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## Journal of Contemporary Educational Research

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# Shift in Translation: A Case Study of Translating *NFPA 1 Fire Code* into Chinese

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**Abstract:** National Fire codes, mandated by government authorities to tackle technical challenges in fire prevention and control, establish fundamental standards for construction practices. International collaboration in fire protection technologies has opened avenues for China to access a wealth of documents and codes, which are crucial in crafting regulations and developing a robust, scientific framework for fire code formulation. However, the translation of these codes into Chinese has been inadequate, thereby diminishing the benefits of technological exchange and collaborative learning. This underscores the necessity for comprehensive research into code translation, striving for higher-quality translations guided by established translation theories. In this study, we translated the initial segment of the *NFPA 1 Fire Code* into Chinese and examined both the source text and target text through the lens of Translation Shift Theory, a concept introduced by Catford. The conclusion culminated in identifying four key shifts across various linguistic levels: lexis, sentences, and groups, to ensure an accurate and precise translation of fire codes. This study offers a thorough and lucid explanation of how the translator integrates Catford's theories to solve technical challenges in *NFPA 1 Fire Code* translation, and establish essential standards for construction translation practices.

**Keywords:** Fire code; Code document; JC Catford; Translation shift theory

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## 1. Introduction

This paper presents a case study on the translation of the *NFPA 1 Fire Code*, which is an essential document that provides guidelines for fire safety in various types of occupancies issued by the National Fire Protection Association (NFPA) <sup>[1]</sup>. As a non-profit non-governmental organization (NGO) dedicated to fire protection and control, the NFPA is committed to advancing scientific standards and codes, as well as funding fire-related research and initiatives aimed at creating a safer environment. Since its establishment in 1896, the NFPA has released over 370 codes and standards, offering comprehensive guidance in the field. Among these, the *NFPA 1 Fire Code* is renowned for its

comprehensive scope, encompassing nearly every facet of fire safety. It addresses general safety requirements, outlines the responsibilities of fire departments, provides guidelines for fire-protective building design, and specifies safety requirements for a wide range of occupancies <sup>[2]</sup>.

In this paper, the translation process is guided by JC Catford's Translation Shift Theory. The paper is structured into four sections. The introduction establishes the research significance by highlighting the crucial role of code translation in protecting lives and property. The second section provides a detailed description of the theoretical foundation of the Translation Shift Theory and its relevance to the translation of fire protection codes. The third section delves into the translation process, evaluating practical compatibility by analyzing the language features of the source text (ST) and identifying shift discrepancies. These efforts aim to investigate translation shift phenomena in code translation and achieve precise translations guided by the principles of Translation Shift Theory.

With rapid development in China, existing codes have lagged behind evolving safety standards for building systems. Chinese institutions recognized the importance of NFPA codes and mobilized a team of experts authorized by the Ministry of Public Security to translate the *NFPA 101 Life Safety Code* and other regulations in 2006. Despite being outdated and not updated in line with current editions, these references have significantly influenced the development of China's legal and code frameworks. For instance, the introduction of the *Code for Fire Protection Design of Buildings* in 2006, subsequently revised and expanded in 2014 and 2018, integrated numerous new clauses and content from the 2017 NFPA code. NFPA has also established a presence in China to actively participate in fire protection and combustion science research. NFPA codes are instrumental in advancing China's codes and standard system, as well as aiding Chinese fire departments in improving management practices.

In short, code translation plays a crucial role in fostering the mutual development of codes and fire-related knowledge across global regions, encapsulating the essence of this paper. Thus, it is essential to incorporate innovative concepts from cutting-edge literature to enhance our fire protection system, with translation serving as the initial step. The translation of national codes, guided by translation theories, plays a pivotal role in future code translation initiatives. Current translations by machine translation (MT) and professional translators often convey the literal meaning without delving into the nuances of academic discourse, leading to critical omissions or misinterpretations of technical terms. These challenges result from the lack of systematic guidance from specific translation theories and a shortage of scientific expertise. Additionally, the absence of a comprehensive glossary in the field poses another obstacle for translators. China has yet to establish a Chinese-English terminology database focused on fire protection topics, creating an academic void for researchers. Through collaborative efforts, colleagues and translators aim to build a precise and comprehensive terminology database.

## 2. Literature review

Translation Shift Theory, which emerged in the 1950s, has undergone significant developments through three distinct stages, establishing a robust foundation for contemporary translation practices. The evolution of Translation Shift Theory began with foundational work in General Linguistics by Halliday at the University of Edinburgh, influenced by Firth. Halliday was the first linguist to introduce the concept of language levels, proposing that language consists of three hierarchical categories: units, elements, and classes <sup>[3]</sup>. Specifically, "units" encompass words, phrases, clauses, and sentences; "elements" refer to the structural components within a sentence; and "classes" represent all possible forms of a particular element, known as paradigms. Building on Halliday's research, Catford published *A Linguistic Theory of Translation* in 1965, refining Halliday's model and introducing new classifications of linguistic elements <sup>[4]</sup>. Catford defined essential categories of linguistics, including units, structures, classes, and systems,



and put forth the concepts of textual equivalence and formal correspondence. Importantly, he acknowledged the inherent limitations of translation, illustrating that “translation equivalence does not always conform to formal correspondence.” To address this, he introduced the term “shifts,” defining them as “departures from formal correspondence in the process of translating from the source language (SL) to the target language (TL)”<sup>[4]</sup>. This work laid a strong foundation for the evolution of Translation Shift Theory. Following Catford’s initial contributions, the 1970s and 1980s witnessed increased scholarly interest in translation shifts. In 1995, Toury from Tel Aviv University expanded on Catford’s theory, proposing that shifts could be divided into two categories: necessary and unnecessary. Necessary shifts are those required due to differences between the source text (ST) and the target text (TT), while unnecessary shifts are optional and subject to normative constraints<sup>[5]</sup>. This distinction provided greater flexibility to Catford’s original theory, broadening its scope and applicability. Collectively, these three stages outline the evolution of the Translation Shift theory, which has become the cornerstone of contemporary translation models. Among the multitude of theories, Catford’s stands out as the most practicable and pragmatic, rendering it an ideal framework for guiding translation practices. Consequently, the author has selected Catford’s theory as the theoretical foundation for this paper.

In his seminal work, Catford provided a comprehensive and insightful definition of translation, describing it as “an operation performed on languages: a process of substituting a text in one language for a text in another”<sup>[4]</sup>. His book not only clarified several fundamental concepts in translation studies but also paved a new path for understanding the motives and methods of translation. Specifically, he defined translation as the “replacement of textual material in one language (SL) by equivalent textual material in another language (TL)”<sup>[4]</sup>. This definition laid the foundation for his exploration of the concept of “equivalence,” which he emphasized as the core element of translation theory.

According to Catford, equivalence is defined as “the corresponding form of source text material which can realize an equivalence in both form and content”<sup>[4]</sup>. For translators, the primary task is to achieve this equivalence when converting source text material into target text. Based on his theory, equivalents are further categorized into two types: textual equivalence and formal equivalence. A textual equivalent is any TL text or portion of text that is observed to be the equivalent of a given SL text or portion of text on a particular occasion. In contrast, a formal correspondent is any TL category (unit, class, structure, element of structure, etc.) that can be said to occupy, as nearly as possible, the “same” place in the economy of the TL as the given SL category occupies in the SL.

Given the inherent differences between language systems, it is widely accepted that absolute equivalence is unattainable in translation. Instead, translators can strive for an approximate formal equivalence. In this context, achieving textual equivalence appears to be a more pragmatic and effective approach for translators, rather than focusing solely on formal equivalence. However, when discussing textual equivalence, it is inevitable that some degree of form-based equivalence may be sacrificed, leading to deviations from the original form. This phenomenon is closely related to what Catford termed “translation shift,” defined as “departure from formal correspondence in the process of going from SL to TL”<sup>[4]</sup>. In essence, translation is a process of achieving textual equivalence through various shifts.

Catford’s translation shift theory identifies two main types of shifts: shift of level and shift of category. A level shift occurs when a SL item at one linguistic level has a TL equivalent at another linguistic level. He identified four primary linguistic levels: grammar, lexis, phonology, and graphology. It is clear that translation between the levels of phonology and graphology is impractical, as there are no suitable carriers for these shifts. Consequently, the only feasible level shifts in written translation are those between grammar and lexis, and vice versa. Specifically, this involves transforming grammatical elements in one language into lexical elements in another.

Catford’s analysis places greater emphasis on category shifts, which are further divided into four types:

- (1) Structural shifts: These involve the restructuring of syntax. For example, the English sentence “I like jazz” (subject pronoun + verb + direct object structure) is translated into Spanish as “Me gusta el jazz” (indirect object pronoun + verb + subject structure). Catford described these shifts as the most common, primarily involving changes in grammatical structure.
- (2) Class shifts: These entail shifts in parts of speech. An example provided by Catford is the English phrase “a medical student” and its French equivalent “un étudiant en médecine” (a student of medicine), where the adjective “medical” is translated as the noun “médecine.”
- (3) Unit (rank) shifts: These occur when the translation equivalent in the target language is at a different rank compared to the source text. Here, “rank” refers to the five hierarchical linguistic units: sentence, clause, group, word, and morpheme.
- (4) Intra-system shifts: These shifts happen when the SL and TL have approximately corresponding systems, but the translation involves selecting a non-corresponding term within the TL system. They are commonly observed in languages with similar linguistic contexts.

Catford’s contributions to translation studies have provided valuable insights into the complexities and nuances of the translation process, highlighting the importance of understanding and applying different types of shifts to achieve effective textual equivalence. The literature on Translation Shift Theory encompasses a wide range of studies that investigate the nuances of translation shifts in various contexts and genres, such as speeches <sup>[6]</sup>, movie subtitles <sup>[7]</sup>, news <sup>[8]</sup>, and novels <sup>[9]</sup>. These studies shed light on the nuances of translation shifts in different genres and mediums. These studies contribute to our understanding of how translations are influenced by linguistic, cultural, and contextual factors, highlighting the importance of maintaining accuracy, readability, and fidelity to the original text in the translation process. Further research in this area can continue to explore and analyze translation shifts in different linguistic and cultural settings, providing valuable insights for translators, researchers, and practitioners in the field of translation studies.

### 3. Discursive features of *NFPA 1 Fire Code*

After assessing the feasibility of applying translation shift theory, it is crucial to further investigate its practical implications. We translate and examine several examples extracted from the *NFPA 1 Fire Code* in order to illustrate the application of Catford’s Translation Shifts Theory in code text translation. The objective of this section is to demonstrate the adaptability of Catford’s Translation Shifts Theory in translating code text and to explore the potential of this theoretical framework in practical translation scenarios. To accomplish this, comprehensive preparatory research is essential in order to comprehend the linguistic characteristics of the original text.

In accordance with the definition given by Wikipedia, “technical code” refers to the documents that state products, processes, or services to meet the technical requirements. In accordance with the function of this code, it should be classified as technical text, which features: (1) formal in mode of speech, (2) objective and accurate in statement, (3) standard in language (4) unadorned in stylistics, (5) strict in logic, and (6) have a large number of technical terms. Undoubtedly, it belongs to technical text.

However, NFPA codes are kind of special. As a member of the American codes and standards family, the NFPA code has no legal force itself. Nevertheless, owing to its special authority in the field of fire safety, it is adopted by many legislative administrations and some federal agencies, who endowed the document with accreditation, and enable the code to be legitimized with the same coercive force as laws and regulations. Therefore, when analyzing the language features of the code, we can easily find that there are many other features: for example, every term of the

code is accurate and has a unique meaning that cannot be substituted by other words, and there are lots of complex sentences in the passage, most of which are subjected to the passive voice. These features indicate the code is not only a technical text, but also subject to the features of legal documents. In short, the code text has the characteristics of both technical texts and legal documents, and all these natures have been classified into three levels—lexical, syntactic, and textual.

### **3.1. Lexical level**

Words, as the smallest units of sentences, play a crucial role in text translation. The code text contains a wealth of technical words and specific terminologies, encompassing both general vocabulary and specialized terms. Technical codes often employ auxiliary verbs and modal verbs (such as “shall” and “must”) to emphasize formality. Moreover, code texts are characterized by accuracy, conciseness, directness, and strictness. Given the code’s dual nature as a legal text, translators must also pay attention to word pairs. The code text contains numerous word pairs, such as “owner/occupant” and “general/detail,” which require precise linguistic conversion to maintain their corresponding relationships.

### **3.2. Syntactic level**

Due to its legal nature, the code text frequently employs declarative sentences, run-on sentences, and imperative sentences, many of which are lengthy and complex. Compared to literary works, code texts use more unemotional sentences in their provisions to emphasize their authoritative nature. Another key feature is the extensive use of the passive voice. According to statistical data, over one-third of the sentences in scientific texts are in the passive voice. In translating these elements, it is essential to utilize level and category shifts guided by Translation Shift Theory.

### **3.3. Textual level**

At the textual level, the code represents a complete system. Firstly, the structure of the code text is characterized by logical consistency and coherence. Secondly, combining the features of both technical and legal texts, the code has a unified structure. For example, the sentence patterns in one chapter of the code are consistent, beginning with an outline followed by detailed information. Additionally, the imperative mood, another hallmark of legal documents, is commonly seen in clauses and sub-clauses. What distinguishes the code from other types of texts is its nominalization, which refers to the process or result of forming a noun or noun phrase from a clause or a verb. To enhance the formality and compactness of the text, code editors often convert verbs into nouns, bringing the target text closer to the style of legal documents.

Given that English is a hypotactic and subject-prominent language, while Chinese is paratactic and topic-prominent, it is necessary to use idiomatic expressions in translation to match the target language with the source language and to translate the source language as completely and objectively as possible.

## **4. Case study**

### **4.1. Shift of level**

Level shifts refer to “a SL item at one linguistic level has a TL translation equivalent at a different level”<sup>[3]</sup>. “Level shifts are only possible from grammar to lexis or from lexis to grammar, and translation shifts between these two levels are very common”<sup>[10]</sup>. In Chinese, passive voice, tense, and plurality are often expressed through lexical means (i.e., using specific words), whereas in English, these concepts are typically conveyed through grammatical structures.



Example 1 illustrates a translation pattern involving the passive voice. The passive voice is a common grammatical structure in English used to avoid mentioning the agent of an action. However, it is relatively uncommon in Chinese contexts. Therefore, a useful guideline for translators is to employ level shifts to adapt the source text to the target language's conventions.

**Example 1:**

ST: A Board of Appeals shall *be established to* rule on matters relating to the fire code and its enforcement.

TT: 成立申诉委员会，旨在裁决消防法规及其实施中产生的相关问题。

Level shift	Shift from English grammar to Chinese lexis
SL: <i>be established to</i>	passive voice structure
TL: 旨在	adverb

Analysis: “A is established to do...” means “sb. establish A, aiming at ...”, which is another kind of level shift. It is nearly impossible to be directly translated as “A 被建立去做某事,” so we use “旨在” to clarify the implied relationship reflected by the grammar. As previously noted, the passive voice is a common grammatical feature in English, particularly in formal documents. However, Chinese translators often avoid using the explicit marker of the passive voice—“被”—due to its less natural usage in Chinese contexts. Given the prevalence of passive sentences in code texts (and indeed in all formal texts), it is essential to handle these constructions effectively by either concealing or replacing the passive marker in translation. This is where level shifts become particularly important.

The following are several strategies for handling passive voice sentences in English-to-Chinese code translation:

- (1) Retaining the original subject and using “被”: Transforming the passive voice into a structure that includes the word “被” while maintaining the original subject.
- (2) Avoiding “被” and using alternatives: Using alternative words to clarify the passive voice, such as “受,” “遭,” “由,” “为……所,” etc., instead of the word “被.”
- (3) Hiding passive forms: Concealing the passive forms in the target text (TT) by rephrasing the sentence.
- (4) Converting passive to active: Converting passive sentences in the source text (ST) into active sentences in Chinese, but only when the subject is known.

These methods are not a comprehensive compilation of translation skills but rather specific transformation strategies summarized by the author during the translation of this code. The first two suggestions represent excellent applications of level shifts, where the passive voice is expressed lexically in the target text but grammatically in the source text. Meanwhile, the third and fourth strategies illustrate category shifts, which will be discussed in a later section.

To further illustrate the application of level shifts, two more examples are provided below.

**Example 2:**

ST: The AHJ shall have the authority to order an operation, construction, or use stopped when any of the following conditions exist:

- (1) Work *is being done* contrary to provision of this Code.
- (2) Work *is occurring* without a permit required by Section 1.12.
- (3) An imminent danger *has been created*.

TT: 存在下列情况时，主管部门有权叫停施工作业、建造或使用：

- (1) 施工作业中违反本规范的规定。
- (2) 未按本规范第 1.12 节要求取得许可证而擅自进行施工。

(3) 已造成紧迫危险。

Level shift	Shift from English grammar to Chinese lexis
SL: <i>is being done</i>	passive voice structure
TL: 施工作业中	verb + noun +adverb
SL: <i>is occurring</i>	present continuous tense
TL: 进行施工	verb + verb
SL: <i>has been created</i>	present perfect tense
TL: 已造成	adverb + verb

Analysis: the expression of tenses is another distinct feature of the English language, and it is often subject to level shifts during translation. In the example provided, three level shifts occur. The first underlined sense-group, “Work is being done,” which serves as the subject of the first specific provision, employs the present progressive passive voice. The second part, “Work is occurring,” uses the present continuous tense. The third sentence is in the present perfect tense.

Translating these tenses directly into Chinese poses challenges, as Chinese lacks distinct past or present perfect tenses. Therefore, the only way to convey these grammatical nuances in Chinese is by adding specific words such as “中” (indicating an ongoing action), “进行” (indicating progression), or “已” (indicating completion).

In fact, the code text primarily utilizes three common tenses: the present continuous, the present perfect, and the simple present. Most sentences in the simple present tense in this code do not require level shifts, as their tenses can be directly expressed in Chinese. However, sense groups involving the present continuous and present perfect tenses are more likely to undergo level shifts due to the inherent difficulties in conveying these tenses between English and Chinese. This is a critical aspect that translators must be mindful of during translation activities.

The numerous tenses in English often convey important temporal information. Any misunderstanding or omission in translation can lead to significant discrepancies in the interpretation of legal and code texts. Therefore, it is essential to remain vigilant about the accurate representation of these tenses to ensure the fidelity and clarity of the translated text.

### Example 3:

ST: A record of *examinations, approvals, equivalencies, and alternates* shall be maintained by the AHJ and shall be available for public inspection during business hours in accordance with applicable laws.

TT: 所有检查记录、申请记录、适用等效技术和更改方案的相关报告应报主管部门留档，并允许公众依照有关法律规定在办公时间内查看。

Level shift	Shift from English grammar to Chinese lexis
SL: <i>examinations, approvals, equivalencies, and alternates</i>	Plural noun form
TL: 所有检查记录、申请记录、适用等效技术和更改方案	adjective + noun

Analysis: The translation of plural nouns constitutes the third level shift in English-Chinese (E-C) translation. In this specific translation program, not every plural noun requires explicit expression or level shift through additional words in the Chinese context. However, in certain circumstances, omitting the plural form may lead to misunderstandings. Therefore, level shifts are necessary to clarify meaning. For example, terms such as “examinations,” “approvals,” “equivalencies,” and “alternates” are plural forms that lack direct grammatical equivalents in Chinese. However, it is crucial to convey that multiple documents are required to be saved for inspection, rather than just one. Thus, the word “所有” (all) is added to clarify the plural forms, adhering to the

principle of level shift.

Unlike other types of shifts, level shifts are deeply rooted in the fundamental linguistic differences between English and Chinese. As such, they are nearly impossible to address or replace with other translation techniques. The three examples discussed here—level shifts involving passive voice, tense, and plural nouns—demonstrate the essential role of level shifts in overcoming translation difficulties. By effectively applying these strategies, translators can ensure that the nuances and complexities of the source text are accurately conveyed in the target language, thereby enhancing the clarity and precision of the translation.

## 4.2. Shift of category

### 4.2.1. Structural shifts

According to Catford, structural shifts are the most common type of translation shifts, primarily involving changes in grammatical structure. The following examples illustrate this concept.

#### Example 4:

ST: The AHJ is authorized to exempt *detached one- and two-family dwellings* and accessory structures from the submittal of plans.

TT: 独立建造的独户住宅或双户住宅及其附属结构无需向主管部门申报设计规划。

Analysis: in the source text, the grammatical structure has been adjusted in its Chinese translation to better align with the target language's syntactic norms. Specifically, the subject "AHJ" (Authority Having Jurisdiction) becomes an indirect object in the Chinese version, while the original phrase "detached one- and two-family dwellings and accessory structures" is repositioned as the subject and placed at the beginning of the Chinese sentence. This rearrangement reflects a structural shift, which is a common type of translation shift identified by Catford, involving changes in the grammatical structure between the source and target languages.

Structural shifts are essential in translation due to the inherent differences in the syntactic patterns of English and Chinese. English often follows a subject + predicate + object + adverb structure, whereas Chinese typically uses a subject + adverb + predicate + object structure. This difference necessitates adjustments in word order and sentence structure to ensure that the translated text is both accurate and natural in the target language.

#### Example 5:

ST: When a requirement differs *between this Code and a referenced document*, the requirement of this Code shall apply.

TT: 当本规范与参考性文件要求不一致时，以本规范要求为准。

Analysis: It is evident that the sentence has undergone significant restructuring. Specifically, the phrase "between this Code and a referenced document," which functions as a complement in the source text (ST), has been moved to the front of the sentence. Meanwhile, "this Code" has been repositioned to serve as the subject of the entire sentence. In the second part of the sentence, the original structure featuring a complete clause with "subject + modal verb + object" has been transformed into a subject-less phrase.

Subject-less sentences and sense groups are common in formal Chinese texts, including the Constitution and other legal documents and codes. Given this linguistic characteristic, translators should pay particular attention to structural shifts when engaging in translation activities. These shifts are crucial for ensuring that the translated text conforms to the syntactic norms of the target language while maintaining the original meaning and intent of the source text.

#### Example 6:

ST: The AHJ shall have the authority to *limit access* to emergencies or other similar situations.

