big data and artificial intelligence: Resource allocation

Through big data technology, massive educational data can be comprehensively collected and analyzed, including students' learning behaviors, performance, interests, and preferences, to more accurately identify educational needs. Meanwhile, the application of artificial intelligence technologies such as machine learning and deep learning can extract deeper information and patterns from this data. Real-time monitoring of resource usage, prediction of future resource demands, and provision of personalized resource allocation suggestions for educational institutions through intelligent algorithms help improve the utilization efficiency of educational resources<sup>[7]</sup>. Combined with artificial intelligence technologies, intelligent recommendation of educational resources and personalized learning path design can be realized, providing students with educational resources more tailored to their learning needs and interests, as shown in **Table 1**.

**Table 1.** Resource allocation methods

Project	Description	Data foundation	Application of artificial intelligence technology	Achievement
Learning difficulty diagnosis	Use AI to analyze student learning data and diagnose learning difficulties and blind spots in various subjects	Student homework data, test scores, online learning duration, and path data	Deep learning, knowledge graphs, anomaly detection	Provide personalized teaching suggestions for teachers and recommend targeted learning resources for students
High-quality resource screening	Screen high-quality educational resources from massive resources through an evaluation model	Educational resource libraries, resources uploaded by teachers, and third-party educational resource platforms	Content quality analysis, user behavior analysis, and collaborative filtering recommendation	Build a high-quality educational resource library and improve resource utilization efficiency
Knowledge point association recommendation	Recommend related knowledge points and learning resources based on students' learning progress and interests	Subject knowledge graphs, student learning path data	Graph algorithms, sequential recommendation algorithms	Realize personalized recommendations of learning resources and improve students' learning effects
Dynamic resource allocation	Dynamically allocate educational resources according to the actual needs of schools, classes, and students	Educational demand profiles, resource usage data, and teaching effect feedback data	Prediction models, optimization algorithms, decision support systems	Achieve precise delivery of educational resources and enhance overall educational quality
Teaching Effect evaluation and feedback	Use big data and AI technologies to evaluate teaching effects in real time and adjust resource allocation strategies promptly	Test score data, student learning progress data, teacher evaluation data	Multi-dimensional analysis, data mining, and visual display	Provide scientific bases for educational decision-makers and promote continuous educational improvement

#### 3.2. Application of big data and artificial intelligence in input evaluation: Curriculum objective determination

Empowered by big data and artificial intelligence technologies, in the curriculum objective setting of the input evaluation component of the CIPP evaluation system, big data analysis is used to understand students' learning

needs, interests, and learning habits, providing scientific and precise data support for curriculum objective formulation. Meanwhile, artificial intelligence technologies can mine hidden patterns and trends from massive data to further assist in understanding students' real needs and predicting future teaching priorities.

In the process of formulating curriculum objectives, big data and artificial intelligence technologies can not only analyze students' current needs but also reveal changes in student needs through historical data comparison, making curriculum objectives closer to students' actual situations <sup>[8]</sup>. Additionally, these technologies can assess the matching degree between curriculum objectives and student needs, ensuring the pertinence and effectiveness of teaching activities, as shown in **Table 2**.

**Table 2.** Objective determination methods

Process stage	Specific content	Data collection method	Data analysis tool	Key indicator
Requirement analysis	Collect students' curriculum needs, including interests and prior knowledge	Online questionnaires, face-to-face interviews	SPSS, Excel	Need coverage rate
Initial objective setting	Preliminarily formulate curriculum objectives based on needs analysis	Expert group discussions, literature research	MindManager, Word	Objective rationality
Data verification	Verify the fit between objectives and students' actual needs through big data	Historical data mining, real-time data monitoring	Hadoop, Spark	Data fit degree
AI-Assisted optimization	Intelligently optimize curriculum objectives using artificial intelligence algorithms	Model training, predictive analysis	TensorFlow, PyTorch	Optimization effect
Objective adjustment	Adjust curriculum objectives based on optimization results	Expert group re-discussions, objective revision	Word, PDF editing tools	Objective adjustment range
Final determination	Finalize curriculum objectives and confirm them with students	Public announcement, student feedback collection	Online survey tools	Student satisfaction

### 3.3. Innovative process evaluation empowered by big data and artificial intelligence: Analysis of student learning behaviors

By deeply mining the massive data generated by students during the learning process, teachers can more accurately grasp students' learning habits, preferences, and potential problems. Based on this analysis, not only can students' learning trajectories be predicted, but also a strong foundation can be provided for personalized teaching <sup>[9]</sup>. In practical applications, the use of big data technology can comprehensively monitor students' learning behaviors. By collecting multi-dimensional information such as clickstream data, interaction records, and homework completion on online learning platforms, and combining advanced machine learning algorithms, detailed student profiles can be constructed. These profiles not only reveal students' learning styles but also accurately predict difficulties and challenges they may encounter in future learning.

### 3.4. Application of big data and artificial intelligence in outcome evaluation: Intelligent outcome evaluation

With the help of big data and artificial intelligence technologies, comprehensive and precise analysis of educational outcomes can be achieved, forming intelligent outcome evaluations <sup>[10]</sup>. By collecting massive data from students' learning processes and combining machine learning algorithms and deep learning models, students' learning characteristics, ability levels, and potential problems can be deeply explored. This evaluation

method not only improves the objectivity and accuracy of evaluation but also helps identify subtle differences and potential trends that are difficult to detect through traditional evaluation methods.

#### **4. Future development trends and prospects**

In discussing the potential of big data and artificial intelligence technologies in the CIPP evaluation model and future innovation directions in the field of educational evaluation, with the continuous advancement of big data and AI technologies, the CIPP evaluation model will further achieve intelligence and personalization. In the input evaluation component, by intelligently analyzing students' personalized data, such as learning habits and ability tendencies, teachers can tailor more suitable teaching plans for students. In process evaluation, real-time monitoring of learning data and feedback mechanisms will help teachers adjust teaching strategies promptly to maximize teaching effects. In outcome evaluation, big data and AI technologies will provide more objective and comprehensive evaluation indicators, thereby more accurately measuring students' learning achievements and teaching effects.

In summary, the application of big data and artificial intelligence technologies in the CIPP evaluation model will not only drive profound changes in the field of educational evaluation but also provide a powerful impetus for the continuous improvement of educational quality. In future educational evaluation practices, these two technologies will play an increasingly important role, leading educational evaluation toward a more scientific and efficient new era.

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#### **References**

- [1] Jiang SS, Ma R, 2025, Research Hotspots and Trends in China's Educational Digital Transformation in the New Era. *Continuing Education Research*, 2025(3): 90–96.
- [2] Huang G, Zong TY, 2025, Value Review and Integration Innovation of Artificial Intelligence Application in Education. *Modern Education Management*, 2025(2): 42–53.
- [3] Yin XQ, Sun WB, Cao SQ, et al., 2025, Exploration of a Learning-Oriented Hybrid Teaching Evaluation System Based on CIPP. *Journal of Higher Education*, 11(3): 95–99.
- [4] Cui YM, Sai JT, Wang LZ, 2025, Research on Constructing an Internal Monitoring and Evaluation Index System for Graduate Training Quality—A Discipline Perspective Based on the CIPP Model. *Higher Education Forum*, 2025(1): 113–118.
- [5] Yin J, Xu N, Guo J, 2025, Research on the Evaluation of Practical Teaching Effectiveness in Application-Oriented

- Universities Based on the CIPP Model. *Modern Education Science*, 2025(1): 147–154.
- [6] Ji HB, 2025, Review, Dilemma Analysis, and Strategy Optimization of Innovation and Entrepreneurship Education in Higher Vocational Colleges from the Perspective of the CIPP Model. *Jiangsu Higher Vocational Education*, 25(1): 91–101.
- [7] Xu XF, Zhang C, 2025, Generative Artificial Intelligence Empowering Engineering Education and Student Competency Development, Assessment, and Certification Systems. *Research in Higher Engineering Education*, 2025(3): 1–13.
- [8] Wang YR, Wang PF, Zhou WB, 2025, Development Path of Quantitative Research Paradigms in Education in the Era of Digital Intelligence. *Higher Education Development and Evaluation*, 41(2): 13–21 + 129.
- [9] Sun YP, Zhao Y, Feng SP, 2025, Research on the Construction Path and Evaluation Dimensions of the Quality Evaluation System for Higher Education Continuing Education. *Gansu Education Research*, 2025(3): 152–155.
- [10] Yang T, Duan R, Yang YZ, 2025, The Algorithmic Gaze of Education in the Age of Artificial Intelligence. *Journal of Educational Science of Hunan Normal University*, 2025(2): 214–221.

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# Exploration and Research on the Path of New Form Textbook Construction in Vocational Education under the Background of High Quality Development

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**Abstract:** Textbook construction is one of the important links in the three education reforms and an important component of vocational education. The rapid development of vocational education and the continuous improvement of the education system have put forward requirements for the high-quality and rapid development of textbook construction. New forms of textbooks, such as loose-leaf format, workbook format, and integrated media, are the reform directions for vocational education textbook construction. In response to the problems of lack of systematic design, insufficient vocational nature, single form, low participation of enterprises, and insufficient regionalism in the construction of new forms of vocational education textbooks, this article elaborates on the connotation and characteristics of new forms of textbooks, and proposes a path for the construction of new forms of textbooks, such as clarifying training objectives, innovating textbook styles, enriching textbook content, activating textbook forms, strengthening school enterprise cooperation, forming a diversified textbook construction team that integrates industry and education, developing diversified and widely adaptable digital resources, synchronously promoting curriculum and textbook construction, improving students' learning interest and effectiveness, continuously improving the quality and adaptability of textbooks to meet the diverse talent cultivation needs of vocational education.

**Keywords:** Reform of the Three Teachings; Vocational education; Textbook construction; New forms; Path instruction

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## 1. Introduction

In February 2019, the State Council issued the “Implementation Plan for National Vocational Education Reform” (referred to as the “20 Articles on Vocational Education”), which pointed out that “vocational education and general education are two different types of education with equal importance”, clarified the “type identity”

of vocational education, and established the basic logical starting point for the construction of vocational college textbooks<sup>[1]</sup>. In addition, the “20 Articles of Vocational Education” require the construction of a large number of national planning textbooks developed through the “dual element” cooperation between schools and enterprises, advocate the use of new loose leaf and workbook style textbooks, and support the development of information resources, providing direction for the construction of new forms of textbooks. In September 2020, the Ministry of Education and nine other departments issued the “Action Plan for Improving the Quality and Quality of Vocational Education (2020-2023)” (referred to as the “Action Plan”), proposing the implementation of the “three educations” (teachers, textbooks, teaching methods) reform campaign in vocational education, and comprehensively deepening the implementation of the “three educations” reform. The textbooks in the “Three Teachings” are the carrier of curriculum construction and teaching content reform, the foundation of the “Three Teachings” reform, an important lever to support teaching, and related to the quality of talent cultivation. Regarding the construction of vocational college textbooks, the “Action Plan” specifically proposes: “Innovate textbook forms based on the characteristics of vocational school students, promote scientific and rigorous, easy to understand, illustrated and diverse forms of loose leaf, workbook, and multimedia textbooks<sup>[2]</sup>. In December 2021, the Ministry of Education issued the “Implementation Plan for the Construction of Textbooks in the 14th Five Year Plan for Vocational Education”, which clearly stated that “based on the actual situation of teaching reform, vocational colleges, industry enterprises, research institutions, publishing units, etc. will be organized in batches to jointly develop no less than 1000 new forms of textbooks, such as loose leaf and workbook style, that are in-depth and shallow, illustrated and diverse in form<sup>[3]</sup>. The above documents put forward specific requirements for the construction of vocational college textbooks from the aspects of textbook design, textbook infrastructure construction, textbook content, and innovative textbook forms. However, the current construction of vocational college textbooks faces some difficulties, such as a serious shortage of practical textbooks that match professional textbooks, insufficient scientific and systematic content of self-compiled textbooks, a shortage of corresponding professional textbooks, slow updates of textbook content, and the need to strengthen the textbook construction team. It is difficult to systematically promote the “three education” reform, which greatly restricts the improvement of talent cultivation quality.

On the basis of describing the connotation and characteristics of new forms of vocational education textbooks, this article systematically expounds the problems in textbook construction, proposes the path and key points of textbook construction, in order to provide a certain reference for vocational education textbook construction.

## **2. The connotation and characteristics of new form textbooks**

### **2.1. The connotation of new forms of textbooks**

The new form of teaching material for vocational education is a new type of teaching material that takes paper teaching materials as the core, the Internet as the carrier, modern information technology as the means, integrates the construction of paper teaching materials and digital teaching resources, and applies it through a variety of terminal forms<sup>[4]</sup>.

The new form of textbooks breaks through the common positioning of traditional paper textbooks as “textbooks as textbooks” and expands the connotation of textbooks to “textbooks are teaching resources with rich content and form”. The extension of the connotation of new form textbooks to the level of teaching resources means that new form textbooks have become a means of systematic integration and application

of teaching resources. The rich content and diverse forms of teaching resources they carry can be directly applied to curriculum teaching. At the same time, this is also an important means of integrating information and displaying teaching resources, and an important way to link textbook construction with teaching mode informatization reform. Specifically, new forms of textbooks include various forms such as new loose-leaf textbooks, workbook textbooks, and multimedia textbooks<sup>[5]</sup>. Each form of textbook has its own internal and external forms. For example, the new type of loose-leaf textbook not only includes the selection, organizational logic, and presentation of textbook content, but also the integration with industry standards and enterprise standards, the construction of modular teaching units, making textbook arrangement more flexible and diverse. The workbook style textbook needs to refer to the production operation guidance manual of the enterprise to design the textbook structure, write the textbook content, and at the same time, design and process the operation manual for teaching, transforming it into teaching content with universal, scientific, and educational technical skills and method knowledge. Integrated media textbooks are based on traditional paper textbooks, using modern information technologies such as artificial intelligence to build teaching platforms, integrate teaching resources, optimize learning environments, and promote individual career development through a teaching design that integrates theory and practice.

Therefore, the connotation of the new form of vocational education textbooks not only includes the innovation of textbook content but also the innovation of textbook form and the integration of teaching resources, aiming to improve the quality and effectiveness of vocational education.

## **2.2. Characteristics of new forms of vocational education textbooks**

The characteristics of new forms of vocational education textbooks can be summarized as follows.

### **2.2.1. Innovation**

The new form of textbooks breaks the concepts and forms of traditional textbooks, focusing on innovation in the construction concept, content design, organizational logic, presentation form, and other aspects of textbooks.

### **2.2.2. Diversification**

The forms of new forms of textbooks are diverse, including loose-leaf textbooks, workbook textbooks, multimedia textbooks, and other types, each with its unique characteristics and advantages.

### **2.2.3. Interactivity**

The new form of teaching materials emphasizes interactive design, using various terminal applications to achieve interaction between teachers and students, between students, and between humans and machines, improving teaching effectiveness and learning experience.

### **2.2.4. Personalization**

New forms of textbooks focus on students' personalized needs, providing diverse learning resources and teaching services, supporting students' self-directed learning, and personalized development.

### **2.2.5. Socialization**

The new form of textbooks emphasizes close cooperation with industries, enterprises, and various sectors of society, integrating professional and enterprise standards into the content of textbooks, making the content more

closely related to actual work scenarios and professional needs, while also integrating more social resources to serve vocational education.

### **2.2.6. Adaptability**

New forms of textbooks can adapt to the needs of different types of vocational education, such as secondary vocational education, higher vocational education, undergraduate vocational education, etc., to meet the career development needs of students at different levels.

In summary, the new form of vocational education textbooks has various characteristics such as innovation, diversification, interactivity, personalization, socialization, and adaptability. These characteristics make the new form of textbooks more in line with the needs and characteristics of modern vocational education, and can better promote students' career development and improve the quality and effectiveness of vocational education. At the same time, the connotation and characteristics of new forms of textbooks are the inevitable trend of educational informatization and modernization, aimed at cultivating high-quality talents that meet the needs of society.

## **3. Problems in the construction of new forms of vocational education textbooks**

The rapid development of informatization continuously promotes the digitization, intelligence, and personalized development of vocational education, injecting new energy into vocational education, but also bringing new challenges to vocational education. The reform and innovation of vocational education teaching should prioritize textbooks. Textbooks are the carriers of teaching content and the basis of teaching activities, and an important way to implement moral education. Further reform and development of supporting teaching resources and carriers can better add value and empower vocational education <sup>[6]</sup>.

At present, the construction of new forms of textbooks in vocational colleges has made certain progress and achievements, but there are also some problems that need to be solved.

### **3.1. Lack of systematic design in textbook construction**

Vocational colleges lack overall and systematic textbook construction, and the level of textbook writing, publishing, and distribution varies greatly, resulting in uneven quality of textbooks.

### **3.2. Insufficient vocational relevance of textbooks**

Vocational colleges need to pay attention to the vocational appropriateness of textbooks, but the current textbook system has not been established, making it difficult to meet local teaching needs. At the same time, there are various problems, such as ineffective use and lack of supervision in the use of textbooks.

### **3.3. The disconnect between textbook content and professional standards**

The lack of a close connection between textbook content and professional standards makes it difficult for students to combine their learned knowledge with professional standards, which affects their employment competitiveness.

### **3.4. Single format of teaching materials**

Single format of teaching materials mainly refers to traditional paper textbooks, with a single presentation form and a lack of diversified teaching resources, such as digital textbooks, online courses, etc., which are difficult

to meet the needs of modern teaching. Although some vocational colleges have already built related teaching resources such as electronic lesson plans, micro videos, animations, etc., for this large amount of online resources, school teachers must selectively select course materials suitable for their own professional teaching and comprehensively organize them, which undoubtedly increases the workload of teachers. At the same time, at present, the information technology education ability of vocational college teachers in many parts of the country, especially in economically underdeveloped areas, is still relatively weak, resulting in unsatisfactory teaching results and poor teacher-student interaction.

### **3.5. Lack of regionalism**

Vocational college textbooks need to be compiled based on local industries and economic characteristics, but currently, there is relatively little content related to local industries in the textbooks, which makes it difficult to meet the development needs of local industries.

### **3.6. Insufficient experience in textbook development**

Teachers lack experience in participating in vocational education professional and curriculum construction, resulting in a lack of systematic thinking. At the same time, teachers have insufficient understanding of the characteristics of vocational education types and related new concepts and theories, and have failed to grasp the talent cultivation characteristics of vocational education. When writing textbooks, teachers may encounter problems of being at a loss or rushing to achieve results, resulting in the inability to write good textbooks that meet the learning needs and cognitive laws of vocational college students.

### **3.7. Insufficient participation of enterprises**

Due to the lack of enterprise participation, the writer lacks relevant professional positions and work experience in the enterprise, lacks in-depth, systematic, and detailed research and analysis of the enterprise, and has insufficient mastery of new technologies and knowledge in the industry field. At the same time, this also leads to a lack of experience in combining textbook content with students' innovation and entrepreneurship needs.

Therefore, the construction of vocational college textbooks needs to strengthen the overall and systematic aspects and improve the level of textbook writing, publishing, and distribution. At the same time, strengthen the professionalism and practicality of textbooks, enrich the content and form of textbooks to meet the needs of modern teaching. Strengthen the regionalism of textbooks and serve the development of local industries. Establish effective supervision and evaluation mechanisms to ensure the quality and effectiveness of textbooks.

## **4. The path of constructing new forms of vocational education textbooks**

To effectively improve the quality of textbook construction and promote the cultivation of students' comprehensive abilities, textbook construction should start from the following aspects.

### **4.1. Clarify the training objectives**

Firstly, it is necessary to clarify the vocational education concept based on abilities, and on this basis, determine the direction and objectives of textbook construction. The competency-based vocational education philosophy emphasizes the cultivation of students' practical operation ability, problem-solving ability, and professional ethics. Therefore, textbook construction should be guided by the cultivation of students' comprehensive abilities.



#### **4.2. Innovative textbook format**

Based on the training objectives, innovate the traditional textbook format. This can include adopting a new hybrid loose-leaf textbook design, which can increase the flexibility and plasticity of the textbook, making it more conducive to students' self-directed learning and teachers' teaching. At the same time, attention should be paid to the integrated design of textbooks and courses, so as to closely link the textbooks with the curriculum and improve teaching effectiveness.

#### **4.3. Enriching textbook content**

The selection and organization of textbook content are also very important. When selecting textbook content, it should be based on the characteristics of students, pay attention to highlighting professional features, and use this as a starting point to organize the textbook content. At the same time, the content of the textbook should reflect the latest developments and practical needs of the industry and enterprises as much as possible, in order to help students better understand and master the required skills.

#### **4.4. Revitalize the form of textbooks**

On the basis of innovating textbook formats and enriching textbook content, the form of textbooks should also be revitalized. This can include utilizing information technology and digital resources, such as online courses, virtual simulations, instructional videos, etc., to provide more vivid, visual, and intuitive teaching materials, helping students better understand and master the learned content. At the same time, personalized learning resources and teaching platforms should be designed based on students' learning characteristics and needs to enhance their interest and effectiveness in learning.

#### **4.5. Strengthen school enterprise cooperation**

In vocational education, school enterprise cooperation is a very important part. Therefore, in the process of textbook construction, it is necessary to actively introduce enterprise elements and cooperate with enterprises to develop textbooks. This can not only ensure the practicality and pertinence of textbook content, but also help students better understand and adapt to corporate culture and work environment.

#### **4.6. Establish a team for the construction of diversified teaching materials, integrating industry and education**

Establish a team for the construction of teaching materials, integrating industry, enterprises, schools, and other parties to jointly develop new forms of teaching materials. Team members should have rich industry and enterprise experience, understand industry development trends and professional standards, and be able to integrate the latest technological developments into textbook construction.

At the same time, based on national professional teaching standards, combined with industry standards and enterprise needs, a curriculum system that meets the requirements of vocational job abilities is constructed. In addition, attention should be paid to updating and revising course content to adapt to the rapid development of industrial technology.

In summary, the construction of new forms of vocational education textbooks against the background of the "Three Education" reform requires us to consider and implement it from multiple aspects. Only by making sufficient efforts in clarifying training objectives, innovating textbook formats, enriching textbook content, revitalizing textbook forms, and strengthening school enterprise cooperation can high-quality textbooks with

vocational education characteristics that meet the needs of the new era be constructed.

## **5. Key points in the construction of new forms of vocational education textbooks**

The key points of the construction of new forms of vocational education textbooks include the following aspects.

### **5.1. Clarify the training positioning**

Vocational education cultivates high-level technical and skilled talents who face the production and service front lines. Therefore, the construction of new forms of teaching materials should aim to cultivate students' comprehensive vocational abilities and professional qualities, focus on practicality and practicality, emphasize the ability to transform complex work scenario planning decisions, design schemes, process requirements, etc. into specific operations or products, and pay attention to cultivating students' innovation and entrepreneurship abilities and teamwork abilities.

### **5.2. Choose appropriate textbook formats**

New forms of textbooks should focus on innovation and diversification of textbook formats. Multiple forms, such as loose-leaf textbooks, workbook textbooks, and multimedia textbooks, can be selected to meet the needs of different types of vocational education and the learning characteristics of students.

### **5.3. Strengthen technical theoretical knowledge**

With the advent of the knowledge economy and digital transformation, the knowledge perspective of vocational education should shift from focusing on practical experience-based vocational knowledge to focusing on competency-based technical knowledge. Therefore, the construction of new forms of textbooks should focus on the depth and theoretical knowledge of technical theory, reflecting the level requirements of undergraduate vocational education.

### **5.4. Close integration with industry demand**

The construction of new forms of textbooks should focus on connecting with industries, integrating vocational and enterprise standards into textbook content, integrating more social resources to serve vocational education, and emphasizing cooperation with industries and enterprises to jointly develop textbooks and teaching resources.

### **5.5. Adapting to the trend of digital transformation**

With the acceleration of digital transformation, new forms of textbooks should focus on the construction of digital resources, such as developing digital textbooks, online courses, etc., establishing teaching resource libraries and digital platforms to meet the needs of modern teaching.

### **5.6. Pay attention to the textbook evaluation and feedback**

The construction of new forms of textbooks should focus on the establishment of a mechanism for textbook evaluation and feedback, which can be evaluated and feedback from multiple aspects such as students, teachers, and enterprise experts, to timely discover and correct problems in textbooks, ensuring the quality and

effectiveness of textbooks.

Therefore, the key points of the construction of new forms of vocational education textbooks include clarifying the training positioning, selecting appropriate textbook forms, strengthening technical theoretical knowledge, closely integrating with industry needs, adapting to the trend of digital transformation, and paying attention to textbook evaluation and feedback. By effectively implementing these key points, we can gradually achieve high-quality development and efficient application of new forms of textbooks, providing strong support for the reform and development of vocational education.

## 6. Conclusion

In the process of textbook construction, it is necessary to accurately grasp the conceptual boundaries and connotation characteristics of various new forms of textbooks, in order to develop new forms of textbooks with vocational education characteristics and promote the “three education” reform of vocational education. At the same time, the construction of new forms of textbooks requires systematic design and overall planning, paying attention to the close connection between textbook content and vocational standards, teaching process and production process, and academic certificates and vocational qualification certificates, with a vocational orientation and emphasis on the types and characteristics of vocational education.

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The authors declare no conflict of interest.