TT 1: 主管部门有权在紧急情况或其他类似情况下实行限制接近权。

TT 2: 主管部门有权在紧急情况或其他类似情况时限制人员接近。

Analysis: in the source text, the sentence structure has been significantly reorganized to better fit the syntactic conventions of the target language. Specifically, the original structure of “subject + verb + direct object + adverbial phrase of purpose + adverbial part of condition” has been restructured into one of the following patterns in the translation:

- (1) “Subject + compound predicate + direct object + condition adverbial + verb + direct object”
- (2) “Subject + compound predicate + adverbial clause of time + verb + indirect object + direct object”

In both cases, the subject “AHJ” (Authority Having Jurisdiction) remains consistent, but the arrangement of the other elements has been adjusted. This reorganization is a clear example of a structural shift, which is necessary to ensure that the translated text is both grammatically correct and semantically coherent in the target language. Such shifts are essential in translation practice, especially when dealing with complex sentences that require adaptation to the syntactic norms of the target language.

4.2.2. Class shifts

Following Halliday, the term “class” is defined as “that grouping of members of a given unit which is defined by operation in the structure of the unit next above.” In Catford’s research, “class” refers specifically to the part of speech. Class shift, therefore, occurs when the translation equivalent of a source language (SL) item belongs to a different part of speech compared to the original item. This can be seen as a transformation of the part of speech to better fit the syntactic and semantic requirements of the target language.

Example 7:

ST: Buildings *with* equivalency, alternatives, or modifications approved by the AHJ shall be considered as conforming with this Code.

TT: 任何采用经主管部门批准的等效技术、替代方案或适用修订条文的建筑，应视作符合本规范要求。

Class shifts	Shift from a proposition to a verb
SL: with	preposition
TL: 采用	verb

Analysis: in the second part of the sentence, the preposition “with” is placed after the subject, implying the meaning of “adopting” or “using.” This usage is further elucidated in the Chinese edition. The shift from a preposition to a verb is a common phenomenon in legal English, which often requires flexible strategies from translators.

Legal English frequently employs prepositions to convey specific meanings, such as “with” indicating possession or association. However, in translation, these prepositions may need to be converted into verbs to better align with the syntactic and semantic requirements of the target language. For example, the phrase “charged with murder” can be translated into Chinese as “被控犯有谋杀罪，” where “with” is transformed into the verb “控告” (accuse) to convey the meaning more clearly.

This type of shift is particularly important in legal texts, where precision and clarity are paramount. Translators must be adept at recognizing when a preposition in the source text can be more effectively expressed as a verb in the target language, ensuring that the translation is both accurate and idiomatic.

Example 8:

ST: This edition may be superseded by a later one, or it may be amended outside of its scheduled revision cycle through the issuance of Tentative Interim Amendments (TIAs).

TT: 当前标准版本有两种更新方式：发行更新版本并取代当前标准，或在非预定修订周期通过“临时修正文件”的形式进行修订。

Analysis: The translation of pronouns poses a significant challenge for translators working with code texts. For instance, the phrase “This edition” could be translated directly as “此版本,” but a more precise and clear expression would be “当前标准版本.” When faced with such choices, translators must consider the reading habits of the target language (TL) audience. Chinese codes rarely employ pronouns, which are often perceived as imprecise and indirect. Instead, formal documents in Chinese typically favor more direct expressions.

In this example, the demonstrative pronoun “This” is replaced with a more detailed modifier, “当前的” (current), to convey the specific meaning of “the current edition of the Fire Code.” Additionally, the rest of the sentence is restructured in Chinese to provide a clearer and more coherent expression for the readers. This approach exemplifies a shift from pronoun to adjective, enhancing the precision and clarity of the translation.

**Example 9:**

ST: The Board of Appeals decisions shall not be precedent-setting.

TT: 申诉委员会的决议不得作为判例。

Analysis: The sentence “A shall not be precedent-setting” is a common pattern in legal and code texts. Drawing on the official translation of the Civil Code of the People’s Republic of China, the translator has chosen to reclassify the modifier noun “precedent-setting” as a proper noun, thereby aligning with the conventions of the Chinese language. This approach is particularly relevant given that Chinese legal texts often favor specificity and directness over the use of pronouns, which are considered imprecise. By replacing the pronoun with a more detailed modifier, the translation not only adheres to the target language’s norms but also provides a clearer and more precise meaning for the reader.

**Example 10:**

ST: 1.1.1 The scope includes, but is not limited to, the following:

- (1) *Inspection* of permanent and temporary buildings, processes, equipment, systems, and other fire and related life safety situations
- (2) *Investigation* of fires, explosions, hazardous materials incidents, and other related emergency incidents
- (3) Review of construction plans, drawings, and specifications for life safety systems, fire protection systems, access, water supplies, processes, hazardous materials, and other fire and life safety issues
- (4) Fire and life safety education of fire brigades, employees, responsible parties, and the general public
- (5) Existing occupancies and conditions, the design and construction of new buildings, remodeling of existing buildings, and additions to existing buildings
- (6) Design, installation, alteration, modification, construction, maintenance, repairs, servicing, and testing of fire protection systems and equipment
- (7) Installation, use, storage, and handling of medical gas systems
- ...
- (14) Control of emergency operations and scenes
- (15) Conditions affecting fire fighter safety
- (16) Arrangement, design, construction, and alteration of new and existing means of egress

TT: 本规范的适用范围包括但不限于下列情况：

- (1) 检查临时性建筑和永久性建筑、生产工艺流程、消防器材、消防系统、和其他消防及有关生命安全情况。
- (2) 调查火灾、爆炸和危险品事故和其他相关紧急事故原因



- (3) 审核建筑安全设施、消防系统、疏散通道、消防供水、工艺流程、危险品和其他消防安全事项的建  
筑方案、图纸和设计说明
- (4) 面向消防队队员、单位从业人员、相关负责人和公众开展消防生命安全教育
- (5) 现有建筑的平面布置和环境、新建项目的设计建造和现有建筑的改建和扩建
- (6) 防火系统的设计、安装、改造、变更、建设、维护和测试，消防器材的维护与保养
- (7) 医疗气体系统的安装、使用、存储和处理
- ... ..
- (14) 控制应急措施和突发情况
- (15) 影响消防员安全的环境
- (16) 新建疏散通道的平面布置、设计、建造和及原有疏散设施的改造

Analysis: This provision marks the beginning of the main body of the code, stipulating the scope of application of the document. As is well-known, English is a static language that prefers the use of nouns, while Chinese is dynamic, favoring verbs. This difference necessitates the use of class shifts in translation, which involve the conversion of parts of speech, such as prepositions to verbs, nouns to verbs, and adjectives to nouns. In this sentence, the nouns “inspection” and “investigation” are translated into verbs, thereby avoiding rigid and unnatural translation.

Technical English often employs nominalization, which can complicate translation into Chinese. Class shifts serve as a valuable tool for addressing nominalized sense groups by appropriately transforming these sentences into dynamic Chinese expressions. This approach ensures that the translation is both accurate and natural in the target language.

### 4.2.3. Unit (rank) shifts

Catford’s translation theory identifies five hierarchical linguistic units (ranks): sentence, clause, group, word, and morpheme. Unit shifts are particularly useful for translating long and complex sentences. By adjusting the rank of linguistic units, translators can effectively manage the syntactic and semantic complexities of the source text, ensuring that the translation remains coherent and comprehensible in the target language.

#### Example 11:

ST: This Code was originally developed as a result of the requests of many members of the National Fire Protection Association for a document covering all aspects of fire protection and prevention that used the other developed NFPA codes and standards.

TT: 起初，应各国家消防协会会员国的要求，美国消防协会起草本规范，旨在制定一部综合性规范，涵盖美国消防协会规范各项现行标准、火灾防护与预防等各方面内容。

Analysis: This sentence is long and complex, typical of legal documents. In this case, shifts are employed across structural, class, and unit dimensions to facilitate translation. Specifically, the phrase “..for a document covering all aspects of fire protection and prevention...” functions as an adverbial clause of purpose in the original sentence. However, in the translation, it is extracted as an independent segment, and the phrase “as a result of” is rendered concisely as “□” (should), which aligns with the directness and conciseness required in code texts.

In this translation, a single sentence is transformed into a clause group, and a phrase is condensed into a single word, demonstrating the application of unit shifts. These shifts are essential for managing the syntactic and semantic complexities of the source text, ensuring that the translation remains coherent and comprehensible in the target language.

Future research will undoubtedly encounter many long and complex sentences in legal texts. These sentences often need to be divided into several parts according to their sense groups to enhance clarity and acceptance by

Chinese readers. This approach will facilitate a more effective translation process, ensuring that the translated text is both accurate and accessible.

**Example 12:**

ST: A permit shall be predicated upon compliance with the requirements of this Code and shall constitute written authority issued by the AHJ *to* maintain, store, use, or handle materials; to conduct processes that could produce conditions hazardous to life or property; or to install equipment used in connection with such activities.

TT: 许可证为主管部门签发的书面授权文件，应按本规范要求办理。进行下列活动时应办理许可证：材料的维修、储存、使用或处理；进行可能危及生命财产安全的生产状况流程，或需安装上述活动中所用到的设备。

Analysis: The source text features a long and complex sentence composed of three clauses and numerous sense groups. To facilitate translation, this sentence has been divided into two complex sentences in Chinese, with three types of unit shifts coexisting within the same sentence. These shifts are essential for managing the syntactic and semantic complexities of the source text, ensuring that the translation remains coherent and comprehensible in the target language.

- (1) Clause-to-sentence shift: The original English sentence is divided into two sentences in Chinese. This shift allows for better clarity and readability in the target language, as Chinese often prefers shorter, more direct sentences.
- (2) Sense group-to-clause shift: The coordinated sense group “A permit shall be ... and shall constitute written authority issued by the AHJ...” is separated into two short clauses linked by a comma. This shift enhances the clarity of the translation by breaking down complex structures into more manageable segments.
- (3) Word-to-sense group shift: The preposition “to” serves as a linkage between the former part and the adverbial of purpose. In the translation, the translator expands the word “to” into a clause, aiming to emphasize the preceding subject while also introducing a new part. This shift highlights the importance of the subject and provides a smoother transition to the next segment.

**Example 13:**

ST: A *decision* of the Board of Appeals to modify an order of the AHJ shall be *in writing* and shall specify *the manner in which such modification is made, the conditions upon which it is made*, the reasons therefore, and justification linked to specific code sections.

TT: 若申诉委员会决定修改主管部门的指令，应形成书面文件，并载明修改的具体方案、附带条件、修改理由，及修改所依据的具体规范条款。

Analysis: The long sentence is characteristic of the style typically found in code texts. In this example, several types of shifts are employed to facilitate translation. (1) Class shift: The first underlined word undergoes a class shift, transforming from a noun to a verb. This shift helps to align the grammatical structure with the target language’s conventions. (2) Rank shift: The phrase “be in writing” is extracted separately as a short sentence. This can be considered a rank shift, where a phrase in the source text is restructured into a complete sentence in the translation. (3) Clause-to-phrase shift: The clauses “the manner in which such modification is made” and “the conditions upon which it is made” are shifted from clauses to phrases. This is a common technique in code translation, where translators aim to produce a more concise translation by using fewer words while maintaining the original information.

Thirteen examples have been selected to illustrate the translation shifts in this code text, covering nearly every notable key point. In fact, significant efforts have been made to match these linguistic differences between Chinese and English with the examples provided in Catford’s *A Linguistic Theory of Translation*. However, it is important to note that Catford’s work primarily offers case studies from French and Spanish, providing limited insights into the

linguistic differences between Chinese and English. Therefore, it is essential to explore the correlation between shifts and the unique linguistic features of these two languages.

The only drawback identified in this analysis is the absence of intra-system shifts, which occur only when two languages share a fundamentally similar linguistic system. Given the significant differences between Chinese and English, no intra-system shifts were found during the analysis. This highlights the unique challenges and considerations involved in translating between these two languages. The code text exhibits distinct language features that require careful attention during translation. The application of Translation Shift Theory is particularly effective in addressing the linguistic differences between Chinese and English. By employing various types of shifts, translators can ensure that the translated text is both accurate and accessible, bridging the gap between the source and target languages.

## 5. Conclusion

This study employed Catford's Translation Shift theory as its theoretical foundation, providing a comprehensive and detailed analysis of how translators can integrate code translation with Catford's theory. It explores how the theory can be applied to address various challenges encountered during the translation process. The following sections summarize the major findings and suggest areas for improvement in future code translation research.

### 5.1. Major findings

The fundamental differences between the source and target languages necessitate the application of various translation shifts. The key findings of this study are as follows:

First, Catford's translation shift theory is suitable for code translation. Code documents exhibit characteristics of both technical and legal texts, requiring precise translation while preserving the original linguistic features. Given the text's features, such as frequent use of the passive voice, formal language, and complex sentences, Catford's theory offers practical solutions to enhance comprehension. It encourages translators to think beyond traditional word-for-word approaches, fostering more flexible and contextually appropriate translations. Additionally, the theory provides a comprehensive framework for understanding various translation techniques. For instance, division can be seen as a form of rank shift at the sentence level; conversion involves class shifts; inversion is a specific type of structural shift; and changes in voice exemplify level shifts between grammar and lexis.

Second, translation skills play a vital role in the process. The author identifies several key translation skills that are crucial for effective code translation:

- (1) Pronoun and conjunction: Pronouns such as "this," "that," and "it" (when used as subjects following adverbial clauses) should be clarified with specific references to avoid ambiguity. In contrast, conjunctions are often omitted in Chinese translations due to the language's paratactic nature. From the perspective of level shifts, these techniques, amplification and omission, can be classified as grammar-to-lexis and lexis-to-grammar shifts, respectively, and are essential for handling pronouns and conjunctions effectively.
- (2) Passive voice: The study identifies four strategies for translating passive voice sentences in English-to-Chinese code translation. The most common approach is converting passive sentences in the source text (ST) into active sentences in the target text (TT). Statistical analysis reveals that out of 198 passive voice sentences in the source text, 113 were restructured into active sentences to align with the conventions of formal documents.
- (3) Long complex sentences: Long and complex English sentences can be effectively broken down into shorter Chinese sentence groups through rank shifts. Although these complex sentences may be unfamiliar to Chinese readers, who are accustomed to shorter clauses and sentences, translators can divide them into sense



groups, achieving equivalence at the sentence level.

- (4) Terminologies: The translation of technical terms presents several challenges. In some cases, terms have direct equivalents in Chinese, such as “facility” ( 设施 ) and “equipment” ( 设备 ). However, for terms without direct equivalents, two strategies are employed: word-for-word translation and creative recreation. For example, “imminent danger” is translated as “紧迫危险,” while “Authority Having Jurisdiction (AHJ)” is creatively translated as “住房和城乡建设局” to reflect its functional equivalent in the Chinese context. Given the potential for misunderstanding due to the lack of cultural equivalents, a glossary with detailed descriptions is compiled to provide sufficient context for readers.

## 5.2. Suggestions

Here are also some suggestions for future researchers on code translation:

- (1) Accurate word choice and coherence: The accurate selection of words, maintaining a coherent writing style, and ensuring uniformity in context are essential components of code translation. Translators often face dilemmas between foreignization (preserving the original meaning) and domestication (enhancing readability). Inspired by Catford’s emphasis on the free movement of equivalences across rank scales, translators should aim for correspondence at the level of sense groups rather than individual words. This approach, combined with attention to the writing style and context of the source text, can achieve a higher level of correspondence and produce higher-quality translations.
- (2) Application of shifts: Translators should not be constrained by rigid correspondences but should actively apply shifts of categories, units, classes, or structures to avoid word-for-word translation. This flexibility ensures that the translation is clear, accurate, and contextually appropriate.

In conclusion, Catford’s Translation Shift Theory provides a robust framework for addressing the linguistic differences between English and Chinese in code translation. By integrating this theory with practical translation skills, translators can produce high-quality translations that meet the demands of both accuracy and readability. Future research should continue to explore the application of these shifts and refine translation practices to enhance the quality and acceptance of code translations.

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# A Study on Penetration Strategies of Infectious Disease Prevention and Control Education in High School Biology Teaching

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**Abstract:** The outbreak of COVID-19 pneumonia has had a serious impact on the world and has led to a greater awareness of the importance of infectious disease prevention and control. Biology is closely related to life sciences and is an ideal discipline to penetrate infectious disease education. Conducting infectious disease prevention and control education can help increase students' knowledge of infectious disease prevention and control and prompt them to form good living habits.

**Keywords:** High school biology classroom; Infectious disease prevention and control education; Penetration education

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## 1. Introduction

Infectious diseases are still the current global focus of attention, the outbreak and prevalence of infectious diseases have brought about an impact on the world, infectious diseases not only threaten the safety of human life and property but also adversely affect the stability of society. In 2020, the outbreak of the COVID-19 epidemic fully exposed the lack of health awareness among citizens. Due to the characteristics of rapid transmission and strong morbidity of infectious diseases, the prevention and control of infectious diseases are facing a serious test<sup>[1]</sup>, which makes people further recognize the importance of infectious disease prevention and control. Therefore, it is of great significance to strengthen the education of infectious disease prevention and control and improve the citizens' awareness of prevention and control. Biology and life sciences are closely related; high school biology, as a basic science subject, covers a wealth of knowledge on infectious disease prevention and control and is the ideal subject to penetrate infectious disease education. Educating students about the prevention and control of infectious diseases can help increase their knowledge of infectious disease prevention and control and cultivate healthy living habits.

## **2. Significance of penetrating infectious disease prevention and control education in high school biology classrooms**

### **2.1. Increasing students' knowledge base and cultivating healthy life habits**

Many problems were exposed during the prevention and control of the COVID-19 epidemic, which made people realize the importance of biosafety education <sup>[2]</sup>. Penetration of infectious disease prevention and control education in high school biology classrooms can help improve students' safety awareness and prompt them to develop healthy living habits.

First of all, school is the primary path of education <sup>[3]</sup>. The high school biology curriculum is closely related to the knowledge of infectious disease prevention and control. For example, there is knowledge related to the immune system set in the selective compulsory high school biology 1 "Homeostasis and Regulation" published by People's Education Publishing House. Through high school biology teaching, it can help students learn and understand how the organism fights against infectious diseases, and learn the structural composition of the virus as well as how the virus proliferates, so as to enable students to understand the mechanism of infectious disease occurrence. Therefore, the knowledge of infectious disease prevention and control penetrating into the classroom of high school biology teaching can increase students' learning interest and help them understand and master key knowledge. Secondly, the infiltration of infectious disease prevention and control education in the process of high school biology teaching can help students learn the transmission channels of infectious diseases and understand the methods of preventing infectious diseases, so that students can realize that the prevention and control of infectious diseases need to start from everyone, to improve students' safety literacy and develop a healthy life habit.

### **2.2. Enhancing students' sense of social responsibility**

It is clearly pointed out in the Biology Curriculum Standards for General Senior Secondary Schools (2017 Edition Revised in 2020) that the biology curriculum should emphasize the cultivation of students' social responsibility, so that students can pay attention to social issues related to biology, participate in discussions and make rational explanations, and form a scientific worldview, outlook on life, and values. The penetration of infectious disease prevention and control education is in line with the requirements of this curriculum standard, students learn about infectious disease prevention and control in the biology classroom, understand the impact of infectious diseases on themselves and their families and society <sup>[4]</sup>, and realize that not only do they need to protect their own health in life, but also pay attention to the health of others, and actively participate in the prevention and control of infectious diseases. For example, when learning about viruses, the transmission pathways of infectious diseases can be incorporated, so that students understand that their own behavior may affect the people around them, thus encouraging the development of healthy habits, such as washing their hands diligently, wearing masks, and so on.

After learning how infectious diseases spread, the hazards they bring, and understanding the measures to stop the spread of infectious diseases, students further realize the importance of the prevention and control of infectious diseases. They pay more attention to the biosecurity problems caused by infectious diseases, which increases their sense of social responsibility and enables them to take the initiative to maintain the hygienic environment of their campuses and classes, which will invariably play a supportive role in the prevention and control of infectious diseases.

### **2.3. Improving students' biosafety awareness**

High school biology classroom is an important place for biosafety education <sup>[5]</sup>, and students' biosafety awareness can be enhanced through the penetration of infectious disease prevention and control education.

In the process of teaching high school biology, teachers can show students the transmission process of infectious

diseases and the harm caused by infectious diseases through vivid cases. Students can intuitively feel how the virus spreads in the host body and realize the serious threat of infectious diseases to human health, which will enhance students' biosafety awareness and prompt students to establish the concept of prevention and proper control of infectious diseases in their lives when they occur.

Teachers in the teaching process penetrate the impact of infectious diseases on the ecological environment and social economy. For instance, infectious diseases can cause massive deaths of animals, destroying the ecological balance; large-scale outbreaks of infectious diseases can cause significant losses to the social economy, affecting the stability of the country and so on. Through the penetration of these cases, students are able to comprehensively recognize the importance of biosecurity.

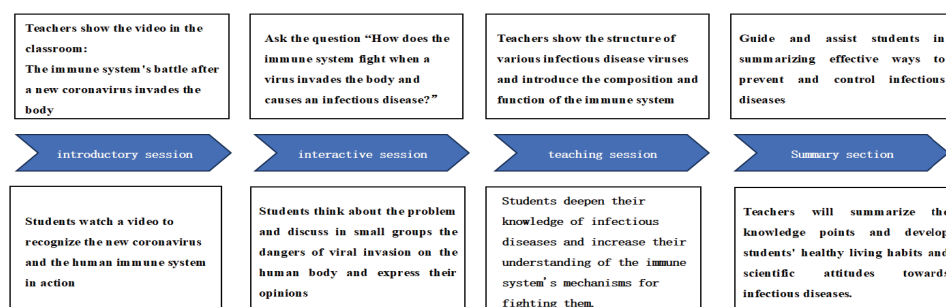
In general, the penetration of infectious disease prevention and control education in high school biology classrooms can not only help students realize the importance of infectious disease prevention and control, but also help students form a certain sense of social responsibility, so that they realize that everyone can contribute to the process of preventing and controlling infectious diseases, and develop healthy habits in life and form a consciousness of consciously prevent infectious diseases.

### **3. Combination of high school biology and infectious disease prevention and control education**

#### **3.1. Combination of viral structure and education on prevention and control of infectious diseases**

High School Biology Compulsory 1 textbook, published by the People's Education Publishing House, includes content on viruses in the "Molecules and Cells" section, specifically in Section 1: "The Cell as the Basic Unit of Life Activity." This expanded content explores the application of virus-related knowledge, emphasizing its close connection to the occurrence of infectious diseases. Students learn about viruses and realize that viruses are the main pathogens that cause infectious diseases, which can be divided into plant viruses, animal viruses, and bacterial viruses according to different hosts <sup>[6]</sup>. Viruses have no cellular structure and are mainly composed of external proteins and internal genetic material <sup>[7]</sup>. Knowledge of the human immune system is presented in Chapter 4 of the Humanistic Version of Selective Compulsory 1, Homeostasis and Regulation, which can help students understand how the body defends itself against infectious diseases by incorporating knowledge of infectious disease prevention and control into the teaching and learning process. Using Chapter 4, Section 1, The Composition and Function of the Immune System as an example, the teacher can introduce a video demonstrating how the immune system responds when the novel coronavirus invades the human body. Since students in Compulsory 1 have already learned about viruses, they will have a foundational understanding of the topic. The teacher can then pose the question: When a virus invades the body and causes an infectious disease, how does the immune system respond? To enhance students' interest in learning, the teacher first explains the components of the immune system, clarifying their structure and functions. Finally, students are guided to summarize effective methods for preventing and controlling infectious diseases while fostering good habits for a healthy lifestyle (**Figure 1**).





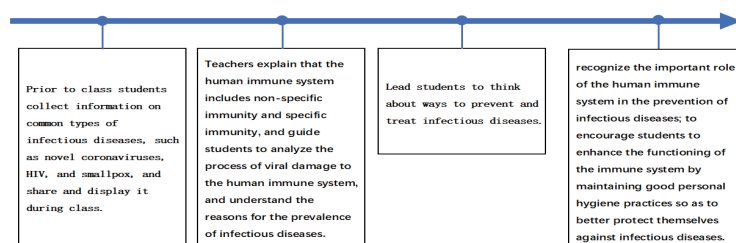
**Figure 1.** A case of combining virus structure with education on prevention and control of infectious diseases

### 3.2. Integration of the immune system and infectious disease prevention and control education

The knowledge of the immune system in high school biology textbooks provides an important theoretical basis for infectious disease prevention and control education. The human immune system has the functions of immune defense, immune monitoring, and immune self-stabilization, including non-specific immunity and specific immunity<sup>[8]</sup>.

Non-specific immunity is innate and provides some resistance to all pathogens, including barriers such as skin and mucous membranes and immune cells such as phagocytes. Specific immunity is acquired immunity to a specific pathogen or antigen, including humoral and cellular immunity. Humoral immunity destroys pathogens through the production of antibodies by plasma cells; cellular immunity activates target cells or destroys pathogens through T cells.

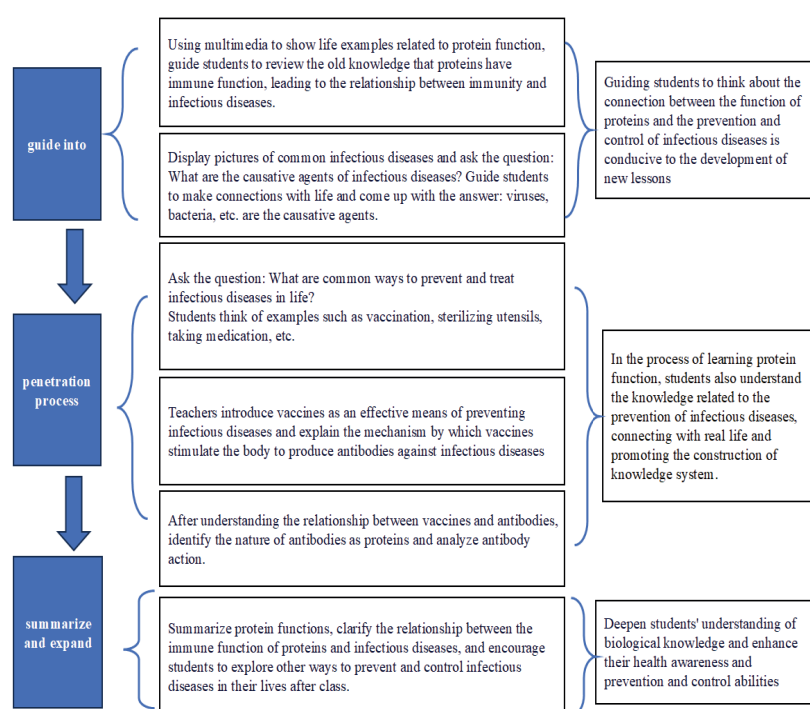
Students can learn about how the human immune system works and how to prevent infectious diseases by boosting immunity. For example, when explaining the human immune system, students can be guided to think about how to enhance the immune system by maintaining good personal hygiene habits, so as to better protect themselves against infectious diseases. At the same time, practical cases can be incorporated, such as the outbreak of the COVID-19 pandemic, which students are familiar with. Due to the public's initial lack of understanding of the virus, many people failed to take precautions, leading to the rapid spread of the epidemic and severe consequences for our country. Subsequently, students were reminded of the strategies for combating the pandemic, including vaccination, self-protection, and maintaining good hygiene. This case helps students recognize the dangers of infectious diseases and the crucial role of the immune system in their prevention and control (**Figure 2**).



**Figure 2.** A case of integration of the immune system with education on prevention and control of infectious diseases

The high school biology textbook under discussion contains a chapter titled "Protein is the Main Bearer of Life Activities." This chapter is designed to instruct students in the structure and function of proteins, as well as the formation of structure and function. Teachers who wish to incorporate this chapter into their curriculum may do so by using it to explain the function of proteins in the process of preventing and controlling infectious diseases. For instance, the immune function of proteins can be elucidated by displaying the image of "common infectious

diseases in life” and posing the question, “What is the causative agent of infectious diseases?” This prompts the notion that viruses and bacteria can be the causative agents of infectious diseases. Subsequently, the question, “What are the common methods of preventing and treating infectious diseases in our lives?” can be posed. The subsequent discussion will center on the role of vaccines in this context, highlighting the significance of antibodies as a crucial component of the immune system. The concept of antibodies as proteins will then be revisited and the implications for disease prevention and control will be explored. The discussion will then shift to the importance of hygienic practices, emphasizing the necessity of adhering to the recommended vaccination schedule. This will be followed by an examination of the role of hygienic habits in preventing the onset of infectious diseases. Through this multifaceted learning process, students not only acquired the knowledge that proteins have immune function but also the knowledge of infectious disease prevention and control. This learning also enhances their understanding of infectious disease prevention and control and strengthens their ability to prevent and control the concept of infectious diseases (Figure 3).



**Figure 3.** Example of combining protein function with education on infectious disease prevention and control

## 4. Challenges of penetrating infectious disease prevention and control education in high school biology teaching

### 4.1. Insufficient teachers' knowledge

Teachers' professional knowledge is indispensable for the penetration of infectious disease prevention and control education in high school biology teaching, and insufficient professional reserves cannot combine infectious disease-related knowledge with teaching. On the one hand, the knowledge structure of high school biology teachers focuses on traditional biological theories, with limited knowledge about infectious diseases, such as the characteristics of emerging infectious diseases and the latest prevention and control technologies. On the other hand, infectious disease prevention and control education involves the cross-fusion of multiple disciplines, which requires teachers to know biology, medicine, sociology, psychology, and other aspects of multi-disciplinary knowledge. However, in reality,

teachers' lack of interdisciplinary knowledge may not be able to guide students to fully understand the phenomenon of infectious diseases from multiple perspectives, limiting the breadth and depth of infectious disease prevention and control education.

#### **4.2. Insufficient students' interest**

Biology has abundant high school academic tasks, with a huge knowledge system that includes cell biology, genetics, ecology, and many other knowledge points. In the face of heavy academic pressure, students may have a low interest in knowledge on infectious disease prevention and control. They may think that this knowledge has little to do with their own lives, thus lacking motivation and enthusiasm to learn; some students may think that the prevention and control of infectious diseases is the doctor's responsibility and pay little attention in class, thus the teaching effect is poor and fails to achieve the expected learning purpose. This means that when infectious disease prevention and control education is infiltrated into the biology classroom, attention should be paid to improving students' motivation.

### **5. Strategies to address the challenge of penetrating infectious disease prevention and control education in high school biology teaching**

#### **5.1. Increasing teachers' professional knowledge reserve**

In response to the lack of teachers' professional knowledge reserve, teachers should continue to learn and increase their knowledge reserve. Teachers should learn and accumulate knowledge about infectious diseases in their daily lives. For example, learning the classification of infectious diseases, sources, transmission channels, etc., to understand the latest infectious disease prevention and control technology. Secondly, teachers should also pay attention to interdisciplinary knowledge learning, to understand other disciplines about infectious disease prevention and control education, in order to better carry out infectious disease prevention and control education.

#### **5.2. Stimulating students' interest in learning**

In infectious disease prevention and control education penetration, first of all, biology teachers should stimulate students' interest through multimedia, such as playing animation and videos about infectious disease knowledge, showing common infectious disease pathogens pictures, setting up infectious disease knowledge Q&A, etc., to arouse students' curiosity and stimulate their interests. In addition, teachers can introduce real social cases, so that students can realize the impact of the outbreak of infectious diseases on society and individuals, prompting students to change their concepts and realize that the prevention and control of infectious diseases are closely related to everyone, encouraging students to study the knowledge of infectious disease prevention and control, understand the principle of the outbreak of infectious diseases, and learn to reasonably cope with the occurrence of infectious diseases and move forward towards a healthy life.

### **6. Conclusion**

In conclusion, integrating infectious disease prevention and control education into high school biology teaching not only helps to increase students' knowledge base about infectious diseases and enhance their awareness of biosafety but also helps to cultivate students' healthy living habits. However, the penetration of infectious disease prevention and control education in biology teaching cannot be separated from the high professional quality of teachers. This means that biology teachers need to keep learning, pay attention to, and explore biological knowledge related to the prevention and control of infectious diseases, and look for content that can be integrated with high school biology



teaching. Only in this way can infectious disease prevention and control education penetrate into high school biology teaching, and ultimately achieve the purpose of cultivating students' awareness of biosafety and literacy, and promoting the development of healthy living habits.

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# Teaching Reform and Practice of Statistics Courses in Big Data Management and Applications Major in the Context of New Quality Productivity

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**Abstract:** In the new era, the impact of emerging productive forces has permeated every sector of industry. As the core production factor of these forces, data plays a pivotal role in industrial transformation and social development. Consequently, many domestic universities have introduced majors or courses related to big data. Among these, the Big Data Management and Applications major stands out for its interdisciplinary approach and emphasis on practical skills. However, as an emerging field, it has not yet accumulated a robust foundation in teaching theory and practice. Current instructional practices face issues such as unclear training objectives, inconsistent teaching methods and course content, insufficient integration of practical components, and a shortage of qualified faculty—factors that hinder both the development of the major and the overall quality of education. Taking the statistics course within the Big Data Management and Applications major as an example, this paper examines the challenges faced by statistics education in the context of emerging productive forces and proposes corresponding improvement measures. By introducing innovative teaching concepts and strategies, the teaching system for professional courses is optimized, and authentic classroom scenarios are recreated through illustrative examples. Questionnaire surveys and statistical analyses of data collected before and after the teaching reforms indicate that the curriculum changes effectively enhance instructional outcomes, promote the development of the major, and improve the quality of talent cultivation.

**Keywords:** New quality productivity; Big data; Compound talents; Statistics course; Teaching examples

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## 1. Introduction

In recent years, with the rapid development of technologies such as big data, artificial intelligence, and the Internet of Things, the global industrial and social structure has undergone profound changes. In this industrial upgrade and

transformation, the role of data in productivity has become increasingly prominent and an irreplaceable part of the new quality of productivity<sup>[1]</sup>. In particular, big data, as a new type of productivity, has become the core driving force for the intelligent transformation and innovative development of all walks of life. The application of big data not only covers the fields of business, finance, and medicine, but also promotes innovation in the field of education<sup>[2]</sup>. Against this background, the Big Data Management and Applications major came into being, aiming to cultivate compound talents with data analysis and industry application capabilities<sup>[3]</sup>. Before the establishment of this major, there were already many majors related to big data, among which the most typical representatives were information management and information systems and data science and big data technology. Although the training objectives of these two majors include the analysis, processing, and application of big data, there are significant differences in their focus and training objectives compared with the Big Data Management and Applications major. The biggest difference is that the Big Data Management and Applications major focuses more on the actual needs of production and life, and aims to cultivate students' ability to use big data analysis to deal with practical problems encountered in the production field, so as to support decision-making and resource allocation in production activities<sup>[4]</sup>. As an emerging discipline, due to the lack of teaching theory and teaching practice, it faces a series of challenges in the actual teaching process, such as vague training objectives, a mismatch between teaching content and methods, and insufficient practical links. These challenges not only affect the quality of talent training, but also hinder the development of the major. Statistics is one of the core courses in the Big Data Management and Applications major. Its teaching quality directly affects students' understanding and application ability of big data analysis methods<sup>[5]</sup>. Carrying out effective teaching reform for this course is not only related to students' professional skills, but also directly affects their future competitiveness in big data-related industries, thereby indirectly changing the role of new quality productive forces in social change. To this end, optimizing the teaching methods of statistics courses and exploring new teaching models in the era of big data are important ways to promote professional development.

## **2. The necessity of teaching reform**

### **2.1. Requirements of new quality productive forces for statistics courses**

The data-centric production model is a typical representative of new quality productivity. With the widespread application of technologies such as big data, artificial intelligence, and the Internet of Things, data has become the core driving force for the transformation and upgrading of all walks of life. In this context, statistics, as a powerful tool for data processing, has been set as a professional basic course in many emerging majors. Especially for the Big Data Management and Applications major, the success or failure of statistics course teaching directly affects students' competitiveness in future employment. Therefore, in this new context, statistics courses need to focus on the combination of courses and actual production while focusing on cultivating students' interdisciplinary comprehensive analysis capabilities.

#### **2.1.1. Focusing on the combination of courses and actual production**

In real life, the sources of data are complex and diverse, covering various fields such as education, business, finance, medical care, and social media. These data are not only huge in quantity, but also diverse in types and complex in structure. Therefore, statistics courses must be closely integrated with actual production and industry needs to help students understand and respond to the actual challenges of data processing. In the era of big data, pure theoretical knowledge can no longer meet the industry's demand for talent. Students need to master the real application scenarios and analysis skills of data through course learning. Specifically, in terms of courses, specific production environments and business scenarios need to be integrated. For example, in the e-commerce industry, user behavior

data can be analyzed to predict user purchasing tendencies; in the medical industry, patient data can be analyzed to improve the accuracy of disease prediction; in the financial industry, statistical methods can be applied to risk assessment and market trend prediction. In terms of practice, the course should strengthen the full-process practice of data analysis, especially in the acquisition, cleaning, processing, and analysis of data. Through repeated training and key explanations of the above four links, students can master the various skills of data processing. For example, in the data cleaning link, the course should focus on how to identify and process missing values, duplicate values, outliers, and inconsistent data formats in the data. In addition, the use of different programming languages and big data processing tools is also an important part of course practice.

### **2.1.2. Cultivating interdisciplinary comprehensive analysis capabilities**

In the era of big data, the application scope of statistics has surpassed the traditional theoretical framework and has gradually been deeply integrated with disciplines such as computer science, artificial intelligence, economics, and management <sup>[6]</sup>. By integrating this interdisciplinary knowledge, statistics can not only analyze and process massive data more efficiently, but also propose more innovative solutions to complex problems to adapt to the rapid development of productivity changes. Therefore, statistics courses should focus on strengthening the integration of interdisciplinary knowledge and especially emphasize the cultivation of students' comprehensive analytical ability. In addition, attention should be paid to the cultivation of students' interdisciplinary thinking, so that they can flexibly use computer programming, artificial intelligence algorithms, and management methods to deeply analyze problems from multiple dimensions and angles and design optimization solutions. Such a course design will help students adapt to the ever-changing social needs, improve their competitiveness in the big data era, and further enhance their innovation ability and cross-domain collaboration ability.

## **2.2. Problem analysis of traditional statistics teaching methods**

Statistics, as the basic theory of multiple disciplines, has broad application prospects. In recent years, with the advent of the big data era, statistics is no longer just a branch of mathematics, but has become an important bridge connecting data and decision-making. However, despite the increasingly important status of statistics, the traditional teaching model still faces many problems such as outdated course content, single practical methods, and insufficient practical links. These problems have limited the teaching effect and the comprehensive development of students to a certain extent.

### **2.2.1. Outdated course content**

As a branch of mathematics, statistics includes a large number of laws, inferences, and theories in its course content. Although these contents play a critical role in basic teaching, in practical application-oriented majors, the overly boring theorems and derivation processes are difficult to arouse students' interest and have limited improvement on teaching effectiveness. At present, most statistics courses still focus on classical statistical theories, such as probability theory, hypothesis testing, parameter estimation, and linear regression, while ignoring the introduction of modern statistical methods. With the rapid development of artificial intelligence and big data technology, emerging statistical methods such as reinforcement learning, knowledge distillation, and model quantitative pruning are becoming increasingly popular in practical applications, but many statistics courses have not yet covered these cutting-edge technologies, resulting in the course content not being able to truly keep pace with the times.

### **2.2.2. Single practical method**

The traditional statistical teaching model usually relies too much on lecture-based teaching, where teachers lead the knowledge transfer and students passively accept it. Although this method can effectively convey basic knowledge,

it lacks deep interaction and participation, and it is difficult to arouse students' interest and creativity. The course content is often boring and lacks relevance to real-world problems, making it difficult for students to perceive the value of applying what they have learned. In addition, traditional teaching often ignores case-driven and problem-oriented learning methods. In big data analysis, the discussion of specific cases and problems can help students better understand the practical application of statistical methods and exercise their problem-solving skills. Although some schools have introduced these teaching methods in statistics courses, unfortunately, due to the lack of classic teaching templates for this type of teaching method, it is difficult for teachers and students to adapt to this type of teaching method in the actual teaching process, and even results in twice the effort with half the results.

### **2.2.3. Insufficient practical links**

Traditional statistics teaching mostly focuses on theoretical explanations and exercise training. Although some majors have some simple hands-on exercises, they only stay at the superficial imitation level. Although this method is applicable to many disciplines, it is no longer enough for Big Data Management and Application majors. In modern data analysis, students not only need to understand statistical principles, but also master a variety of data analysis tools (such as Python, R, SQL, etc.), and be able to use these tools for data cleaning, modeling, and visualization. Due to the diversity and complexity of big data, pure theoretical learning and simple experiments can hardly help students truly understand and apply statistical methods. Therefore, adding practical cases of real projects in course design is an effective way to break the gap between teaching and production. Reasonable practical training can improve students' competitiveness in the future workplace.

## **3. Strategies for teaching reform**

### **3.1. Building a curriculum system under the background of new quality productivity**

New quality productivity has a different connotation from traditional productivity. It emphasizes the high integration of technological innovation and intelligence under the premise of data-driven. In this context, the original curriculum system can no longer meet the needs of modern society for data analysis, innovative thinking, and technological application. It has become an inevitable requirement to deeply integrate the existing curriculum system with the development trend of productivity. In order to adapt to this change, the curriculum design needs to undergo fundamental changes. It is necessary to not only strengthen the teaching of basic theories, but also improve students' application ability in technical practice, while focusing on the integration of interdisciplinary knowledge and the cultivation of innovative ability. Therefore, building a curriculum system that adapts to the needs of the new quality productive forces era, covering the three modules of "basic theory + technical practice + case studies," has become the key to cultivating high-quality data analysis talents.

#### **3.1.1. Basic theory module**

Theory is still the foundation of statistics-related scientific fields. Theory first is the theoretical foundation and is the premise of all subsequent research and practice. In the context of big data, although the learning of technical applications and data processing tools has become increasingly important, the core theory of statistics is still the basis for students to understand and analyze data. Mastering basic theories such as probability theory, statistical inference, hypothesis testing, and regression analysis is not only a prerequisite for students to conduct actual data analysis, but also the basis for deep learning and technological innovation. In the process of teaching basic theories, it is necessary to clarify the primary and secondary relationships of knowledge. First, we should start with the most basic probability theory to help students build the most basic knowledge framework, and then introduce a variety



of statistical processing methods to consolidate and develop students' understanding of statistics. Finally, we will introduce modern statistical methods and techniques, gradually deepen them, and lay a solid foundation for them to solve complex practical problems in the future.

### **3.1.2. Technical practice module**

Programming languages and various big data processing frameworks have become essential tools for processing and analyzing data. Mastering the use of tools can not only easily complete various tasks in this course, but also cope with various complex challenges in all professional courses and even in actual work. Mastering programming languages such as Python, R, and SQL, as well as big data processing frameworks such as Hadoop and Spark, enables students to extract effective information from massive data, thereby achieving accurate analysis and decision support. In the course design, the technical practice module should focus on the practical application of these tools. Through actual combat exercises and project-driven learning, it helps students transform theoretical knowledge into practical ability, so that they can easily grasp the study of professional courses and enhance their interest in learning.

### **3.1.3. Application case module**

Application cases are the sublimation of theory and an important bridge from theory to practice. Its core lies in combining basic theory with technical practice, making complex theoretical knowledge concrete and perceptible, so as to help students better understand and apply statistical knowledge. In the context of big data, theory and practice become closer, and the role of application cases in teaching becomes more important. Flexible analysis and use of various application cases will make the teaching process interesting and easy. In the information age, a large amount of data is generated every day in various fields. Due to the huge amount of data, the way to process them has also become unusual. For example, risk prediction in the financial market, disease diagnosis in medicine, and user portraits in network communication are all based on massive data. When processing data, different fields need to use different models and experiences according to the scenarios in their own fields, thus forming a more complex processing process. Through the visualization of application cases, teachers and students can sort out their thoughts in the complicated teaching process. In addition, encouraging students to complete a project in groups through cooperation can allow students to recognize their own strengths in practice and further study to reach a higher level.