## References

- [1] Lu SM, 2022, Research and Practice of Textbook Construction in Vocational Colleges under the Background of “Three-Education” Reform: A Case Study of the Vocational Communication Skills Textbook. *Theory and Practice of Education*, 42(27): 52–55.
- [2] Ministry of Education, 2020, Notice of the Ministry of Education and Nine Other Departments on Issuing the Action Plan for Improving the Quality and Quality of Vocational Education (2020–2023). [https://www.gov.cn/zhengce/zhengceku/2020-09/29/content\\_5548106.htm](https://www.gov.cn/zhengce/zhengceku/2020-09/29/content_5548106.htm)
- [3] Ministry of Education, 2021, Notice from the General Office of the Ministry of Education on Issuing the Implementation Plan for the Construction of Textbooks in the 14th Five Year Plan for Vocational Education. [https://www.gov.cn/zhengce/zhengceku/2021-12/08/content\\_5659302.htm](https://www.gov.cn/zhengce/zhengceku/2021-12/08/content_5659302.htm)
- [4] Zhou F, Yang HF, Cao PF, et al., 2022, Discussion on the Connotation and Construction Principles of New Form

Teaching Materials under the Background of “Three Education Reform”. *Health Vocational Education*, 2022(14): 70–72.

- [5] Ding XG, 2021, Comparison and Construction Analysis of New Forms of Vocational Education Textbooks. *Chinese Vocational and Technical Education*, 2021(2): 67–71.
- [6] Wang JJ, Du HQ, 2022, Research on the Development of New Forms of Vocational Education Textbooks under the Background of Industry-Education Integration. *Education and Vocational*, 2022(6): 109–112.

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# Exploration of the Country and Region-Oriented Model for English Majors

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**Abstract:** With the in-depth development of globalization and the increasing frequency of international exchanges, the exploration of the country and region-oriented model for English majors has become an important part of the reform of English majors in colleges and universities. Based on this, this paper deeply explores the background of the exploration of the country and region-oriented model for English majors, the significance of this exploration, and the strategies for integrating this model, aiming to provide certain references for relevant researchers.

**Keywords:** English major; Country and region-oriented direction; Model exploration

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## 1. Introduction

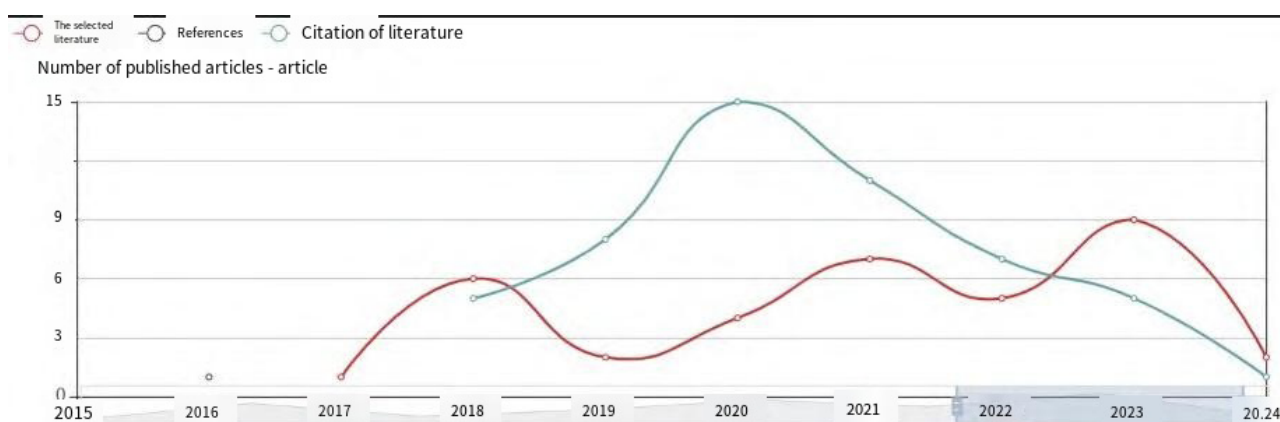
The “Teaching Guide for English Majors in Regular Institutions of Higher Education” clearly points out that with the rapid development of the social economy and the rapid progress of information technology, English teaching also faces new challenges and opportunities. Traditional classroom teaching can no longer meet the needs of contemporary students for knowledge acquisition and interactive communication. Therefore, the reform of English teaching has become the focus of attention in current institutions of higher education. The goal is to cultivate students’ independent thinking ability, cooperative spirit, and cross-cultural communication ability by introducing diversified teaching methods such as innovation, inspiration, and interaction. In 2022, the 20th National Congress of the Communist Party of China determined the basic national policy of promoting high-level opening-up. The Communist Party of China will lead the people of the whole country to accelerate the construction of a powerful trading nation, promote the high-quality development of the Belt and Road Initiative, firmly pursue an independent foreign policy of peace, adhere to the basic national policy of opening-up, firmly pursue a win-win strategy of opening-up, actively participate in the reform and construction of the global governance system, maintain world peace, promote common development, and strive to build a community with a shared future for mankind <sup>[1]</sup>. Colleges and universities should follow the national policy



documents and take a path that conforms to national development, so as to better promote talent cultivation.

## 2. Background of the exploration of the country and region-oriented model for English majors

In 2020, country and region studies were officially listed as one of the five major development directions of foreign language and literature majors, which laid a solid foundation for colleges and universities to promote the interdisciplinary integration of “English + country and region.” Under the current complex international situation and the guidance of national policies, some scholars have emphasized the significance of integrating English with country and region studies. There are a total of 36 articles on the China National Knowledge Infrastructure (CNKI) with the keywords “English” and “country and region.” The overall development trend is shown in **Figure 1** <sup>[2]</sup>.



**Figure 1.** Overall development trend

Relevant research shows that in the context of the English discipline, teachers focus on exploring the talent-cultivation model for country and region studies. For example, some scholars, based on the country and region-related courses offered by English majors in some northeastern universities, use qualitative research methods to study the classroom evaluation of typical country and region-related courses. Some scholars also use a combination of quantitative and qualitative research methods to explore the current situation, problems, and corresponding solutions of group cooperative learning in the teaching of country and region-related courses. Some scholars have analyzed the problems in research paths, research boundaries, curriculum system construction, teaching staff construction, and the evaluation mechanism of scientific research achievements in country and region studies under the foreign language discipline and put forward targeted solutions. From the above-mentioned research, it can be seen that some researchers have fully recognized the importance of integrating the construction of English majors with the discipline setting of country and region studies. However, judging from the total of 36 articles, the current relevant research and specific practices are still relatively scarce. Colleges and universities should further improve the construction of the country and region-related curriculum system based on this, strengthen the cultivation of country and region awareness and English language ability, so as to cultivate the “English + country and region” composite talents needed by the country <sup>[3]</sup>.

### **3. Significance of the exploration of the country and region-oriented model for English majors**

#### **3.1. Meeting the needs of the times and cultivating composite talents**

With the rapid advancement of globalization and the increasing frequency of international exchanges and cooperation, the connections among countries in the economic, political, cultural, and other fields are becoming closer. As an international common language, English plays a crucial role in international exchanges. And knowledge of different countries and regions is an important basis for an in-depth understanding of them. The exploration of the country and region-oriented model for English majors aims to cultivate composite talents who are proficient in English language skills and familiar with the political, economic, cultural, social, and other aspects of the target country or region <sup>[4]</sup>. Such talents can, in international business negotiations, break language barriers with their excellent English communication skills and, at the same time, use their understanding of the business environment and cultural customs of the other country to develop more targeted negotiation strategies and promote cooperation. In international cultural exchange activities, they can not only spread their own country's culture in fluent English but also deeply understand the connotations of other cultures, promoting mutual respect and learning among different cultures. Therefore, this model meets the requirements of the times for talents, helps to enhance China's voice and influence on the international stage, and promotes friendly exchanges and in-depth cooperation between China and other countries in the world <sup>[5]</sup>.

#### **3.2. Promoting disciplinary integration and optimizing the curriculum system**

The exploration of the country and region-oriented model for English majors strongly promotes the in-depth integration of the English discipline and country and region studies. The traditional English major curriculum system often focuses on language-skill training, while country and region studies focus on the comprehensive knowledge of specific countries or regions. By organically combining the two, it is possible to break the disciplinary barriers and form an interdisciplinary teaching system. Under this model, English teaching is no longer limited to the imparting of language knowledge but integrates rich country and region-related cases and background knowledge, making the teaching content more vivid and practical. For example, in English literature courses, the historical and cultural background of the place where the works were created can be combined for explanation, enabling students to not only understand the language charm of the works but also gain insights into the cultural connotations behind them. At the same time, country and region studies, with the help of the English language, broaden their research horizons and communication channels <sup>[6]</sup>. This disciplinary integration helps to optimize the curriculum system, improve teaching quality, and cultivate talents with comprehensive qualities and innovative abilities <sup>[7]</sup>.

### **4. Strategies for integrating the country and region-oriented model for English majors**

#### **4.1. Improving teachers' learning model of country and region knowledge**

In terms of knowledge-integration theory, English language and literature knowledge and country and region knowledge are not unrelated but are intertwined and complementary <sup>[8]</sup>. On the one hand, teachers need to learn English-major knowledge in linguistics, literature, translation, etc., to ensure the high-quality development of English teaching. On the other hand, teachers also need to systematically learn country and region knowledge to form a comprehensive understanding of different regions, which can better facilitate teaching <sup>[9]</sup>. For example,

when explaining English literary works, teachers should not only teach basic professional knowledge but also combine the historical background, cultural traditions, and social realities behind the works. This can enable students to understand not only the literal meaning of the language but also the deep-seated cultural content behind the works. In terms of knowledge integration, colleges and universities can establish platforms to provide teachers with online courses and academic databases, allowing teachers to learn at any time and share their academic insights and research results after learning, which can better stimulate teachers' thinking and continuously improve their knowledge systems and teaching methods. In terms of lifelong learning, colleges and universities can classify teachers at different levels for better education <sup>[10]</sup>. For example, for teachers with relatively weak basic knowledge, colleges and universities can arrange for them to participate in academic conferences and further-education courses to improve their professional knowledge. For teachers with interdisciplinary-integrated knowledge, they can be encouraged to deepen their understanding of knowledge through practice and innovate different teaching methods to better teach students. After teachers complete the corresponding tasks, they will be evaluated by the school. Teachers who have a good command of basic knowledge and innovative teaching methods will be rewarded, forming a virtuous cycle and better promoting the all-around development of students <sup>[11]</sup>.

#### **4.2. Focusing on the integration of country and region knowledge**

At present, the curriculum system of English majors in colleges and universities not only over-emphasizes students' language skills but also has an excessive focus on the cultivation of students' professional knowledge, resulting in students' inability to comprehensively understand knowledge. In the traditional model, English teaching mainly focuses on language skills such as listening, speaking, reading, writing, and translation. Although this can help students build a solid language foundation, this single-cultivation model is difficult to meet the current social requirements for composite talents <sup>[12]</sup>. Some scholars have clearly pointed out that the cultivation of foreign-language talents should not be limited to language learning itself but should be comprehensive, enabling students to master the knowledge of politics, economy, geography, history, culture, and other fields of relevant countries. Only in this way can students have a broader international perspective and deeper professional qualities to adapt to the increasingly complex international communication and cooperation environment. Based on this, English majors in colleges and universities must keep up with the pace of the times and organically integrate country and region-related content into the English-major education system to better cultivate talents <sup>[13]</sup>. In terms of textbook development, colleges and universities can organize professional teacher teams to compile targeted, systematic, and practical textbooks based on the cutting-edge achievements of country and region studies, ensuring that the textbook content covers both basic language knowledge and rich country and region-related information. In terms of teaching materials and courseware, teachers can use multimedia means to vividly present teaching content, enhancing the interest and attractiveness of teaching. In terms of information technology, teachers can make full use of modern information technology to develop online learning resources, providing students with convenient and efficient learning channels and breaking the limitations of time and space. In terms of the implementation of curriculum reform, colleges and universities should also pay attention to the evaluation and feedback of teaching effects, so that teachers can better adjust their teaching methods <sup>[14]</sup>.

### 4.3. Utilizing HAINC to give full play to the advantages of artificial intelligence-assisted teaching

With the rapid development of artificial intelligence technology, colleges and universities pay more attention to using information technology to promote the reform and progress of various disciplines. From the perspective of teachers, artificial-intelligence tools such as ChatGPT show great potential in the field of foreign-language teaching related to country and region studies. They can provide strong support for teachers, assisting in tasks such as teaching material compilation, teaching design planning, courseware production, and lesson plan writing. From the perspective of students, ChatGPT can help students clearly define the concepts related to country and region studies, provide reference directions for their thesis topics, assist in collecting materials and data for their theses, and even optimize and revise the language and grammar of their theses. In the traditional classroom-teaching model, teachers control the teaching progress according to the learning situation of most students. However, this strategy has obvious disadvantages. Low-level students may gradually fall behind due to not being able to keep up with the teaching rhythm, while high-level students may not be able to fully exert their potential due to the teaching progress not meeting their needs. Teachers can use artificial-intelligence technology to precisely address the problem of students' uneven levels according to their individual differences, thus better conducting teaching. Teachers need to adjust their interaction and communication strategies because the capabilities of artificial intelligence have certain limitations. It mainly relies on a large amount of historical data and repeated training to adjust its strategies and may not be able to quickly adapt to immediate changes (Figure 2) <sup>[15]</sup>.

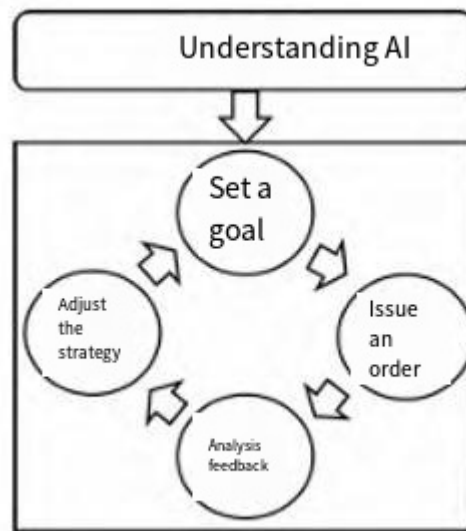


Figure 2. HAINC component cycle diagram

In the field of education and teaching, effective negotiation and communication between colleges and universities and ChatGPT play an important role in improving teachers' teaching effectiveness. For example, through such communication, teachers can obtain information and resources that are more suitable for teaching needs with the help of ChatGPT, optimize teaching plans, and thus enhance the attractiveness and effectiveness of the classroom. However, in the current education system, the application of artificial-intelligence technology, especially the human-machine interaction and negotiation ability (HAINC), is still in a relatively primary stage,

with significant limitations in application scope and depth. Many teachers, although aware of the potential of artificial intelligence, do not integrate it into teaching practice. Teachers should constantly update their knowledge to better adapt to social development changes, thus promoting their own development and enhancing classroom teaching strategies.

## 5. Conclusion

This study, through an in-depth analysis of the problems existing in the current curriculum system for English majors and the application potential of artificial-intelligence technology in education and teaching, proposes a teaching model that organically integrates country and region studies with English teaching. In the future, colleges and universities should further strengthen relevant research and practice, improve the construction of the curriculum system, enhance the artificial-intelligence literacy of teachers and students, strengthen school-enterprise cooperation and international exchanges, and create more practical opportunities for students.

## Disclosure statement

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## References

- [1] Zhu HY, 2025, Research on the Cultivation Strategies of Cross-Cultural Communication Competence of English Majors from the Perspective of the Belt and Road Initiative. *The Guide of Science & Education*, 2025(6): 137–139.
- [2] Dang X, 2024, Research on the Cultivation of Applied-Oriented University English Majors from the Perspective of Country and Region Studies: Focusing on Australian Higher Education. *Journal of Jiangxi Vocational and Technical College of Electricity*, 37(6): 93–95.
- [3] Wang Y, 2023, Research on the Implementation Path of Ideological and Political Construction in Country and Region-Related Courses for English Majors. *Foreign Language Research*, 2023(4): 61–66.
- [4] Zhang XY, Qian N, Zhao L, 2023, Teaching Practice of Integrating Ideological and Political Education into Country and Region-Related Courses Based on PBL. *English Teachers*, 23(11): 64–67.
- [5] Xu ZX, 2023, An Empirical Study on the Classroom Assessment Model of English Country and Region-Related Courses from the Perspective of Cognitive Discourse Function, thesis, Dalian University of Foreign Languages.
- [6] Yang J, 2023, Research on the Classroom Evaluation Strategies of Project-Based Country and Region-Related Courses for English Majors, thesis, Dalian University of Foreign Languages.
- [7] Wang ZP, 2023, The Expansion of the Disciplinary Identity of Country and Region Studies and English Language and Literature. *Foreign Language Teaching and Research*, 55(2): 297–307 + 321.
- [8] Lu JM, Li XM, 2022, A Preliminary Exploration of the Teaching Quality Evaluation System for Country and Region-Related Courses for English Majors in Undergraduate Colleges and Universities. *Overseas English*, 2022(24): 104–105 + 111.
- [9] Huang CM, 2022, An Analysis of the Key Issues in American Studies Education for English Majors. *Jiangsu Foreign Language Teaching and Research*, 2022(3): 29–32.
- [10] Qiao YP, 2022, Research on the Impact of Project-Based Country and Region-Related Courses on Students'



Critical Thinking Ability, thesis, Dalian University of Foreign Languages.

- [11] Zhang T, 2022, Research on the Flow Experience of English Majors in Project-Based Country and Region-Related Courses, thesis, Dalian University of Foreign Languages. <https://doi.org/10.26993/d.cnki.gslyc.2022.000001>
- [12] Fu Q, 2022, An Exploration of the Practice of Ideological and Political Education in English Country-Related Courses from the Perspective of Cultural Confidence. *English on Campus*, 2022(1): 64–66.
- [13] Chang JY, Yu RH, 2021, Research on the Teaching Problems and Coping Strategies of Project-Based Country-Related Courses. *Chinese ESP Research*, 2021(3): 1–8 + 134.
- [14] Xiao ZL, 2021, The Transformation of the Talent-Cultivation Model for English Majors from Language Research to Country and Region Studies. *Modern English*, 2021(12): 112–114.
- [15] Wang HM, 2021, An Exploration of the Integration of English Audio-Visual-Speaking Courses and Five Major Directions under the Background of New Liberal Arts. *Journal of Henan Institute of Science and Technology*, 41(6): 79–84.

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# Paths to Improve the Quality of Higher Education Management Based on the OBE Concept

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**Abstract:** This article deeply explores the connotation and characteristics of the OBE concept, analyzes the current situation and problems of higher education management, and proposes paths to improve the quality of higher education management based on the OBE concept. The aim is to better promote the systematic and scientific management of higher education and thus facilitate the all-around development of individuals.

**Keywords:** OBE concept; Higher education management; Quality improvement; Outcome-based; Continuous improvement

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## 1. Introduction

The Central Committee of the Communist Party of China and the State Council issued the “Outline for the Construction of an Education-powerful Country (2024–2035)”, which clearly states that it adheres to the guidance of the president of the CCP Thought on Socialism with Chinese Characteristics for a New Era, thoroughly implements the spirit of the 20th National Congress of the Communist Party of China and the Second and Third Plenary Sessions of the 20th Central Committee, fully implements the president of the CCP’s important expositions on education, deeply understands the decisive significance of the “Two Establishments”, firmly adheres to the “Two Maintenances”, adheres to giving priority to the development of education, fully implements the party’s education policy, unswervingly follows the path of socialist education development with Chinese characteristics, adheres to the socialist orientation of running schools, comprehensively grasps the political, people-centered, and strategic attributes of education, implements the fundamental task of cultivating virtue and nurturing people, educates talents for the party and the country, fully serves the construction of Chinese-style modernization, runs education rooted in the land of China, accelerates the construction of a high-quality education system, cultivates socialist builders and successors with all-round development of morality, intelligence, physique, aesthetics, and labor, and accelerates the construction of a socialist education-powerful

country with strong ideological and political leadership, talent competitiveness, scientific and technological support, people's livelihood guarantee, social coordination, and international influence, providing strong support for building a modern socialist power and comprehensively promoting the great rejuvenation of the Chinese nation <sup>[1]</sup>. Colleges and universities should manage students in accordance with national policy documents to better promote talent cultivation.

## **2. The connotation of higher education management**

Higher education management refers to activities with students as the main body, using various scientific educational management means to promote the all-around development of students. Broadly speaking, education management covers aspects such as ideological and political education, student affairs management, assessment and evaluation of student work, techniques and methods of student work, and guidance on student growth and development. Narrowly speaking, education management is student affairs management, including aspects such as freshman enrollment management, class construction management, dormitory management, employment guidance, and career development services. Education management is an important part of college management work, which can demonstrate the comprehensive management level of colleges and universities and the quality of talent cultivation. It plays a key role in cultivating qualified socialist builders and successors. Improving the quality of education management is not only a demand of the times but also an important foundation for the sustainable development of higher education <sup>[2]</sup>. The "Regulations on the Management of Students in Regular Higher Education Institutions" states: "Higher education institutions should take talent cultivation as the core, follow the national education policy, abide by the laws of education, and continuously improve the quality of education; they should run schools in accordance with the law, manage strictly, improve and perfect management systems, and standardize management behaviors; they should combine management with strengthened education to continuously improve the management level and strive to cultivate qualified socialist builders and reliable successors." In terms of the education management model, in order to achieve the education management and talent-cultivation goals proposed by the party and the country, colleges and universities should clarify educational goals, formulate appropriate educational content and implementation methods, rely on effective educational carriers, construct a scientific and complete education management mechanism, and continuously test and adjust it in practice. Finally, a feasible and guiding education model is formed to lay a solid foundation for the effective implementation of education management work <sup>[3]</sup>.

## **3. Problems in higher education management**

At present, while the higher education management in China is developing rapidly, it also faces many challenges and problems. In terms of the management system, most colleges and universities still adopt the traditional hierarchical management model, which has problems such as a long decision-making chain and slow response speed. In terms of quality standards, there is a lack of a unified and scientific evaluation system, and the quality requirements vary greatly among different colleges and universities, and even different majors. In terms of resource allocation, there is often a phenomenon of emphasizing hardware investment while neglecting software construction, and emphasizing scientific research while neglecting teaching. Specifically, the main problems in higher education management include: unclear educational goals, lack of clear and measurable definitions of learning outcomes; lack of systematic design in the curriculum system, insufficient connection among courses,

and difficulty in forming a joint force to support the achievement of final learning outcomes; single teaching methods, mainly teacher-centered lectures, with insufficient student participation and initiative; evaluation mechanisms that emphasize knowledge over abilities, making it difficult to comprehensively reflect students' comprehensive qualities and actual ability levels; and quality assurance measures that are merely formal, lacking an effective continuous improvement mechanism. The reasons for these problems are multifaceted. Historically, China's higher education has long been influenced by the Soviet professional education model, emphasizing the systematic teaching of professional knowledge while paying insufficient attention to ability cultivation. In terms of management concepts, many colleges and universities still remain in the "management and control" stage and have not truly established the concept of "service and support." At the implementation level, teachers lack sufficient mastery of new educational concepts and methods and lack systematic training and guidance. In addition, the inertia of the traditional evaluation mechanism also hinders the in-depth advancement of education management reform. In-depth analysis of these problems and their causes helps researchers to more precisely apply the OBE concept and construct a scientific and effective education quality management system.

## **4. Paths to improve the quality of higher education management based on the OBE concept**

### **4.1. Colleges and universities construct a three-dimensional teaching framework to facilitate the all-around development of students**

Colleges and universities can establish a teaching guidance framework that includes learning outcomes, a diversified evaluation mechanism, and a deep-integration improvement mechanism based on outcome-based education as the core, so as to better cultivate students' comprehensive qualities. In terms of scientific learning outcomes, colleges and universities can communicate and exchange with teachers of other disciplines based on industry demand research, and finally determine the knowledge content that graduates need to master. For example, colleges and universities can develop different knowledge frameworks and literacy frameworks for different majors. Students not only need to learn professional basic knowledge in the classroom, but also need to improve their comprehensive qualities in practice. In terms of the diversified evaluation mechanism, first, teachers can put students' classroom performance, homework completion, and group discussion situations into an electronic portfolio and regularly share the contents with students, so that students can understand their strengths and weaknesses and make better improvements. Second, teachers can record students' application of knowledge from one discipline to solve problems in other disciplines through process-based evaluation, so as to better examine students' interdisciplinary abilities. Third, after students study cases, teachers can let their peers evaluate them to cultivate students' critical thinking. Fourth, teachers can evaluate students through traditional outcome-based evaluation and practical report evaluation methods, so that teachers can better adjust their teaching strategies. Only by using such diversified evaluation methods can teachers comprehensively understand students' learning situations and dynamically adjust teaching strategies. In terms of the deep-integration improvement mechanism, colleges and universities can evaluate teachers' teaching levels through the evaluation of other teachers, students, and off-campus experts and scholars. For teachers with weak practical links, colleges and universities can establish a "school-enterprise dual-tutor" system, that is, professional teachers and enterprise teachers jointly guide students. For teachers who integrate less curriculum ideology and politics, colleges and universities can provide rich case resources for teachers by establishing a curriculum ideology and politics case database. Only by better combining these three aspects can teachers promote the all-

round development of students <sup>[4]</sup>.