## **3.2. Reform teaching methods**

### **3.2.1. Case teaching method**

The case teaching method is one of the important teaching methods of statistics courses. By introducing specific industry cases or research cases, students can intuitively see the application of statistical methods in practical problems, so as to better understand abstract theoretical knowledge. For example, by analyzing risk assessment cases in financial markets, students can learn how to use statistical methods for risk avoidance and investment decisions; through medical data analysis cases, students can master how to deal with missing values and outliers and perform predictive modeling. The advantage of the case teaching method is not only to deepen students' understanding of statistical knowledge, but also to effectively cultivate students' analytical thinking and problem-solving ability. In the specific implementation of teaching, teachers can guide students to exercise critical thinking and teamwork ability in the process of discussing and analyzing cases through group discussions and role-playing. Cases have become the core content of most course teaching. Excellent cases can not only stimulate students' interest in learning, but also provide classic templates for teaching. Therefore, in order to give full play to the advantages of the case teaching method, teachers should carefully select cases related to the course content and design appropriate problem situations according to the progress and difficulty of the course. At the same time, the case content should be closely integrated

with the industry development trend and updated in a timely manner to ensure that students can master the latest technology applications and industry dynamics.

### **3.2.2. Flipped classroom teaching method**

Flipped classrooms originated from China's MOOC platform. With the rise of online teaching, it has gradually become a popular teaching method. The core concept of flipped classrooms is to transform the traditional teacher-centered teaching model into a student-centered teaching model. By changing the classroom structure and teaching methods, students become active participants in learning, while teachers become guides and assistants. This model is highly suitable for courses with strong practicality. For the statistics course in the Big Data Management and Applications major, the flipped classroom allows students to master relevant theoretical knowledge and basic skills through pre-class self-study videos, online tutorials, and other resources, and prepare for in-depth discussions and practical activities in class. In class, teachers guide students to apply the theoretical knowledge they have learned and help students understand the practical application of statistical methods through case analysis, problem-solving, and teamwork. After class, students can further deepen their understanding and application of the knowledge they have learned by reviewing class content, completing experimental tasks, participating in discussion groups, or communicating with teachers.

### **3.2.3. Experimental teaching method**

Experiments are one of the important ways for humans to understand the world. As a traditional teaching method, experimental teaching methods have a long history in teaching. However, traditional experimental teaching methods have problems such as outdated teaching methods, insufficient student initiative, formalized experimental reports, and imperfect assessment systems<sup>[7]</sup>. Therefore, it is particularly urgent to reform experimental teaching methods to adapt to new teaching situations and needs. In the era of big data and big models, data science is no longer merely theoretical research and formula derivation, but also a science of finding data laws and extensions based on repeated experiments. Most effective research results come from continuous experimental exploration. The same is true for the study of statistics courses. Experiments occupy an indispensable and important position in statistics teaching. Only through repeated experiments can students truly understand the application of statistical methods, accumulate experience in solving practical problems, master data analysis skills, and cultivate critical thinking and innovative thinking in the process. In order to better cultivate students' practical ability, experimental teaching must be closer to practical applications, especially combining experimental content with practical problems in modern statistics. Finally, through some challenging experimental tasks, students with spare time are encouraged to think independently and explore freely to tap their creativity to the greatest extent possible.

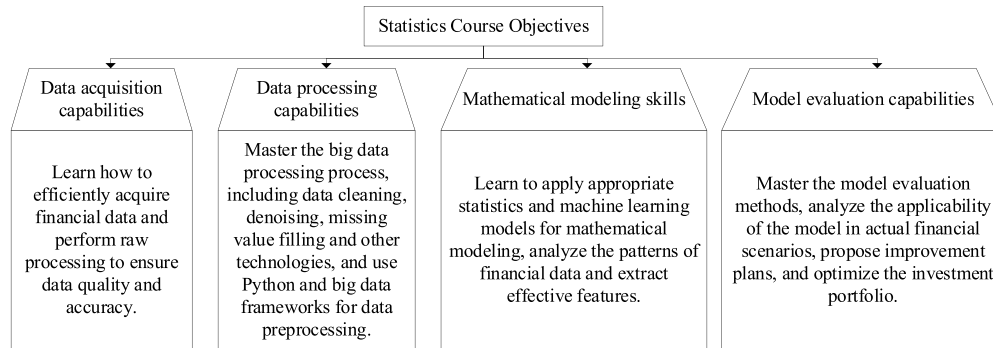
## **4. Implementation cases and results**

### **4.1. Teaching case design**

With the development of society, financial markets have entered the homes of ordinary people. Preventing and resolving financial risks is a topic that individuals, companies, and even countries must pay attention to<sup>[8]</sup>. This section will take "Financial Market Risk Assessment and Investment Portfolio Optimization" as a case. Through specific course design and combined with actual financial data analysis tasks, students can not only master the basic methods of statistics, data analysis, and machine learning, but also learn how to apply this knowledge to actual financial scenarios, improving their practical ability and innovative thinking.

### 4.1.1. Course objectives

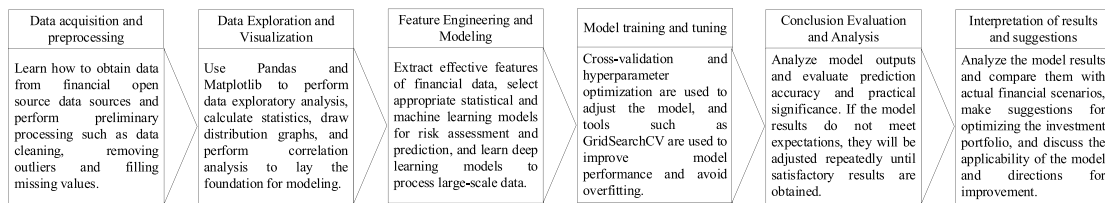
The main goal of the course is to help students understand the risk assessment methods of the financial market through actual data analysis tasks, and use statistics, big data analysis, and artificial intelligence technology to optimize investment portfolios. The specific objectives are shown in **Figure 1**.



**Figure 1.** Statistics course objectives

### 4.1.2. Teaching process

The teaching process covers the entire process of big data management and application, as shown in **Figure 2**.



**Figure 2.** Statistics teaching process

## 4.2. Analysis of implementation effect

In order to test the effectiveness of the teaching reform of this statistics course, we collected the satisfaction evaluation of the classroom tutorial of this course from students and teachers of the School of Computer Engineering of Guilin University of Electronic Technology in 2022 and 2024, as well as the feedback of students on the relevance of career development. The control group is the data of the two years before the curriculum reform (2022), and the experimental group is the data after the curriculum reform (2024). **Tables 1** and **2** show the results of the teachers' and students' satisfaction evaluation of the classroom teaching situation before and after the curriculum reform, respectively, and **Table 3** presents the feedback results of students on the relevance of career planning before and after the curriculum reform. The results of **Table 1** are selected from 20 statistics teachers of relevant majors in the school as statistical samples, and the results of **Tables 2** and **3** are samples of students of the entire major of Big Data Management and Applications.

**Table 1.** Distribution of teachers' satisfaction with classroom teaching before and after the curriculum reform

Course satisfaction	2022	2024
Very satisfied	0%	10%
Satisfied	10%	60%
General	60%	20%
Unsatisfied	30%	10%



**Table 2.** Distribution of students' satisfaction with classroom teaching before and after the curriculum reform

Course satisfaction	2022	2024
Very satisfied	5%	30%
Satisfied	15%	50%
General	65%	10%
Unsatisfied	15%	10%

**Table 3.** Results of students' feedback on career planning relevance before and after the curriculum reform

Relevance	2022	2024
Jobs related to this major	20%	50%
Uncertain	50%	30%
Jobs not related to this major	30%	20%

Through the data in **Tables 1** and **2**, it is found that after the implementation of the teaching reform, the satisfaction of teachers and students with classroom teaching has been significantly improved. Among them, the number of teachers who are satisfied or above has increased from the original 10% to 70% after the reform, and the number of very satisfied has increased from the original 0% to 10%, indicating that teachers are more motivated to conduct classroom teaching after the curriculum reform. On the other hand, the classroom satisfaction of most students has also changed from general to satisfied, and the number of very satisfied evaluations has also increased to 30%, indicating that students' classroom participation and learning interest have also been greatly improved. Finally, from the results of **Table 3**, it can be concluded that the proportion of students who plan to engage in related occupations after graduation has increased by 2.5 times after the curriculum reform, indicating that students' recognition of the major has become higher and their confidence in learning the major has been greatly improved.

## 5. Conclusion

This paper takes statistics in Big Data Management and Applications as an example to explore the direction and feasibility of implementing teaching reform under the background of new quality productivity. New productive forces are driven by data and put forward higher requirements for the current data processing discipline. After analyzing several prominent problems in the current statistics course, a teaching reform method with students as the main body and practice as the center is proposed for the statistics course in the Big Data Management and Applications major, which can improve the teaching enthusiasm of teachers and students. Finally, we give an example of teaching demonstration, compare and analyze the ratings of teachers and students on course satisfaction before and after the teaching reform and students' feedback on career relevance, and find that the implementation of teaching reform measures has a positive significance. In addition, the teaching reform results also provide a good reference for the rest of the courses in this major and the statistics courses of emerging majors, with certain guiding significance for many courses.

In future teaching, we will continue to explore and improve the teaching methods of statistics courses in combination with the ever-changing teaching environment and students' learning needs. On this basis, we will optimize teaching design and practice, further improve teachers' teaching ability, create a relaxed and efficient learning atmosphere for students, help them master the course content, and lay a solid foundation for future career

development and scientific research.

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# The Implementation Path and Effect Evaluation of Curriculum Ideological and Political Education in Professional Courses in Higher Education Institutions

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**Abstract:** Under the background of the new era, strengthening curriculum ideological and political construction has become one of the important tasks for colleges and universities to achieve curriculum teaching reform in recent years. How to subtly and effectively infiltrate the ideological and political ideas of the curriculum in the teaching of specialized courses, and achieve the effect of “salt into taste” is the biggest difficulty in the current construction of curriculum ideological and political education in colleges and universities. Based on this, this paper first analyzes the characteristics of carrying out ideological and political teaching in professional courses in colleges and universities, then expounds on the existing problems and implementation paths of current ideological and political teaching in professional courses in colleges and universities, and finally analyzes its teaching practice results, aiming to further promote the construction and development of ideological and political teaching in colleges and universities and provide some references for peers.

**Keywords:** Curriculum ideological and political teaching; Colleges and universities; Specialized course teaching; Implementation path

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## 1. Introduction

Under the guidance of the fundamental task of “cultivating morality and cultivating people,” it is necessary for teachers of professional courses in colleges and universities to establish good ideological and political teaching concepts, dig deeply into the ideological and political elements of professional courses, and strengthen the shaping of their values while explaining professional knowledge and basic skills to students, so as to promote the coordinated development of students’ knowledge, skills, and accomplishment. In the end, the students will be trained to be compound talents with both morality and skills<sup>[1]</sup>. Therefore, it is of great significance to explore the concrete

implementation path of curriculum ideology and politics in the teaching of professional courses in colleges and universities.

## **2. Characteristics of ideological and political teaching of professional courses in colleges and universities**

Professional courses in colleges and universities carry out curriculum ideological and political teaching, emphasizing the organic integration of professional courses teaching and ideological and political education, aiming at promoting the all-round development of students. Specifically, there are three main characteristics: First, the teaching goal is clear, which requires college teachers to pay attention to the teaching of basic professional knowledge and skills as well as the cultivation of students' ideological concepts and moral cultivation, so as to better train students to become compound talents with both morality and skills. Second, the integration of teaching content is higher, which requires teachers of professional courses in colleges and universities to dig deep into the ideological and political elements of professional course knowledge and integrate them organically, rather than simply superimposing ideological and political education on the basis of professional course teaching. Third, teaching evaluation is more comprehensive, which requires college teachers to focus on not only the assessment and evaluation of students' professional knowledge and skills, but also the formation and development of students' ideological concepts and moral qualities, so as to effectively guarantee the effect of ideological and political teaching in courses.

## **3. Existing problems of curriculum ideological and political teaching in colleges and universities**

Since the construction wave of “curriculum thought and politics” was set off in colleges and universities, although many teachers and related researchers have made analysis and interpretation of the connotation of curriculum thought and politics, in the concrete teaching practice, it can be found that there are still some misunderstandings in their cognition and understanding of curriculum thought and politics, leading to a series of problems<sup>[2]</sup>. Taking the teaching of professional courses in colleges and universities as an example, these problems are mainly manifested as follows: first, it fails to distinguish the thought and political curriculum from the ideological and political curriculum. Curriculum thought and politics refers to digging out relevant ideological and political elements from professional courses, emphasizing that teachers' teaching is rooted in the teaching of professional courses, and reasonably integrating ideological and political education on this basis<sup>[3]</sup>. Therefore, the proportion of ideological and political elements in curriculum ideological and political teaching is small. If there is no such element, it can be omitted. The teaching of ideological and political courses is mainly based on professional and systematic ideological and political education, and the entire class should be carried out around ideological and political education. However, some teachers of professional courses in colleges and universities fail to distinguish the two. Some of them have the problem of “emphasizing the teaching of professional knowledge and skills, neglecting the cultivation of humanistic quality in the course”<sup>[4]</sup>; some pay too much attention to the cultivation of students' professional ethics and ideological concepts in teaching, which leads to the separation of the primary and secondary teaching, thus affecting the actual teaching effect of professional courses<sup>[5]</sup>. Second, the curriculum ideological and political teaching is carried out in a mere form, lacking in-depth exploration and analysis of its connotation and essence. Many of them are carried out by preaching slogans, talking big words, reading policies, etc., failing to explore more effective and advanced teaching methods that are easier for students to accept<sup>[6]</sup>. Third, in the aspect of teaching evaluation, more attention is paid to the assessment and evaluation of students' professional knowledge and skills, and less

consideration is given to the evaluation of the effect of curriculum ideological and political teaching, which affects the implementation effect of curriculum ideological and political teaching in colleges and universities to a certain extent.

## **4. Implementation paths of curriculum ideology and politics in the teaching of professional courses in universities**

### **4.1. Teaching concepts: Following the principle of “good teachers, appropriate class, and limited teaching time”**

Teachers are the main organizers and implementors of classroom teaching, and their own ability and accomplishment will directly affect students' learning and development. Therefore, in order to better practice the philosophy of ideological and political teaching, teachers of professional courses in colleges and universities need to first actively change their own teaching concepts, pay more attention to their own words and deeds in classroom teaching and daily life, and ensure “self-integrity.” Only in this way, the implementation of ideological and political education for students by professional course teachers in colleges and universities can be more convincing, and the effect of ideological and political teaching can be better guaranteed. At the same time, when carrying out ideological and political teaching, teachers of professional courses in colleges and universities should grasp its duration and frequency, otherwise, too much and frequently is likely to backfire <sup>[7]</sup>. For example, teachers can dig deeply into the ideological and political elements of professional courses before the formal class, and intersperse one or several ideological and political elements in each class, instead of blindly “instilling” all of them in students, so as to ensure that the curriculum ideological and political can achieve the cumulative effect of dripping stone <sup>[8]</sup>. In addition, taking into account the limited time of each class, the curriculum ideological and political teaching carried out by professional course teachers in colleges and universities should have a certain time limit, to avoid being dominated by ideological and political education. Otherwise, it will not only affect students' learning of professional courses, but also greatly reduce the effect of ideological and political education.

### **4.2. Teaching content: Emphasizing “high intention, good script, and clever design”**

A quality class usually has good teaching content as support and guarantee. Therefore, under the ideological and political vision of the curriculum, teachers of professional courses in colleges and universities should do a good job in the reconstruction and optimization of teaching content, which should include not only the content of professional courses, but also the content of ideological and political. Under normal circumstances, good teaching content will generally meet the requirements of “high intention, good script, and clever design” <sup>[9]</sup>. If a lesson is regarded as a movie, then its connotation must first be “high intention.” Specific to teaching practice, teachers are required to always adhere to the basic guidance of the educational goal of “educating people for the country and educating talents for the Party,” and attach importance to the cultivation and educational guidance of students' correct ideological values <sup>[10]</sup>. Secondly, teachers of professional courses in colleges and universities should ensure “good script,” that is, high-quality content of ideological and political teaching of courses. The content should be close to the development of the social times, economic and industrial development, and the theoretical frontier of professional fields. In order to achieve this, professional course teachers in colleges and universities must dig deep into the ideological and political elements of professional courses and ensure the richness of ideological and political education content as much as possible. Only in this way can the curriculum ideological and political teaching concepts be more easily and naturally implemented. Finally, teachers of professional courses in colleges and universities should do a good job in the design of ideological and political teaching, as far as possible to effectively integrate the course ideological



and political teaching into all aspects of teaching such as self-preparation before class, teaching explanation in class, summary and review after class, and ensure that the timing, method, and content of integration are the best, so as to truly engage the students and effectively guarantee the effect of ideological and political teaching in the course<sup>[11]</sup>.

#### **4.3. Teaching methods: Adhering to the “various ways, new methods, and ingenious integration”**

In order to further ensure the effect of ideological and political teaching and achieve the expected teaching goals, teachers of professional courses in colleges and universities need to actively study new teaching methods. Different from the single ideological and political course teaching, the teaching of professional courses in colleges and universities is just like cooking. In the whole teaching process, professional knowledge and skills are still the focus of teachers in teaching, and the integration of ideological and political elements is like the seasoning added to the cooking, which plays the role of the finishing touch<sup>[12]</sup>. Therefore, under the ideological and political vision of the curriculum, teachers of professional courses in colleges and universities should adhere to the “student-oriented” teaching concept, and actively explore more appropriate and effective education and teaching methods in order to better promote students’ learning and development. Before formal teaching, the first thing that teachers of professional courses in colleges and universities need to do is to analyze the learning situation, pay more attention to the actual learning needs and professional development needs of students, and adopt various methods to carry out curriculum ideological and political teaching as far as possible, such as case inspiration, independent practice, BOPPPS, visit and study, cooperative exploration, project-driven, problem guidance, etc. in order to explain the ideological and political content contained in professional courses well<sup>[13]</sup>. At the same time, teachers of professional courses in colleges and universities should base themselves on the reality of students and start from things that students are interested in and easily accept, so as to explicitly integrate ideological and political education into the teaching of professional courses, such as asking students to explore the ideological and political elements of professional courses, participate in social practice or conduct field investigations after class, so as to give more classroom initiative and discourse choice to students, instead of blindly emphasizing the “moistening things silently” education guidance<sup>[13]</sup>. Only in this way, it is more likely to promote the sustainable innovation and development of ideological and political construction of college curriculum. In addition, teachers of professional courses in colleges and universities should ensure the novelty of integrating ideological and political elements into the teaching of professional courses. For example, students can watch relevant videos to bring them a more intuitive learning experience, they can also influence students’ thoughts and behaviors through words and deeds, etc., which is often much more effective than the teacher’s language explanation. In terms of content integration and innovation, teachers of professional courses in colleges and universities can integrate news and current affairs, social hot spots, anecdotes of celebrities, scientific anecdotes, historical allusions, traditional culture, classic works, and national policy documents into the teaching of professional courses, so as to further enrich and innovate the teaching content of ideological and political courses.

#### **4.4. Teaching evaluation: Focusing on “teacher and student assessment, process assessment, and long-term assessment”**

Teaching evaluation is an important part of curriculum teaching reform in colleges and universities, and it is also a big challenge. The traditional teaching evaluation and evaluation of professional courses in colleges and universities is basically to evaluate students’ mastery and application of professional knowledge through a final examination, with relatively simple form and content<sup>[14]</sup>. In the field of curriculum thought and politics, the teaching evaluation of professional courses in colleges and universities should be innovative on this basis. In terms of assessment objects, the teaching of professional courses in colleges and universities should not only pay attention to the assessment

of students, but also strengthen the assessment of teachers, and actively incorporate the evaluation of ideological and political teaching into the evaluation system. For example, teachers' ideological cognition, values, moral feelings, and professional attitudes can be used as the measurement criteria for the evaluation of ideological and political teaching in the course, so as to highlight the humanism and richness of teaching evaluation. Specifically, the evaluation of students mainly includes students' classroom performance, learning attitude, professionalism, and other content. The assessment and evaluation of teachers mainly includes teachers' ethics, professionalism, professional spirit, and professional ethics<sup>[15]</sup>. In addition, considering that the ideological and political construction of the curriculum is a long-term and gradual process, its teaching penetration can enrich the spiritual level of teachers and students to a certain extent. Therefore, teachers of professional courses in colleges and universities should pay attention to the "examination process and examination long-term" when carrying out the evaluation of ideological and political teaching, that is, pay attention to the process assessment (such as the ideological and political quality shown by students in the process of study and life on campus) and long-term assessment (such as the performance of students outside the school after graduation, which can refer to the indicators such as the contribution rate of students' industry). At the same time, teachers of professional courses in colleges and universities can also include the assessment content related to ideological and political courses in the final examination paper, so that students can make their own views and ideas according to their cognition and understanding of the industry, which can be personal development or scientific spirit. In this way, it can better help college teachers to understand and grasp students' ideological dynamics or existing psychological problems, facilitate teachers to adjust and optimize curriculum ideological and political teaching plans on this basis and according to it, which is conducive to effectively ensuring the teaching effect of curriculum ideological and political teaching and to pointing out the direction for the continuous improvement of college curriculum ideological and political teaching.

## **5. Effect analysis of curriculum ideological and political teaching in colleges and universities professional courses**

Based on the ideological and political ideas of curriculum, promoting the innovation and development of teaching of specialized courses in colleges and universities can inject new vitality and impetus into the reform and development of China's higher education, making the development of specialized courses rise to a new height. To be specific, the practical application of curriculum ideology and politics in the teaching of professional courses in colleges and universities is of great significance in promoting both the learning and development of students and the professional development of teachers. On the one hand, from the perspective of students, the application of curriculum ideology and politics in the teaching of college professional courses can effectively improve students' personal moral cultivation and professional quality, and help guide them to establish correct ideological values. On the other hand, from the perspective of teachers, to better practice the ideological and political teaching concept of curriculum, they must deeply study the connotation and essence of curriculum ideological and political teaching, and constantly strengthen the study and research of relevant knowledge, so as to more scientifically and effectively integrate ideological and political education into the teaching of professional courses. Therefore, for teachers, the practical application of curriculum ideology and politics in the teaching of professional courses in colleges and universities can effectively improve their own teaching concepts, teaching ability, and professional quality.

## **6. Conclusion**

All in all, in the context of the new era, society has increasingly higher requirements for the skills and

accomplishment of all kinds of talents. To this end, more and more colleges and universities have strengthened the ideological and political construction of curriculum, aiming to strengthen the cultivation of students' values and moral qualities through the infiltration of ideological and political education in the teaching of specialized courses, so as to achieve the purpose of promoting the coordinated development of students' knowledge, skills, and accomplishment. In the specific teaching practice, the teachers of specialized courses in colleges and universities should follow the teaching concept of "good teachers, appropriate class, and limited time." In terms of teaching content, they should emphasize "high intention, good script, and clever design." In terms of teaching methods, we should adhere to "various ways, new methods, and ingenious integration." In terms of teaching evaluation, we should pay attention to "teacher and student assessment, process assessment, long-term assessment," so as to ensure the actual effect of teaching and train students to become compound talents with both virtue and talent.

## Disclosure statement

The author declares no conflict of interest.

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# Application of Electronic Pathology Reading Library in Standardized Practical Skill Training of Clinical Pathology Residents

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**Abstract:** *Objective:* To enhance the reading skills of clinical pathology residents, it is essential to establish a well-structured electronic pathology reading library. *Methods:* In accordance with the Resident Standardization Training Content and Standards (2022 Edition), clinical pathology residents are required to master pathological diagnoses across 11 systems: skin, head and neck, mediastinum and respiratory, digestive, urinary and male reproductive, female reproductive and breast, lymphatic and hematopoietic, bone and soft tissue, cardiovascular, central nervous, and endocrine diseases. Senior pathologists specializing in each subspecialty selected classic pathological slides, which were systematically scanned and compiled into an electronic pathology library. *Results:* A questionnaire survey was conducted to gather feedback on the electronic pathology reading library. Residents generally found it to be convenient, efficient, and conducive to learning. *Conclusion:* Training in clinical pathology diagnosis is a core component of standardized resident training. The electronic pathology reading library has been well-received and recognized by resident doctors. However, further efforts are needed to explore diverse teaching methods that align with modern educational approaches, ultimately contributing to the development of highly skilled resident doctors.

**Keywords:** Electronic pathology reading library; Clinical pathology; Standardized resident training; Practical skills

**Online publication:** March 4, 2025

## 1. Introduction

The standardized training program for resident physicians in clinical pathology (hereinafter referred to as “resident training”) includes a comprehensive assessment of both theoretical knowledge and practical skills. Both components are equally important, with the enhancement of practical skills being a key objective of our training program <sup>[1]</sup>. Beyond strong theoretical foundations, pathologists must develop proficiency in professional skills, as they play a crucial role in bridging the gap between doctors and patients <sup>[2]</sup>.

Practical skill training in clinical pathology encompasses tissue sampling and slide interpretation, with the



latter being particularly critical. Mastery of slide reading is essential for developing competent pathologists capable of handling routine pathological tasks. According to the Standardized Training Content and Standards for Resident Physicians (2022 Edition), clinical pathology residents must be proficient in diagnosing diseases across 11 systems: skin, head and neck, mediastinum and respiratory, digestive, urinary and male reproductive, female reproductive and breast, lymphatic and hematopoietic, bone and soft tissue, cardiovascular, central nervous, and endocrine diseases. Each system includes a broad range of conditions, making the learning process complex and multifaceted <sup>[3]</sup>. Some diseases, such as lymphoma, soft tissue tumors, and gynecological malignancies, are particularly challenging and require extensive, repetitive slide reading practice for mastery <sup>[4]</sup>. Therefore, the establishment of an electronic pathology slide reading library significantly enhances subspecialty training and facilitates skill development among residents.

## 2. Materials and methods

### 2.1. Data collection

In accordance with the Standardized Training Content and Standards for Resident Physicians 2022 Edition syllabus, pathological slides from the Pathology Department of Baoding First Central Hospital, collected from October 2013 to the present, were screened. Slides representing diseases from the 11 systems that clinical pathology resident physicians are required to master were selected for data preparation.

### 2.2. Methods

#### 2.2.1. Process for establishing an electronic slide reading library

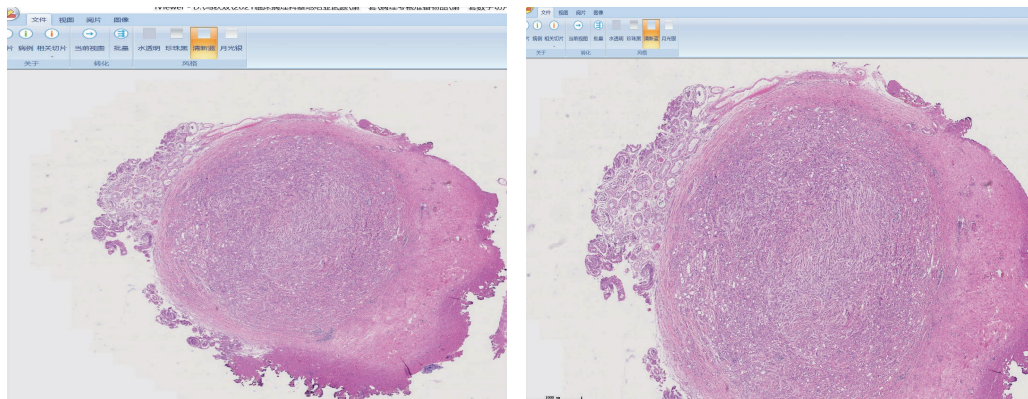
Folders were created for the 11 systems specified in the syllabus (**Figure 1**), with subfolders designated for different diseases within each system (**Figure 2**). Conventional slides were then borrowed from our professional base, categorized by system. Two senior pathologists from the relevant sub-specialties reviewed and selected classic cases. The Jiangfeng slide scanner was used to scan and archive these classic slides (HE + IHC). The scanned electronic slides allow free dragging, zooming in, and zooming out (**Figures 3 and 4**). Additionally, electronic medical history information was incorporated to ensure data completeness. The establishment of an electronic slide reading library enables resident physicians to systematically review disease diagnoses in alignment with the syllabus, providing a clear and structured learning objective.

- 1. Skin
- 2. Head and Neck
- 3. Mediastinum and Respiration
- 4. Digestion
- 5. Urinary and Male Reproduction
- 6. Female Reproduction and Breast
- 7. Lymphatic and Hematopoietic System
- 8. Bone and Soft Tissue
- 9. Cardiovascular System
- 10. Central Nervous System
- 11. Endocrine System

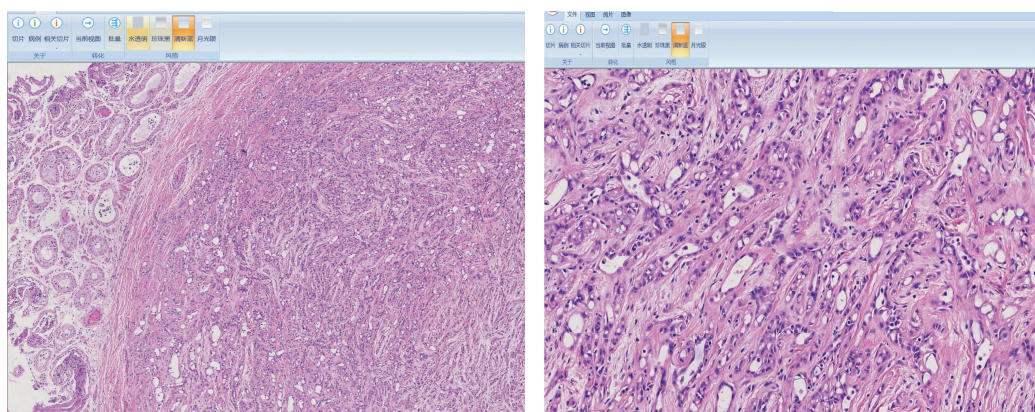
**Figure 1.** Classification by system

- 1. Wart
- 2. Cutaneous tuberculosis
- 3. Tinea
- 4. Gout
- 5. Freckles
- 6. Pigmented nevus
- 7. Malignant melanoma
- 8. Seborrheic keratosis
- 9. Epidermoid cyst
- 10. Trichoepithelioma
- 11. Dermal fibrohistiocytic tumor
- 12. Skin and soft tissue tumor
- 13. Pilomatricoma
- 14. Skin vascular tumor
- 15. Basal cell carcinoma
- 16. Squamous cell carcinoma
- 17. Keratoacanthoma
- 18. dermatofibrosarcoma protuberans
- 19. Pyogenic granuloma
- 20. Kaposi's sarcoma

**Figure 2.** Classification by disease name



**Figure 3.** Low magnification of electronic pathological section: Observing the general outline



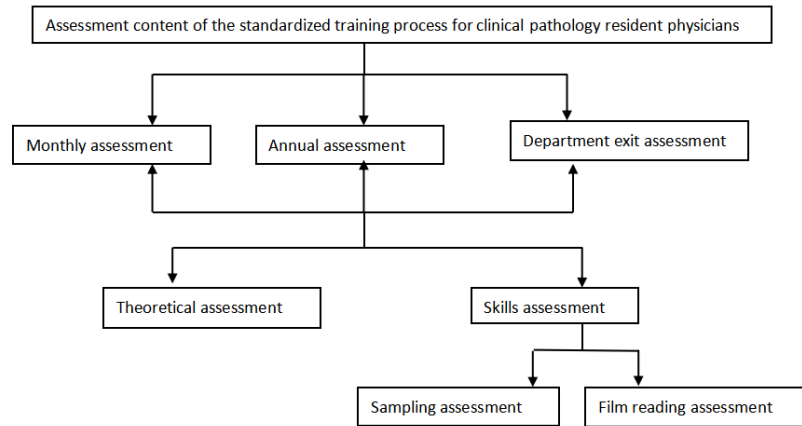
**Figure 4.** High magnification of electronic pathological section: Observing cell structure

### 2.2.2. Usage method of the electronic pathology slide reading library

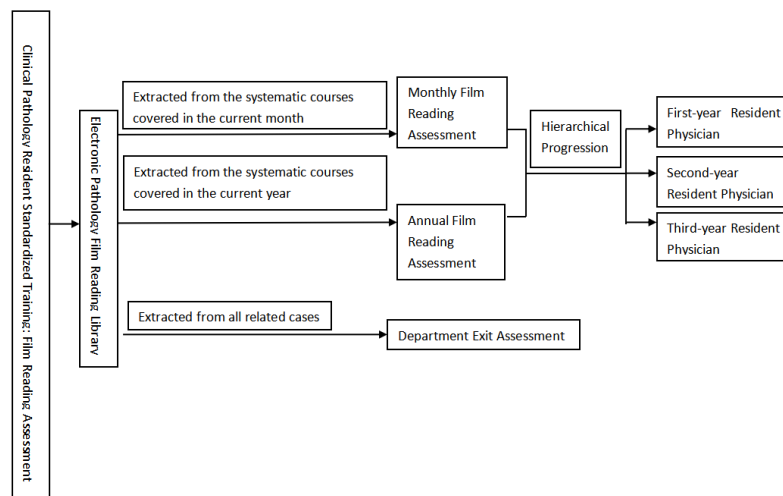
Pathology is a highly specialized field characterized by complex classifications, abstract concepts, and extensive content that requires memorization and comprehension. Diagnostic criteria are intricate, demanding experience in slide interpretation. The establishment of an electronic slide reading library significantly enhances the learning experience of resident physicians and improves the process management of pathology training programs.

Convenience for real-time learning of resident physicians: With the aid of scanning software, resident physicians can repeatedly examine slides and refine their diagnostic skills, ensuring high operability. Simultaneously, instructors can provide real-time guidance, eliminating the need for borrowing and returning glass slides, thereby saving time. Furthermore, electronic images from the slide reading library can be easily captured for research papers and professional presentations (PPTs), avoiding the inefficiencies and quality issues associated with using mobile phone photography.

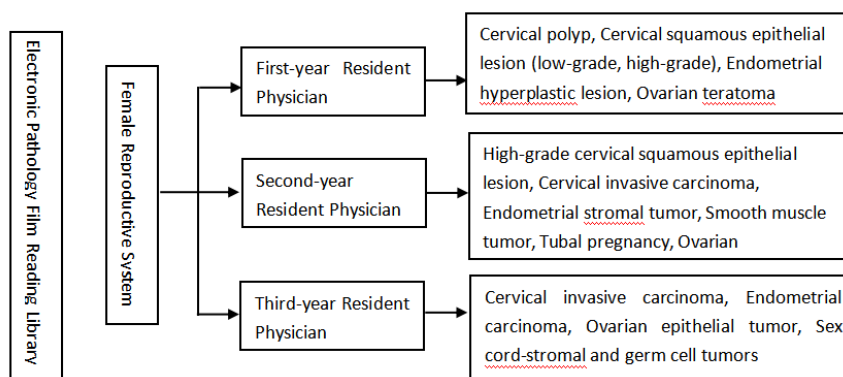
Application to process management in clinical pathology training: In the management of clinical pathology residency training programs, resident physicians must undergo monthly, annual, and final assessments, covering both theoretical knowledge and practical skills. The latter includes sample collection and slide reading evaluations. The electronic pathology slide reading library can be integrated into these assessments (see **Figures 5** and **6** for details), offering a faster, more convenient, safer, and reusable alternative to traditional glass slide preparation. This method closely replicates residency skill assessment procedures, enabling resident physicians to develop proficiency in slide interpretation and respond more efficiently during exams. For an example focusing on the female reproductive system, refer to **Figure 7**.



**Figure 5.** Standardized training and assessment content for clinical pathology resident physicians



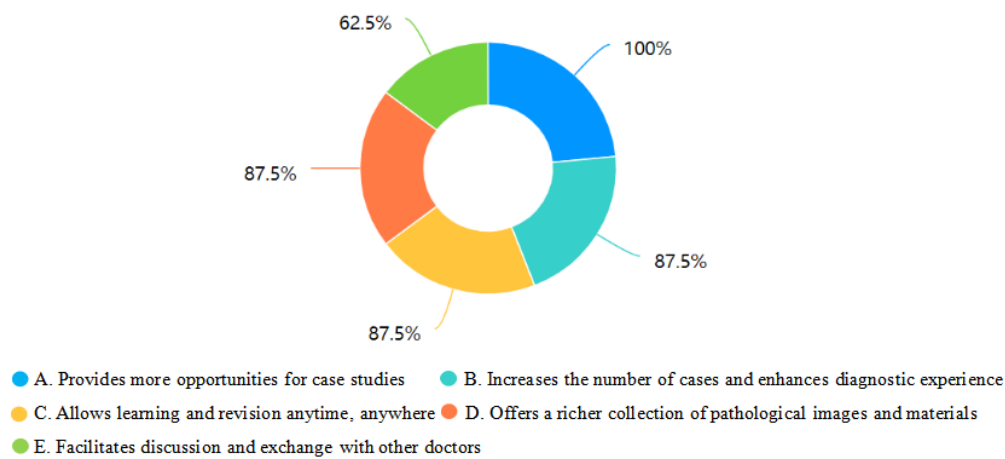
**Figure 6.** Use of the electronic pathology slide reading library in standardized training skills assessment for resident physicians



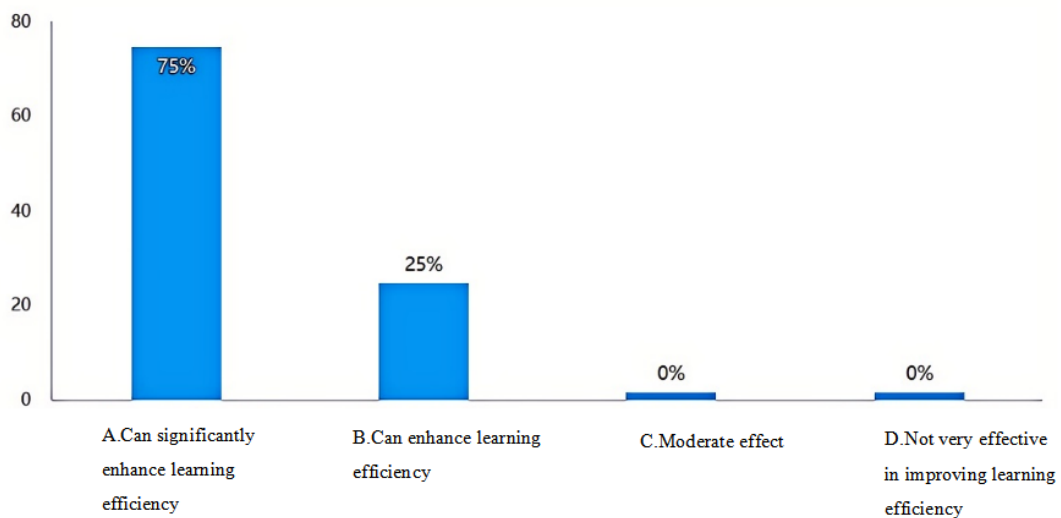
**Figure 7.** Demonstration of the use of electronic slide library using the female reproductive system as an example

### 3. Results

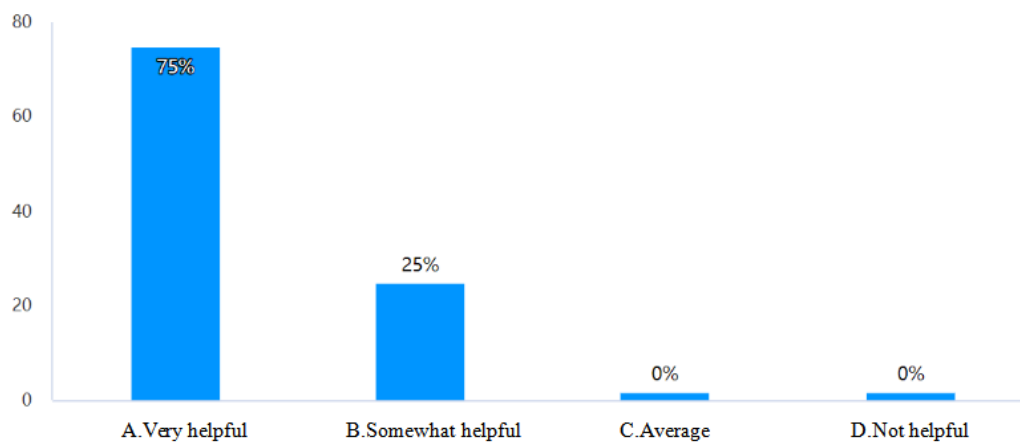
A feedback survey was conducted using the Wenjuanxing survey tool to assess resident physicians' use of the electronic pathology slide reading library. Overall, residents found the library to be convenient, efficient, and beneficial for learning (**Figures 8 to 10**). However, feedback from instructors at our training base revealed that some trainees prioritized speed over careful observation when reading electronic slides, leading to discrepancies compared to conventional pathology slide reading. Therefore, exclusive reliance on the electronic slide reading library is insufficient. It should be integrated with conventional pathology slide reading to develop pathologists with strong diagnostic skills.



**Figure 8.** Advantages of using electronic pathology slide reading library



**Figure 9.** Learning efficiency after using electronic pathology slide reading library



**Figure 10.** Feedback on the usage of electronic pathology slide reading library

## 4. Discussion and conclusion

Resident physician standardized training is a vital component of continuing medical education, playing a significant role in cultivating high-level medical professionals and improving healthcare quality <sup>[5]</sup>. Clinical pathology serves as a scientific foundation for diagnosing and treating human diseases and is a key discipline for studying disease occurrence, progression, and prognosis <sup>[6]</sup>. Additionally, clinical pathology provides essential advisory services within clinical applications, offering explanations and recommendations for further examinations and treatments, which hold considerable clinical significance. Therefore, ensuring high-quality and sustainable clinical pathology training is crucial for enhancing medical standards <sup>[7]</sup>.

During their training, resident physicians in this specialty are typically responsible for conducting preliminary pathological diagnoses. However, slides used in routine departmental work must be promptly archived to allow patients to borrow them for consultations. This necessitates that resident physicians borrow slides from the pathology archive. Traditional glass pathology slides, while widely used, are fragile and susceptible to damage or loss if not properly stored. Furthermore, borrowing patient slides for repeated observation and learning poses certain risks. To address this, our training base previously established a library of glass pathology slides for teaching purposes. After obtaining informed consent from patients and their families, slides were prepared and categorized by disease system. However, this method still carries risks of damage and loss. When certain slide categories become unavailable, preparing new slides is both time-consuming and labor-intensive. Consequently, integrating an electronic pathology slide reading library into the training program is essential.

The standardized training of clinical pathology residents differs from other clinical specialties due to its unique characteristics, the complexity of diseases, diverse content, and varying diagnostic criteria. It requires a strong foundation in fundamental knowledge, with training content designed and implemented according to professional requirements <sup>[8,9]</sup>. To cultivate competent and skilled pathologists, clinical pathology diagnosis training serves as the core of the entire standardized training process. The introduction of an electronic pathology slide reading library has been well-received by resident physicians. With the rapid advancement of online platforms and the increasing accessibility of updated medical information, modern learning through multiple channels and methods has become a prevailing trend. Resident training administrators must continuously explore innovative strategies and models to enhance standardized training and improve physicians' professional competencies. The journey toward advancing resident training remains challenging and requires a concerted effort from the training base. By leveraging



institutional strengths and adopting teaching models aligned with modern educational approaches, we can strive to cultivate outstanding resident physicians.

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## Disclosure statement

The authors declare no conflict of interest.