#### **4.2. Colleges and universities adopt multiple measures to deepen the practice of outcome-based education**

Colleges and universities can achieve the education goal with outcome-based education as the core by optimizing the curriculum system and teaching methods. First, when setting courses, colleges and universities should, based on outcome-based education, examine the improvement of students' professional abilities, the progress of their professional qualities, and the development of their innovative abilities in professional knowledge, so as to comprehensively examine the rationality of course settings and dynamically adjust the course content. Second, in order to better let students understand the importance of interdisciplinary learning, colleges and universities can teach students through the case-teaching method. For example, colleges and universities can hold an "Intelligent Manufacturing System Design" competition and encourage different students to participate. Students can form teams with students from different majors. For instance, one group consists of students majoring in design, machinery, electronics, and computer science. Each student plays to their strengths. Design majors can design models, machinery majors can implement the design, electronics majors can ensure the model can move, and computer science majors can make the machine model complete corresponding action commands. This way, students can understand the importance of interdisciplinary learning and teamwork. Third, colleges and universities can establish a progressive practical teaching system that includes basic experiments, course design, enterprise internships, and graduation projects. For example, after freshmen complete their theoretical knowledge learning, they will conduct basic experiments in the school's simulation laboratory. Sophomores will intern in enterprises to understand the application of theoretical knowledge in practice. Juniors will summarize their practical experience into graduation projects, which can better integrate theory and practice <sup>[5]</sup>. Finally, teachers can teach students through teaching models such as problem-based learning and case analysis. For example, in the "Mechanical Innovation Design" course, teachers may ask students, "How can we design a robot for the elderly?" and "What knowledge is needed in the design process?" Teachers can divide students into groups of 4–5 according to the questions they raised, and each group can choose the question they want to discuss, and finally explain the reasons for their thinking and how each person will solve the problem. It can be seen that only by decomposing learning outcomes into different course modules can teachers better transform professional knowledge into problem-solving abilities.

#### **4.3. Under the OBE concept, colleges and universities collaborate inside and outside the school to improve teachers' qualities and teaching quality**

In the process of improving the quality of higher education management based on the outcome-based education (OBE) concept, teachers, as the instructors of education and teaching, their mastery of professional basic knowledge has a direct impact on student teaching management. Colleges and universities can improve teachers' professional qualities by combining in-school and out-of-school teachers. For in-school teachers: First, colleges and universities can invite experts and scholars to give lectures to educate teachers, enabling them to understand diverse teaching management methods and apply them to student management. Second, colleges and universities can establish platforms that allow teachers to learn at any time. Teachers can communicate and exchange with teachers from other schools about problems they do not understand. Third, colleges and universities can send in-school teachers to intern in enterprises to understand the latest industry development needs and better manage students. Fourth, colleges and universities can use an incentive mechanism to give



certain honorary and cash rewards to teachers who propose diverse and innovative teaching management methods, forming a virtuous cycle and attracting more teachers to join. For out-of-school teachers: First, colleges and universities can invite out-of-school teachers to be guest lecturers to bring new case content to students. Second, colleges and universities can invite out-of-school experts, scholars, and enterprise personnel to participate in curriculum design to better develop a curriculum system that meets the development needs of students and social requirements. Third, colleges and universities can establish an accumulation-based reward mechanism for out-of-school personnel to encourage more out-of-school experts and scholars to participate in student education. Only by training in-school teachers and recruiting out-of-school teachers under the guidance of the OBE concept can colleges and universities promote the comprehensive improvement of teaching quality.

#### **4.4. Colleges and universities construct an OBE-oriented platform to dynamically adjust teaching management**

Colleges and universities should dynamically adjust teaching management methods according to students' learning interests and needs. The OBE concept emphasizes student-centeredness, which requires colleges and universities to establish a comprehensive student growth assessment system. Colleges and universities can manage students by establishing a platform system. In the login module, once students log in to the platform, there will be learning content tailored to each student. Students study according to this learning task list. For problems they do not understand, the system will not only provide feedback on the content to teachers but also understand students' thinking on how to solve the problems. Some students may communicate and exchange with other students in the communication module, some may get answers by leaving messages during the live broadcast of experts and scholars in the communication module, and some may find the entry point of the problem they do not understand through extracurricular learning resources in the expansion module and then solve the problem by searching for reference materials. After each student completes their task list, they can conduct practical operations in a virtual laboratory to better transform theoretical learning content into practical operation steps. Through this systematic method, colleges and universities can better manage students, understand their learning problems and needs, and thus dynamically adjust teaching strategies to better manage students.

#### **4.5. Colleges and collaborate with enterprises and other parties to co-create teaching content oriented to social needs**

Colleges and universities can develop teaching content that meets social needs by inviting the participation of enterprises, experts and scholars, and graduates. First, enterprises, experts and scholars, graduates, and college administrators should develop curriculum content that meets social needs based on an understanding of students' needs, ensuring that the content students learn meets social requirements. Second, enterprises, experts and scholars, graduates, and college administrators should propose diverse teaching methods in curriculum design to enable students to apply theoretical knowledge to practice after learning, better meeting the needs of enterprises for talents. At the same time, enterprises can provide students with certain internships and practical opportunities, allowing students to understand their strengths and weaknesses in practice and adjust their learning methods. In addition, colleges and universities can also invite enterprises, experts and scholars, and graduates to participate in student evaluation to ensure that the evaluation results can reflect not only students' professional knowledge but also their comprehensive qualities. For example, colleges and universities can

establish a “Professional Construction Committee” and invite experts from different industries, enterprise executives, and senior teachers to participate in jointly formulating the development direction of majors and updating curriculum content, making the designed content more in line with market needs and better improving students’ practical abilities.

## 5. Conclusion

This article proposes strategies such as colleges and universities constructing a three-dimensional teaching framework to facilitate the all-round development of students, adopting multiple measures to deepen the practice of outcome-based education, collaborating inside and outside the school to improve teachers’ qualities and teaching quality under the OBE concept, constructing an OBE-oriented platform to dynamically adjust teaching management, and collaborating with enterprises and other parties to co-create teaching content oriented to social needs, aiming to provide some references for relevant researchers.

## Disclosure statement

The author declares no conflict of interest.

## References

- [1] Zhan ST, 2024, Research on Improving the Quality of Higher Education Management Based on the OBE Concept. *Journal of Harbin Vocational and Technical College*, 2024(6): 91–93.
- [2] Lu SY, 2025, Analysis of the Improvement of College Student Education Management under the OBE Concept. *Intelligence*, 2025(6): 105–108.
- [3] Liu LJ, 2024, Research on Countermeasures for College Student Education Management Based on the OBE Concept. *Modern Vocational Education*, 2024(30): 165–168.
- [4] Liu X, 2024, Research on the Improvement of College Student Education Management from the Perspective of the OBE Concept. *Shanxi Youth*, 2024(11): 169–171.
- [5] Chen XX, 2023, Research on the Improvement of College Student Education Management Based on the OBE Concept. *University*, 2023(35): 180–183.

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# Analysis of Teaching Countermeasures for Higher Vocational English from the Perspective of Blended Learning

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**Abstract:** In the new era, against the backdrop of deepening reform and advancing education and teaching initiatives, higher vocational education serves as a crucial front for cultivating applied-oriented talents in China. Innovating the English teaching model in higher vocational colleges can contribute to the cultivation of high-quality vocational English-proficient students. However, currently, there remain certain issues in English teaching at vocational colleges. In light of this situation, this paper expounds on the development background of higher vocational English education within the context of blended learning. By taking into account the current state of higher vocational English teaching, the paper proposes new teaching reform measures to address the existing problems, aiming to enhance higher vocational students' enthusiasm for English learning, improve the quality of English teaching in vocational colleges, and promote the development of higher vocational colleges in China.

**Keywords:** Blended learning model; Higher vocational English education; Teaching strategies

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## 1. Introduction

According to the strategic goals of the “14th Five-Year Plan for the Development of National Education”, the development of information technology has presented opportunities for higher vocational colleges. As an important subject, higher vocational English is tasked with cultivating high-skilled talents with high-quality comprehensive application abilities during the talent-training process. Currently, an increasing number of scholars are focusing on the application of the blended learning model in higher vocational English courses within the smart education environment <sup>[1]</sup>. Through the blended learning approach, the online and offline English teaching in higher vocational education form a complete teaching chain. Students can acquire English knowledge through the three-stage learning process of “pre-class, in-class, and after-class”, which improves the teaching quality of higher vocational English classes and enhances students' learning abilities.

## **2. Higher vocational English teaching from the perspective of blended learning**

### **2.1. Overview of the blended learning model**

Against the backdrop of the new era of smart education in the development of vocational education, the blended learning model refers to a dual-chain and dual-subject learning model that combines the traditional face-to-face learning mode with online learning practices. By integrating various English teaching resources in higher vocational education, it can precisely extract and efficiently integrate the advantages of online and offline learning, thereby generating a new and high-quality educational model <sup>[2]</sup>. This provides higher vocational students with a new learning perspective and rich learning experiences.

The blended learning model shows diverse characteristics in helping higher vocational students master new learning methods. First, the learning method is flexible. Blended learning combines online and offline learning. Under the guidance of traditional classroom teaching, it utilizes smart education platforms to fully explore and collect various English listening, speaking, reading, and writing materials, breaking the limitations of single traditional teaching <sup>[3]</sup>. Higher vocational students can independently decide when, where, and what to learn, maximizing their foreign language internalization skills. Second, the learning resources are diverse. With the help of big data, higher vocational students can identify their learning weaknesses and select suitable learning materials from the English smart education resource library according to their needs. They can comprehensively collect knowledge points from various versions of English textbooks in higher vocational education, including phonetic notations of English words and phrases, English listening audio materials, and grammar knowledge points in different pragmatic scenarios, greatly enriching the connotation of English learning and improving students' comprehensive English proficiency <sup>[4]</sup>. Third, the learning process involves collaborative cooperation. In the blended learning model for higher vocational students, vocational educators are not the sole teaching subjects. Instead, they switch between the classroom and the platform as study partners. According to different learning objectives, learning questions are set in the three-stage learning process of pre-class, in-class, and after-class. Higher vocational students are required to study textbooks with these questions, raise their hands to ask questions, and interact with educators in class, and they can also leave messages on the message board of the English smart education platform to seek help and get answers <sup>[5]</sup>.

### **2.2. Application conditions of the blended learning model**

Firstly, in the integrated learning process, higher vocational educators need to have the ability to explore and integrate “online + offline” educational resources, leveraging the advantages of classroom teaching and online extension <sup>[6]</sup>. During classroom teaching, educators should guide students to learn aspects such as vocabulary accumulation, correct pronunciation, grammar types, and situational writing. Before class, educators should review the teaching materials based on teaching objectives, refine key vocabulary and knowledge points, and create knowledge maps to help students understand the overall context and key-difficult points of a unit or chapter, enabling students to conduct a pre-class preview according to their own learning situations. During the online extension, educators need to collect educational information suitable for higher vocational education, integrate corresponding teaching resources, and upload diverse listening, speaking, reading, and writing materials to broaden students' learning horizons and stimulate their enthusiasm for autonomous learning <sup>[7]</sup>. At the same time, to meet the requirements of interdisciplinary development in vocational education in the new era, educators can also upload vocational English educational materials related to multiple disciplines such as economics, politics, geography, and culture on the platform to meet the English-learning needs of students from

different majors, thereby enhancing the teaching effectiveness of higher vocational English education.

Secondly, as the main body of blended learning, higher vocational students' enthusiasm and initiative in the learning process should be ensured by educators<sup>[8]</sup>. Regarding the issue that some higher vocational students lack enthusiasm for classroom participation, educators can carry out ideological education and transformation to help them deeply understand the importance of vocational education in their future development in the new era and change their outdated concepts of English learning. More specifically, educators should innovate classroom teaching methods and construct a three-level blended learning model of "classroom teaching + online expansion + practical education", actively promoting students' transformation from "wanting to learn" to "I want to learn" as self-conscious learners<sup>[9]</sup>. Among them, practical education is a further deepening after classroom teaching and online expansion. It focuses on vocabulary pronunciation, grammar structure, and sentence-writing in real-life contexts, which greatly promotes the improvement of students' English application abilities. The three-level blended learning model serves as a strong link connecting higher vocational students and educators, classroom teaching and online teaching, and educators' leading teaching and students' autonomous learning. It is of great significance for catalyzing students' autonomous learning abilities and consolidating their autonomous learning achievements<sup>[10]</sup>.

### **3. Current situation and existing problems in higher vocational English teaching**

During the crucial stage of vocational education reform in the new era, some higher vocational educators have started to explore the blended learning model. However, due to the lack of a systematic teaching process and unified teaching standards, the exploratory education of the blended learning model has not achieved significant breakthroughs<sup>[11]</sup>. Analyzing the existing flaws, some educators lack perfect information technology application abilities and cannot master high-precision digital teaching methods. This may lead educators to encounter difficulties in integrating online English teaching resources, resulting in cumbersome work and time-consuming processes.

Before implementing the blended learning model, educators should prepare corresponding English learning materials according to students' learning interests and English proficiency, record and edit high-quality listening, speaking, reading, and writing materials, and generate micro-lecture videos that meet the development needs of students' majors<sup>[12]</sup>. However, in the actual teaching process, when educators introduce the blended smart education platform in the three-stage learning process of "pre-class, in-class, and after-class", they usually need to use intelligent electronic devices. For some students, this may cause inconvenience in hardware equipment for learning, affecting their learning experiences.

## **4. Research on teaching countermeasures for higher vocational English from the perspective of blended learning**

### **4.1. Integrating teaching resources and constructing a diversified learning platform**

During the reform of higher vocational education in the new era, the first priority for higher vocational educators is to focus on the compilation of teaching materials and the integration of resources<sup>[13]</sup>. Regarding the innovation of English teaching materials, before classroom teaching, educators need to summarize the unit themes of the entire English textbook, arrange the application scenarios of refined grammar, create knowledge maps of basic knowledge, and optimize the key-difficult points of each chapter. While retaining the core



knowledge and application skills of the English textbook, educators should appropriately collect English listening, speaking, reading, and writing materials related to the textbook chapters according to students' learning situations, such as pragmatic skills of vocational English, to provide teaching support for students' vocational development. After completing the basic teaching tasks, educators should also actively develop digital educational resources. Higher vocational colleges and educators should work together. Under the requirements of the English education goals in vocational education reform, the college should take the lead in guiding educators to conduct a large-scale integration of information-based and digital resources, such as recording unit micro-lectures, updating and scheduling the MOOC system, and developing English-learning apps. These resources should cover English textbook content, English listening, speaking, reading, and writing materials, after-class exercise training, and practical applications of vocational English, using a digital resource library to broaden students' learning channels and horizons and meet their learning needs at different stages <sup>[14]</sup>. For example, in the development of the "Rain Classroom" learning platform, educators can first collect different types of English materials and upload them to the corresponding columns on the platform for students to easily access the updated information. Then, educators can assign relevant learning tasks according to the chapter learning objectives, requiring students to practice the application of grammar, vocabulary, and sentence patterns in the after-class resource library. Students can study independently on the Rain Classroom platform, complete the assignments given by educators, and communicate with classmates in the discussion area. At the same time, the Rain Classroom is equipped with a learning tracking system that can monitor students' learning progress and knowledge mastery in real-time and provide accurate feedback to educators in a timely manner, facilitating educators to carry out subsequent educational work.

## **4.2. Designing diverse activities to improve students' learning participation**

Firstly, educators can carry out online autonomous learning activities. Before class, educators can release learning tasks and resources through the online learning platform to guide students to learn independently. Learning tasks can include watching micro-lecture videos, reading English articles, and completing listening exercises. During the autonomous learning process, students should record the problems and doubts they encounter and communicate and discuss with educators and classmates through the platform. Secondly, educators need to actively organize offline classroom interaction activities. During offline classroom teaching, educators should provide targeted explanations and guidance based on the problems and difficulties students encountered during online learning. At the same time, they should design diverse classroom interaction activities, such as group discussions, role-playing, English speeches, and situational simulations, to encourage students to participate actively and improve their oral expression and teamwork abilities. In addition, after class, educators can also provide students with some extended learning resources and activities, such as recommending English movies, English songs, and English-learning websites, and organizing English corners and English competitions. These activities can enrich students' after-class lives, stimulate their learning interests, and improve their comprehensive English application abilities <sup>[15]</sup>.

## **4.3. Transforming the roles of teachers and students to promote diverse teaching interactions**

### **4.3.1. The transformation of educators' roles**

Educators should transform from traditional knowledge transmitters to learning guides, organizers, and

facilitators. Under the blended learning model, educators need to carefully design teaching content and activities to guide students to learn independently and cooperatively. They should keep abreast of students' learning situations in a timely manner, provide personalized learning guidance and feedback, and organize classroom discussions and communication activities to promote the collision of ideas and knowledge sharing among students.

#### **4.3.2. The transformation of students' roles**

Students should transform from passive knowledge recipients to active learners. They need to establish an awareness of autonomous learning, develop a reasonable learning plan, and actively utilize online learning resources for independent learning. They should also actively participate in offline classroom interaction activities, communicate and cooperate with educators and classmates, and continuously reflect and summarize during the learning process to improve their learning abilities and self-management skills.

#### **4.4. Reforming the evaluation system to achieve comprehensive and objective evaluation**

First, diversify the evaluation subjects. Establish a diversified evaluation system that includes educator evaluation, student self-evaluation, and peer evaluation. Educator evaluation mainly assesses students' learning achievements and processes, while student self-evaluation and peer evaluation help students identify their strengths and weaknesses, cultivating their self-reflection abilities and teamwork spirit.

Second, diversify the evaluation methods. Adopt a variety of evaluation methods, combining formative evaluation with summative evaluation. Formative evaluation focuses on students' learning processes, including their online learning performance, classroom participation, assignment completion, and group-cooperation performance. Summative evaluation, on the other hand, emphasizes the assessment of students' knowledge mastery and application abilities, such as final exams and oral tests. Through diverse evaluation methods, a comprehensive and objective evaluation of students' learning situations can be achieved.

Third, pay attention to evaluation feedback. Educators should promptly provide students with evaluation results so that students can understand their learning progress and existing problems. Based on the evaluation feedback, educators should adjust their teaching strategies and methods, provide targeted learning suggestions and guidance to help students improve their learning methods and enhance their learning effectiveness.

### **5. Conclusion**

In conclusion, with the continuous development of smart education in higher vocational education, higher vocational colleges have begun to adopt the blended learning model. Through strategies such as collecting and integrating educational resources, designing diverse teaching practice activities, flexibly transforming the roles of teachers and students, and improving the teaching evaluation system, it is possible to accurately address the problems in current vocational education reforms, meet the English-learning needs of higher vocational students in the new era, cultivate comprehensive vocational English-proficient talents, and promote the in-depth development of higher vocational English education reform.

### **Disclosure statement**

The author declares no conflict of interest.

## References

- [1] Xu DH, 2021, Research on the Innovative Path of Higher Vocational English Teaching from the Perspective of Tea Culture. *Fujian Tea*, 43(12): 154–155.
- [2] Li J, 2022, Research on the Innovation and Development of Higher Vocational English Teaching Ideas in the Information Age: A Review of *Research on the Development and Innovation of Higher Vocational English Teaching*. *Yangtze River*, 53(5): 244.
- [3] Yu LD, 2023, Research on English Teaching for Higher Vocational Textile Majors in the Context of Artificial Intelligence: A Review of *Practical Textile English*. *Wool Textile Journal*, 51(7): 134–135.
- [4] Kong XF, 2020, Exploration of College English Teaching under the Influence of Multiculturalism: A Review of *Research on Higher Vocational English Education from a Multicultural Perspective*. *Contemporary Educational Science*, 2020(12): 2.
- [5] Wen X, 2020, Current Situation and Countermeasures of Higher Vocational English Teaching against the Background of Enrollment Expansion. *Fujian Tea*, 42(3): 177.
- [6] Bai M, 2022, Cultivating the Learning Abilities of Higher Vocational Thai-Majored Students through the Blended Learning Model Based on “Internet +”. *Journal of Honghe University*, 20(5): 137–139.
- [7] Lin YE, Ke N, Yang YB, 2022, Characteristics and Value Orientation of Blended Learning in Distance Education in the “Internet +” Era. *Journal of Yunnan Open University*, 24(3): 12–16.
- [8] Shen ZH, 2022, Multidimensional Examination of the Innovation of College English Teaching Models. *Food Research and Development*, 43(21): 241.
- [9] Yang B, 2022, Research on the Construction of an Online-Offline Blended Teaching Model for College English. *Journal of Jilin Agricultural Science and Technology University*, 31(5): 117–120.
- [9] Liu J, Cao LH, 2022, Research on Cultivating Higher Vocational Students’ English Autonomous Learning Ability under the Blended Teaching Model. *Journal of Liaoning Vocational College of Economics and Trade & Liaoning Institute of Economic Management*, 2022(5): 110–112.
- [10] He J, Ma TJ, Zhang YL, 2022, Multidimensional Integration of Blended Learning Activity Design from the Perspective of Deep Learning. *Journal of Inner Mongolia Normal University (Educational Science Edition)*, 35(4): 61–69.
- [11] Chen MF, 2022, Research on the Learning Engagement Status and Influence Mechanism of Higher Vocational Students under the Blended Teaching Model. *Journal of Jinzhong University*, 39(5): 96–102.
- [12] Huo LJ, Sun N, Sun RM, et al., 2023, Research on Methods for Improving Higher Vocational Students’ Autonomous Learning Ability. *Research and Practice on Innovation and Entrepreneurship Theory*, 2023(5): 66–68.
- [13] Zhang C, 2023, Research on the Blended Teaching Model for College English under the “Internet +” Background. *China New Telecommunications*, 25(8): 212–214.
- [14] Zhao ZY, 2023, Research on the Blended Teaching of College English Based on Outcome-Based Education. *Journal of Jilin Agricultural Science and Technology University*, 32(3): 103–106.
- [15] Li HX, 2023, Research on the Innovative Reform of College English Course Teaching from the Perspective of New Media. *Journal of Jilin Agricultural Science and Technology University*, 32(5): 102–105.

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# A Study on Strategies and Methods for Early-Stage Cultivation of Chip Innovation Talent under the CYCORE Project

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**Abstract:** There is an urgent global and national shortage of skilled semiconductor professionals, underscoring a critical need to cultivate chip-design expertise among young learners. The CYCORE project is a government-supported youth semiconductor education initiative aimed at strengthening this early-stage talent pipeline. In this study, the CYCORE curriculum—spanning the full chip design process from basic electronics to simplified CPU design—is analyzed, and classroom implementation case studies are presented. A structured I/E/C/K/S questionnaire (measuring student Interest, Engagement, Creativity, Knowledge, and Skills) is used to evaluate student outcomes. Results indicate that CYCORE’s hands-on, project-based modules substantially boost student engagement and interest in chip technology and foster early innovation capabilities. Students reported high satisfaction and demonstrated improvements in applied knowledge, creative problem-solving skills, and confidence through hands-on design challenges. These findings suggest that targeted semiconductor education can effectively contribute to the STEM talent pipeline.

**Keywords:** Chip education; CYCORE; Innovation cultivation; STEM education; Talent pipeline; Curriculum innovation

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## 1. Introduction

The global demand for semiconductor expertise has reached unprecedented levels. Worldwide chip shortages and the rapid expansion of applications from AI to 5G have made semiconductors a strategic industry for national economies. Governments in the US and EU are investing heavily (e.g., the US Chips Act and the EU Chips Act) to build domestic manufacturing and talent pipelines. By 2030, Deloitte projects that over one million additional skilled semiconductor workers will be needed globally<sup>[1]</sup>. In the Taiwan region, for example, specialized “colleges of semiconductor research” (chip schools) have been established at top universities to nurture a local talent pool. These efforts underscore a global “talent war” for chip professionals.

In response to this need, Chinese educators and industry experts have launched innovative programs to attract and train young talent. One leading initiative is the “CYCORE” project (the Young China Core initiative). Launched in 2018 by the SoC Design Key Laboratory of Peking University, Shenzhen (led by Dr. He Jin) in collaboration with HKUST Prof. Chen Wenxin, CYCORE is the country’s first government-supported youth chip education program. Operating under the motto “chip science for all, strong nation chip talent.”

This paper examines the CYCORE experience as a model for early-stage chip talent development. The purpose of this research is to identify effective curriculum strategies and pedagogical approaches, assess implementation outcomes, and measure student learning gains under the CYCORE program. Specifically, Sections 4–6 of this study analyze the program’s curriculum design, classroom and laboratory implementation results, and student performance and interest outcomes.

## **2. Conceptual foundations and program rationale**

Drawing on research in China’s STEM education and innovation training for youths, the program is grounded in theories of hands-on learning, creative thinking, and interdisciplinary integration. Engineering education theory suggests that students learn best through project-based design challenges, which the initiative incorporates through practical chip design projects and collaborative lab work. Cognitive and constructivist theories likewise support an approach where learners actively construct knowledge of complex systems through guided experimentation and problem-solving tasks <sup>[2]</sup>.

## **3. Research design and evaluation methods**

The study employed a mixed-methods approach to evaluate the CYCORE program’s impact on student learning and innovation competencies. A quasi-experimental, pretest-posttest design was implemented within a classroom setting, supplemented by comparison data and qualitative feedback. Key elements of the methodology included the following.

**Participants:** Undergraduate engineering students enrolled in the CYCORE-affiliated chip design course took part in the study. These were typically senior-year students with a foundational background in electronics. Approximately 55 students formed the experimental group. A comparison group of similar students from a parallel cohort or program was used for benchmarking outcomes and providing a reference for evaluation.

**Curriculum and intervention:** The CYCORE curriculum spanned one semester and was delivered through specialized modules, hands-on workshops, laboratory sessions, and a capstone chip design project. Instruction combined lectures on theoretical concepts with extensive practical experience using chip-design software, simulation tools, and prototyping equipment. Teams of students worked on design challenges under the guidance of both industry and academic mentors, ensuring that classroom learning aligned closely with real-world semiconductor development processes.