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# The Characteristics and Intervention Strategies of Novice Teachers' Inappropriate Behaviors in Classroom Teaching

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**Abstract:** This study aims to explore the characteristics of novice teachers' inappropriate behaviors in classroom teaching and their intervention strategies. With the continuous improvement of education quality, novice teachers face increasing challenges in teaching practice. Their inappropriate behaviors not only affect the classroom atmosphere but may also negatively impact students' learning outcomes. Therefore, researching the characteristics of novice teachers' inappropriate behaviors and their intervention strategies holds significant scientific and social value. This study employs a combination of quantitative and qualitative methods to analyze the behavioral patterns of novice teachers in classroom teaching and proposes corresponding intervention strategies. The results indicate that novice teachers' inappropriate behaviors mainly manifest as poor classroom management, monotonous teaching methods, and insufficient interaction with students. Based on these findings, the study proposes a series of effective intervention strategies, including enhancing teacher training, optimizing teaching design, and promoting positive interactions between teachers and students. The conclusions of the study not only provide practical guidance for educational practice but also point out directions for future research, emphasizing the crucial role of teacher professional development in improving teaching quality.

**Keywords:** Novice teachers; Inappropriate behaviors; Intervention strategies; Teaching quality; Teacher professional development

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## 1. Introduction

The increasing complexity of educational environments has placed novice teachers under significant pressure to perform effectively in classroom settings. As they transition from theoretical learning to practical application, these educators often encounter challenges that can lead to inappropriate behaviors, which in turn affect the learning atmosphere and student outcomes. Despite the growing body of research on teacher effectiveness, there remains a notable gap in understanding the specific characteristics of inappropriate behaviors exhibited by novice teachers and

the strategies that can effectively mitigate these issues.

Existing literature has extensively documented the importance of classroom management and teacher-student interactions in fostering a conducive learning environment. However, novice teachers frequently struggle with these aspects due to their limited experience and the overwhelming demands of the teaching profession. This struggle is often exacerbated by a lack of comprehensive training that addresses the practical realities of classroom dynamics<sup>[1]</sup>. Moreover, the transition from pre-service training to actual teaching often reveals deficiencies in pedagogical skills and adaptability, which are crucial for managing diverse classroom scenarios<sup>[2]</sup>.

The current study aims to fill this gap by systematically examining the inappropriate behaviors of novice teachers in classroom settings and identifying effective intervention strategies. The research is guided by the hypothesis that targeted interventions can significantly improve classroom management skills and enhance the overall teaching quality of novice educators. By employing a mixed-methods approach, this study seeks to provide a nuanced understanding of the behavioral patterns of novice teachers and the contextual factors that contribute to these behaviors.

Furthermore, the study explores the role of professional development in equipping novice teachers with the necessary skills to navigate the complexities of classroom teaching. Previous research has highlighted the positive impact of continuous professional development on teaching efficacy and student engagement<sup>[3]</sup>. However, there is a need for more focused research on how specific training programs can address the unique challenges faced by novice teachers.

In summary, this research endeavors to contribute to the field of educational practice by offering evidence-based insights into the behaviors of novice teachers and proposing practical strategies for intervention. The findings are expected to inform policy-making and the design of teacher training programs, ultimately enhancing the quality of education delivered by novice teachers.

## **2. Methodological framework**

### **2.1. Research design and participants**

The research design of this study was structured to comprehensively explore the inappropriate behaviors exhibited by novice teachers in classroom settings and to identify effective intervention strategies. This study employed a mixed-methods approach, integrating both quantitative and qualitative data collection techniques to ensure a robust analysis of the research questions. The mixed-methods approach was chosen to provide a more nuanced understanding of the complex dynamics at play in classroom environments, as highlighted in previous studies on teacher motivation and classroom management<sup>[2,4]</sup>.

The quantitative component of the research involved a survey distributed to a large sample of novice teachers, defined as those with less than five years of teaching experience. This survey aimed to capture a broad range of data regarding classroom management practices, teaching methodologies, and interactions with students. The survey was designed to identify patterns of inappropriate behavior and to quantify the prevalence of these behaviors across different educational contexts. The selection of participants was guided by the need to ensure diversity in terms of teaching subjects, school types, and geographical locations, reflecting the varied challenges faced by novice teachers<sup>[5]</sup>.

In parallel, the qualitative component involved in-depth interviews and classroom observations. These methods were employed to gain deeper insights into the contextual factors influencing novice teachers' behaviors and to explore the subjective experiences of these educators. The interviews were semi-structured, allowing for flexibility in exploring themes that emerged during the discussions. Classroom observations provided an opportunity to witness firsthand the interactions between teachers and students, offering a real-time perspective on the challenges and

strategies employed by novice teachers<sup>[4,6]</sup>.

Participants in the qualitative phase were selected through purposive sampling, focusing on individuals who demonstrated a willingness to reflect on their teaching practices and who represented a range of teaching environments. This approach ensured that the data collected was rich and varied, capturing the complexities of classroom dynamics and the multifaceted nature of teaching challenges<sup>[7]</sup>.

The integration of quantitative and qualitative data allowed for a comprehensive analysis, facilitating the triangulation of findings to enhance the validity and reliability of the study. This methodological framework was informed by existing literature on teacher stress and motivation, which underscores the importance of understanding both the external pressures and internal motivations that influence teacher behavior<sup>[6,8]</sup>. By combining these methods, the study aimed to provide a holistic view of the factors contributing to inappropriate behaviors among novice teachers and to identify targeted interventions that could support their professional development and improve classroom outcomes<sup>[2,5]</sup>.

Overall, the research design was meticulously crafted to address the research objectives, ensuring that the findings would be both relevant and applicable to real-world educational settings. The diverse participant pool and the mixed-methods approach provided a solid foundation for exploring the intricate relationships between teacher behavior, classroom management, and student engagement.

## **2.2. Data collection instruments and procedures**

The data collection process in this study was meticulously designed to ensure the reliability and validity of the findings regarding novice teachers' inappropriate behaviors and intervention strategies. A mixed-methods approach was employed, integrating both quantitative and qualitative data collection instruments to provide a comprehensive understanding of the research problem.

For the quantitative component, structured questionnaires were administered to a diverse sample of novice teachers. These questionnaires were designed to capture detailed information about classroom management practices, teaching methods, and perceived challenges. The questions were formulated based on existing literature and validated scales to ensure they accurately reflected the constructs being measured. This approach aligns with the methodologies used in studies examining teacher behavior and classroom management, where structured instruments provide quantifiable insights into prevalent issues<sup>[4]</sup>.

In the qualitative phase, in-depth interviews and classroom observations were conducted to gain deeper insights into the contextual factors influencing novice teachers' behaviors. The interviews were semi-structured, allowing for flexibility in exploring specific themes that emerged during the conversation. This method is particularly effective in capturing the nuanced experiences of teachers, as it allows for the exploration of personal and environmental factors that may not be evident through quantitative measures alone<sup>[5]</sup>. Classroom observations were systematically recorded, focusing on interactions between teachers and students, classroom dynamics, and the implementation of teaching strategies. This observational data provided a rich, contextual backdrop to the quantitative findings, enabling a more holistic analysis of the issues at hand.

The procedures for data collection were carefully planned to minimize bias and ensure consistency. Participants were selected through purposive sampling to ensure a representative mix of novice teachers from various educational settings. This diversity was crucial in capturing a wide range of experiences and challenges faced by novice teachers, thereby enhancing the generalizability of the study's findings. Data collection was conducted over a specified period, with clear protocols in place to guide the administration of questionnaires and the conduct of interviews and observations. These protocols were informed by best practices in educational research, ensuring that the data

collected was both reliable and valid <sup>[3]</sup>.

Throughout the data collection process, ethical considerations were paramount. Participants were informed of the study's purpose, and their consent was obtained prior to participation. Anonymity and confidentiality were assured to encourage honest and open responses, particularly in the qualitative interviews where sensitive topics might be discussed. This ethical approach is consistent with the standards outlined in research involving human subjects, ensuring that the rights and well-being of participants are safeguarded at all times <sup>[9]</sup>.

In summary, the data collection instruments and procedures were meticulously designed to provide a robust foundation for analyzing novice teachers' inappropriate behaviors and identifying effective intervention strategies. By integrating quantitative and qualitative methods, the study was able to capture a comprehensive picture of the challenges and opportunities in novice teachers' professional development.

### **2.3. Statistical analysis techniques**

The statistical analysis techniques employed in this study were meticulously chosen to ensure a comprehensive understanding of the inappropriate behaviors exhibited by novice teachers and the effectiveness of intervention strategies. Initially, descriptive statistics were utilized to summarize the demographic characteristics of the participants and the frequency of various classroom behaviors. This foundational step provided a clear overview of the data, allowing for the identification of prevalent patterns and anomalies.

Subsequently, inferential statistical methods were applied to test the hypotheses regarding the impact of targeted interventions on classroom management skills and teaching quality. Specifically, analysis of variance (ANOVA) was conducted to compare the effectiveness of different intervention strategies across various groups of novice teachers. This technique was instrumental in determining whether the observed differences in teaching outcomes were statistically significant, thereby validating the efficacy of the proposed interventions.

In addition to ANOVA, regression analysis was employed to explore the relationship between specific teacher behaviors and student outcomes. This approach facilitated the identification of key predictors of successful classroom management and effective teaching practices. The use of regression analysis also allowed for the control of potential confounding variables, ensuring that the results accurately reflected the influence of the interventions.

The integration of qualitative data through thematic analysis further enriched the quantitative findings. By coding and categorizing the qualitative data, insights into the underlying factors influencing teacher behavior were gained. This mixed-methods approach provided a holistic view of the challenges faced by novice teachers and the potential solutions.

The choice of statistical techniques was informed by previous research on stress and coping mechanisms in educational settings, which highlighted the importance of understanding intermediary factors in behavioral outcomes <sup>[8,10]</sup>. These studies underscored the complexity of teacher-student interactions and the multifaceted nature of teaching stress, reinforcing the need for a robust analytical framework in this study.

Overall, the combination of descriptive, inferential, and qualitative analyses ensured a rigorous examination of the data, enabling the formulation of evidence-based recommendations for improving novice teachers' classroom practices.

## **3. Presentation of findings**

### **3.1. Quantitative data analysis**

The quantitative data analysis in this study provides a comprehensive understanding of the inappropriate behaviors exhibited by novice teachers in classroom settings and evaluates the effectiveness of various intervention strategies.



The analysis begins with descriptive statistics, which summarize the demographic characteristics of the participants and the frequency of observed behaviors (**Figure 1**). This foundational step is crucial for establishing a baseline understanding of the context in which these behaviors occur.

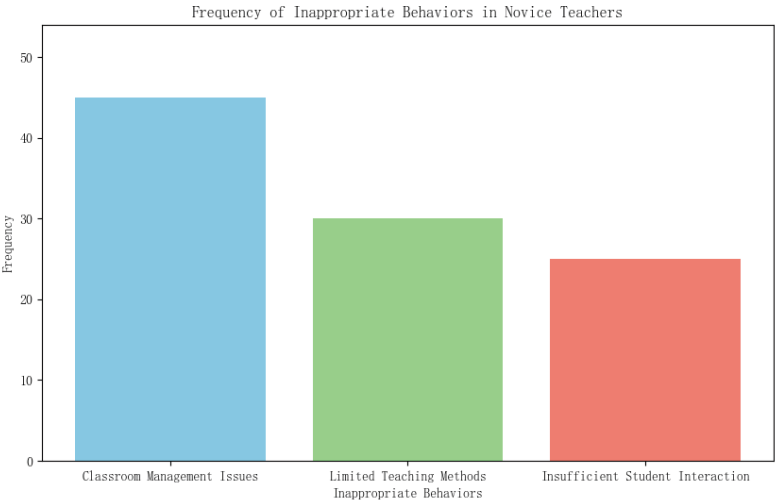
The data reveal that novice teachers often struggle with classroom management, a finding consistent with previous research highlighting the challenges faced by new educators in maintaining discipline and engagement <sup>[5]</sup>. The quantitative analysis further identifies specific behaviors, such as reliance on a limited range of teaching methods and insufficient interaction with students, which corroborates the qualitative observations noted in the study.

Inferential statistical methods, including ANOVA and regression analysis, were employed to assess the impact of targeted interventions on classroom management skills and teaching quality. The results indicate that structured professional development programs significantly enhance the ability of novice teachers to manage classroom dynamics effectively. This aligns with findings from research on teacher motivation and professional growth, which emphasize the importance of continuous development in improving educational outcomes <sup>[2]</sup>.

Moreover, the analysis explores the relationship between teacher behaviors and student outcomes, revealing a significant correlation between effective classroom management and improved student performance. This relationship underscores the critical role of teacher-student interactions in the learning process, as highlighted in studies on classroom discipline and management beliefs <sup>[5]</sup>. The data suggest that interventions fostering positive teacher-student relationships can mitigate the negative effects of inappropriate behaviors.

The quantitative findings also consider the socio-economic factors influencing teacher behaviors, drawing parallels with studies on the impact of external factors on teacher motivation and performance <sup>[2]</sup>. These insights are vital for understanding the broader context in which novice teachers operate and for designing interventions that address both individual and systemic challenges.

In short, the quantitative data analysis provides robust evidence supporting the need for targeted interventions to address the specific challenges faced by novice teachers. By integrating these findings with qualitative insights, the study offers a holistic view of the factors contributing to inappropriate behaviors and the strategies that can effectively mitigate them. This comprehensive approach not only enhances our understanding of novice teacher dynamics but also informs the development of evidence-based policies and training programs aimed at improving teaching quality.



**Figure 1.** Frequency of inappropriate behaviors in novice teachers

### 3.2. Qualitative observations

The qualitative observations conducted during this study provide a nuanced understanding of the inappropriate behaviors exhibited by novice teachers in classroom settings. These observations reveal the complexities and multifaceted nature of classroom dynamics, highlighting the interplay between teacher behavior, student engagement, and the educational environment.

Initially, it was observed that novice teachers often struggle with classroom management, a finding consistent with existing literature that emphasizes the importance of effective classroom management skills for successful teaching outcomes <sup>[4]</sup>. The qualitative data indicated that these teachers frequently face challenges in maintaining discipline and order, which can lead to a chaotic learning environment. This aligns with previous studies that have identified classroom management as a critical area where novice teachers require additional support and training <sup>[5]</sup>.

Furthermore, the observations highlighted a tendency among novice teachers to rely on a limited range of teaching methods, often defaulting to lecture-based instruction. This approach can result in reduced student engagement and interaction, as students may become passive recipients of information rather than active participants in the learning process. Such findings echo the concerns raised in studies on teacher effectiveness, which suggest that diverse and interactive teaching strategies are essential for fostering student motivation and learning <sup>[3]</sup>.

The qualitative data also underscored the importance of teacher-student interactions in shaping the classroom atmosphere. Novice teachers who struggled to establish meaningful connections with their students often encountered difficulties in managing classroom behavior and fostering a positive learning environment. This observation is supported by research that highlights the role of teacher-student relationships in influencing student outcomes and classroom dynamics <sup>[11]</sup>.

Additionally, the study found that novice teachers frequently experience emotional and professional stress, which can exacerbate inappropriate behaviors in the classroom. This stress is often compounded by a lack of adequate resources and support, as noted in studies examining teacher stress and its impact on teaching performance <sup>[6]</sup>. The emotional labor associated with teaching, particularly in challenging environments, can lead to burnout and disengagement, further affecting classroom management and instructional quality <sup>[3]</sup>.

The observations also revealed that novice teachers often lack confidence in their ability to manage classroom challenges effectively. This lack of confidence can manifest as hesitation in enforcing classroom rules or adapting teaching methods to meet diverse student needs. Such findings are consistent with research on teacher self-efficacy, which suggests that confidence in one's teaching abilities is crucial for effective classroom management and student engagement <sup>[5]</sup>.

In summary, the qualitative observations from this study provide valuable insights into the challenges faced by novice teachers in classroom settings. These findings underscore the need for targeted interventions and professional development programs that address the specific needs of novice teachers, equipping them with the skills and confidence necessary to navigate the complexities of classroom teaching. By fostering a supportive and resource-rich environment, educational institutions can help novice teachers overcome these challenges and enhance their teaching effectiveness.

## 4. Analytical discourse

### 4.1. Comparative analysis with existing literature

The findings of this study align with and expand upon existing literature regarding novice teachers' inappropriate behaviors and intervention strategies. Previous research has highlighted the challenges faced by novice teachers in classroom management and student interaction, which are crucial for effective teaching. This study corroborates

these findings by demonstrating that novice teachers often struggle with classroom management, leading to a chaotic learning environment. This is consistent with the notion that classroom management is a significant challenge for teachers, as it involves planning, organizing, and managing classroom interactions to create a conducive learning environment <sup>[4]</sup>.

Moreover, the study's identification of limited teaching methods and insufficient student interaction among novice teachers echoes existing literature that emphasizes the importance of diverse teaching strategies and active student engagement. The reliance on lecture-based teaching methods, as observed in this study, results in decreased student participation and engagement, a finding that aligns with the broader educational discourse on the need for interactive and student-centered teaching approaches <sup>[5]</sup>.

The emotional and professional pressures experienced by novice teachers, as highlighted in this study, are also well-documented in the literature. These pressures often stem from a lack of resources and support, which exacerbates inappropriate behaviors. This aligns with research indicating that novice teachers frequently experience stress and anxiety due to the demands of the teaching profession and the lack of adequate support systems <sup>[12]</sup>.

Furthermore, the study's findings on the impact of socioeconomic factors on teacher behavior and the effectiveness of intervention strategies resonate with existing research on the influence of external factors on educational outcomes. The need for targeted interventions that consider individual and systemic challenges is emphasized in the literature, suggesting that effective professional development programs can significantly enhance classroom management skills and improve teaching quality <sup>[13]</sup>.

In addition, the study's emphasis on the importance of professional development for novice teachers is supported by literature that underscores the role of continuous professional growth in improving teaching practices. The positive impact of structured professional development programs on classroom management and student performance, as demonstrated in this study, is consistent with findings that highlight the benefits of ongoing teacher training and support <sup>[14]</sup>.

Overall, this study contributes to the existing body of knowledge by providing empirical evidence on the specific challenges faced by novice teachers and the effectiveness of targeted intervention strategies. The integration of quantitative and qualitative data offers a comprehensive perspective on the complexities of classroom teaching for novice educators, reinforcing the need for evidence-based policies and training programs to enhance educational quality.

## **4.2. Theoretical implications and practical applications**

The findings of this study offer significant theoretical implications and practical applications for understanding and addressing inappropriate behaviors in novice teachers' classroom teaching. Theoretically, the study contributes to the existing body of literature by highlighting the critical role of classroom management and teacher-student interaction in shaping educational outcomes. This aligns with previous research that underscores the importance of effective classroom management in creating conducive learning environments <sup>[4]</sup>. The study's insights into the challenges faced by novice teachers, such as reliance on limited teaching methods and insufficient student engagement, further enrich the theoretical discourse on teacher effectiveness and professional development.

Moreover, the study's findings resonate with the broader educational theories that emphasize the interplay between teacher behavior and student outcomes. The observed correlation between structured professional development programs and improved classroom management skills suggests that targeted interventions can significantly enhance teaching quality. This is consistent with the notion that professional development is pivotal in equipping teachers with the necessary skills to navigate the complexities of classroom dynamics <sup>[4]</sup>. The study also

highlights the influence of socioeconomic factors on teacher behavior, suggesting that interventions must be tailored to address both individual and systemic challenges.

In terms of practical applications, the study provides evidence-based recommendations for designing teacher training programs and policy interventions. The identification of specific inappropriate behaviors, such as inadequate classroom management and limited student interaction, offers a foundation for developing targeted training modules that address these issues. The emphasis on promoting positive teacher-student interactions aligns with the findings of studies on implicit learning, which suggest that fostering a supportive learning environment can enhance student engagement and performance<sup>[15]</sup>. Additionally, the study's insights into the emotional and professional pressures experienced by novice teachers underscore the need for comprehensive support systems that include mentoring, resource provision, and stress management strategies.

Furthermore, the study's findings have implications for addressing broader educational challenges, such as student motivation and engagement. By enhancing teachers' classroom management skills and fostering positive interactions, educational institutions can create more inclusive and effective learning environments. This approach is supported by research on adolescent anxiety, which highlights the role of school atmosphere and teaching strategies in influencing student outcomes<sup>[16]</sup>. The study also suggests that interventions should consider the psychological and social dimensions of teaching, as these factors can significantly impact teacher behavior and student learning experiences.

Overall, the study's theoretical and practical contributions underscore the importance of evidence-based approaches in improving educational practices. By integrating insights from various fields, such as psychology and education, the study offers a comprehensive framework for understanding and addressing the challenges faced by novice teachers. This interdisciplinary perspective is crucial for developing holistic interventions that not only enhance teaching quality but also promote positive student outcomes. The study's findings thus provide a valuable resource for educators, policymakers, and researchers seeking to improve the effectiveness of teacher training programs and educational practices.

### **4.3. Limitations of the study and future research directions**

The study acknowledges several limitations that may impact the generalizability and applicability of its findings. Firstly, the sample size, while diverse, may not fully represent the broader population of novice teachers. This limitation suggests that future research should consider larger and more varied samples to enhance the robustness of the conclusions drawn. Additionally, the study's reliance on self-reported data could introduce bias, as participants may have provided socially desirable responses rather than accurate reflections of their behaviors and experiences. To mitigate this, future studies could incorporate more objective measures, such as third-party classroom observations or longitudinal tracking of teacher performance over time.

Moreover, the study's focus on specific educational settings may limit the applicability of its findings to different cultural or institutional contexts. For instance, the influence of socioeconomic factors on teacher behavior and intervention effectiveness, as highlighted in previous research, suggests that contextual variables play a significant role in educational outcomes<sup>[10]</sup>. Future research should explore these contextual differences to develop more tailored intervention strategies that account for diverse educational environments.

The study also recognizes the complexity of factors influencing novice teachers' behaviors, such as personality traits and psychological well-being, which were not extensively examined in this research<sup>[9]</sup>. Future investigations could delve deeper into these individual differences, employing frameworks like the Big Five Factor Model to better understand how traits such as neuroticism or conscientiousness affect teaching practices and stress responses.



Furthermore, while the study provides insights into effective intervention strategies, it does not fully address the long-term sustainability of these interventions. The literature on teacher burnout and psychological distress underscores the importance of ongoing support and professional development to maintain improvements in teaching quality <sup>[9]</sup>. Future research should evaluate the durability of intervention impacts and explore mechanisms to support continuous teacher growth.