**Instruments:** Multiple data collection instruments were used to assess learning outcomes. Standardized knowledge tests evaluated students’ mastery of integrated circuit theory and design principles before and after the course. Surveys and questionnaires measured students’ attitudes, motivation, innovation interest, and self-reported skills related to engineering and creativity. Instructors also applied rubric-based assessments to evaluate project deliverables, design presentations, and prototypes, capturing both the technical accuracy and the creative quality of student work.



**I/E/C/K/S framework:** A distinctive evaluation tool was the I/E/C/K/S framework, which examined five dimensions of learning growth: Interest, Experience, Creativity, Knowledge, and Skills. Each student completed an I/E/C/K/S self-assessment at the beginning and end of the program, rating their own progress on these dimensions. Instructors used the same framework to score team projects and individual reflective assignments. This approach allowed the study to quantify growth across each category, capturing both gains in technical knowledge and the development of creativity and sustained interest. By measuring multiple facets of learning, the framework provided a holistic view of how the program influenced students' competencies.

**Evaluation procedures:** The evaluation followed a systematic protocol. At the outset, baseline data were gathered through pre-course tests and initial surveys. During the semester, instructors recorded formative data such as project grades, observation notes, and interim feedback. Upon program completion, students took post-intervention tests and competitions and surveys to measure changes in knowledge and attitudes <sup>[3–4]</sup>. In addition, qualitative data were collected via focus-group interviews and written reflection essays, giving students an opportunity to describe their learning experiences. Quantitative data (test scores, survey metrics, and I/E/C/K/S ratings) were statistically analyzed to assess learning gains and to compare the experimental and reference groups, while qualitative feedback helped interpret the results. This mixed-methods design ensured a comprehensive evaluation of the program's effectiveness in cultivating early-stage chip innovation talent.

## **4. Core strategies and approaches for early-stage chip talent development in the CYCORE program**

### **4.1. Curriculum structure and modular design**

**Fundamentals of electronics:** Introductory modules cover basic electrical theory and circuit principles, providing a foundation in voltage, current, and simple circuits (supported by an Electrical Basics module and hands-on experiments in circuit assembly).

**Digital logic design:** Core modules in middle grades focus on binary arithmetic and logic circuits, such as designing adders and subtractors, and understanding sequential logic elements like latches, flip-flops, and counters. These units build students' competence in Boolean logic and circuit design, forming the groundwork for understanding how chips function at a logical level.

**Integrated systems and applications:** Advanced modules for higher grades tie hardware concepts to real-world applications. For instance, students undertake projects like an infrared transmission and reception system to learn how microelectronic circuits interface with communication technology. Other modules involve working with decoder and counter chips, bridging theoretical design with practical system integration. This thematic breadth — from materials and device physics up to electronic system applications — mirrors the entire chip design and manufacturing process, illustrating how different STEM fields converge in semiconductor technology.

### **4.2. Interdisciplinary integration pathways**

Chip development inherently spans multiple domains — including physics (electronics and materials science), mathematics (binary algebra and logic), computer science (architecture and programming), and engineering design. The program consciously integrates content from these disciplines within its modules to demonstrate their interconnectedness.

### **4.3. University-industry-school collaboration mechanisms**

Universities play a key role by contributing subject-matter expertise and resources. Professors and researchers co-design curriculum modules, offer specialized workshops for both teachers and students, and open up campus laboratories for youth research experiences. Industry partners provide the practical perspective and additional resources to make learning authentic. Companies in the semiconductor sector have been engaged to sponsor equipment (like FPGA boards, chip kits, or lab supplies) and to offer site visits or internships for students.

Industry engineers' industry input is used to align the curriculum with skill needs. Feedback from companies about emerging technologies or desired competencies can be incorporated, keeping the program relevant. As noted in workforce studies, partnerships between chip companies and schools are "essential to maximizing educational efforts" in talent pipeline development, and CYCORE leverages this by actively involving industry at every stage.

Schools and educators participating in schools integrate CYCORE modules into their schedule (some as part of science/technology classes, others as after-school clubs). School administrators coordinate with universities and companies to schedule mentoring sessions, field trips, and project showcases. Teachers, after receiving training, serve as day-to-day facilitators of the curriculum and liaisons between students and external mentors. The collaboration mechanism often involves a formal agreement or platform where the three parties meet regularly to plan activities, review progress, and share resources <sup>[5]</sup>.

### **4.4. Innovation-oriented assessment framework**

The program employs an innovation-oriented assessment framework that emphasizes creativity, application of knowledge, and continuous improvement. Project-based assessments are at the core of this framework. Instead of exam scores, students are primarily evaluated on capstone projects, design challenges, and research assignments that require them to innovate. For each module or unit, students might be tasked with designing a solution to a real-world problem. The evaluation criteria focus on indicators such as originality of the approach, effectiveness of the solution, teamwork, and communication (if it is a group project), and the iterative improvements made in response to testing or feedback.

Another pillar of the innovation-oriented assessment is competitive and collaborative evaluation. Students are encouraged to participate in specialized competitions as a means to benchmark their skills and get external feedback. For instance, the CYCORE initiative may culminate in a youth chip innovation contest where teams of students propose and prototype novel chip-related projects <sup>[6]</sup>.

## **5. Implementation and case analysis**

### **5.1. Overview of pilot teaching activities**

The CYCORE pilot curriculum was delivered as an extracurricular engineering course over a one-semester term to a cohort of high-school students. It comprised a sequence of 15 modules covering fundamental analog and digital electronics concepts. Each module combined a brief contextual lecture with a hands-on lab and a small design challenge. Students worked in teams of 3–4 to build and test actual electronic circuits (e.g., breadboard prototyping) and to write short reflection notes. Instructional scaffolds included guided worksheets and faculty/mentor support during open-ended lab time. In total, students completed a pre-course survey and a mid-course survey on attitudes and self-efficacy (the I/E/C/S questionnaire) and an end-of-course test on technical concepts.

The pilot used these activities to bridge abstract theory and concrete experience. For example, early modules introduced simple components (LEDs, resistors, switches) and later modules built on them (e.g., using transistors or logic gates). Modules were sequenced so that skills and knowledge accumulated, and each module culminated in a mini-project (such as generating an audible tone or implementing a logic function). CYCORE designed the lessons to mirror elements of the engineering design process (problem identification, prototyping, testing, iteration), reinforcing habits like systematic testing and design revision. The pilot courses were taught by trained instructors using consistent materials, and classroom observations and surveys were used to monitor student engagement throughout.

## 5.2. Representative lesson cases

The study highlights three illustrative modules from the 15-week sequence, chosen for their pedagogical roles in the curriculum.

**NE555 timer oscillator module:** In this lesson, students constructed a simple astable oscillator using the ubiquitous NE555 timer IC, a resistor, a capacitor, and a piezo buzzer. The instructor introduced the NE555 datasheet and timing equation briefly, then challenged each team to wire a stable tone generator circuit.

**Infrared transmitter/receiver module:** Students related the abstract idea of “wireless signaling” to tangible components and even had to ensure their circuits complied with the components’ orientation (polarity and wiring). The exercise illustrated error-handling (e.g., realizing the IR LED must be modulated to avoid ambient light interference) and creativity, as some students improvised by using cardboard to collimate the IR beam or by coding simple patterns of pulses for practice.

**Logic gate adder module:** In this digital-logic module, teams built a binary half-adder using basic logic gates (AND, XOR) on the simulation platform. The instructor first reviewed truth tables, then students were given integrated-circuit chips for XOR and AND gates. Each group was tasked to wire up the gates so that the inputs A and B yielded correct sum and carry outputs (testing all four input combinations). Students quickly saw how the sum (XOR output) and carry (AND output) together perform single-bit addition. As an extension, some groups were challenged to cascade two half-adders into a full adder.

## 5.3. Classroom observation and student engagement patterns

During the pilot implementation, classroom observations and informal interviews were used to gauge how students interacted with the materials and with each other. A consistent pattern emerged: students were generally highly engaged during the hands-on activities. For example, during the NE555 oscillator lab, many students moved dynamically around the bench, discussing resistor choices and audibly celebrating when their buzzer worked. Instructors noted that even initially reserved students became more active when circuits “lit up” or buzzed, often helping each other find loose wires. Similarly, in the IR module, students clustered around the phototransistor and LED to experiment with angles and obstructions. These anecdotes were backed by end-of-project feedback: students described the CYCORE projects as “interesting”, “challenging”, “engaging”, and “enjoyable”, reflecting the excitement observed in class.

## 6. Evaluation and discussion

### 6.1. Quantitative results

Interest (I): Pre-test mean  $\approx 3.9/5$ ; mid-test mean  $\approx 4.1/5$  ( $\Delta +0.2$ ).

Engagement/Confidence (E): Pre  $\approx 4.6/5$ ; mid  $\approx 4.3/5$  (both very high).

Creativity (C): Pre  $\approx 3.7/5$ ; mid  $\approx 3.8/5$  (both on positive side of scale).

Satisfaction (S): Mid-term mean  $\approx 4.7/5$  (strong agreement with enjoyment and appropriate challenge).

Knowledge (K): Final test and competition means  $\approx 0.85$  (85%) correct for pilot vs  $\approx 0.5$  for control (significant difference).

Additionally, at the end of the term, students participated in a culminating design contest comprising three problems aligned with the course content. Problem 1 focused on the CD4026 7-segment decoder/counter chip: each team had to implement a reset-enabled counting circuit so that each button press would advance the seven-segment display correctly and reset it when needed. Problem 2 involved an NE555 timer-based oscillator: students built a blinking circuit that caused alternating flashes (e.g., three red LEDs then three green LEDs) by tuning the timer and resistor network. Problem 3 was a composite multi-chip timing and logic design: using a provided rectangular-wave generator and a seven-segment decoder circuit (including a 4026 chip), along with basic logic gates, teams created a 0–60 decimal counter (resetting at 60) displayed on a pair of seven-segment LEDs. These tasks closely mirrored the hands-on and integrative nature of the curriculum and reflected project-based learning practice. In line with evidence that project contests bring out students' ability to apply theoretical knowledge, teams successfully tackled the problems using the circuitry and concepts taught in the course.

Students performed strongly on these end-of-course tasks. On concept-based exam questions related to the contest content, correctness rates were high, indicating solid understanding of the underlying principles. All teams were able to successfully simulate and construct the required circuits in the lab, and several students earned awards at city-level science and engineering competitions, demonstrating real-world rigor and creativity. Notably, the experimental (CYCORE) group outperformed a comparison group of peers on these assessments, reflecting the substantial conceptual understanding and practical skills developed by the curriculum.

## 6.2. Qualitative reflections

Teachers noted that students frequently “light up” when theoretical content comes to life. Instructors reported that even students who started out hesitant became fully involved by the middle of the course. One teacher commented, “When we first introduced the circuit kits, most kids were quiet. After a couple of weeks, they were the ones telling me how to fix a short or where to put a new resistor!”

Students' own feedback corroborated these observations. Post-project feedback surveys contained comments such as “I enjoyed building real circuits instead of just reading”, and “It was fun to fail and try again until it worked.” Several students explicitly appreciated the iterative aspect: one wrote, “I liked that I could change something and see a different result. It felt like I was a real engineer.” Such comments illustrate that the pilot course fostered the kind of iterative, problem-solving mindset that CYCORE targets. Observers also saw that students' questions became more sophisticated over time, from “Why doesn't the light turn on?” to “How can we make this blink faster?” This mirrors other studies of project-based classes, where students report gaining confidence in tackling technical challenges themselves.

## 6.3. Student engagement and learning outcomes

Interest and confidence (I/E): In the pre-course survey, interest items (I indicators) averaged around 4.0–4.4 on a 5-point scale (e.g., mean 4.4 on “I am curious about circuits and chip technology”). This high baseline suggests participants were already motivated. Importantly, this interest did not wane: at the mid-course point,



the corresponding curiosity item averaged about 4.3, and eagerness to pursue a related career remained high (around 4.0) (pre-mid).

Self-efficacy (E indicators) was similarly strong and showed positive signs. Pre-course, all students agreed they were confident doing a basic electronics lab (E01 mean = 5.0), and most knew how to seek help on circuit problems (E02 mean  $\approx$  4.2). By midcourse, communication and problem-solving confidence remained high: mean ratings on “I help peers with questions” and “I communicate well with team members” were about 4.2–4.3. Qualitatively, several comments reflect this confidence.

Creativity and innovation (C): The CYCORE program placed strong emphasis on fostering creative problem-solving, as seen in the C indicators (creativity- and perseverance-oriented questions). On the pre-course survey, students already showed reasonable creative attitudes: means on most C items were in the 3.4–4.4 range (e.g., 4.4 on willingness to try new approaches after failure, and 4.0 on reflecting on how to improve a project). These high scores for persistence suggest students were open to learning from mistakes – a positive starting point.

By mid-course, some creativity measures increased. For instance, the average for “I can quickly list many different ideas or plans on a topic” rose from about 3.4 to 3.7, and “I like to combine unrelated ideas into new ones” went from 3.1 to 3.6.

Open-ended feedback also pointed to successful learning. Importantly, none of the comments indicated a desire to abandon any part of the core content; instead, students asked for more of the hands-on and interactive approaches. This aligns with the high means on guidance and overall satisfaction (each 4.7/5) and reinforces the quantitative picture that the course was both challenging and rewarding.

Overall, the data show positive learning gains. Knowledge quiz scores suggest that key technical concepts were understood by most, and areas of confusion are clear targets for improvement.

## 7. Conclusion and suggestions

The CYCORE project demonstrates that a well-structured, hands-on STEM curriculum can significantly engage youth in semiconductor technology. The analysis of CYCORE’s Sections 4–6 reveals three key findings. First, the program’s curriculum strategies emphasize experiential learning and depth. Students progressed through tiered modules (from basic circuitry up to simple CPU design) using custom lab kits and cloud-based EDA tools, while also attending expert-led seminars and industry lab visits. Second, the implementation outcomes were positive: schools set up dedicated “chip labs” (with FPGA boards and EDA terminals), teachers received specialized training, and the program achieved high student engagement. In measurable terms, students’ hands-on performance improved markedly (92% of assigned experiments were successfully completed, and 85% met expected debugging proficiency). Students also achieved external validation: multiple participants won awards in regional electronic skills competitions and chip design contests. Third, the student learning gains included both knowledge and motivation. Participants reported a deeper understanding of semiconductor principles, and the opportunity to implement projects (infrared detectors, LED circuits, CPU adders, etc.) reinforced their skills. These gains are reflected in both the quantitative lab metrics and the qualitative success stories (e.g., students admitted to competitive “Future SciTech Star” programs).

In summary, the CYCORE project offers a replicable “chip education ecosystem” that spans K-12 schooling and links formal learning with competition and expert outreach. Its success highlights that early,



hands-on exposure to semiconductor technology, supported by policy and industry engagement, can build a much-needed talent pipeline. The study recommends expanding such programs across the country and formally recognizing them in education policy to inject new momentum into China's strategic chip talent reserve. The lessons from CYCORE can guide schools, governments, and companies worldwide in cultivating the next generation of chip designers and innovators.

## Disclosure statement

The author declares no conflict of interest.

## References

- [1] Deloitte, 2024, The Global Semiconductor Talent Shortage. Accessed on June 17, 2025. <https://www2.deloitte.com/us/en/pages/technology/articles/global-semiconductor-talent-shortage.html>
- [2] Aktamis H, Bulut Ates C, 2024, Investigating the Effects of Creative Educational Modules Blended with Cognitive Research Trust (CORT) Techniques and Problem-based Learning (PBL) on Students' Scientific Creativity Skills and Perceptions in Science Education. *Thinking Skills and Creativity*, 2024(51): 101471.
- [3] Liston M, 2023, STEM Education Outreach involving School-industry-university Partnerships for Scalable and Sustainable Impact. *Connected Science Learning*, 5(3): 11.
- [4] Miller K, Sonnert G, Sadler P, 2017, The Influence of Students' Participation in STEM Competitions on Their Interest in STEM Careers. *International Journal of Science Education, Part B*, 8(2): 95–114.
- [5] HireChina, 2025, The Global Semiconductor Talent Shortage. Accessed on June 17, 2025. <https://www.hiredchina.com/articles/semiconductor-talent-hunt-in-chinas-semiconductor-industry>
- [6] Smith J, 2025, Future insights on AI. *Journal of AI Research*, preprint.

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# Training Methods for Piano Performance Techniques and Their Application in Teaching

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**Abstract:** The piano is a multi-part instrument with a wide range of sounds and rich expressive power. It is suitable for solo accompaniment and has diverse playing techniques, which have strong emotional resonance and can inspire people. Therefore, the piano is known as the “king of instruments.” Piano performance, as an art that requires high skills, requires performers to undergo long-term and specialized training in order to reach a high level. To cultivate students’ performance skills in vocational colleges, teachers need to strengthen their skills training in basic practice, practical application, and understanding of piano works, explore effective paths for piano skill teaching, and consolidate students’ foundation to improve their performance level.

**Keywords:** Piano performance skills; Training methods; Application path; Teaching

**Online publication:** July 4, 2025

## 1. Introduction

The cultivation of piano playing skills can improve students’ performance level and have a positive impact on their emotional expression, mental health, and core literacy <sup>[1]</sup>. In practical teaching, due to students’ different learning abilities and foundations, systematic courses often lead to uneven learning quality and high learning pressure <sup>[2]</sup>. Based on this, teachers should strengthen the construction of basic skills teaching, conduct in-depth research on training methods and effective teaching strategies for piano performance skills, in order to meet students’ individual differences and personalized learning needs, and promote the improvement of students’ practical ability and performance level <sup>[3-4]</sup>.

## 2. Training methods for piano performance techniques

### 2.1. Basic exercises to solidify the foundation of performance

The fundamental practice of piano is an important path to solidify students’ playing foundation and exercise

their playing skills, including finger and wrist flexibility training, rhythm and strength training, etc. After a long period of connection, students' foundation will become solid, and they can perform at a higher level when playing. In the specific implementation process, teachers should develop detailed training plans based on students' specific situations, which should cover different stages of learning content and techniques to ensure that students can gradually master playing skills <sup>[5]</sup>. For example, the training of rhythm intensity can adopt a hierarchical practice method. The rhythm training of novice students focuses on mastering the beat, such as playing quarter notes, eighth notes, etc., and helps students establish a sense of rhythm through repeated practice. The training of finger wrist flexibility can be achieved through finger stretching exercises and key touch exercises, which greatly benefit students' finger flexibility and wrist arm coordination <sup>[6]</sup>. For example, using finger exercises and finger stretching as preparatory activities before playing the piano can maintain finger flexibility and enable students to quickly enter the state of playing the piano. The key to practicing key tapping is to keep the fingers relaxed and use the gravity generated by the natural fall of the arm to control the volume <sup>[7]</sup>. When the key tapping is slightly heavy, the music becomes stronger, and when the key tapping is light, the music volume decreases <sup>[8]</sup>. For long octaves, wrist skills and arm coordination are also required. Long-term stretching and key touching exercises can help students develop muscle memory, resulting in even intensity and powerful sound during performance. In addition, teachers should also include the training of reading ability in their plans. Reading score training involves music notation symbols, emoticons, and other content <sup>[9]</sup>. Teachers can provide students with more literature materials, and through the exploration and learning of these materials, help students feel the meaning of music during the reading process, so that they can fully express their thoughts and emotions during performance.

## **2.2. Practical application to enhance performance ability**

The ultimate goal of learning and training piano playing skills is to enable students to demonstrate their learning effectiveness through practice and express emotions in music through performance <sup>[10]</sup>. Therefore, teachers should focus on practical applications and organize practical activities to enable students to exercise their playing skills through hands-on practice. They should provide guidance from the perspectives of playing time, understanding rhythm and beat, body coordination, and breathing patterns to improve their playing level and ability. After students have mastered certain piano performance skills, teachers can choose suitable pieces and organize piano performance competitions in groups. Secondly, a systematic summary of the piano theory knowledge and performance skills learned should be conducted to provide students with relevant materials on the music. By explaining the cultural background, the creator's life, and other content, students can perceive the thoughts and emotions contained in the music. Then, targeted guidance should be provided to students to make them more proficient in applying the learned skills during collaborative practice. Finally, focus on practice, encourage innovation, fully tap into students' strengths and potential, and enable them to expand their thinking and further understand the knowledge they have learned through collaborative practice. Taking the "Moonlight Sonata" as an example, teachers carry out activities based on the characteristics of left-hand staccato and right-hand melody in the music. They include key touch, force control, and rhythm control in the activity evaluation, and practice these contents in a modular form. For example, students practice left-hand staccato separately and gradually add right-hand melody to promote the coordinated development of both hands; For strength control, one can start practicing with single or short notes, gradually transitioning to more complex long notes and even the entire musical phrase. By practicing part by part, students will become more proficient in mastering the

music and eventually play the emotionally rich and skillful “Moonlight Accompaniment”<sup>[11–12]</sup>.

### **2.3. Understand the artwork and experience its artistic charm**

Every piano piece has its own style and story, influenced by the creator’s personality and experiences, as well as the cultural background and social environment of the time<sup>[13]</sup>. Therefore, playing piano pieces requires not only professional skills and techniques but also the expression of emotions and thoughts contained in the music. This requires performers to possess more solid skills and broader humanistic literacy. While guiding students in piano performance skills, teachers should also popularize relevant cultural knowledge about the music, focus on cultivating students’ music analysis and appreciation abilities, continuously improve their artistic cultivation, strengthen their understanding of the emotions of the music, and deepen their mastery of performance techniques. This has a positive effect on integrating deeper emotions into performance practice, and over time, can stimulate and enhance students’ sense of music<sup>[14]</sup>. In this process, teachers should help students control the integration of technique application and emotion, analyze the emotional changes of the music in detail, and allow students to choose the most suitable technique based on emotional changes. Only when they are close to the creator’s mentality can the emotions of the music be perfectly expressed, and the application of techniques can be more proficient, thereby achieving continuous improvement in the performance effect.

## **3. Exploration path of piano teaching in vocational colleges**

### **3.1. Pay attention to teaching students according to their aptitude and promote their individual development**

Teaching students according to their aptitude is an effective method to stimulate their potential strengths and promote their individual development<sup>[15]</sup>. Teachers need to fully consider the characteristics of each student when planning teaching and provide targeted educational guidance based on their learning ability, cognitive level, personality traits, and other information to ensure that students’ technical skills, musical expression, innovative thinking, etc. are cultivated. For example, for students with low musical sense, teachers can provide them with more excellent piano works to enhance their emotional cognition of the music by repeatedly listening to piano pieces. When they perform again, they can find that their playing skills become more proficient and their musical sense is also improved<sup>[16]</sup>. For students with weak learning foundations, teachers can provide more explanations of skills and fundamental knowledge to help them lay a solid foundation. For students with strong foundations, teachers can encourage them to try playing more complex works and promote their strengths.

Piano playing techniques, such as hand techniques, scales, chords, etc., teachers should help students master the correct learning methods when implementing personalized teaching, so as to achieve twice the result with half the effort in learning techniques<sup>[16]</sup>. They can start with basic exercises and gradually transition to more complex music, and divide teaching from easy to difficult stages. In the primary stage, they practice basic music, allowing students to start learning from hand shapes, key touch methods, as well as simple scales, rhythms, and other content. The teachers implement teaching methods such as demonstration, “Belt and Road”, and group cooperation. When students establish their understanding of skills, teachers guide them to learn the skills and knowledge of the next stage. In this process, teachers also need to choose appropriate teaching methods for students to adapt to their differences and learning needs. For example, if students have problems such as their arms constantly swinging and the first joint of their fingers collapsing while playing, teachers should strengthen the training of “support” for their arms and fingers when guiding techniques. For example,

the fingers should be firmly held to avoid joint looseness and blurred sound. When playing continuous scales, attention should be paid to the speed and force of the fingers when pressing the keys evenly. For students who lack coherence in their playing skills, in the preparatory stage, they should pay attention to the coordination of their hands, fingers, and other body parts, and “go through” their skills as a whole in their minds, so that they can perform with ease in actual performance <sup>[17]</sup>.

### **3.2. Carry out artistic practice and enhance students’ learning experience**

In piano teaching, cultural and theoretical knowledge are the foundation for students to understand skills, and more importantly, the practical application of skills. Teachers should implement a teaching method that emphasizes both theory and practice, vigorously carry out artistic practice activities, and enable students to exercise and challenge their practical application, thereby strengthening their learning experience. For example, when conducting activities with the theme of “traditional festivals” and using skill application, emotional expression, and understanding of connotations as evaluation criteria, students need to deeply consider how to monetize the “joyful scenes of festivals” through music. Teachers can provide students with several songs related to festivals, allowing them to innovate, practice, and perform the songs in a personal or group collaborative manner. During this process, students will use their life experiences to gain a deeper understanding and decomposition of theoretical knowledge and skills, ultimately transforming them into a brand new song <sup>[18]</sup>. Through the full play of students’ autonomy and innovative thinking, more emotional music performances can be presented, which also promotes their creativity, practicality, and skill application.

In addition to learning and applying basic skills, students also need to master other techniques during performance, such as audience interaction, emotional contagion, and facial expression coordination <sup>[19]</sup>. It is necessary to allow the audience to capture their attention through the performer’s gaze and emotions, and feel the emotions in the music. This requires the performer to possess professional skills and rich emotions. Teachers should strengthen the training of students’ performance speed and melody control ability. They can use metronomes to stabilize rhythm, speed, and strengthen control over the strength of hand touch keys. This practical training can avoid repetitive and meaningless exercises, not only increase students’ practical experience, but also help improve their skills application ability and emotional expression. Students can also be led to participate in the planning of cultural performances and collaborate with other art students to create songs. This cooperative practical activity allows students to directly experience the joy of creation, and they can also learn more useful skills and experiences through sharing with other peers, which can effectively promote the development of students’ performance ability and creative thinking.

### **3.3. Design specialized training to help students adjust their mentality**

Whether listening to music or playing music, it can help people express their emotions, relieve stress, and play an important role in adjusting their psychological state. In the teaching of piano performance skills, teachers can conduct specialized training to help students master suitable psychological adjustment techniques through playing. Through focused training, students can be encouraged to concentrate and avoid distractions. For example, by designing goals, practicing repeatedly, creating a relaxed environment, and other methods of focused training, not only can external interference be reduced, but students can also become more self-disciplined. Grasp emotional changes. Not all music is positively meaningful, and many students may experience psychological and emotional effects due to excessive engagement during performance. Therefore,



before performing, students should fully understand the reading content and regulate their emotions through communication with others, deep breathing, self-motivation, and other methods. By communicating with the audience through eye contact and regulating breathing during performance, the influence of reading emotions can be reduced. This not only keeps one's mentality in a stable state, but also stimulates emotional resonance with the audience towards the music. Pay attention to teaching evaluation. Teachers should attach importance to the role of evaluation education, allowing students to further master playing skills while assisting their psychological health development. In the process of student learning and practice, specific content should be included when praising students, pointing out their progress and shortcomings, and providing targeted guidance and correction in a timely manner to enhance their confidence and participation. At the same time, it is necessary to help students understand skills through evaluation. For example, after practical assessment, if some students show slight deficiencies in rhythm control, teachers can provide targeted guidance to these students and improve teaching strategies to meet their diverse learning needs and enhance teaching quality.

#### **4. Conclusion**

In summary, the improvement of piano research skills in vocational colleges requires a foundation of flexible hand techniques, solid theoretical knowledge, and good practical abilities. Through reasonable training methods and long-term practice, the development of abilities can be achieved. Therefore, the teaching staff should strengthen the exploration of training methods for performance skills, continuously innovate piano teaching, optimize practical activities, build an efficient piano teaching classroom for students, guide students to engage in more in-depth learning, and thus improve their performance level.

#### **Disclosure statement**

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#### **References**

- [1] Cui JC, 2024, Enhancing Musical Expression and Solidifying Piano Performance Skills. *Charm Hunan*, 2024(6): 58–60.
- [2] Qin PZ, 2024, A Brief Discussion on Innovative Strategies for Piano Teaching Methods in Universities. *Journal of Luoyang Institute of Technology (Social Sciences Edition)*, 39(5): 93–96.
- [3] Gao M, 2024, Research on Innovative Ideas of Piano Art Education and Teaching Methods — Review of “Development and Teaching Research of Piano Art”. *People's Changjiang*, 55(9): 247–248.
- [4] Xiao GY, 2024, Research on Training Techniques for Rhythm and Intensity in Piano Performance. *Art Review*, 2024(23): 193–196.
- [5] Cheng C, 2024, The Application of Piano Performance Techniques in Music Teaching. *Journal of Hulunbuir College*, 2024(6): 111–113.
- [6] Wang J, 2024, Exploration of Teaching Reform in Modern Piano Performance and Accompaniment Techniques: A Review of “Practice and Innovation of Piano Performance and Accompaniment Techniques in Teaching”. *Chinese Journal of Education*, 2024(6): 140.
- [7] Li QJ, 2024, Exploration of Application Strategies of Experiential Teaching Method in Piano Teaching in Colleges

- and Universities. *Ethnic Music*, 2024(1): 82–85.
- [8] Dong KY, 2024, Cultivation and Practice of Piano Performance Techniques in Music Teaching: Taking “Moonlight Sonata” as an Example. *Qin Tong*, 2024(2): 12–14.
- [9] Zhang B, 2023, Analysis of Piano Teaching Strategies in Vocational Colleges Based on Core Competencies. *Drama Home*, 2023(35): 181–183.
- [10] Zeng LN, 2023, Analysis of the Role of Piano Performance Techniques in Emotional Expression in Music. *Drama House*, 2023(24): 69–71.
- [11] Cao KX, 2023, A Brief Discussion on Strategies for Improving Piano Performance Techniques. *Art Evaluation*, 2023(11): 113–117.
- [12] Park WK, 2022, The Role and Training Methods of Piano Performance Techniques in Music Performance. *Drama House*, 2022(5): 67–68 + 145.
- [13] Cao M, 2022, Exploration of the Law of Performance Breathing in Piano Teaching in Colleges and Universities. *Cultural Industry*, 2022(3): 151–153.
- [14] E ZGS, 2022, Exploration of Precautions for Piano Beginners in Performance Techniques. *Daguan (Forum)*, 2022(1): 39–41.
- [15] Chen YQ, 2021, Performance Techniques and Practice in Piano Teaching in Vocational Colleges: A Review of “Concepts and Practices of Piano Education and Teaching”. *Journal of Tropical Crops*, 42(8): 2440.
- [16] Fang YH, Leng J, 2021, Research on Strategies for Cultivating Students’ Psychological Quality in Piano Performance Teaching. *Art Evaluation*, 2021(11): 163–165 + 172.
- [17] Shen YG, 2020, Research on Key Touch Techniques in Piano Performance and Teaching. *Northern Music*, 2020(10): 66–67.
- [18] Li BW, 2019, The Important Role of Piano Performance Skills in the Expression of Musical Sense and its Practical Application in Teaching. *Northern Music*, 39(14): 212–220.
- [19] Guan BY, 2019, Exploration of Performance Techniques Teaching in Vocational Piano Courses. *Northern Music*, 39(9): 178–183.
- [20] Zhang J, 2021, Construction and Reflection on Innovative Models of Piano Teaching. *Art Evaluation*, 2021(4): 133–135.

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# Construction of Evaluation Index System for International Exchange and Cooperation in Higher Education Institutions

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**Abstract:** The Ministry of Education and seven other departments issued the Opinions on Accelerating and Expanding the Opening-Up of Education in the New Era in 2020, laying out new directives for China's educational internationalization strategy. The policy reaffirmed the country's commitment to cultivating talent for modernization through study abroad and other international cooperation channels. This paper mainly explores the construction of an evaluation index system for international exchange and cooperation in higher education institutions. Developing a scientific and effective evaluation index system requires not only clarity of goals and functions but also a logically coherent, rigorous, and practically viable framework, which is based on four fundamental principles, including the goal orientation principle, systematicity principle, operability principle, and the dynamic adjustment principle.

**Keywords:** International exchange; Evaluation index system; Index system

**Online publication:** July 4, 2025

## 1. Introduction

As China's higher education system increasingly steps onto the global stage, international exchange and cooperation have transitioned from being ancillary activities to core components that enhance institutional quality, bolster global influence, and serve national strategies. Against the backdrop of initiatives such as the "Double First-Class" construction, the "Education Power" strategy, and the deepening of the Belt and Road Initiative, there is an urgent requirement for education administrators to scientifically evaluate the quality and effectiveness of international exchange and cooperation in universities. However, many Chinese universities currently face challenges such as unscientific indicator systems, weak operability, and vague strategic orientation in performance evaluation.

In 2017, the Central Committee of the Communist Party of China and the State Council released the Opinions on Strengthening and Improving Ideological and Political Work in Higher Education Institutions

under the New Circumstances, clearly identifying international exchange and cooperation as one of the five core functions of universities. It emphasized that universities shoulder important missions such as talent cultivation, scientific research, social service, cultural inheritance and innovation, and international exchange and cooperation. The participation of universities in international exchange and cooperation reflects the global trend of educational internationalization, promoting mutual recognition, exchange opportunities, and shared achievements. It has become both a strategic necessity and a benchmark for evaluating university performance in China, especially within the framework of “Double First-Class” universities and first-class curriculum construction. In 2020, the Ministry of Education and seven other departments issued the Opinions on Accelerating and Expanding the Opening-Up of Education in the New Era, laying out new directives for China’s educational internationalization strategy. The policy reaffirmed the country’s commitment to cultivating talent for modernization through study abroad and other international cooperation channels <sup>[1]</sup>. This paper explores the design of such an index system based on four fundamental principles, including the goal orientation principle, systematicity principle, operability principle, and the dynamic adjustment principle.

## **2. Fundamental principles for constructing the evaluation index system**

Developing a scientific and effective evaluation index system requires not only clarity of goals and functions but also a logically coherent, rigorous, and practically viable framework. Given that China’s higher education internationalization is now entering a stage of high-quality development, this paper proposes the following four core principles, which both reflect international evaluation norms and align with the practical realities of China’s universities. These principles emphasize both national strategy and institutional differentiation.

### **2.1. Goal-oriented principle**

The starting point of any evaluation system is to answer the question “Why evaluate?” Indicators should not be a mere checklist of data points but should serve developmental goals. For applied universities in China, international exchange and cooperation are essential means to “serve national strategies, engage in global governance, and promote educational modernization.” Thus, the index system must be aligned with clear strategic goals and closely integrated with the universities’ internationalization vision. Specifically, goal orientation can be reflected in three areas.

**Alignment with national strategies:** Universities should contribute to strategic frameworks such as the Belt and Road Initiative, China-ASEAN education cooperation mechanisms, and the Global Development Initiative. Indicators could include the proportion of students from BRI countries or the number of collaborative institutions established with key countries.

**Support for Double First-Class construction:** Internationalization is an integral part of building world-class disciplines and universities. Evaluation should focus on contributions to academic construction, research outputs, and global reputation, such as the proportion of internationally co-authored papers, foreign scholar participation, and effectiveness of transnational labs.

**Guiding talent cultivation transformation:** In the context of globalization and digitalization, international competence has become a fundamental trait. Indicators should assess efforts to foster students with international vision, cross-cultural skills, and global responsibility, e.g., coverage of bilingual courses, international internships, exchange rates, and global issue research projects.

The core of the goal-oriented principle lies in establishing a logical loop from national strategies to institutional planning, specific projects, and evaluation indicators, ensuring both detailed visibility and macro-level alignment.

## **2.2. Systematicity principle**

Evaluation systems must adopt a holistic and systemic logic. International exchange and cooperation are complex, involving multiple levels, stakeholders, and channels, and encompassing organizational mechanisms, resource allocation, project execution, and outcomes. The system should:

Cover all stages (“input–process–output–impact”), e.g., inputs like funding and personnel; processes like project efficiency; outputs like number and quality of results; impacts like global reputation and alumni networks.

Be structured hierarchically with primary, secondary, and tertiary indicators, e.g., “international scientific collaboration” as a primary indicator can include “co-authored papers,” “collaborative funding,” and “joint project success rates.”

Integrate horizontally and vertically by breaking down traditional administrative or disciplinary silos, linking data from international offices, academic affairs, and graduate schools.

Allow redundancy and error tolerance by incorporating flexible thresholds and redundancy mechanisms to avoid rigid, one-size-fits-all standards that may create negative incentives.

A systemic design ensures that the index system reflects the real structure and operational logic of internationalization in universities and provides solid support for managerial decision-making.

## **2.3. Dynamic adjustment principle**

The external environment for international exchange and cooperation in higher education is not static; it is influenced by a range of factors, including international political relations, pandemic developments, technological revolutions, and policy shifts. If the evaluation indicator system lacks the ability to dynamically adjust, it risks falling into the traps of “indicator rigidity” or even “indicator failure.” The principle of dynamic adjustment emphasizes the following.

### **2.3.1. Mechanism for regular review and revision**

A system should be established to review and update the indicator framework every 3 to 5 years, adjusting indicator content and weightings in a timely manner based on national policy directions and trends in international education. For example, in the post-pandemic era, the increasing prevalence of online international education and virtual exchange programs should be promptly incorporated into indicators related to the “diversity of international cooperation formats.”

### **2.3.2. Support for institution-specific adjustments based on positioning**

For universities at different stages of development or with varying internationalization priorities, the indicator system should allow for the addition of “customized indicators” within a general framework. For instance, coastal universities with an open orientation may strengthen indicators evaluating cross-border education and overseas campuses, while universities in ethnic minority regions may enhance metrics focused on cooperation with neighboring countries.



### 2.3.3. Mechanism for responding to external uncertainty indicators

For example, geopolitical tensions may force universities to terminate certain international partnerships. The indicator system should include a metric such as “capacity to respond to international policy risks” to assess the efficiency, contingency planning, and resource reallocation abilities of universities in response to unexpected developments.

### 2.3.4. Forward-looking adjustments based on big data and trend prediction

By utilizing emerging tools such as artificial intelligence and big data trend analysis, institutions can monitor shifts in the landscape of international cooperation in real time—such as hotspots in global talent mobility or the distribution of emerging research topics—and accordingly adjust their future cooperation strategies and indicator designs.

By establishing a “living indicator system,” universities can deeply integrate evaluation efforts into their strategic management processes, ensuring that the system not only reflects current performance but also guides future development.

## 2.4. Chinese characteristics principle

Although international cooperation generally follows global norms, China’s education system has unique characteristics. Therefore, index construction should prioritize localization and cultural confidence. This principle can manifest in the following.

Policy guidance alignment: Reflecting the “Four Services” (serve development, the people, technological progress, and society), e.g., evaluating participation in foreign aid education or support for western regions.

Cultural dissemination: As higher education is also a vehicle for Chinese culture, indicators may include the frequency of Chinese cultural events, achievements in Confucius Institute construction, or the number of Chinese language teachers dispatched abroad.

Rule-making participation: Moving from “participation” to “leadership”, e.g., involvement in setting international standards, leading academic organizations, or initiating global research projects.

By emphasizing this principle, the index system not only helps universities improve but also showcases the strengths and values of China’s higher education model.

## 3. Framework for constructing the evaluation index system

### 3.1. Basic capacity for international cooperation

This dimension primarily evaluates the institutional mechanisms, resource conditions, and strategic layout that a university possesses prior to engaging in international exchange and cooperation activities (**Table 1**)<sup>[7]</sup>.

**Table 1.** Basic capacity for international cooperation

Indicator	Description
Internationalization Strategy and planning	Reflects the university’s ability to systematically plan and structure international cooperation
Resource allocation	Indicates the level of investment and organizational support for international initiatives
Faculty international background	Demonstrates the international competence and foundational capacity of the teaching faculty

### 3.2. Organization and operation of cooperation projects

This dimension evaluates a university's capacity to organize and implement international projects, including its management mechanisms and operational efficiency (Table 2).

**Table 2.** Organization and operation of cooperation projects

Indicator	Description
Types and structure of projects	Assesses whether cooperation forms are diversified and whether a robust collaboration network exists
Management mechanisms	Determines the university's institutional capacity for managing international cooperation projects
Execution efficiency	Data can be sourced from finance and administrative information systems

### 3.3. Outputs and quality of cooperation

This dimension focuses on the substantive outcomes generated from cooperation and serves as the core of the evaluation system (Table 3).

**Table 3.** Outputs and quality of cooperation

Indicator	Description
Academic achievements	Quantitative academic contribution indicators, with emphasis on quality over quantity
Educational outcomes	Can be jointly monitored with the academic affairs and career services departments
Research collaboration	Includes projects jointly applied for with foreign universities, enterprises, and institutions

### 3.4. International influence and reputation

This dimension highlights the university's "visibility" and "voice" within the global higher education system (Table 4).

**Table 4.** International influence and reputation

Indicator	Description
International rankings and citations	Relatively authoritative, but should be interpreted with awareness of inherent biases
Participation in international organizations	Reflects the university's capacity to evolve from participant to leader on the global stage
International alumni network	Reflects the university's soft power and international cultural recognition to some extent

### 3.5. Cultural communication and institutional adaptability

This dimension emphasizes the principle of Chinese characteristics, assessing efforts in promoting Chinese culture and aligning with international standards (Table 5).

**Table 5.** Cultural communication and institutional adaptability

Indicator	Description
Chinese cultural influence	Data can be collected in collaboration with the China Center for People-to-People Exchanges, Ministry of Education
Rule integration capacity	For example, AACSB, ABET, EQUIS, and other global accreditations
Institutional adaptation and reform	Indicates the university's internal institutional capacity for adaptation and reform

## **4. Implementation recommendations for the evaluation index system**

### **4.1. Enhancing adaptability and precision**

The evaluation system should be adapted based on the type of institution (research-oriented, application-oriented, or regional universities) and their stage of development. Under a general framework, a classified set of indicators should be constructed, allowing universities to adjust indicator weights and specific criteria autonomously, so long as core standards are upheld. For example, regional universities may emphasize indicators related to regional cooperation and localized characteristics, whereas research-oriented universities may focus on research output and global impact <sup>[3]</sup>.

### **4.2. Promoting digital collection and dynamic evaluation**

It is recommended that education authorities take the lead in developing a unified national data collection and analysis platform for international exchange and cooperation in higher education. The platform should automatically generate visualized reports based on institutional data submissions and be integrated with policy tools such as the “Double First-Class” performance evaluation system. Meanwhile, institutions themselves should build horizontal data coordination mechanisms internally to break data silos among departments such as the Office of International Affairs, the Research Office, and the Academic Affairs Office <sup>[6]</sup>.

### **4.3. Linking evaluation to development**

Evaluation results should be linked with the allocation of resources for internationalization policies, such as the distribution of dedicated funds for international programs, authorization for pilot international projects, and candidate recommendations for international organizations. Moreover, universities should be encouraged to conduct diagnostics and capacity building based on evaluation outcomes, facilitating a genuine shift from “evaluation” to “improvement” <sup>[5]</sup>.

## **5. Conclusion**

International exchange and cooperation in higher education have become a key hallmark of China’s educational openness to the world. The quality of its development directly impacts the nation’s educational soft power and global influence. Based on the “Five Fundamental Principles for the Evaluation System of International Exchange and Cooperation,” this paper proposes specific design recommendations for the indicator system and provides suggestions for its practical implementation.

This system not only reflects universal trends in internationalization development but also integrates the distinctive characteristics of China’s education system and cultural mission, thus offering strong operational and policy-oriented value. Moving forward, it is crucial to strengthen follow-up research on the practical application of this evaluation system. Through case studies and empirical data, the indicator system can be further optimized, providing a more practice-driven theoretical framework for evaluating the quality of internationalization in Chinese universities.

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## References

- [1] Liang YQ, 2021, Strategies for Internationalization of Engineering Education and Curriculum. *Heilongjiang Education (Higher Education Research and Evaluation)*, 2021(10): 56–59.
- [2] Chen J, Zhang H, 2024, Construction and Empirical Study of Evaluation Index System for International Exchange and Cooperation in Secondary Colleges of Universities. *Journal of Nanjing University of Science and Technology (Social Science Edition)*, 2024(6): 3842.
- [3] Huang T, Xiao L, 2022, Research on the Construction of an Evaluation Index System for the Internationalization of Higher Education in China in the New Era. *Higher Education Management*, 2022(6): 92–96.
- [4] Duan SF, Kang YF, 2021, International Experience in Constructing Evaluation Systems for University Internationalization: From the Perspective of Five Assessment Tools and Six Dimensions. *Science and Technology in Chinese Universities*, 2021(5): 85–89.
- [5] Sun YX, 2021, Key Dimensions for Improving the Quality Evaluation of University Internationalization. *Shanghai Education Evaluation Research*, 2021(1): 86–89.
- [6] Nong CS, 2021, Construction of University Internationalization Evaluation Index System. *Heilongjiang Higher Education Research*, 2021(2): 46–49.
- [7] Liu Y, Li N, 2020, Judging the Evaluation Index System for Higher Education Internationalization: A Comparative Study of Nine Evaluation Frameworks. *Heilongjiang Higher Education Research*, 2020(8): 45–47.
- [8] Wen W, Cui YN, 2020, Perception, Implementation, and Evaluation of Internationalization in Chinese Universities under New Globalization. *Higher Education Research*, 2020(7): 78–81.

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# Research on the Development Path of Industry Education Integration in Vocational Colleges under the Background of Digital Economy

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**Abstract:** In the context of the booming digital economy, integrating industry and education in vocational colleges is crucial for cultivating high-quality technical talent. Currently, there are issues with the collaboration between vocational colleges and enterprises, including outdated collaboration mechanisms, insufficient faculty, and a lack of practical training resources. Three typical models have emerged in practice: the order-based talent co-education model, which customizes training plans through school-enterprise agreements to achieve precise employment; the co-construction model of industrial colleges, which integrates school-enterprise resources and deepens technology research and development and talent cultivation through “dual-subject” management; and the co-construction model of virtual simulation training bases, which relies on digital technology to solve high-cost, high-risk training problems. These models provide feasible paths for vocational education to meet industry demands and promote the deep integration of industry and education.

**Keywords:** Digital economy; Vocational colleges; Integration of industry and education; Digital transformation

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## 1. Introduction

The digital economy has become the core force driving industrial transformation and economic growth due to the deep integration of digital technologies such as big data, artificial intelligence, and blockchain. According to the White Paper on the Development of China’s Digital Economy, China’s digital economy continues to grow as a percentage of its GDP, and the acceleration of industrial digital transformation has created an urgent demand for versatile technical talent <sup>[1]</sup>. In this context, vocational colleges, which play a key role in cultivating high-quality applied talent, have identified the development of an innovative industry-education integration model as a critical strategy to meet industrial demands and support regional economies. However, practical difficulties



remain in integrating industry and education in vocational colleges <sup>[2]</sup>. These include insufficient depth of school-enterprise collaboration, a curriculum system lagging behind technological iteration, and a lack of digital training resources <sup>[3]</sup>. These issues make it difficult to meet the new digital economy's requirements for talent's knowledge structure and practical ability. Therefore, exploring innovative development paths for the integration of industry and education in vocational colleges in the context of the digital economy is an inherent requirement for the high-quality development of vocational education and an important means of promoting industrial upgrading and economic transformation <sup>[4-5]</sup>. This article provides theoretical references and practical solutions for the digital transformation of vocational colleges' industry-education integration based on a situation analysis and practical cases.

## **2. Practice model of school enterprise cooperation in vocational colleges**

### **2.1. Order-based talent co-education model**

Vocational colleges sign talent training agreements with enterprises and customize training plans based on their job requirements. These plans integrate corporate culture, technical standards, and job skills into the curriculum. Enterprises are deeply involved in the teaching process. They select technical experts to serve as part-time teachers, provide internship positions, and conduct pre-job training. For instance, a vocational college may collaborate with an internet enterprise to establish an "e-commerce operations" class. In this class, students complete real projects for the enterprise while studying, and they can then enter corresponding positions at the enterprise after graduation. This approach precisely aligns recruitment with employment.

### **2.2. Co-construction model of industrial colleges**

Leading enterprises and colleges in the industry jointly establish industrial colleges, integrating resources in terms of faculty, technology, equipment, and other aspects. The industrial college adopts a "dual subject" management model, jointly developing courses, building training bases, and conducting technological research and development. For instance, a vocational school and a digital technology enterprise can establish an "Artificial Intelligence Industry College", incorporating cutting-edge technological standards from the enterprise and building a joint laboratory. Students can master skills such as AI algorithm application and data modeling through real project practice, forming an "industry education integration ecosystem" based on "learning by doing."

### **2.3. Co-construction mode of virtual simulation training base**

In response to the high cost and risk of training in the digital economy field, schools and enterprises are building a virtual simulation training base together. Enterprises provide virtual simulation technology and real industry data, while universities design and implement teaching scenarios. In the field of intelligent manufacturing, for example, virtual simulation technology is used to simulate the operation of intelligent production lines. Students can perform equipment debugging, troubleshooting, and other operations in a virtual environment. This effectively solves problems such as insufficient training equipment and high operational risks while enhancing the authenticity and safety of practical teaching.

These three models of school-enterprise cooperation have different focuses and complement each other. The order-based talent co-education model is employment-oriented and achieves precise talent delivery, but it lacks flexibility. The co-construction model of industrial colleges integrates the advantageous resources of

schools and enterprises. This model is conducive to in-depth technology research, development, and talent cultivation. However, the construction cost is high, and the cycle is long. The co-construction model of virtual simulation training bases focuses on practical teaching pain points. It breaks through equipment and safety limitations. However, it relies on technological investment and data updates. Together, the three parties promote the integration of industry and education in vocational colleges, evolving from shallow cooperation to deep collaboration and providing multiple paths for vocational education to meet the needs of the digital economy. In the future, researchers can explore the advantages of integrating these models to build a more efficient school-enterprise cooperation ecosystem.

### **3. New challenges faced by the integration of industry and education in vocational colleges**

#### **3.1. The collaborative innovation mechanism between schools and enterprises lags behind the digital transformation of industries**

In the context of the digital economy, the technological iteration cycle has shortened significantly, and the demand for industrial positions has become more dynamic and complex. However, the current collaboration model between vocational colleges and enterprises is still mostly traditional, based on shallow cooperation such as internship dispatch and order training <sup>[6]</sup>. This model lacks a dynamic adjustment mechanism based on industry demand. Significant misalignment exists between schools and enterprises in terms of talent cultivation standards, curriculum development, and teaching resource management, resulting in an imbalance between talent supply and industry demand. This makes it difficult for graduates to meet the demand for immediately usable talent in the digital economy, as they need to go through a long period of job adaptation.

#### **3.2. The construction of the “dual teacher” teaching staff is disconnected from the development of digital technology**

The new technologies and formats generated by the digital economy require vocational education teachers to possess a combination of theoretical knowledge and practical skills, as well as teaching and technology expertise <sup>[7]</sup>. However, current vocational college teaching staff generally have weak practical abilities. They mainly focus on theoretical teaching and scientific research within the school and lack practical experience in the digital economy industry. Therefore, it is difficult to deeply integrate cutting-edge technologies, such as big data analysis and artificial intelligence applications, into curriculum design and teaching implementation. This ability gap has led to a tendency to emphasize conceptual explanations while neglecting practical training in industry-education integration courses, which seriously restricts students' ability to cultivate digital skills.