Lastly, the study's findings on classroom management and student interaction align with existing literature but also reveal gaps in understanding the nuanced dynamics of teacher-student relationships <sup>[5]</sup>. Future research could benefit from a more granular analysis of these interactions, considering factors such as communication styles and emotional intelligence, to refine strategies that foster positive classroom environments.

In short, while the study contributes valuable insights into novice teachers' inappropriate behaviors and intervention strategies, addressing these limitations through expanded research efforts will enhance the field's understanding and support the development of more effective educational practices.

## **5. Concluding insights**

### **5.1. Summary of key findings**

The study's findings highlight several key aspects of novice teachers' inappropriate behaviors and effective intervention strategies. Primarily, it was observed that novice teachers often struggle with classroom management, which aligns with existing literature emphasizing the importance of effective classroom management for conducive learning environments <sup>[4]</sup>. This struggle is compounded by a reliance on limited teaching methods, such as lecture-based approaches, which reduce student engagement and participation. This finding is consistent with previous research indicating that novice teachers tend to have lower control over classroom dynamics compared to their more experienced counterparts <sup>[5]</sup>.

Furthermore, the study identified a lack of effective teacher-student interaction as a significant issue, contributing to a chaotic learning environment. This aligns with findings that suggest novice teachers face emotional and professional stress due to insufficient resources and support, which exacerbates inappropriate behaviors <sup>[5]</sup>. The analysis also revealed that structured professional development programs significantly enhance classroom management skills, underscoring the critical role of continuous professional development in improving teaching practices.

Additionally, the study found that socioeconomic factors influence teacher behaviors and the effectiveness of intervention strategies. This suggests that interventions must address both individual and systemic challenges to be effective. The research also highlighted the importance of promoting positive teacher-student interactions and support systems, providing evidence-based recommendations for designing teacher training programs and policy interventions.

Overall, the findings emphasize the necessity of targeted interventions to address the challenges faced by novice teachers, providing a comprehensive perspective that guides the formulation of policies and training programs aimed at enhancing educational quality.

### **5.2. Contributions and innovations**

This study makes significant contributions to the field of educational research by providing a comprehensive analysis of novice teachers' inappropriate behaviors and proposing effective intervention strategies. The integration of both quantitative and qualitative methodologies offers a robust framework for understanding the multifaceted challenges faced by novice teachers, thereby addressing a critical gap in existing literature. By identifying specific behavioral



patterns such as inadequate classroom management and limited student interaction, the study aligns with and extends previous findings, offering empirical evidence that supports the need for targeted professional development programs. These programs are shown to enhance classroom management skills significantly, which is crucial for improving educational outcomes.

Innovatively, the study emphasizes the importance of structured professional development, which not only addresses immediate classroom challenges but also fosters long-term teacher growth. This approach is consistent with the notion of continuous professional development as a means to adapt to the evolving educational landscape. Furthermore, the study highlights the impact of socioeconomic factors on teacher behavior and the effectiveness of intervention strategies, suggesting that a holistic approach is necessary to address both individual and systemic challenges. This aligns with recent findings that underscore the need for comprehensive support systems to enhance teaching quality and student engagement <sup>[4]</sup>.

Moreover, the study introduces a nuanced understanding of the dynamics between teacher-student interactions and classroom management, suggesting that fostering positive interactions can mitigate inappropriate behaviors. This insight contributes to the development of evidence-based policies and training programs that prioritize active engagement and resource availability, as highlighted in recent educational research <sup>[4]</sup>. The innovative aspect of this study lies in its ability to translate theoretical implications into practical applications, providing a framework for designing interventions that are both effective and sustainable. By doing so, it offers valuable insights for policymakers and educators seeking to improve novice teachers' effectiveness and, ultimately, student learning outcomes.

## Disclosure statement

The author declares no conflict of interest.

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# Contrast in the Classification of Fujian Folk Dance and the Construction of Textbooks

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**Abstract:** This study first analyzes four distinct forms of Fujian folk dance, highlighting the notable differences in their cultural characteristics and dance qualities. It then categorizes these dance forms to align with textbook construction, discussing in depth the principles guiding the development of textbooks that correspond to these classifications.

**Keywords:** Fujian folk dance; Dance classification; Constructions of textbooks; Guiding principles

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## 1. Introduction

From its very inception, Fujian folk dance has been deeply intertwined with the customs and traditions of the local people. It serves as a true reflection of their beliefs, etiquette, rituals, and aesthetic preferences in dance. Over thousands of years of inheritance, development, and integration, Fujian folk dance has not only expanded in quantity and artistic refinement but has also permeated various aspects of social life. It has become an indispensable part of folk activities, including worshipping deities, paying homage to ancestors, celebrating festivals, and marking significant life events such as weddings and funerals. These dance movements have been refined, exaggerated, and artistically developed by folk artists across different dynasties, gradually forming a distinctive style rich in local characteristics. Today, Fujian folk dance and folk culture continue to promote and influence each other, accumulating and evolving over generations, resulting in a profound cultural legacy.

## 2. Types and classification of Fujian folk dance

Historical records document the cultural evolution of Fujian folk dance, with references to its traditional forms appearing in historical texts from various dynasties. One of the earliest depictions is the rock carving of music and dance sacrificial scenes found on a cliff in Xianzitang, Hua'an, Zhangzhou. These primitive murals depict dancers in a squatting position with their legs bent at a 90-degree angle, upper arms extended horizontally, and forearms bent either downward or upward. Each dancer is adorned with a tail decoration that reaches the ground. Although no

written records exist from this early period, these vivid images provide valuable insights into how Fujian's primitive ancestors used music and dance in sacrificial rituals.

During the Tang Dynasty, Fujian folk dance flourished. (1) Volume 3 of *Bixi Manzhi* cites *Youxian Guchui*, which describes the bustling cultural scene around Antai Bridge in Fuzhou: "The area was already densely populated, with boats lined up like clouds. On both sides of the river, wine shops and song-singing buildings stood, while the sounds of flutes and pipes drifted through the willow and banyan leaves." (2) In the Five Dynasties period, Dunren Zhan's poem *I Moved to Quanshan City, and Marquis Liu Invited Me to Visit the County Garden* illustrates the vibrant atmosphere of the time: "Tens of thousands of soldiers' weapons are scattered, and in thousands of households, the sounds of silk and bamboo instruments are heard. After the dancers with slender waists finish dancing, the fragrance of makeup wafts, and after the painted-face performers complete their makeup, the blush from wine appears." (3) Similarly, *The Gazetteer of Minhou County* records the grand performances of *Baixi* (a form of folk entertainment): "Various acrobatic troupes filled the roads, with the sounds of flutes and drums resounding through the sky, lasting throughout the night." By the Song and Yuan Dynasties, Quanzhou had become the largest port in the East, attracting artists from northern China. The influx of musical and dance traditions they brought greatly enriched Fujian's dance culture. Historical records from different periods provide detailed descriptions of dance themes, content, forms, music, costumes, and the grand performance scenes of the time.

Based on these records, we can broadly categorize Fujian folk dances into four distinct types: (1) Ritual dances: Performed as part of religious and ceremonial practices. (2) Folk custom dances: Rooted in seasonal customs and traditional festivities. (3) Martial arts-inspired dances: Incorporating elements of martial arts into their movements. (4) Opera-related dances: Integrating storytelling with song and dance performances. Each of these categories exhibits unique cultural characteristics and artistic qualities, highlighting the diversity and richness of Fujian folk dance.

## 2.1. Ritual dances rooted in religious rites

Religious ritual dances, which are deeply embedded in religious ceremonies, reflect the spiritual aspirations of human nature and emphasize key religious concepts such as mystery, purification, and symbolism. In Fujian, folk religious activities encompass Confucianism, Buddhism, Taoism, and other diverse religious beliefs. This strong religious atmosphere not only provides fertile ground for the survival of Fujian's local religious dance traditions but also fosters the prosperity of its folk religious dance art.

Fujian's religious ritual dances can be classified into four main types, each representing a distinct tradition: Taoist rituals, Buddhist ceremonies, Confucian sacrifices, and Shamanistic dance forms. (1) Taoist ritual dances: As a vital component of Taoist culture, Fujian's Taoist ritual dances involve symbolic gestures, the drawing of talismans, and the chanting of incantations during sacrificial ceremonies. These dances are further categorized into two styles: literary (liberal arts) and martial arts performances. (2) Buddhist music and dance: With a long history in Fujian, Buddhist music and dance are typically performed in temple halls or at ritual sites where Buddhist families hold ceremonies. (3) Confucian dances: These dances are characterized by refined choreography and are performed not only during sacrificial ceremonies but also at banquets. They serve as a means of self-cultivation, educating the public in moral development and promoting positive social customs. (4) Shamanistic dances: The structure, masks, and costume designs of Fujian's Shamanistic dances are rich in symbolism. These dances evoke deep personal experiences, allowing performers to transcend themselves and transform into representations of ghosts and deities. Across these various forms of religious ritual dance, there is a common emphasis on spiritual pursuit, often prioritizing symbolic meaning over dynamic rhythm and movement.

## **2.2. Folk dances rooted in seasonal customs**

Folk dances integrated with seasonal customs constitute the largest category of Fujian folk dances, offering a diverse range of forms and rich cultural significance. These dances encapsulate the everyday traditions and social customs of ordinary people, incorporating elements such as collective singing and dancing, humor, and wit. They directly reflect the collective national consciousness, the survival instincts of the common people, the local cultural landscape, interpersonal relationships, and the authentic emotions that connect individuals to society.

Given that Fujian's folk dance culture is deeply influenced by religious consciousness at a macro level, there is often an intricate connection between folk and religious dances. This interdependent relationship results in folk dances incorporating religious elements and vice versa.

Despite their shared roots in everyday life, Fujian's folk dances vary in form, content, and style. They can be broadly categorized as follows: (1) Masked dance: Performed within the context of exorcism rituals. (2) Farming dance: Rooted in agricultural rituals and traditions. (3) Ballad dance: Centered around singing and dancing games. (4) Imitative dance: Inspired by the movements of animals and plants in nature. These folk dances, in their various forms, serve as cultural expressions that embody the traditions, beliefs, and lifestyles of the people of Fujian.

## **2.3. Martial arts-inspired dances rooted in martial arts**

Martial arts-inspired dance, choreographed by incorporating martial arts techniques, reflects the enduring and hereditary characteristics of Fujian's martial arts tradition. Fujian is a province with a deep-rooted martial arts heritage. Initially, martial arts-inspired dance often depicted glorious achievements by imitating combat victories or served as a training method for martial techniques. It was also performed as collective martial dance drills to boost military morale.

With the end of warfare, martial arts-inspired dance, once primarily used on the battlefield, gradually permeated daily life, evolving into various folk martial dance forms that combined entertainment with competitiveness. Beyond enhancing physical fitness and promoting health, martial arts-inspired dance also embodied the spirit of national defense and home protection. As a result, it continued to develop and evolve across different dynasties.

In Fujian folk dance, martial arts-inspired dance can be broadly categorized into three types: (1) Fitness dance: Focused on physical conditioning and well-being. (2) Weapon-based dance: Featuring choreographed movements with traditional weapons. (3) Lion dance: A dynamic and symbolic performance that blends martial arts with cultural expression.

## **2.4. Opera dances rooted in songs and dances**

Opera dance, which centers on portraying stories through song and movement, utilizes dance to represent rich life experiences, depict distinct character personalities, and unfold complex, dramatic narratives. In opera, the "acting" and "fighting" segments are considered its dance components.

Fujian is home to more than thirty types of local operas, where dance and opera share an inseparable bond. Many local minor operas originated from traditional songs and dances, and through continuous integration and development, dance performance elements have become fully embedded in opera art. Some highly dance-oriented local operas, in turn, have influenced and borrowed from dance traditions. This reciprocal relationship has led to the fusion phenomenon of "dance in opera and opera in dance."

Opera dance follows the strict "stylization" principles of opera, requiring precise, delicate movements and graceful postures. These movements must align with specific characters and settings while also advancing the dramatic plot, providing essential visual support for the complete artistic presentation of opera. Thanks to the rigorous norms and master-apprentice traditions in local opera, numerous ancient court music and folk dances of significant historical and cultural value have been well preserved in Fujian's opera performances.



Based on different forms of dance in Fujian opera, opera dance can be broadly classified into three types: (1) Court music and dance: Originating from ancient court performances of the Song and Yuan dynasties. (2) Religious opera: Ritualistic opera developed during the late Qing and early Ming dynasties. (3) Local minor operas: Opera forms that have spread across various regions of Fujian.

### 3. Comparison between Fujian folk dance classification and textbook construction

Fujian folk dances can be categorized into four main types: religious dance, folk dance, martial arts-inspired dance, and opera dance. Religious dance is further divided into four subtypes: Taoist dance, Buddhist dance, Confucian dance, and Shamanist dance. Folk dance consists of four forms: masked dance, farming dance, ballad-style dance, and imitative dance. Martial arts-inspired dance includes three forms: fitness dance, weapon-based dance, and lion dance. Opera dance is classified into three forms: court music and dance, religious opera, and local minor operas. Based on these distinct dance types and forms, corresponding textbook models can be developed: religious dance textbooks, folk dance textbooks, martial arts-inspired dance textbooks, and opera dance textbooks. **Table 1** is a comparison of the relationships between them<sup>[1,2]</sup>.

**Table 1.** Comparison of various types of dances<sup>[3-5]</sup>

Dance type	Teaching material content Textbook form	Cultural background	Performance content	Style characteristics	Dance form	Training objectives
Religious dance	Taoist dance	Taoist ritual	1. Throwing cymbals 2. Shigong Dance 3. The Dance of the Fairies Washing the Mirror 4. Lotus Lamp Dance 5. Prayer altar dance 6. Paper-cut Flower Dance 7. The Movement of Yamen Runners	Ceremony dance	Men dance alone; Women dance alone; Group dance	Sacrificial Music and Dance
	Buddhist dance	Offering through physical actions	1. Flying Apsaras Musicians and Dancers 2. Fragrant Flower Dance	Buddhist music and dance	Women's group dance	Flying Apsaras Music and Dance
	Confucian dance	Ancestral temple sacrificial ceremony	1. Culture and dance 2. Martial dance	Sacrificial dance	Men's group dance	Elegant Music Yiyue Dance
	Witchcraft dance	Witchcraft rituals	1. Suoluo Lian 2. Fire Tripod Elder Man and Fire Tripod Elder Woman 3. Lotus - Picking Dance 4. The Dance of the Wet Nurse Walking the Astral Steps to Pray for Blessings 5. Thunder - gesture Dance 6. Bamboo Planting Dance Style 7. Six-knot Flower Praying Dance	Witchcraft ritual dance	Men's group dance; Two-people dance	1. Suoluo Lian 2. Witchcraft ritual dance 3. Traditional dance of She nationality
Folk dance	Masked dance/Masquerade dance	Exorcism ceremony	1. Nuo Mask Dance 2. Mask Dance/Masked Dance	Nuo ceremony with masks	Men's group dance	Nuo dance
	Farming dance	Farm-related celebrations	1. Qianggu Dance 2. Fengpo Drum Dance 3. Fengpo Drum Dance 4. Four Treasures Dance 5. Tea Basket Drum in Dance 6. Dragon Dance	1. Drum-beating dance 2. Dance with props	Group dance	Percussion dance
	Ballad category	Song and dance games	1. Tea-Picking Lantern Dance 2. Daqiantao Dance 3. Dance with Jingle Bells 4. Step dance/treading dance 5. Bamboo Forest Sword Flower Dance 6. Sleeve Flapping Dance	Sing and dance joyfully	Group dance	Song and dance, a song and dance
	Simulation dance	Simulation game	1. Dance of the Bear 2. Man Carrying Woman Dance	Drama pantomime	Two-people dance	Simulation dance

**Table 1 (Continued)**

Dance type	Teaching material content	Cultural background	Performance content	Style characteristics	Dance form	Training objectives
	Textbook form					
Martial arts dance	Fitness dance	Building up one's body and improving health	Hai Fan Dance	Prop dance	Group dance	Mussel dance
	Instrumental dance	Military drill	1. Daguantai Dance 2. Song Jiang's Army Formation 3. Yingge Dance 4. Rattan Shield Drill 5. Shield Dance 6. Guangbing Dance 7. War Platform Drum 8. Performance of Big Drum and Parasol 9. Hunting Dance 10. Bell and Knife Dance 11. Pat the Lion Target	Martial arts drills	Team dance	1. Round shield 2. Twin sticks 3. Rattan shield 4. Shield 5. Knife with bell 6. Dances with drums
	Lion dance	Festival entertainment	1. Quanzhou Lion Combat Dance 2. Green Bamboo Lion Manipulation 3. Lion Array	Festival entertainment	Team dance	Lion dance
Theatrical dance	Court music dance	Celebration banquet ceremony	1. <i>Eighteen-step Ritual Mother</i> Perform the Rites with Hands Down 2. Lotus Picking Dance 3. Sword and Utensil Dance 4. Mingfei Dance 5. Dance of the Rainbow Feather Garment	Court dance	Women's group dance; Women dance alone	classical dancing
	Religious opera	Ancestral Temple Sacrificial Rites	1. Nine-grade Lotus Lantern 2. Dacheng Opera	Ritual Opera	Solo dance; Group dance	Ritual opera
	Local minor drama	Song and dance play	1. The 'Fan Dance' in The Romance of the Western Chamber in Ruilan's Adventure in the Rain 2. 'Colorful Ball Dance' in Li Yaxian 3. The 'Ball-throwing Dance' in The Rooftop Match-making 4. 'Chest-slapping Dance' in Zheng Yuanhe	Opera song and dance	Women's group danceMen's group dance	1. Fan Dance 2. Umbrella Dance 3. Colorful Ball Dance 4. Ball-swinging Dance 5. Clown Dance 6. Chest-slapping Dance

## 4. Principles for the construction of teaching materials

### 4.1. Emphasizing the cultural essence of Fujian folk dance

Fujian's folk dance culture boasts a long and rich history, with distinct regional characteristics across different areas. Furthermore, as cultural evolutionists have noted, these dances reflect various stages of social development. Due to variations in natural and social environments, the historical and cultural traditions passed down in each region differ, resulting in unique cultural and ecological features. Over time, these characteristics have gradually formed and endured, shaping the distinctive trajectory of human dance culture in Fujian. This legacy holds significant value in cultural history. Therefore, when addressing the classification of Fujian folk dances and the development of teaching materials, it is essential to preserve the cultural authenticity of these dances. Teaching materials should not only reflect the artistic and technical aspects of folk dances but also convey their deep-rooted cultural significance, ensuring that students appreciate the historical and social contexts in which these dances evolved <sup>[6]</sup>.

### 4.2. In-depth folk research and documentation

The collection, classification, and analysis of existing folk song-dance and folk dance-music materials serve as the primary methods for refining and developing Fujian folk dance teaching materials. Folk dances evolve in response to their environments, social contexts, and specific performance occasions. For example, the "Chest-Slapping Dance"

is found not only in Quanzhou but also in Tong'an, illustrating the regional variations summarized by the phrase "different customs every hundred li, distinct practices every ten li." As a result, even the same dance may exhibit different regional cultural imprints. To truly understand the development trends of Fujian folk dances and align teaching research with contemporary needs, it is crucial to immerse oneself in folk traditions—experiencing and analyzing their transmission and evolution firsthand. Fieldwork should go beyond merely documenting the dynamic forms of dances. It should also encompass the collection and organization of related elements such as dance music, costumes, props, written records, visual materials, notable figures, performance formations, stage settings, and living customs. More importantly, research should emphasize uncovering the cultural principles and deeper meanings embedded within dance movements. Only through comprehensive investigation and analysis can the true essence of Fujian folk dances be captured, ultimately enriching the development of high-quality teaching materials.

### **4.3. Training-oriented, representative, and systematic teaching materials**

According to incomplete statistics, Fujian has more than 700 types of folk dances. Given the constraints of limited teaching hours, it is unrealistic to incorporate all these dance forms into textbooks. Professor Meina Jia emphasized that the refinement of teaching materials must "take the teaching purpose as the guiding principle, selecting choreography that is valuable, scientific, and rigorous. The correct approach to constructing folk dance teaching materials is to refine content from the outside in, aligning with the natural development of such materials." Folk dances derived from traditional sources cannot be directly equated with textbook content. Instead, the material must undergo repeated analysis and evaluation to identify the most representative and instructive dance types. These selected dances should then be refined, combined, and systematically arranged so that raw materials can be transformed into structured and effective classroom textbooks. Additionally, the compilation of dance sequences must adhere to the following principles: A distinct and representative regional style; a clear training objective; high training value; and a systematic approach to structuring teaching materials <sup>[7]</sup>.

## **5. Conclusion**

As a significant cultural symbol reflecting the spiritual and artistic life of the people of Fujian, folk dance is an integral part of the region's cultural heritage. This study has explored the classification of Fujian folk dance and presented personal perspectives and recommendations. The relationship between different dance classification models and the development of applied teaching materials has been summarized, encompassing textbook content, cultural context, expressive elements, stylistic characteristics, dance forms, and training objectives. It is proposed that in the process of integrating Fujian folk dance classifications with teaching material development, original folk resources should first be systematically collected and organized. The selection of teaching materials must emphasize training value, representativeness, and systematic structuring. Most importantly, preserving the cultural and regional authenticity of Fujian folk dance is essential. Only by doing so can Fujian folk dance flourish as a distinctive and vibrant part of China's folk dance culture, showcasing its unique local characteristics for future generations.

## **Disclosure statement**

The author declares no conflict of interest.

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# A Study on Globalization and Women's Education in Asia

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**Abstract:** This article aims to analyze the development and shortcomings in women's education in Asia during the past two decades. Asian women students have been subjected to numerous forms of discrimination and unequal treatment in school and the global labor market, despite the efforts of educators, politicians, and many related stakeholders. The article first critically examines several theories of globalization and education from the perspective of equity. It then analyzes several typical pieces of study on the obstacles that Asian women students encounter both before and after graduation to draw implications for future research.