#### **3.3. There are institutional barriers to the co-construction and sharing of digital training resources**

Practical teaching in the field of the digital economy relies heavily on intelligent training platforms, such as virtual simulations and digital twins <sup>[8]</sup>. However, constructing such resources presents challenges, including high costs, risks, and technological barriers. In school-enterprise cooperation, both parties often have difficulty reaching a consensus due to institutional conflicts regarding data ownership, intellectual property rights, and the division of operational and maintenance responsibilities. However, due to the lack of unified resource-sharing standards and incentive mechanisms among colleges and universities, repeated construction and idle resources

frequently occur, and an intensive, regional training resource ecosystem has not formed. This significantly reduces the overall effectiveness of practical teaching in industry-education integration.

## **4. The practical path of empowering vocational colleges with the integration of industry and education through the digital economy**

### **4.1. Building a dynamic school enterprise collaboration mechanism**

Researchers rely on digital technology to build a platform for school-enterprise collaboration, utilize big data to analyze industry position demand, and establish a rapid response mechanism for “demand forecasting, course adjustment, and talent cultivation.” For example, AI algorithms can be used to mine industry recruitment information and enterprise development plans to predict job skill requirements in advance. Jointly developing modular courses between schools and enterprises allows real enterprise projects to be broken down into teaching cases and embedded into the curriculum system. Virtual simulation technology can also be used to build a remote collaboration space between schools and enterprises, breaking geographical limitations and enabling enterprise engineers and university teachers to jointly guide practical teaching. A vocational college that cooperates with an e-commerce enterprise can use the platform to obtain real-time information on changes in job demand, such as live-streaming sales and data analysis. The college can then dynamically adjust course content and introduce enterprise live-streaming projects into the classroom. This will continuously shorten the talent training cycle and significantly improve the degree of matching with industry demand.

### **4.2. Building a digital “dual teacher” teaching staff**

Create a two-way mobility mechanism for school-enterprise teachers. Encourage teachers to regularly participate in digital technology projects in enterprises. Support enterprise technical experts to participate in curriculum development and teaching as part-time faculty. Colleges can establish “Teacher Enterprise Practice Bases” with enterprises. Teachers must complete at least two months of enterprise practice each academic year to master applying digital technology in practical scenarios. Concurrently, schools will introduce digital technology training resources and organize specialized training for teachers on artificial intelligence applications, big data analysis, and other relevant topics. For example, schools will offer certification courses, such as Huawei Cloud Certification and Python Data Processing, through online course platforms. Additionally, schools will promote normalized communication between teachers and industry experts by utilizing virtual teaching and research communities. This will include regularly conducting “digital technology teaching workshops” and inviting enterprise engineers and teachers to discuss teaching cases. These workshops will enhance the digital technology application and teaching transformation capabilities of the teaching staff.

### **4.3. Promote the digital reconstruction of the curriculum system**

Guided by the demands of the digital economy, reconstruct the curriculum system of vocational colleges and add emerging course modules, such as the basics of artificial intelligence and data visualization analysis. For instance, traditional computer science programming courses will be upgraded to an integrated “Python + Big Data Analysis” course, which will use real enterprise datasets for instruction. At the same time, develop blended online and offline teaching resources and utilize virtual reality (VR) and augmented reality (AR) technologies to create virtual simulation training courses that simulate real work scenarios. For instance, if the logistics management major incorporates VR technology, students can operate automated sorting equipment

and plan logistics routes in a virtual environment. Additionally, blockchain technology can be used to trace and authenticate learning outcomes and to store students' course assignments and project results on the chain for verification. Enterprises can view students' ability data in real time, enhancing the adaptability of course content to industry practice.

#### **4.4. Co-construction and sharing of digital training resources**

The joint construction of regional digital training bases by schools and enterprises adopts a cooperation model of “enterprises investing in technology and universities providing venues.” This model integrates training platforms such as virtual simulation and digital twins. In the field of intelligent manufacturing, for example, enterprises provide industrial robot digital twin systems, and universities develop teaching modules based on these systems. Students can program devices, diagnose faults, and perform other operations in a virtual environment. At the same time, a unified data standard and resource-sharing agreement are established, achieving cross-school and cross-regional open sharing of training resources through cloud platforms. Several vocational colleges in the Yangtze River Delta region have partnered with businesses to create a “digital economy training cloud platform”, which integrates virtual simulation training resources, such as e-commerce operations and artificial intelligence development. Colleges can access these resources as needed. Additionally, real project data from enterprises is introduced as training materials, and step-by-step practical tasks are set up to gradually improve students' ability to solve practical problems, from basic simulation operations to complex project development.

#### **4.5. Improve the evaluation system for the integration of the digital industry and education**

Using big data and artificial intelligence technology, construct a digital evaluation model covering multiple dimensions, such as the teaching process, practical results, and employment quality. Monitor students' learning dynamics through a learning behavior analysis system that records their online learning duration, classroom interaction data, and project completion status to create personalized learning profiles. Use feedback data from enterprises to evaluate the effectiveness of talent cultivation. For example, collect evaluations from enterprises on the job competence and skill mastery of graduates. Establish a dynamic early warning mechanism for the quality of industry education integration. When an evaluation indicator falls below the threshold, the system will automatically issue a warning, prompting colleges to adjust their training plans and optimize the allocation of teaching resources based on the evaluation results. For example, after evaluating the data analysis ability of its students, a university found that the compliance rate was low. The university then increased the relevant course hours and introduced enterprise data analysts to carry out special training, forming a virtuous cycle of “evaluation—feedback—improvement.”

### **5. Conclusion**

In the digital economy, integrating industry and education in vocational colleges is an opportunity and a challenge. The practical approach involving a collaborative mechanism, teacher development, and an evaluation system provides direction for solving existing problems. In the future, digital technology must be used to promote deep collaboration between schools and enterprises and the efficient integration of resources to truly make vocational education a bridge connecting the digital economy and talent supply. Through continuous

exploration and practice, educators aim to align vocational education with the digital economy, providing strong momentum for industrial upgrading and social development.

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## References

- [1] Yu QM, 2025, Research on the Mechanism of Digitalization Empowering High Quality Development of Vocational Education. *Continuing Education Research*, 2025(7): 51–58.
- [2] Zong GJ, Yu XW, Yu BC, 2025, The Connotation Construction of Modern Industrial Colleges in Vocational Undergraduate Schools under the Background of Industry Education Integration. *Modern Vocational Education*, 2025(16):17–20.
- [3] Qing ZY, 2025, The Practical Logic of Accelerating the Construction of a Modern Vocational Education System that Integrates Industry and Education. *Vocational and Technical Education*, 46(16): 1
- [4] Huang JH, 2025, Talent Cultivation and Construction of “Exhibition Design Practice” Based on the Integration of School Enterprise Cooperation, Industry, and Education. *High Tech and Industrialization*, 31(5): 95–97
- [5] Chen XY, Li J, Ye SQ, et al., 2025, Exploration and Innovation of the “Double Innovation” E-commerce Live Streaming Talent Training Model under the Background of Industry Education Integration. *Modern Business and Industry*, 2025(13): 49–51.
- [6] Zhao HB, 2025, Digital Empowerment of Industry Education Integration: Significance, Implementation Forms, and Challenges. *Science, Education, and Culture*, 2025(10): 7–11.
- [7] Siliņa Jasjukevici G, Lusena Ezera I, Ilisko D, et al., 2025, Promoting Effective Vocational Education and Training Teacher’s Professional Development and Its Transfer to Practice: A Systematic Review. *Education Sciences*, 15(5): 596.
- [8] Larue Keeley K, 2025, *Innovative Approaches in Vocational and Regional Education*. IGI Global, Pennsylvania.

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# Study on the Evaluation of Language Courses in Kindergartens Based on AHP and Fuzzy Optimal Observation Model

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**Abstract:** This study indicatively integrates the Analytic Hierarchy Process (AHP) and Fuzzy Comprehensive Evaluation (FCE) model to systematically evaluate language courses in kindergartens, addressing the subjective ambiguity and multidimensional weighting challenges inherent in early childhood education assessment. Through a rigorously validated indicator system and empirical data from 30 classrooms, results demonstrate that language courses significantly enhance vocabulary understanding (C11: 85.2) and oral fluency (C21: 89.5), yet reveal critical gaps in logical expression (C42: 62.3). The proposed model achieves 92% consistency with expert validation, offering educators a quantifiable tool for curriculum optimization.

**Keywords:** Kindergarten education; Language course evaluation; Analytic Hierarchy Process (AHP); Fuzzy Comprehensive Evaluation; Early childhood cognitive development

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## 1. Introduction

Preschoolers experience heightened sensitivity during language development, benefiting maximally from structured linguistic interventions. Tailored language courses accelerate linguistic progress through rich input and meaningful interaction <sup>[1]</sup>. Recent research increasingly focuses on evaluating early childhood language curricula using advanced methodologies <sup>[2]</sup>. This study integrates a fuzzy optimal observation model with the Analytic Hierarchy Process (AHP) to evaluate kindergarten language courses, providing a quantitative assessment for optimizing instructional effectiveness.

## 2. Problem statement

The evaluation of language courses in kindergartens faces significant challenges due to the inherent complexity

and subjectivity of measuring early childhood language development. Traditional evaluation methods, such as teacher observations or standardized tests, often fail to account for the following critical issues:

Q1: How does the integration of the Analytic Hierarchy Process (AHP) and fuzzy optimal observation model resolve the subjectivity and multidimensional weighting challenges in evaluating kindergarten language courses?

Q2: What gaps in curriculum design and pedagogical practices are revealed by the AHP-fuzzy model, particularly regarding the alignment with children’s developmental needs in language and cognition?

### 3. Literature review

Current evaluations of kindergarten language courses suffer from three limitations: Reductionist methods relying on isolated skill assessments (e.g., vocabulary drills) that overlook multidimensional language interactions <sup>[2]</sup>; Subjective weighting failing to prioritize core competencies (e.g., comprehension vs. grammar) <sup>[3]</sup>; and qualitative-quantitative dividescausing inconsistent ratings of identical performances <sup>[4]</sup>. To resolve this, recent studies demonstrate Analytic Hierarchy Process (AHP) effectively weights competencies through pairwise comparisons, while fuzzy models transform subjective ratings (e.g., “excellent fluency”) into quantifiable data <sup>[5–6]</sup>. This study integrates both approaches to establish an evaluation system where high weights for comprehension (0.40) and oral fluency (0.70) reflect neurocognitive language acquisition milestones, addressing gaps identified in early childhood pedagogical research <sup>[7–8]</sup>.

## 4. Integrated evaluation methodology

### 4.1. Analytic Hierarchy Process (AHP)

The AHP method involved three steps: In constructing the hierarchy, primary indicators (e.g., language comprehension) and secondary indicators (e.g., vocabulary comprehension) were identified based on the literature review and expert consensus. Five experts compared the relative importance of these indicators using Saaty’s 1–9 scale (**Table 1**). Consistency ratios (CRs) were calculated for each judgment matrix using Yaahp v12.0 software, and all CR values were below 0.10, which met Saaty’s reliability threshold.

**Table 1.** Expert pairwise comparison matrix for primary indicators (C1–C4)

Compared indicators	Language comprehension (C1)	Language expression (C2)	Language communication (C3)	Comprehensive cognition (C4)
Language comprehension (C1)	1 (Equal)	2 (C1 > C2)	3 (C1 > C3)	4 (C1 > C4)
Language expression (C2)	1/2 (C2 < C1)	1 (Equal)	3 (C2 > C3)	3 (C2 > C4)
Language communication (C3)	1/3 (C3 < C1)	1/3 (C3 < C2)	1 (Equal)	2 (C3 > C4)
Comprehensive cognition (C4)	1/4 (C4 < C1)	1/3 (C4 < C2)	1/2 (C4 < C3)	1 (Equal)

As shown in **Table 1**, the numbers indicate relative importance (e.g., “3” means that the row indicator is 3 times more important than the column indicator). The matrix passed Saaty’s consistency check (CR = 0.08 < 0.10) to ensure logical reliability.

## 4.2. Fuzzy optimal observation model

The fuzzy model tackled language evaluation ambiguity through three phases: membership degree collection, weighted synthesis, and normalization.

### 4.2.1. Step 1: Membership degree collection

Teachers rated each secondary indicator (e.g., Vocabulary Understanding) on a 4-level scale: Excellent, Good, Average, Poor. The membership degrees (proportions of ratings) were aggregated as shown in **Table 2**.

**Table 2.** Membership degree distribution of secondary indicators

Indicator	Excellent (%)	Good (%)	Average (%)	Poor (%)
Vocabulary understanding (C11)	70	20	10	0
Sentence comprehension (C12)	60	30	10	0
Oral fluency (C21)	80	15	5	0
Grammar accuracy (C22)	70	20	10	0
Dialogue interaction (C31)	65	25	10	0

**Table 2** shows the values represent the percentage of experts/teachers assigning each rating. For example, 70% rated Vocabulary Understanding (C11) as Excellent.

### 4.2.2. Step 2: Weighted synthesis

AHP weights (from **Table 1**) were multiplied by membership degrees to calculate contributions to final scores (**Table 3**).

**Table 3.** Weighted synthesis example for language comprehension (C1)

Indicator	AHP weight	Excellent (%)	Weighted contribution (Excellent)
Vocabulary (C11)	0.6	70	$0.6 \times 70 = 42$
Sentence (C12)	0.4	60	$0.4 \times 60 = 24$
Total contribution	—	—	$42 + 24 = 66$

**Table 3** shows that the total contribution of language comprehension (C1) to the excellent level is 66 points. Similar calculations apply to “good”, “average”, and “poor.”

### 4.2.3. Step 3: Normalization

Final scores were converted to a 0–100 scale for interpretability (**Table 4**).

**Table 4.** Normalized scores of primary indicators

Primary indicator	Total Contribution (Points)	Normalized score (0–100)
Language comprehension (C1)	66	85.2
Language expression (C2)	73	89.5
Language communication (C3)	58	78.9
Comprehensive cognition (C4)	45	62.3

**Table 4** analysis shows C2 (Language Expression) leads (89.5), followed by C1 (85.2); C3 requires improvement (78.9), while C4 needs urgent intervention (62.3), revealing key competency gaps for course optimization.

## 5. Evaluation framework and model application

### 5.1. Hierarchical Indicator System

**Table 5** shows that through literature review and expert consensus, a language course evaluation system with 4 main indicators and 8 secondary indicators was constructed, covering language comprehension, expression, communication, and comprehensive cognitive ability. The weights of the indicators were determined by the AHP method, and the experts used the Saaty 1–9 scale for two-by-two comparisons, and the consistency ratios (CR) calculated by the Yaahp software were all <0.10, which met the reliability criteria.

**Table 5.** Language course evaluation system

Primary indicators (Weights)	Secondary indicators (Weights)	Key focus
C1. Language comprehension (0.40)	C11. Vocabulary understanding (0.6)	Vocabulary mastery
	C12. Sentence comprehension (0.4)	Sentence comprehension
C2. Language expression (0.30)	C21. Oral fluency (0.7)	Coherence of expression
	C22. Grammar accuracy (0.3)	Grammatical correctness
C3. Language communication (0.20)	C31. Dialogue interaction (0.65)	Interactive communication
	C32. Emotional expression (0.35)	Emotional articulation
C4. Comprehensive Cognition (0.10)	C41. Language thinking (0.6)	Linguistic reasoning
	C42. Logical expression (0.4)	Logical coherence
C1. Language comprehension (0.40)	C11. Vocabulary understanding (0.6)	Vocabulary mastery

### 5.2. Weight determination and validation

Weights were calculated using the Analytic Hierarchy Process (AHP), validated through the following steps:

Five experts used Saaty’s scale to rate indicators’ importance, with all matrices meeting consistency criteria ( $CR \leq 0.10$ ). Language comprehension (C1) was deemed most important with a weight of 0.40, reflecting its key role in early language development (Table 6).

**Table 6.** Simplified judgment matrix for primary indicators (C1–C4)

Compared indicators	C1	C2	C3	Compared indicators
C1	1	2	3	4
C2	1/2	1	3	3
C3	1/3	1/3	1	2
C4	1/4	1/3	1/2	1

**Table 6** shows that the AHP Judgment Matrix uses expert comparisons to assess the importance of language skills (C1–C4). A value greater than 1 in a row indicates that the row is more important than the

column (for example, a “2” in C1 indicates that language comprehension is twice as important as language expression). Values less than 1 (e.g., “1/2” in C2) indicate the opposite. Language comprehension (C1) had the highest priority, while integrated cognition (C4) was ranked lowest. Final weights were calculated by Yaahp software and validated by consistency ratios ( $CR < 0.1$ ).

### 5.3. Fuzzy evaluation process

The fuzzy model synthesized evaluation results through three phases. **Table 7** shows the data collection process, with teachers grading secondary indicators (e.g., 70% of teachers rated C11 as “excellent”). The AHP weight is combined with the membership. Scores were converted to a 0–100 scale for interpretability.

**Table 7.** Example calculation for language comprehension (C1)

Indicator	Weight	Excellent (%)	Contribution (Points)
C11 (Vocabulary)	0.6	70	$0.6 \times 70 = 42$
C12 (Sentence)	0.4	60	$0.4 \times 60 = 24$
Total	–	–	$66 \rightarrow 85.2/100$

### 5.4. Final evaluation results

**Table 8** shows that there are significant differences in the progress of different skills. In particular, the results in language comprehension and expression were very good and received good evaluations.

**Table 8.** Comprehensive scores of kindergarten language courses

Primary indicator	Score (0–100)	Tier
Language comprehension (C1)	85.2	Excellent
Language expression (C2)	89.5	Excellent
Language communication (C3)	78.9	Good
Comprehensive cognition (C4)	62.3	Average

## 6. Results and discussion

Fuzzy comprehensive evaluation shows kindergarten language courses significantly improve children’s language comprehension and expression, especially in vocabulary and oral fluency. These courses enhance children’s vocabulary and oral communication skills, aiding effective interactions. There’s a notable gap in comprehensive cognitive abilities, particularly in logical expression. This suggests a need for a balanced approach that develops both basic language skills and higher-order cognitive abilities for holistic development.

Curriculum designers should emphasize the importance of improving children’s ability to think and express themselves logically in language, while maintaining a focus on language comprehension and expression training. To this end, they can incorporate a variety of interesting activities such as group discussions, creative story creation, and interactive dialogues. These activities aim to develop logical thinking skills and encourage the use of complex sentence patterns.



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## Author contributions

Miao Yu was responsible for the framework of the paper and data collection, and analysis. Jing Li was responsible for the literature review of the paper and the organization of the conclusions.

## References

- [1] Schachner JN, Sorensen K, Mashburn AJ, 2022, Language Environments and Speech Development in Preschool Classrooms: A Meta-Analysis. *Early Childhood Research Quarterly*, 2022(61): 1–12.
- [2] Anthony JL, Hsieh YY, O’Connor RE, 2023, Multidimensional Assessment of Oral Language Skills in Early Childhood. *Journal of Educational Psychology*, 115(2): 256–271.
- [3] Sundqvist P, Levlin M, Norlund Shaswar A, 2022, Social Communication Assessment Tools for Preschoolers. *Language, Speech, and Hearing Services in Schools*, 53(2): 523–538.
- [4] Anthony JL, Hsieh YY, O’Connor RE, 2023, Multidimensional Assessment of Oral Language Skills in Early Childhood. *Journal of Educational Psychology*, 115(2): 256–271.
- [5] Schachner JN, Sorensen K, Mashburn AJ, 2022, Language Environments and Speech Development in Preschool Classrooms: A Meta-analysis. *Early Childhood Research Quarterly*, 2022(61): 1–12.
- [6] Mouroutsou S, 2023, Fuzzy AHP for Evaluating Early Childhood Education Quality Indicators. *Fuzzy Sets and Systems*, 2023(458): 92–110.
- [7] Kabir G, Sumi RS, 2024, Fuzzy Model Integration for Educational Quality Assessment. *Journal of Applied Research in Higher Education*, 16(1): 210–225.
- [8] Sun X, Li H, 2024, Cognitive-linguistic Interactions in Kindergarten Curriculum Design. *Early Education and Development*, 35(1): 1–20.

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# Research on the Innovation Path of Football Teaching Mode in Vocational Colleges under the Background of “Integration of Sports and Education”

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**Abstract:** To improve the quality of talent cultivation in vocational colleges and strengthen students’ comprehensive quality and professional abilities, this paper explores the mode innovation of football teaching in vocational colleges based on the perspective of “integration of sports and education.” The study aims to construct a dual-driven talent cultivation model of “professional orientation + football literacy”, forming a “skilled + sports-type” composite talent training system. Additionally, the study proposes an innovative mode of “integration of in-class and extracurricular activities + school-enterprise collaboration” to promote the reform of football teaching mode in vocational colleges. The research presents multiple measures, including resource optimization, teacher empowerment, and deepening collaboration, to facilitate the transformation and innovation of football teaching mode in vocational colleges under the current background of “integration of sports and education.”

**Keywords:** “Integration of sports and education”; Vocational college; Football teaching; Mode innovation

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## 1. Preface

“Integration of sports and education” refers to the effective integration of multiple dimensions, such as goals, resources, and educational functions of sports and education. Through deep collaboration between the two, it aims to cultivate students’ comprehensive physical quality and abilities, thereby achieving high-quality development of sports and education. Under this background, football teaching in vocational colleges has ushered in new development opportunities. The traditional focus on skill transmission and knowledge instillation in football teaching in vocational colleges is no longer suitable. Therefore, it is necessary to promote the innovation of football teaching modes in vocational colleges based on the background of “integration

of sports and education.” On this basis, the football teaching mode in vocational colleges will be gradually improved, effectively strengthening students’ comprehensive quality and enhancing the quality of talent cultivation in vocational colleges <sup>[1]</sup>.

## **2. The significance of innovating the football teaching mode in vocational colleges in the background of “integration of sports and education”**

Under the strategy of “integration of sports and education”, the innovation of football teaching mode in vocational colleges has profound significance and value, and it is a key link to strengthen the quality of talent cultivation. From the perspective of achieving the educational goals of vocational colleges, promoting the innovation of football teaching mode can break the dilemma of traditional football teaching that solely focuses on skill transmission. It can form a dual-core driving model of “professional demand + football literacy.” Under this model, physical education and professional talent cultivation resources are effectively integrated, enabling students to develop teamwork and strengthen their ability to withstand pressure while participating in football. These are not only essential qualities indispensable for students’ professional development but also a crucial aspect of their comprehensive growth <sup>[2]</sup>. Simultaneously, promoting the innovation of football teaching mode in vocational colleges under the background of “integration of sports and education” also fully complies with the relevant requirements of the “integration of sports and education” policy. It contributes to the innovation of teaching mode and balanced allocation of educational resources, thereby providing a continuous stream of compound talents for social development and construction.

## **3. Framework for innovation in football teaching models in vocational colleges in the background of “integration of sports and education”**

### **3.1. Theoretical support: Constructing a dual-core driving model of “professional needs + football literacy”**

Driven by the policy of “integration of sports and education”, the football teaching model in vocational colleges should strive to break the limitations of traditional teaching methods, forming an educational model oriented towards professional needs, while strengthening the cultivation of students’ football literacy, and constructing a dual-core driving model of “professional needs + football literacy” <sup>[3]</sup>. In practice, the orientation of professional needs requires vocational colleges to closely integrate talent cultivation positioning with sports football education, and to achieve innovative changes in football teaching scenarios by combining the management needs of social sports guidance and event operations. Under the dimension of football literacy, vocational colleges need to focus on cultivating multi-dimensional elements such as football skills, football tactical thinking, physical fitness reserves, and sports spirit cultivation, so that students can gradually form more professional sports abilities in systematic sports training and strengthen talent cultivation effectiveness.

### **3.2. Goal orientation: Creating a “skilled + sports” composite talent training system**

Under the background of the “integration of sports and education” policy, the innovation of football teaching models in vocational colleges should be based on creating a “skilled + sports” composite talent training system to promote talent cultivation, thereby ensuring continuous optimization and improvement of the talent cultivation level in vocational colleges. The cultivation of “skilled” talents requires vocational colleges to

focus on the integration of professional football skills training and vocational skills cultivation. Therefore, it also requires vocational colleges to deeply integrate multiple dimensions such as football technology, football training methods, and football match organization and planning in education and teaching to achieve deep integration of teaching and sports <sup>[4]</sup>. In practice, practical course projects such as “football teaching and training” and “event planning and training” can be considered, and students’ comprehensive abilities can be promoted based on real project task drives during the teaching phase, allowing students to gradually transition from traditional “single skill training” to “composite skill development” in football learning.

### **3.3. Implementation path: Constructing an innovative model of “integration of in-class and extracurricular activities + school-enterprise collaboration”**

The innovation of football teaching models in vocational colleges under the background of “integration of sports and education” also requires vigorous construction of an innovative model that integrates resources both inside and outside the school through “integration of in-class and extracurricular activities + school-enterprise collaboration”, while achieving deep collaboration between schools and enterprises <sup>[5]</sup>. In practice, vocational colleges need to actively promote specialized football skills training and basic vocational theory teaching for students, utilizing integrated teaching methods such as situational teaching, project-based teaching, and online-offline hybrid teaching models. For example, guiding students to analyze football tactics during teaching effectively integrates knowledge of football tactics and data analysis to gradually develop students’ tactical abilities and data analysis skills. The integration of extracurricular resources should be centered on practice, deeply integrating content such as football clubs, school team training, and campus football training matches, allowing students to gradually transition from classroom learning to practical competition. At the level of school-enterprise collaboration, vocational colleges need to strengthen cooperation with enterprises and football clubs, vigorously promoting the construction of an integrated industry-education-research model, and facilitating innovative reforms in football teaching models in vocational colleges through deep collaboration.

## **4. Challenges faced by the innovation of football teaching models in vocational colleges in the background of “integration of sports and education”**

### **4.1. Challenges brought by imbalanced resource allocation**

Promoting innovation in football teaching models in vocational colleges in the background of “integration of sports and education” faces challenges brought by imbalanced resource allocation. This is mainly due to imbalances in hardware facility configuration and funding investment in football teaching in vocational colleges. For example, some vocational colleges face issues such as insufficient football field quantity, aging turf, and inadequate training equipment in hardware facility configuration, which cannot meet the requirements of teaching model innovation and reform <sup>[6]</sup>. In terms of funding, some vocational colleges have limited budgets. They often invest their educational funds in key professional fields during development and operation, while the amount of funding available for football teaching is relatively limited. This leads to slow updates of football teaching equipment, insufficient modernization of teaching methods, and affects the effectiveness of football teaching innovation.

### **4.2. Challenges posed by the shortcomings of teacher capabilities**

The innovation of football teaching mode in vocational colleges faces challenges posed by the shortcomings

of teacher capabilities, especially in the current context of “integration of sports and education.” To break the traditional phenomenon of “emphasizing form over substance” in football teaching mode innovation, sufficient teacher resources are needed as support. However, in reality, vocational colleges face a relative scarcity of “dual-qualified” teachers, and the current teacher team has many problems, such as outdated knowledge structure and weak teaching and research capabilities<sup>[7]</sup>. For example, some teachers in vocational colleges often graduate from sports colleges with a specialty in football. Although they have solid football skills, they are relatively lacking in practical experience, especially in understanding professional positions such as sports events and event operations. Therefore, they cannot deeply promote the “integration of sports and education” in football teaching, and it is difficult to deeply integrate football skills with professional scenes, weakening the effect of football teaching.

#### **4.3. Challenges posed by the disconnection between school and enterprise collaboration**

The innovation of football teaching mode in vocational colleges in the background of “integration of sports and education” faces challenges posed by the disconnection between school and enterprise collaboration. This is mainly manifested in the current formal collaboration between vocational colleges and enterprises, which cannot achieve deep cooperation and interaction between the two parties, reducing the effect of football teaching in vocational colleges<sup>[8]</sup>. In practice, the cooperation between vocational colleges and enterprises often involves inconsistencies in the goals and demands of both parties. For example, enterprises often focus on short-term brand promotion and access to cheap labor, while vocational colleges focus on strengthening teaching quality and improving students’ employment competitiveness through cooperation between the two parties. Therefore, the mismatch in cooperation goals between the two parties also leads to an overly mechanized overall cooperation process, making it difficult to achieve deep interaction and promotion, and unable to bring positive factors to the innovation and reform of the football teaching mode in vocational colleges.

### **5. Suggestions and countermeasures for the innovation of football teaching mode in vocational colleges under the background of “integration of sports and education”**

#### **5.1. Resource optimization, building a “school-enterprise sharing” platform**

To promote the innovative reform of football teaching mode in vocational colleges and improve the quality and effectiveness of football teaching in the current context of “integration of sports and education”, the primary task is to achieve optimal allocation of resources and vigorously build an education resource sharing platform inside and outside the school to ensure that the education and teaching process has sufficient resource support. Therefore, vocational colleges need to focus on “school resources + external resources” to achieve the integration and expansion of multiple resources, building a three-dimensional teaching resource support system. For example, in the integration of school resources, vocational colleges need to dynamically match football teaching resources. At this stage, vocational colleges are required to scientifically plan the use time of football fields and the reform of football teaching modes based on multiple factors such as the development trend of football events, teaching plan requirements, and student growth needs, so as to achieve off-peak teaching and time-sharing opening of football teaching fields, thereby improving the utilization rate of the fields. At the level of fund utilization, it is necessary to actively build an innovation fund for football teaching in vocational colleges, such as adopting the fund acquisition mode of “basic funding + project declaration”, and also accepting external donations or independent funding methods. This can not only integrate internal and external



financial resources but also help the orderly progress of the football teaching mode in vocational colleges, thus completing the task of football teaching in vocational colleges with high quality and strengthening the level of talent cultivation.

## **5.2. Empowering teachers and constructing a “dual-qualified” training system**

To innovate the football teaching model in vocational colleges in the background of “integration of sports and education”, it is necessary to actively promote teacher empowerment and vigorously build a “dual-qualified” teacher talent training system. Therefore, it is necessary to make concerted efforts from multiple perspectives in the actual promotion of teacher training. Firstly, vocational colleges need to “bring in” professionals in the field of football, breaking the shortcomings of insufficient talent supply through talent introduction, such as flexibly bringing in excellent talents from within the industry, including coaches from professional football clubs, famous sports teachers from primary and secondary schools, and event operation experts, to teach in vocational colleges. These excellent talents can serve as full-time or part-time teachers in the form of an “enterprise mentor pool”, thus providing students with more professional football guidance <sup>[9]</sup>. Secondly, football teaching in vocational schools needs to lead existing teachers to “go out” and actively participate in professional practices outside the school. For example, it can be stipulated that existing football teachers need to take up positions in partner enterprises for practical training every year, with a practice time of more than two months. Through participation in specific job positions such as teaching and training, and event organization, teachers can continuously accumulate practical experience and transform these practical experience results into specific teaching cases. This will enhance the professional level of football teachers in vocational colleges and enable them to fully play their role in promoting the innovation of football teaching models.

## **5.3. Deepening collaboration and promoting the “two-way embedding of school and enterprise” mechanism**

Under the current background of “integration of sports and education”, to further realize the reform and innovation of football teaching models in vocational colleges, it is necessary to focus on promoting deep collaboration and vigorously building a “two-way embedding of school and enterprise” mechanism. Through this mechanism, deep collaboration between schools and enterprises can be achieved, providing students with a better learning and practical environment, improving their football abilities while cultivating their comprehensive qualities. In practice, a two-way linkage mechanism of “schools embedding enterprise needs, and enterprises embedding the teaching process” can be constructed. For example, under the dimension of schools embedding enterprise needs, a “Football Teaching Innovation Guidance Committee” composed of enterprise representatives, industry experts, and vocational teachers can be established. This committee can regularly organize market research and demand research in the form of working groups, and then effectively transform the latest needs of positions in sports education, event operations, and other aspects based on the research results. Teaching objectives and course content can be adjusted based on the research results to ensure a deep match between the football teaching model and market demand <sup>[10]</sup>. Enterprises embedding the teaching process require “full-chain” deep participation in football teaching in vocational colleges. For example, in the curriculum development of vocational colleges, enterprises need to participate in the compilation of teaching materials, highlighting the characteristics and pertinence of the content based on dimensions such as professional development trends in the field of football and talent ability needs. In the teaching implementation

phase, enterprise mentors can deeply participate in classroom teaching, broadening students' professional horizons through the sharing of practical cases and interpretation and analysis of market demand. In the student practice phase, a "modern apprenticeship" system can be established, where enterprise mentors guide students through the practice process. This not only allows students to complete the transition from school to enterprise but also achieves deep collaboration between the school and the enterprise, promoting the reform and innovation of teaching models in vocational colleges.

## 6. Conclusion

Research has found that actively promoting innovation in football teaching models in vocational colleges under the background of "integration of sports and education" has far-reaching influence and value. It can not only strengthen students' football proficiency but also help cultivate their professional qualities, thereby promoting students to grow into compound talents that meet the development needs of the football sports field. In the future, vocational colleges need to further explore innovative paths for football teaching models under the background of "integration of sports and education," and actively introduce digital technology to upgrade and iterate teaching techniques. At the same time, they should consider strengthening international cooperation and exchanges to form a more complete football teaching and education system, continuously delivering high-quality, compound talents for the long-term development of China's football field.

## Disclosure statement

The author declares no conflict of interest.

## References

- [1] Qiu B, 2025, Research on the Innovation of Football Teaching Methods in Vocational Colleges under the Background of Integration of Sports and Education. *Modern Sports Technology*, 2025(3): 139–142.
- [2] Zhao SW, Hong F, 2021, Exploration of the Basic Issues of the Deepening Development of Campus Football under the Background of "Integration of Sports and Education". *Sports Research and Education*, 2021(1): 61–66.
- [3] Hao XZ, 2022, Dilemmas and Paths of "Football into Campus" under the Background of Integration of Sports and Education. *Basic Education Forum*, 2022(3): 18–19.
- [4] Sun Y, 2022, Research on the Reform Strategy of College Football Teaching under the Background of Integration of Sports and Education. *Sports Style*, 2022(17): 137–139.
- [5] Zhang H, 2024, Talking about the Training Strategy of School Football Talented Students under the Background of "Integration of Sports and Education". *Sports Style*, 2024(1): 86–88.
- [6] Dou GM, Ren HJ, Liang YZ, 2023, Research on the High-quality Development of School Sports under the Background of "Integration of Sports and Education" — Taking the Development Model of Campus Football in Tsinghua University Primary School as an Example. *Curriculum, Teaching Materials and Methods*, 2023(1): 146–151.
- [7] Liu X, Ma XF, 2023, Research on the Innovation Path of Higher Vocational Sports Teaching under the Background of "Integration of Sports and Education". *Sports Science and Technology*, 44(6): 144–146.
- [8] Yuan YM, 2024, Research on the Innovation and Reform of Teaching Mode of College Sports Clubs under the

Background of Integration of Sports and Education. *Journal of Jilin Agricultural Science and Technology College*, 33(5): 102–105.

- [9] Mou X, 2024, Research on the Reform of Tennis Teaching in Colleges and Universities Based on the Concept of Integration of Sports and Education — Taking Hankou University as an Example. *Modern Sports Technology*, 14(6): 54–59.
- [10] Dai LY, 2024, Talking about the Practice of the Teaching Mode of “Learning, Practicing, Competing and Evaluating” in the Teaching of Secondary Vocational Sports Football Units from the Perspective of Core Literacy. *Anhui Education Research*, 2024(3): 27–29.

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# Practical Exploration of the Integrated Teaching of Ink Painting and Chinese Language for Primary School Children

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**Abstract:** This article focuses on the integrated teaching of ink painting and Chinese language subjects for primary school children, exploring the value, specific paths, and practical strategies of combining the two. By pairing ancient poems with ink paintings and visually presenting literary stories, disciplinary boundaries are broken down. This allows students to enhance their ink painting skills while understanding the literary connotations, achieving coordinated development of cultural inheritance and artistic aesthetic abilities. It effectively cultivates students' interdisciplinary thinking and comprehensive literacy.

**Keywords:** Primary education; Ink painting teaching; Chinese language subject; Subject integration; Comprehensive literacy

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## 1. Introduction

In the context of deepening reform in basic education, where subject integration has become a key direction for cultivating students' core literacy, the "Chinese Curriculum Standards for Compulsory Education (2022 Edition)" and the "Art Curriculum Standards for Compulsory Education (2022 Edition)" provide policy guidance for the integration of ink painting and Chinese language subjects in primary schools. This integration not only aligns with the need to cultivate cultural confidence but also effectively activates students' multiple intelligences and promotes the development of interdisciplinary thinking.

From the perspective of current research, regarding the value of integration, Li Jilin proposes using "artistic conception" as a link to help students understand the aesthetic commonality of "poetry and painting sharing the same origin" through poem-painting pairings<sup>[1]</sup>. Wang Ning emphasizes that the integration of the two subjects helps achieve unity in cultural inheritance and innovation<sup>[2]</sup>. Yin Shaochun points out that integrated teaching can break down disciplinary barriers and promote the formation of interdisciplinary thinking<sup>[3]</sup>. In

terms of practical approaches, Zhang Hua explores specific methods of “incorporating poetry into painting”, including selecting classic poems for thematic creation <sup>[4]</sup>. Chen Qin advocates realizing the transformation between graphics and texts by creating ink illustrations and reproducing scenes from famous works <sup>[5]</sup>. Wu Zhonghao proposes constructing an integrated teaching chain of “reading - writing - painting” <sup>[6]</sup>. Regarding teaching strategies, Zhou Yimin suggests using multimedia to create an immersive teaching atmosphere, Wang Rongsheng advocates implementing tiered guidance based on students’ ability differences, and Cui Yunxiao emphasizes adopting a comprehensive evaluation method combining “self-evaluation, peer evaluation, and teacher evaluation” <sup>[7-9]</sup>. Zhang Hong’s practice shows that this integrated teaching model significantly improves students’ comprehension ability of literary works and creative confidence. However, there are still issues such as insufficient innovation in integration models and a scarcity of supporting teaching resources, which urgently require further in-depth research <sup>[10]</sup>.

The organic combination of ink painting teaching and Chinese language subjects in primary schools not only enables students to deepen their understanding of literary works in the process of ink creation but also stimulates artistic inspiration through literary contexts. This approach injects new vitality into traditional art education, thereby effectively promoting the coordinated development of students’ humanistic and artistic literacy.

## **2. The value of integrating ink painting and Chinese language subjects**

### **2.1. Deepening literary understanding and enhancing aesthetic perception**

Both ancient poems and ink paintings pursue the “artistic conception” as their core. When students illustrate poems with paintings, they need to deeply analyze the imagery, emotions, and rhythms in the poems, transforming abstract words into concrete images. For example, when depicting “The lonely smoke rises straight from the desert, the long river reflects the round setting sun”, students use different shades of ink to show the vastness of the desert and the grandeur of the setting sun. This not only deepens their understanding of the poem but also allows them to experience the aesthetic mood shared by poetry and painting.

### **2.2. Inheriting traditional culture and enhancing cultural confidence**

Ink painting and ancient poetry are both treasures of Chinese culture. Through integrated teaching, students can sense the wisdom and feelings of the ancients while painting, experiencing the artistic realm of “poetry in paintings and paintings in poetry.” This enhances their sense of identity and pride in traditional culture, achieving an organic unity of cultural inheritance and innovation.

### **2.3. Cultivating interdisciplinary thinking and developing comprehensive abilities**

Today’s art classes require teachers to integrate multiple disciplines. This integrated teaching breaks the limitations of a single discipline, allowing students to simultaneously mobilize various abilities such as language comprehension and artistic expression. From interpreting texts to conceiving images, and from selecting ink techniques to completing creations, students gradually form an interdisciplinary problem-solving mindset through practice. This effectively enhances their observation, imagination, and creativity.



### **3. Specific paths for the integration of ink painting and Chinese language subjects**

#### **3.1. Incorporating poetry into painting: The transformation of artistic conception from ancient poetry to ink painting**

##### **3.1.1. Teaching classic poetry with illustrations**

Firstly, teachers select ancient poems with a strong visual sense, such as Li Bai's "Watching the Tianmen Mountains" and Su Shi's "Late Scene on the Huichong River in Spring." They guide students to extract visual elements from the poems by reading and analyzing the colors (e.g., the "green" in "Two green mountains face each other") and movements (e.g., the "coming" in "A lonely sail comes from the sun"). Then, in art classes, students are instructed to use ink techniques to visualize the poetic imagery: using blank spaces to represent clouds and fog, using flying white strokes to outline the flowing sensation of the river, and using light ink to render the distant mountains.

##### **3.1.2. Thematic creation and expansion**

Cross-disciplinary creations are carried out around themes such as seasons and festivals. For example, after studying poems describing spring, students create ink paintings with the theme "Rhythm of Spring", combining poems like "Ode to the Willow" and "Spring Day" to express the vitality of willows budding and peach blossoms blooming. During the teaching of the Double Ninth Festival, students are guided to create ink paintings inspired by Wang Wei's "Thinking of My Brothers on a Mountain on the Double Ninth Festival", expressing the theme of climbing high and missing loved ones, achieving a deep integration of literary themes and artistic expression.

#### **3.2. Interpreting literature through painting: visual expression of literary stories**

##### **3.2.1. Creating illustrations for textbook stories**

For story-based texts in Chinese textbooks, such as the fable "Sitting in a Well and Gazing at the Sky" and the fairy tale "Little Tadpoles Looking for Their Mother", students are encouraged to create ink painting illustrations based on the text content. They need to extract key plot points and character traits from the stories and then use simple ink lines to outline images like frogs and tadpoles, expressing the scene atmosphere with layers of ink colors. This not only helps students grasp the storyline but also cultivates their ability to convert text into images.

##### **3.2.2. Re-creation of literary classics**

Combined with reading classic masterpieces such as "Journey to the West" and "Romance of the Three Kingdoms", the "Ink Masterpieces" creation activity is launched. For example, students use ink painting to express the tense scene of "Sun Wukong Fighting the White-Bone Demon Three Times", demonstrating the drama of literary works and the expressive power of ink art through intense fighting actions and exaggerated character expressions, deepening their understanding of the characters and plots of the classics in the process of creation.

#### **3.3. Integration of reading, writing, and drawing: A closed-loop expression from text to image**

The introduction of ink painting elements into composition teaching forms a learning chain of "Reading — Writing — Drawing." For example, in art club classes with the theme "My School", students first use ink

sketching methods to record iconic buildings, plants, and trees on campus; when writing, they refer to the painting materials for detailed descriptions; after completing the composition, they create an ink illustration based on the text content, achieving mutual promotion between language expression and visual expression.

## **4. Teaching strategies for the integration of ink painting and Chinese language subjects**

### **4.1. Creating contexts to stimulate creative interest**

Multimedia resources are used to create an immersive learning environment. For example, when explaining “Mooring by Maple Bridge at Night”, classical Chinese guqin music with the same title is played, and videos of ink paintings of Jiangnan water towns are displayed, guiding students to experience the poetic imagery in an audiovisual atmosphere and stimulating their creative desires.

### **4.2. Tiered guidance respecting individual expression**

Differentiated guidance is provided based on students’ Chinese comprehension abilities and painting foundations. For students with strong language expression skills but a weak painting foundation, emphasis is placed on guiding composition and techniques; for students skilled in painting, they are encouraged to dig deeper into literary connotations and create more thoughtful works.

### **4.3. Diversified evaluation to promote comprehensive development**

A combined evaluation method of “self-evaluation — peer evaluation — teacher evaluation” is adopted, conducting comprehensive evaluations from dimensions such as literary understanding (e.g., whether the poetic imagery is accurately expressed), artistic expression (e.g., whether the ink and brush are properly used), and innovative thinking (e.g., whether the picture composition is novel). For example, in the evaluation of “ancient poem illustration” works, students not only share their painting ideas but also recite the corresponding ancient poems, achieving a dual demonstration of literary and artistic abilities.

## **5. Practical cases and effectiveness**

In the fourth-grade Chinese and art integration teaching practice this semester, teachers conducted a two-month “Ink Poetry Rhythm” themed course. After studying the ancient poetry unit, students completed over 20 poetry illustrations, including “Quatrains” and “Watching the Lu Shan Falls.” Classroom observations and student feedback showed that 90% of students expressed a deeper understanding of the poetry content through painting; in the final assessment, the classes participating in the integrated teaching achieved significantly higher scores in ancient poetry comprehension and creative writing questions than the traditional teaching classes. Additionally, students’ ink painting works were exhibited at the campus culture festival, receiving high praise from parents, teachers, and students, effectively enhancing students’ learning achievement and cultural confidence.

## **6. Conclusion**

The integration of ink painting and Chinese language subjects in primary school children provides a new perspective for traditional culture education and subject teaching innovation. Through paths such

as incorporating poetry into painting and interpreting literature through painting, students achieve cross-disciplinary literacy improvement in the blend of literature and art. In the future, it is necessary to further explore richer integration models, develop supporting teaching resources, promote the deep integration of ink painting and Chinese teaching, and assist students in growing into new-era talents with both cultural heritage and artistic creativity.

## Disclosure statement

The author declares no conflict of interest.

## Reference

- [1] Li JL, 2020, The Aesthetic Education Path of Context Education and Subject Integration. Jiangsu Education Press, Nanjing, 45–62.
- [2] Wang N, 2021, The Integration Practice of Chinese Language Teaching and Traditional Cultural Inheritance. *Educational Research*, 2021(3): 78–85.
- [3] Yin SC, 2019, Interdisciplinary Teaching Strategies for Art Under Core Literacy. *Chinese Art Education*, 2019(5): 12–18.
- [4] Zhang H, 2022, Pairing Ancient Poems with Illustrations: A Practical Path for the Integration of Language and Art. *Primary School Chinese Teaching*, 2022(12): 34–37.
- [5] Chen Q, 2023, Ink Visualization Strategies for Literary Stories. *Primary School Teaching and Research*, 2023(8): 56–59.
- [6] Wu ZH, 2021, Construction of a Reading, Writing, and Drawing Model for the Integration of Composition Teaching and Art. *Chinese Teaching Communication*, 2021(18): 23–26.
- [7] Zhou YM, 2020, Creation and Application of Immersive Teaching Situations. *Basic Education Curriculum*, 2020(20): 45–49.
- [8] Wang RS, 2022, Practice and Reflection on Stratified Chinese Teaching. East China Normal University Press, Shanghai, 77–91.
- [9] Cui YH, 2021, Reform of Competency-Oriented Teaching Evaluation. *Global Education Outlook*, 2021(6): 32–40.
- [10] Zhang H, 2023, Analysis of the Practical Effectiveness of the Elementary School Ink Poetry Course. *Education Practice and Research*, 2023(10): 22–25.

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# Research on the Current Situation and Innovation Path of Ideological and Political Education in Primary Schools under the Background of the Great Ideological and Political Course

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**Abstract:** The concept of “Great Ideological and Political Course” provides a fundamental follow-up for Lide Shuren in the new era. As a critical period of shaping values, the quality of ideological and political education in primary schools is related to the fundamental issue of “who to train, how to train people, and for whom.” This paper focuses on improving the effectiveness of ideological and political education in primary schools, and analyzes the core problems existing at present, such as deviation of teaching concept, single method path, structural shortcomings of teachers, and improper evaluation mechanism. Based on the innovative practice of many primary schools in China, this paper puts forward some strategies, such as constructing a spiral advanced curriculum system, exploring the teaching mode of situation-practice-technology integration, strengthening the professional development-oriented teacher construction, and deepening the cooperative education community between home, school, and community. The research emphasizes that the attraction and appeal of ideological and political education can be significantly enhanced through the immersion experience of red resources, deep interdisciplinary collaboration, and intelligent technology empowerment. The future development paths, such as new media literacy education, co-construction and sharing of urban and rural digital resources, long-term evaluation, and guarantee mechanism construction, are further discussed, which provides a theoretical reference and practical mirror for promoting the integration and high-quality development of ideological and political education in primary schools.

**Keywords:** Ideological and political education in primary schools; Ideological and political education; Innovative situational teaching; Collaborative education

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## 1. Introduction

The proposal of the “Great Ideological and Political Course” has pointed out the direction and provided fundamental follow-up for the implementation of the fundamental task of cultivating people in the new era. At present, the research on the innovation of ideological and political education in the basic education stage under the background of “big ideological and political course” is in the ascendant, especially in the aspects of curriculum integration, teaching mode reform, technology application and evaluation reform, which need more in-depth practical exploration and theoretical refinement. The primary school stage is a critical period for the formation of values, and the quality of its ideological and political education is directly related to the implementation of the fundamental problem of education: “Who to train, how to train people, and for whom.” With the promulgation of the “Compulsory Education Ideological and Political Curriculum Standards” in 2022, ideological and political education has been given higher requirements, emphasizing the goal orientation, problem orientation, and innovation orientation, and strengthening the value-oriented function while imparting knowledge. However, in the current teaching process, the ideological and political education in primary schools still faces challenges such as marginalization and formalization. It has become an important topic in the reform of basic education that how to build a pattern of educating people with full participation, whole class involvement, and whole process investment through the innovation of educational concepts and methods. It provides theoretical reference and practical guidance for deepening the reform and innovation of ideological and political education in primary schools and improving the effectiveness of educating people.

## 2. The status quo and problems of ideological and political education in primary schools

### 2.1. There are deviations in educational concepts

Against the background of the influence of exam-oriented education in the past, the ideological and political education in primary schools often encounters the double dilemma of vague goal orientation and insufficient value recognition in practice (**Table 1**). In the allocation of teaching resources, many schools still devote their main resources and energy to Chinese, mathematics, foreign languages, and other disciplines, while ideological and political courses are put in a secondary position. This tendency has led to ideological and political education being in a weak position in curriculum arrangement, resource allocation, and the evaluation system for a long time. When communicating with parents, teachers often focus on the strategy of improving academic performance, and rarely involve students’ ideological dynamics, mental health, and the formation of values. This performance-oriented evaluation model not only ignores the cultivation of students’ comprehensive literacy, but also may cause psychological burden to students with learning difficulties, making them form a negative mentality of “learned helplessness psychological tendency” in long-term negative evaluation, which deviates from the cultivation goal of students’ core literacy development and loses their self-confidence and motivation in learning. In the long run, it will have a far-reaching impact on the whole school teaching.



**Table 1.** Main manifestations of ideological and political education concept deviation in primary schools

Dimension	Produce problems	Consequence influence
Target location	One-sided pursuit of achievements, ignoring the goal of moral education	The ideological and political course is marginalized, and the educational function is weakened.
Teaching practice	Take achievement as the only evaluation criterion.	Students' values are distorted, and learning is utilitarian.
Teacher-student interaction	Lack of ideological exchange and value guidance	Students' ideological trends are difficult to grasp, and psychological problems breed.
Allocation of resources	Insufficient investment in ideological and political education resources	Poor teaching conditions and limited activities.

## 2.2. The teaching method and content are single

At present, there is a general phenomenon of “three less and three more” in ideological and political education in primary schools: emphasizing knowledge indoctrination but neglecting value experience, emphasizing unity and ignoring individual differences, and emphasizing teaching material content and ignoring life connection. In terms of teaching strategies, most teachers still mainly adopt traditional “spoon-feeding” teaching, treating students as containers for passively accepting knowledge, ignoring students' initiative and participation as learning subjects. This one-dimensional teaching model is difficult to adapt to the psychological characteristics of active thinking, strong curiosity, and active exploration of primary school students, which can easily lead to a dull classroom atmosphere, low student participation, and even weaken the effectiveness of ideological and political classroom.

In terms of teaching content, the selection of teaching resources often has the problem of being overly adult and divorced from the reality of children's lives. There is no effective connection between abstract political concepts and moral norms and students' real life, so it is difficult to arouse emotional resonance and ideological identity. At the same time, the case update lags behind, which is out of touch with the pulse of the times and the reality of students' digital existence, and fails to fully integrate the elements of the times and regional cultural characteristics, making the teaching content obsolete and lacking in affinity. According to relevant surveys, most students think that the content of ideological and political courses is “boring and difficult to understand”, and only some students say that they can establish an effective connection between what they have learned in class and their life experience.

## 2.3. The teaching staff is weak

The construction of ideological and political teachers in primary schools is facing structural shortcomings, especially in rural and remote areas. Some primary schools are not equipped with full-time teachers of Taoism and law, and the professional training system is not perfect. The Opinions on Further Strengthening the Construction of Ideological and Political Courses in Primary and Secondary Schools in the New Era issued by the Ministry of Education proposes that by 2025, the proportion of full-time teachers in primary schools will reach more than 70% <sup>[1]</sup>. The survey results show that the proportion of part-time teachers in primary and secondary schools is 40%, and the proportion of full-time teachers is 60%, which means that there is still a certain gap from this goal <sup>[1]</sup>. Primary schools are not equipped with full-time ideological and political teachers, and related courses are usually held by Chinese teachers or teachers of other disciplines. Although these teachers have the ability of subject teaching, they lack systematic ideological and political

theory study and moral education professional training, and their understanding of ideological and political education often stays in the shallow cognition of “reasoning” and “doing tasks”, which reflects the lack of professional standards and training system for ideological and political teachers.

The lack of professional quality further restricts the improvement of teaching quality. Because of the heavy teaching tasks, it is difficult for part-time teachers to devote enough energy to studying the laws of ideological and political education and innovating teaching strategies. Some teachers’ own political theory literacy is insufficient, and their understanding of socialist core values is not deep enough, so it is difficult to instill effective values in teaching. At the same time, due to the limitations of economic conditions and development prospects, rural areas are facing three challenges: it is difficult to attract talent, it is difficult to retain talent, and it is difficult to cultivate talent. It is difficult for rural primary schools to attract and retain high-quality ideological and political education talents, and the existing teacher training has some problems, such as low frequency, generalization of content, and insufficient practical guidance, which leads to poor professional development channels for teachers and slow improvement of teaching ability.

#### **2.4. The evaluation mechanism is not perfect**

The failure to establish a scientific evaluation system is an important reason that restricts the improvement of the quality of ideological and political education. At present, there are three prominent problems in the evaluation of ideological and political education in primary schools: First, the evaluation dimension is not comprehensive, and it pays too much attention to the memory and understanding of knowledge content, ignoring the evaluation of core qualities such as emotional attitude, values and behavior habits; Second, the evaluation methods are not diversified, mainly relying on question testing, lacking process evaluation and multiple evaluation methods. Question testing belongs to instrumental rationality, which has overstepped value rationality at present, paying too much attention to low-level cognitive goals and ignoring high-level goals such as value identification and behavior transformation; Third, the evaluation results are not taken seriously, and the scores of ideological and political subjects account for a low proportion in the students’ comprehensive evaluation, and are weakly related to the evaluation awards, which is difficult to attract the real attention of students and parents.

This evaluation mechanism leads to the misunderstanding that ideological and political education pays more attention to knowledge than practice. Although students can memorize moral norms and political terms, it is difficult to internalize them into conscious action and value orientation. Moreover, the deviation of evaluation orientation makes teachers intentionally or unintentionally strengthen knowledge transmission and weaken value guidance in teaching design and implementation, which further intensifies the formalization of ideological and political education.

### **3. The innovative path and deepening strategy of ideological and political education in primary schools from the perspective of the “great ideological and political course”**

#### **3.1. Building a spiral advanced curriculum system**

According to the cognitive characteristics and acceptance ability of students of different ages, it is an urgent task to build a gradual and spiral ideological and political course system to improve the effectiveness of education (**Table 2**). The “three-dimensional collaborative framework” education system of Jilaoqing Primary

School in Dongsheng District provides a successful example <sup>[2-3]</sup>. According to the cognitive characteristics and growth rules of students in different classes, the school implements vertical integration and builds a ladder-like ideological and political education chain: in the lower grades, “knowing yourself and loving the campus” is the core, and the feelings of loving the motherland and hometown are enlightened through picture book reading and campus visits; Middle school students focus on “understanding society and inheriting culture”, and carry out activities such as red story preaching and traditional festival exploration to deepen the understanding of socialist core values; Senior students focus on “practicing responsibility and establishing ideals” and guide students to turn cognition into action through social practice and voluntary service. At the level of curriculum implementation, educators should realize horizontal linkage, make good use of classroom teaching as the main channel, and all kinds of courses should go with ideological and political theory courses in the same direction to form a synergistic effect and promote the “deep integration of ideological and political education and curriculum ideological and political education” <sup>[2, 4]</sup>. On the one hand, educators should tap the ideological and political elements of Chinese, ideological and political science, fine arts, and other disciplines, and create a collaborative education mode of “ideological and political discipline.” On the other hand, educators should integrate campus resources and establish an “ideological and political education resource library”, which covers small civilized videos, reading Chinese traditional classics, etc., and provide rich materials for teachers’ teaching. At the same time, the moral education department cooperates with the young pioneers, teaching departments, and other departments to plan themed activities and form a horizontal linkage education pattern of “teaching + activities.”

**Table 2.** The goal and content design of ideological and political education in primary schools based on core literacy

Grade	Primary objective	Important content	Activity form
Grade 1–2	Enlightenment emotional identity Basic norms of training	Love family and school. Basic etiquette and rule Consciousness	Picture book reading Campus visit Behavior habit formation game
Grade 3–4	Deepen value cognition Inherit excellent culture	public virtue traditional culture group consciousness	Red story meeting Traditional holiday experience Practice of class autonomy
Grade 5–6	Strengthen social responsibility Establish ideals and beliefs	National education Concept of rule of law Career planning	social survey moot court voluntary service Professional experience

### 3.2. Explore the teaching mode of situation-practice-technology integration

Teaching method is a bridge between educational content and students’ learning, which is directly related to the attraction and effectiveness of ideological and political education. Innovative teaching methods need to grasp three key directions.

Situational teaching emphasizes that by creating real or simulated situations, abstract values can be materialized and vivid, so as to achieve deep experience and meaning construction. Chengdu Pengcheng Primary School has built a “three-order and four-dimensional panoramic” ideological and political education system, which is connected in three stages: the lower grades emphasize habit formation, the middle grades emphasize character shaping, and the upper grades emphasize value guidance; Four-dimensional integration: ideological and political courses are refined, ideological and political courses are infiltrated, theme

activities are project-oriented, and practical education is socialized; Panoramic coverage: form a five-in-one educational field of “teaching-activity-practice-management-environment.” In the lesson “National Security is the Top Priority”, Mr. Liu Qi of this school skillfully uses AI technology to create a situation, creates a highly simulated immersive learning situation, and designs the task of “striving to be a small lecturer on national security”, which guides students to learn national security knowledge through the game, and enhances their awareness and sense of responsibility in safeguarding national security.

Practical teaching pays attention to the unity of knowing and doing, and promotes the internalization of value through immersive experience and physical participation. Chongqing Geleshan Primary School makes full use of the location advantage of the important birthplace of Hongyan spirit, and organizes fifth-grade teachers and students to walk to Geleshan Martyrs Cemetery, Revolutionary Memorial Hall, and Baigongguan to carry out immersion study through the integrated education mode of “Red Research + Great Ideological and Political Course” to realize the intergenerational inheritance of red culture <sup>[5]</sup>. Offering homemade white flowers in front of the martyr’s tomb, touching the replica of the five-star red flag sewn in prison, and listening to the story of “radish head”, these immersive experiences internalize the abstract revolutionary spirit into emotional identity through concrete experience. On the occasion of the 82nd anniversary of the “Factory Pit Massacre”, 200 student representatives from the Central Primary School in Factory Pit Town, Nanxian County, Hunan Province walked into the Memorial Hall for the Victims of the Factory Pit Massacre and started a special ideological and political education through the immersive practice class. For three consecutive years, the school has integrated the ideological and political course into the red education base, and promoted the red education into the brain, heart, and line with the “walking classroom”, making the local red history the most vivid ideological and political teaching material.

Intelligent technology empowers the transformation of educational form, which not only broadens the educational boundary but also reshapes the relationship between teaching and learning, realizing personalized learning support and accurate evaluation. Jianchi Town Central Primary School in Hanyin County makes full use of modern information technology, such as webcasting and short videos, to produce and publish a series of short videos with the theme of red culture to carry out ideological and political education activities, and to break the time and space restrictions in the classroom. Pengcheng Primary School realizes immersion teaching through digital three-dimensional scenes, which greatly enhances the attraction and appeal of education <sup>[6]</sup>. The application of a smart education platform has also realized the sharing of high-quality ideological and political resources with schools in rural and remote areas.

### **3.3. Build a professional development-oriented team of ideological and political teachers**

High-quality and professional ideological and political teachers are the key support to improve the quality of education. Teachers’ construction should be promoted from three dimensions: strict access, systematic training, and effective encouragement <sup>[7]</sup>.

On the access mechanism, educators should clarify the professional standards of ideological and political teachers and give priority to selecting teachers with high political literacy and professional background as full-time ideological and political teachers. Jianchi Town Central Primary School in Hanyin County actively introduces and trains party member teachers with a profound theoretical foundation and practical experience as ideological and political teachers, which is worthy of reference. By organizing teaching observation, teaching and research activities, teacher skills training, teacher skills competition, and red culture experience,



the school continuously improves the professional quality and teaching ability of ideological and political teachers.

In the aspect of the training system, it is necessary to build a hierarchical and diverse training scheme. Jilaoqing Primary School in Dongsheng District has established a school-based teaching and research system, including collective lesson preparation, lesson presentation, and case study. At the same time, teachers are encouraged to carry out classroom-based action research, form practical wisdom, and create a professional development model of “learning, research, and application.” The combination of theory and practice should be strengthened in the training content, which includes not only theoretical research on Socialism with Chinese characteristics Thought in the new era, but also practical skills such as situational teaching and activity design.

In the incentive mechanism, it is necessary to improve the evaluation criteria of ideological and political teachers and highlight the practical guidance of moral education. The Detailed Rules for the Evaluation of Ideological and Political Teachers formulated by Jilaoqing Primary School comprehensively evaluate the teaching effect, activity organization, student feedback, and other dimensions, which effectively mobilize the enthusiasm and creativity of teachers. The construction of teachers’ morality and style is one of the core connotations of specialization. Teachers’ sense of professional honor and mission can be enhanced through the selection of “model teachers’ morality” and the publicity of outstanding teachers’ deeds.

### **3.4. Build a collaborative education community between home and school**

Ideological and political education is a systematic project that requires schools, families, and society to form a benign mechanism of joint efforts and mutual education. Collaborative mechanism not only forms an educational ecological circle, but also is an important guarantee to consolidate the effectiveness of ideological and political education. Jilaoqing Primary School in Dongsheng District pushed the article “Family Education Guidance” through parent-teacher conferences and WeChat official account to guide parents to infiltrate ideological and political education in family life, such as cultivating a sense of responsibility through housework and cultivating feelings of home and country by reading red books with parents and children <sup>[3]</sup>. Jianchi Town Central Primary School in Hanyin County has also strengthened communication and cooperation with parents by establishing home-school contact manuals and other ways, encouraging parents and children to learn red culture together, participate in school ideological and political activities, and jointly promote ideological and political education. These practices show that the effect of ideological and political education will be significantly enhanced when family education and school education resonate at the same frequency in value orientation.

The linkage between schools and clubs provides rich resources and a broad stage for ideological and political education. Jilaoqing Primary School in Dongsheng District actively “establishes a home-school cooperative education network”, organizes students to enter the community to participate in public welfare services, and conducts practical research in the red education base, making social resources a vivid classroom for ideological and political education. The Shiyuan Foreign Language Primary School in Xuanhan County makes full use of the rich local red resources, such as Bashan Red Army Park and Wanyuan Defence War History Exhibition Hall, and develops them into a practical base for ideological and political education. Through activities such as sweeping the tombs of martyrs and interviewing descendants of the Red Army, the local revolutionary history has become the most vivid teaching material. The curriculum development



process of transforming social resources into educational resources should not only stay at the utilization level, but also create a normalized and institutionalized cooperation mechanism by signing agreements and setting up bases, effectively solving the dilemma of limited school educational resources and realizing the all-around expansion of educational space.

## **4. The typical case analysis**

### **4.1. Central primary school in Changjiao town, Nanxian county, Hunan province: “Walking ideological and political course”**

Relying on the local red historical resources, the Central Primary School of Changjiao Town, Nanxian County, Hunan Province, innovatively developed a “walking classroom.” On the occasion of the 82nd anniversary of the “Factory Pit Tragedy”, the school organized 200 student representatives to enter the memorial hall for the victims of the Factory Pit Tragedy, and promoted red education through an on-site mourning ceremony, historical explanation, and group discussion. The design of the event is unique. In the solemn mourning ceremony, teachers and students, and representatives from all walks of life mourned and offered flowers together, which stimulated emotional resonance through ritual education. In the memorial hall, professional lecturers vividly restore historical scenes by combining physical exhibits, making the history of the war of resistance against Japan in textbooks tangible; In the theme discussion session after returning to school, students share their feelings with what they have seen and heard, and talk about personal ideals from historical responsibility to realize ideological sublimation. What is particularly prominent is that the school has institutionalized and normalized such activities, and regularly organizes practice at important nodes such as Tomb-Sweeping Day, the anniversary of the September 18th Incident, and the national public holiday, covering all students in grades three to six.

This “memorial hall + classroom” linkage model has achieved remarkable results. Let the students feel that the happy life now is the result of the blood and efforts of their ancestors. Educators should study hard and make our motherland stronger with their own strength. This true emotional expression confirms the far-reaching influence of practical teaching on shaping students’ values, and embodies the unique role of “venue learning” and “ritual education” in shaping values.

### **4.2. Jilaoqing Primary School in Dongsheng District: Ideological and political integration**

Jilaoqing Primary School in Dongsheng District summarized and refined the characteristic experience of ideological and political education in the school, and created a brand project of “integrating love and ideological and political education.” Focusing on the ecology of “love education”, educators will deepen the characteristics of “three-dimensional collaboration”, “curriculum integration”, and “practical education” to form a recognizable brand of ideological and political education. The school’s innovation highlights are mainly reflected in three aspects. First, build a “three-dimensional collaborative” framework, realizing vertical connection (emphasizing enlightenment in lower grades, strengthening cognition in middle grades and promoting practice in higher grades), horizontal linkage (integrating disciplines and resources) and three-dimensional radiation (educating people through cooperation between home, school and society) <sup>[2-3]</sup>. The second is to create a practical system of “integration of knowledge and practice”, and carry out activities such as “Children’s Heart to the Party” and “I take a photo with the national flag” around major festivals, and at the same time build a trinity labor education system of “campus labor + family labor + social labor”

to let students hone their will by sweating. The third is to create a cultural atmosphere of “moistening things silently”, build a red cultural corridor, build a class book corner, and hold a “Love Culture Festival” regularly, so that ideological and political education can be integrated into all aspects of campus life.

The reform of the evaluation mechanism is another innovation of the school. The school has established a core literacy-oriented evaluation system, set evaluation indicators from three dimensions: cognition, emotion and behavior, adopted the method of combining process evaluation with result evaluation, and introduced multiple evaluation subjects combining students’ self-evaluation, mutual evaluation with teachers’ evaluation and parents’ evaluation, so as to comprehensively and objectively evaluate the educational effect and demonstrate the systematic thinking of school-based ideological and political brand building.

### **4.3. Pengcheng Primary School in Chengdu: Technology empowerment in ideological and political education**

Faced with the challenge of the information age, Pengcheng Primary School in Wenjiang District, Chengdu actively explores the integration mode of “AI+ ideological and political education” and injects new vitality into traditional ideological and political education<sup>[6]</sup>. The “three-order and four-dimensional panoramic” ideological and political education system constructed by the school is quite distinctive<sup>[6]</sup>. Third-order cohesion refers to the emphasis on habit formation in lower grades, character shaping in middle grades and value guidance in higher grades; Four-dimensional integration includes fine ideological and political courses, ideological and political infiltration of disciplines, project-oriented theme activities and socialization of practical education; Panoramic coverage forms a five-in-one educational field of “teaching-activity-practice-management-environment.” In addition, the “Hongboyuan” patriotic education base built by the school adopts three-dimensional and digital scenes to realize immersive ideological and political education. By forming a team of “Red Scarf Interpreters”, cultivating the brand of “Red Hearts Will Live Forever” and implementing the link empowerment of “the party leads the group and the group leads the team”, a characteristic path of combining technical empowerment with humanistic edification has been formed, which is a successful practice of digital transformation of education in the field of ideological and political education.

## **5. Challenges and future prospects**

### **5.1. Respond to the challenges of the new media environment**

In the information age, pluralistic values are widely spread through the network platform, which poses a severe challenge to the ideological and political education in primary schools. On the one hand, there is a contradiction between the characteristics of network information fragmentation and students’ systematic cognitive needs, and the wrong value orientation mixed in massive information may dissolve the effect of school education. On the other hand, the attraction of traditional education methods is relatively insufficient, and it is difficult to compete with the vividness and interactivity of new media platforms.

To cope with this challenge, educators need to adopt the strategy of “combining dredging and blocking, focusing on dredging.” First, improve students’ media literacy and cultivate students’ information discrimination ability and critical thinking<sup>[7]</sup>. The second is to build a high-quality campus network culture position and make full use of the short video platform<sup>[6]</sup>. The third is to innovate the supply of digital ideological and political products, and make the spread of mainstream values more grounded and dynamic by developing digital educational resources<sup>[6]</sup>.

## 5.2. Promote the balanced development of urban and rural education

The ideological and political education in rural primary schools faces the double dilemma of a lack of resources and weak teachers. Digital technology is the key lever to break the gap between urban and rural areas, and it is urgent to promote educational equity through “precise assistance” and “resource sharing” of digital technology. First, fully tap classroom resources and promote the application of “three classrooms” (special delivery classroom, famous teacher classroom, and famous network classroom). Second, make efficient use of digital technology to build a regional digital resource library and a sharing platform for ideological and political education. The third is to optimize the assistance mechanism and implement the “U-G-S” (university-government-primary and secondary schools) collaborative support project.

## 5.3. Build a long-term mechanism

The sustainability of the effectiveness of ideological and political education depends on the establishment and perfection of a long-term mechanism, and a systematic mechanism should be constructed. The first is to reform the evaluation mechanism and build a “developmental evaluation system based on core literacy.” Incorporate the effectiveness of ideological and political education into the core indicators of school quality evaluation, and establish a three-dimensional evaluation system covering cognition, emotion, and behavior. Jilaoqing Primary School in Dongsheng District uses “growth value assignment” to dynamically track students’ comprehensive development, and it is worth learning to comprehensively evaluate the effectiveness of education through literacy assessment, theme practice achievement display, and so on.

The second is to improve the resource guarantee mechanism, and it is suggested to explore the resource supply model of “government-led and diversified participation.” On the one hand, increase financial input to ensure special funds for ideological and political education; On the other hand, educators should integrate social resources and mobilize the high-quality resources of the whole society to create a “Great Ideological and Political Course.” For example, Xuanhan County established a “red education base group” and built a practical education network by integrating resources such as Bashan Red Army Park and Wanyuan Defence War History Exhibition Hall.

The third is to establish a teaching and research support mechanism and emphasize the importance of “empirical research” to enhance the effectiveness of practice<sup>[1, 8]</sup>. Teaching and research support is the power source. Set up special research topics on ideological and political education and encourage teachers to carry out action research; Build a regional teaching and research community of ideological and political education, hold regular teaching competitions and exchange activities, and form a virtuous circle of “practical research promotion.” Only through institutionalized and normalized mechanism construction can educators ensure that the innovation of ideological and political education does not become a mere formality and truly realize sustainable development.

## 6. Summary

The ideological and political education in primary schools is the key link to carry out the fundamental task of cultivating moral people, and its quality is directly related to the cultivation of socialist builders and successors. By analyzing the problems of ideological and political education in primary schools, such as the deviation of ideas, a single strategy, weak teachers, and an imperfect evaluation mechanism, and combining the innovative practice of many schools in China, this study puts forward systematic improvement paths.

To sum up, to improve the effectiveness of ideological and political education in primary schools, efforts should be made to achieve the unity of value and knowledge, theory and practice, unity and diversity, and tradition and times.

The author thinks the future development of ideological and political education in primary schools should be devoted to building a “big ideological and political education system” with “big pattern (collaborative education), big classroom (breaking boundaries), big resources (integration and sharing), and big evaluation (literacy orientation)” [2, 4, 6]. Through the collaborative education mechanism inside and outside the classroom, educators can integrate various resources, connect with social reality, break the boundaries of disciplines, the walls of the campus, and the restrictions of study sections, and realize all-staff, whole-process, and all-round education. At the same time, the author suggests paying attention to the balanced development of urban and rural areas, promoting the sharing of high-quality educational resources through digital means and accurate assistance mechanisms, so that every child can enjoy high-quality ideological and political education resources. Only in this way can educators give full play to the role of ideological and political education in cultivating people for the party and the country, and consolidate the foundation and cultivate new people of the times who are responsible for national rejuvenation.

## Disclosure statement

The author declares no conflict of interest.

## References

- [1] Hu S, Zhang GB, 2023, Problems and Improvement Strategies of Ideological and Political Teachers in Primary and Secondary Schools. *China Moral Education*, 2023(10): 32–38.
- [2] Zhang T, 2025, Methods of Moral Education in Primary Schools under the Background of Great Ideological and Political Education. *Gansu Education*, 2025(9): 38–41.
- [3] Wang XH, 2025, Integration of Ideological and Political Courses in Universities, Primary and Secondary Schools to Build a New Pattern of Moral Education. *Educator*, 2025(16): 66–67.
- [4] Hu YY, 2025, The Practical Dilemma and Optimization Path of the Integration of Ideological and Political Courses in Universities, Primary and Secondary Schools. *Guangxi Education*, 2025(3): 61–64.
- [5] Zhang XQ, 2025, Local Red Resources into the Practice of Ideological and Political Education in Primary Schools. *Spiritual Civilization*, preprint.
- [6] Peng QH, 2023, The Basis, Principles and Path of Digitalization to Promote the Construction of “Great Ideological and Political Course”. *Ideological and Theoretical Education Guide*, 2023(11): 96–104.
- [7] Chen ZL, 2020, The Current Situation and Countermeasures of Ideological and Political Education in Primary Schools in the New Era. *Guangxi Education*, 2020(17): 38–39.
- [8] Xu RF, 2022, The Connotation, Difficulties, and Approaches of Ideological and Political Integration in Primary and Secondary Schools in the New Era. *Journal of Xinjiang Normal University (Philosophy and Social Sciences Edition)*, 43(3): 59–68.

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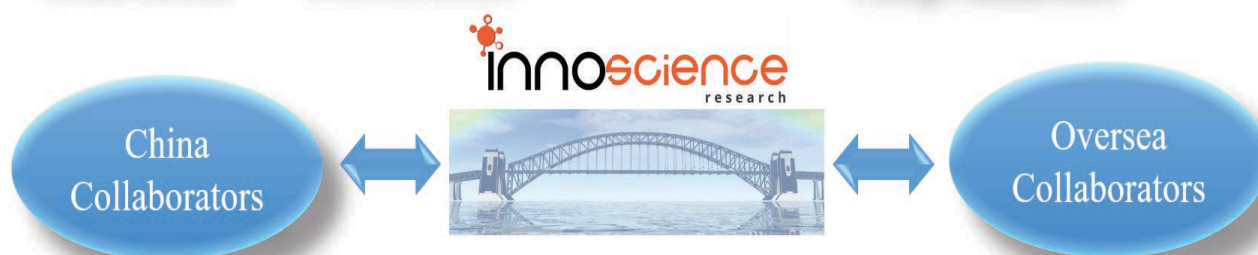
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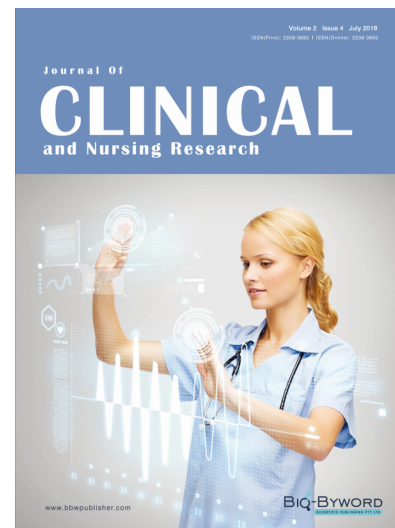
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