**Keywords:** Globalization; Women's education; Education in Asia

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## 1. Introduction

Globalization and its central ideology, neoliberalism, have a considerable impact on education in the twenty-first century, with education being increasingly intertwined with the financial and economic aspects of society. In today's environment of commercialization and market dominance, policymakers around the world are attempting to strike a balance between promoting economic growth and supporting equity and human rights. Meanwhile, many important stakeholders, particularly university students and educators, make every effort to stay away from the mainstream of privatization and decentralization in order to prevent devaluing specific disciplines (those are not directly linked to economic growth) and inequity among student groups<sup>[1]</sup>.

The importance of Asian women's education for human rights and equity is highlighted in this annotated bibliography. Despite the efforts of educators and politicians, Asian women students have been subjected to many forms of discrimination and unequal treatment in school and the global labor market. Besides, their requirements for equity have not received the attention they deserve, and the number and scope of relevant research are restricted. This paper is separated into two parts to further analyze this issue. The first section, which serves as a theoretical foundation, critically examines several theories of globalization and education from the perspective of equity. In



the following section, several typical pieces of study on women's education in Asia are analyzed together to draw implications for future research. Given the importance of accessing the global labor market as a fundamental goal of education, the discussion in this article also covers the disadvantages that Asian women students face after graduation in the job market.

## **2. Theoretical structure to understand the impact of globalization on women's education**

### **2.1. Study by Appadurai (1996)**

Appadurai <sup>[2]</sup> presented an insightful theoretical framework for understanding women's current condition and challenges in modern society. According to Appadurai, the global economy has resulted in disjunctions among economy, culture, and politics, which are represented by five dimensions of global cultural flows: ethnoscaples, technoscapes, financescapes, mediascapes, and ideoscapes. These five dimensions of flow are intertwined with complexity, driven by powerful international cooperations and institutions, and exert varied levels of influence in different global areas based on the uniqueness of local development situations. Appadurai did not mention education or the cultural differences between poor and developed countries in this thesis. Nonetheless, it has significant consequences for understanding relevant education strategies. The research in this paper criticizing "The Girl Effect" program <sup>[3]</sup> could be an example.

At the end of this chapter, Appadurai mentioned the crisis of unstable families and social culture from the perspective of women. The unstable and ever-changing global political environment requires updating ideologies. Meanwhile, people transcend cultural borders, and the media amplifies public awareness of social conflicts. In this situation, women are under pressure from both their families and society, which forces them to reassess their identities within masculine cultures and "negotiate increasingly harsh conditions of work at home and in the nondomestic workplace" <sup>[2]</sup>. This tension between family responsibilities and working will be detailed in the following section of this paper. However, Appadurai's examination of women's problems is limited in this chapter, focusing primarily on women's struggles within families and the "honor of women" promoted by the media from a male perspective.

### **2.2. Study by Rizvi and Lingard (2010)**

Rizvi and Lingard <sup>[4]</sup> examined the problem of gender equity in education in the global South from the policy and societal perspectives in this chapter of the book. The core argument is that women's education in the global South demands not only immediate legislative attention, but also a rethinking of its goals. The development of women's education in the South follows an instrumentalist logic, which trains women with skills because they require lesser wages than males, rather than for their rights: "gender equity appears to be a calculated and efficient strategy to provide corporations with a cheaper source of labor for both local and transnational companies" <sup>[4]</sup>. This inequity is serious, especially in South Asia, where women's rights are in the worst condition.

The fundamental root reason for this gender inequity, according to Rizvi and Lingard <sup>[4]</sup>, is the neoliberal imaginary and the instrumental economic terms used by its proponents. To change this and enhance the status of women in education, social reform and a rethinking of education's fundamental purpose are required. Rizvi and Lingard <sup>[4]</sup> discussed the role of the state in developing equity policies and avoiding educational inequity later in the chapter. However, in Asia's less developed regions, local officials are more likely to have a constrained, patriarchal attitude and disregard women's rights to education, thus both government and governance should participate in the creation of a new logic network to guarantee women's rights to education.

### 2.3. Study by Stromquist and Monkman (2014)

In this introduction to globalization and its effects on the global economy and education, Stromquist and Monkman <sup>[1]</sup> grouped cultural changes, identity preservation, and challenges to gender equity, noting that, while today's media has reinforced gender stereotypes, gender studies and the concept of gender equity have been circulating rapidly around the world as an important way of transmitting critical knowledge for marginalized people. However, with neoliberalism as the prevailing ideology, the focus of education has shifted away from a student-centered curriculum toward economic training. As a result, several majors in the realm of the liberal arts that were unhelpful for economic development are being neglected and denied in today's higher education. Women are frequently the victims of this disciplinary inequality.

This essay provides insight into the problems that Asian women confront in higher education. The global economy is deeply asymmetric in a complex and intersectional manner, as Stromquist and Monkman pointed out <sup>[1]</sup>. The North controls the majority of international money flows and promotes homogenizing tendencies in economic growth, education, and many other facets of the global society. The majority of Asian countries are developing nations that have adopted the neoliberal definition and goal of education as a tool for economic development. Local needs should be prioritized in these countries, where women's contributions to higher education and the global job market are undervalued. Stromquist and Monkman <sup>[1]</sup> did not discuss possible solutions to the weakening of feminist work within the universities by globalization. Still, they did mention counter-efforts to globalization at the end of the article, which calls for strengthening the state. However, these movements are few, and women's education issue is not included in the propaganda.

### 2.4. Study by Carnoy (2014)

Carnoy <sup>[5]</sup> stated in this article that two dynamics are driving the development of women's higher education and expanding women's engagement in the labor market. On the one hand, feminist values have pushed for gender equity. On the other side, the growing need for low-cost workers drives more women's participation in the global labor market. As a result, globalization-driven advancements in women's higher education do not result in educational fairness or equitable treatment of female workers in the workplace.

This research is important for understanding the negative consequences of globalization on women's education in developing Asian countries under the surface of prosperity. Women in less developed regions now have more options to receive higher and vocational education as a result of increased use of digital technologies and increased labor immigration (or what Appadurai <sup>[2]</sup> refers to as the ethnoscaples and technoscaples of flows). However, under neoliberalism and capitalism's dominance, the profit from recruiting women workers is a more powerful key motive for higher education investment, as women are paid less than men, which is especially true in developing countries.

Carnoy <sup>[5]</sup> claimed that education decisions should be made based on each country's unique situations and national curriculum standards as possible solutions to inequity concerns. Carnoy, like Spreen and Valley <sup>[6]</sup>, emphasized the need to equip teachers with modernized technological skills to support pupils effectively. Higher education must be sponsored more for the public benefit rather than for the profit of international cooperations to eliminate discriminatory treatment of women students in school and after graduation. Virtual universities and MOOCs (massive open online courses) were shown to be unsuccessful in raising higher education quality in this study. However, Carnoy did not suggest any other ways to make beneficial use of technology and global communication to make the public education system more successful for everyone.

## **2.5. Study by Moeller (2014)**

In this study, Moeller <sup>[3]</sup> criticized the Nike Foundation for funding girls' vocational education programs in Brazil, claiming that although the programs were intended to alleviate poverty and empower young women, in fact, they were problematic and risky for the students involved. According to Moeller, the Nike Foundation invested in these programs primarily to repair the company's reputation for mistreating female employees, and also to meet market demand for low-wage labor. The implementation is solely focused on accountability, ignoring the impact of gender and race intersectionality on young Brazilian women. Worse, the fundamental logic of these programs places the burden of regional development on young women, imposing needless moral obligations on them while denying their "unrealistic" career ambitions.

Moeller's study could serve as a model for women's education in Asia, as Asia is also a low-wage labor supply for transnational firms in the West. Many firms invest in education in poor areas of Asia under the effect of globalization for the sake of their brand and future profit, without addressing the discriminatory status of local participants. Later in the article, Moeller recommended an alternative: instead of teaching basic workplace skills, invest in helping girls pass standardized assessments <sup>[3]</sup>. This may be useful in Brazil, but it should be reassessed in Asia because the exam difficulty and competition intensity are different in these locations.

## **2.6. Study by Spreen and Vally (2020)**

Spreen and Vally <sup>[6]</sup> highlighted the issue of violence directed at women and other vulnerable groups in their critical reflection on social and political levels. Rapes of women and children are part of the continued violence, which is accompanied by unequal pay for women in the job and widespread sex and race discrimination in education. As Spreen and Vally pointed out, these factors of violence are deeply rooted in the "political economy of racial and patriarchal capitalism" <sup>[6]</sup>. The government's corrective actions failed to address the prevalent racism and gender discrimination. The most important reason was "ignoring political history, particularly one that emphasizes the continued struggle against oppression and structural inequality" <sup>[6]</sup>, which implies the importance of understanding and respecting historical facts rather than presenting empty slogans.

Although this study takes place on a different continent, it has lots of implications for studies of women's education in Asia, where a majority of countries are developing countries and have suffered from colonialism and financial difficulties in the history of being marginalized and exploited by Western countries since the beginning of globalization. To combat racism and sexism on both continents, the political-economic and cultural roots of xenophobia and patriarchy must be transformed. Furthermore, because low-income schools lack proper support from the government, instructors are unable to arm young people without themselves first receiving adequate training; therefore, "poverty and pervasive inequality out to be better understood and more intentionally incorporated into the curriculum" <sup>[6]</sup>. Another problem worth noting is that within relevant social movements, race-based and sex-based discrimination also exist. This article does not offer a solution to solve the problems; however, because political economics is at the root of the concerns raised above, viable solutions might be found in the articles discussed above on the topic of globalization and local economic development.

## **3. Representative research on globalization and women's education in Asia**

### **3.1. Study by Habu (2000)**

Habu <sup>[7]</sup> conducted interviews with Japanese female university students in the United Kingdom and derived conclusions regarding their motivations and attitudes about studying abroad. Habu focused on the impact of

globalization and commercialization on higher education and people's perceptions of it in this study. There are strong push factors driving women students to leave Japan for education. In Japan, even though women students have equal opportunities to be admitted to universities, there is discrimination against "feminine" disciplines, much similar to the condition of Indian women students in the research by Chanana in the following article in this paper <sup>[8]</sup>. The job market is also unfriendly to women graduates, who are discouraged from continuing working once they are married and have little opportunity to be promoted into management positions. Socio-cultural factors also cause women under great pressure to pursue independence and individual achievements. In conclusion, although Habu's article did not directly discuss women's education environment in Japan, implications could be drawn from the various reasons for women students leaving the Japanese educational system that are mentioned above.

In discussing the influence of education privatization and commercialization on both universities and students, this study recalls Stromquist and Monkman <sup>[1]</sup>. Foreign students from Japan are viewed by many British colleges "in financial terms, not as members of a scholar community" <sup>[7]</sup>. As a result, Japanese female students experienced feelings of alienation and neglect from university officials. Eventually, these female students left a restrictive Japanese school system for Western education, but they were not treated with the respect and care they deserved by today's commercialized universities.

### **3.2. Study by Chanana (2007)**

Chanana <sup>[8]</sup> systematically collected and evaluated statistics on the number of women students and their proportion in various disciplines in Indian higher education, and described the trends and problems for Indian women's higher education. Under the social current of privatization, the government has reduced investment, leaving higher education depending on funds from the market, industry, and tuition from students, which echoes the research by Rizvi and Lingard on education commercialization <sup>[4]</sup>. As a result, the developments of disciplines are more adapted to the needs of the market. In India, subjects with higher future salaries, such as engineering, commerce, and science, are regarded as "masculine" disciplines, and women students are discouraged from choosing them. Admittedly, in recent years, there have been more women students in traditional "masculine" majors, and the percentage of women graduates and researchers has been increasing. However, women are generally still facing discrimination in higher education.

Women students in India face distinct problems depending on their geographical location, social class, and family background, according to Chanana <sup>[8]</sup>. Because of the patriarchal socio-cultural setting in which they live, women students are expected to marry after graduation, and their education is oriented toward the marriage market rather than the labor market. Furthermore, private universities for professional education are costly, and students rarely get a return on their investment shortly after graduation. As a result, parents and groom's families rarely allow women from low-income families or underdeveloped regions to pursue higher education. Chanana acknowledged that the government plays a significant role in promoting women's higher education and that it has done so in a disappointing manner. However, in her analysis of data, she did not include the implications for government investment and policies.

### **3.3. Study by Yeung and Yang (2020)**

By analyzing the issue of youth unemployment in developing Asian countries such as China and South Korea, Yeung and Yang <sup>[9]</sup> criticized the uncertain job market and the educational system that failed to prepare students with the skills required by the market. As global competition intensifies, employee incomes and working conditions have worsened, and more young people in developing countries have become "NEETs" (not in employment, education, or



training). The failure of young graduates to transition to the labor market has its origins in colonial history (such as in Hong Kong) and workplace inequities among racial, gender, and socioeconomic groups.

Yeung and Yang <sup>[9]</sup> highlighted the difficulties confronted by young women students in China and the Republic of Korea: they are disadvantaged in wages than their male counterparts, and married women have a significantly higher risk of being in NEET. They struggle with a mismatch between what they learn in school and what businesses want. Lower-ranking colleges, as well as social science and humanities areas, are also facing discrimination.

According to Yeung and Yang <sup>[9]</sup>, changing education policies is required to solve the unemployment problem. Women and other excluded groups encounter uncertainty problems in the global job market. As a result, more training, internships, mentoring, and protections for women students and other vulnerable groups are required to foster equity. However, this research in Asia is limited to East Asian countries, ignoring other regions where vulnerable groups of students face similar issues but require different types of support based on their historical and social backgrounds.

### **3.4. Study by Khoja-Moolji (2021)**

Khoja-Moolji <sup>[10]</sup> presented a practical solution for the promotion of human rights education in Pakistan in this podcast: equipping teachers with a decolonization mindset. Pakistan has a Euro-centric logic of knowledge, with girls' roles constrained under a post-colonized patriarchal framework, due to its colonization history. Khoja-Moolji organized a teacher training program as a volunteer that focused on what she called "politics of knowledge" and aimed to educate teachers in low-income community schools (who are underpaid and unsupported by the government) to recognize and criticize colonialism in and outside of the classroom. Because religion and family play important and unique roles in Pakistani society, they were also included in the discussion in her teacher training program.

Although the government claims to support it, girls' education still relies heavily on outside aid, causing obstacles to education volunteers. As Khoja-Moolji explained, international corporations and their investments in developing countries involve a "network of privilege," which is a type of colonialism in essence. As a result, Khoja-Moolji and her colleagues had to evaluate foreign organizations and corporations critically and selectively engage with them as human rights educators. Otherwise, their programs may be seized by these overseas aid providers, and "then their political edge gets blunt." This is exemplified by Nike's "The Girl Effect" program in Brazil, which dealt with similar issues but achieved little practical progress <sup>[3]</sup>. However, Khoja-Moolji's program is still in its early stages. She did not mention the future of decolonized teacher training, nor did she provide implications for educators to keep politically independent from international aid providers.

### **3.5. Study by Maheshwari (2021)**

Women leaders in higher education encourage policies supporting women students and offering social models for them, which is crucial for women's education in South Asian nations with substantial gender inequities in both education and the workplace. Maheshwari <sup>[11]</sup> compared women's leadership in higher education in Western countries with that in Vietnam to draw implications for the strengthening of women's role in Vietnam's higher education realm. Similar to other Asian countries, although Vietnam's economy has witnessed quick growth in recent years, the percentage of unemployed women remains high, and their promotion in the workplace is highly confined <sup>[7-9]</sup>. As the report demonstrates, there exist impediments in Vietnam, particularly for women, when they complete their studies and move into leadership positions. On a macro level, the dominant socio-cultural perspective demands that women



prioritize their families. Women's accomplishments are also frequently overlooked by educational institutions. On a micro level, internalized stereotypes cause women to lack self-confidence in their abilities. On the contrary, developed Western countries have cultures that are more supportive of women participating in politics, the labor market, and higher education. In conclusion, Maheshwari <sup>[11]</sup> argued that in Vietnam, women need self-motivation, self-confidence, family support, and social modeling (role models and mentors) to gain success as leaders in higher education.

In Vietnam, the gender gap is widening, according to this report. However, addressing gender inequality in education and workforce participation will take time and effort on the part of the government. Maheshwari emphasized the role of government in the future; however, this study does not address how governments may better promote women's leadership.

### **3.6. Study by Orazova and Cohen (2021)**

Orazova and Cohen <sup>[12]</sup> interviewed Ayna, a woman from a rural family in Turkmenistan, Central Asia, whose life was transformed by learning the English language. Despite policies in Central Asian countries that encourage women's rights, women students in rural areas continue to be excluded from higher education. Elders in her family discouraged Ayna from pursuing a university education. However, she overcame many obstacles, stuck to her principles, and eventually graduated with honors. Her ability to communicate fluently in English was essential in her achievement since it led to a job and an opportunity for further education. Ayna adopted a Western attitude during her university studies, acknowledged and analyzed gender issues using Western academic thinking, and reflected on the barriers to women in her culture. She became a role model for girls in her home nation as she adopted an English-speaking mindset and joined the English-speaking culture.

Orazova and Cohen <sup>[12]</sup> emphasized the importance of the English language in Central Asia after the fall of the Soviet Union, which echoes the theory of Appadurai <sup>[2]</sup> in that in today's world of globalization, social ideology, cultural flows, and the power of countries interacted to make English play a major role as a carrier of Western culture in economically backward Central Asia.

The success of Ayna was studied using liberal feminist theory and investment theory. The former emphasizes her belief in her abilities, whereas the latter focuses on ideology (motivation), identity (community sense of belonging), and capital (social network through which one acquires linguistic knowledge) in learning a second language. In Ayna's story, the role of the teacher/mentor who taught her English and encouraged her to pursue further education played a critical role. However, Orazova and Cohen did not further discuss the educational implications of this fact.

## **4. Conclusion**

In conclusion, globalization and its dominating ideology, neoliberalism, have a significant and unique impact on Asian women's education. Within Asian countries, a growing focus on human rights and economic growth has enabled more women to pursue secondary and higher education at home and abroad. However, as the previous study demonstrates, Asian women continue to face significant inequity and prejudice in both education and the workplace. In most regions of Asia, a woman's desire to complete her education is usually discouraged by the elder family members and the dominant social culture, and her college major is heavily influenced by stereotypes of "feminine" and "masculine" disciplines. She is marginalized in the global work market after graduation, and her transfer to leadership is limited. Still, it is worth emphasizing that each Asian country has its own history, religion, economic situation, and other social contexts, all of which have different influences on women's education progress.

Meanwhile, the international community, particularly powerful Western corporations and institutions, plays a

critical role in this scenario. In many circumstances, instead of investing in human rights, they invest in women's education in developing Asian countries to cultivate workers who require lower wages. Similarly, when government funding decreases and worldwide rankings become increasingly important, many Western universities admit more international students for profit without providing them with the respect and support they need. In conclusion, both domestic and international factors have hindered women's education and their pursuit of gender equity.

To overcome this gender inequity problem, both domestic and international initiatives are required. Curriculums must be revised to properly prepare female students for entry into the global workforce. Policies must be developed to increase the salary of female graduates in the workplace. When receiving international aid, local policymakers should insist on promoting education for the sake of human rights rather than succumbing to commercialism and neoliberalism. Furthermore, the traditional parochial social culture must become more accessible, appreciating women's contributions as self-sufficient citizens.

This paper included studies on Japan, India, China, the Republic of Korea, Pakistan, Vietnam, and Turkmenistan, but not on other places that are similarly important. Local government policy and funding are equally crucial in the growth of education and hence could serve as a research topic in the future. This paper concentrates on higher education and vocational education for women; however, compulsory and secondary education are as important in the advancement of women's rights and could be a focus for future research. Furthermore, like Ayna's English teacher did in Orazova and Cohen's <sup>[12]</sup> research, more research may include the perspective of teachers and school employees in building a supportive atmosphere for women and other oppressed groups of students.

## Disclosure statement

The author declares no conflict of interest.

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# Design and Implementation Strategies for English Reading Teaching in Secondary Vocational Schools from the Perspective of Curriculum Ideology and Politics: Taking an English Reading Class as an Example

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**Abstract:** Within the perspective of curriculum-based ideological and political education, this paper takes a secondary vocational English reading class themed “Invention and Innovation” as an example to delve into the process from instructional content design to implementation. In terms of instructional design, the paper highlights key elements. Profoundly, it discusses the strategies for teaching implementation, including the setting of teaching objectives, the selection of reading instructional materials, and the design and advancement of teaching activities. The aim is to effectively integrate ideological and political elements into secondary vocational English reading instruction, with the hope of providing useful references and insights for the teaching of English reading in secondary vocational education.

**Keywords:** Curriculum ideology and politics; English teaching in secondary vocational schools; Reading instructional design; Implementation strategies

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## 1. Teaching background

With the continuous updating and deepening of educational concepts, curriculum ideology and politics, as a set of beliefs about the aims of education, has increasingly attracted widespread attention and emphasis from educators. To implement the fundamental task of fostering virtue through education and achieve the educational goal of subject-based character cultivation, it is necessary for teachers of secondary vocational schools to uncover ideological and political elements with educational value in the design of teaching, and to deepen the content of ideological and political education during the implementation of teaching, thereby enhancing students' comprehensive literacy <sup>[1]</sup>. Secondary vocational English teaching should cultivate students' core competencies

and values of workplace language communication, awareness of thinking differences, cross-cultural understanding, and autonomous learning <sup>[2]</sup>. In combination with the teaching material content of Unit 7 Invention and Innovation from the *Basic English Module 2* published by Higher Education Press, it is found that the reading materials of this unit provide rich ideological and political educational values for second-year students majoring in mechanical and electrical engineering. The students in this class have a certain foundation in English language and relatively good reading habits, and they are able to comprehend the reading passages in the textbook with the help of the vocabulary list. However, they have had limited exposure to argumentative essays and lack certain reading strategies. Therefore, after completing a reading comprehension class, a reading-for-thinking class was designed to explore the ideological and political elements behind the text.

## **2. Key elements of instructional content design**

This section mainly discusses the instructional design from the perspective of curriculum ideological and political education. In the entire instructional design, the following key elements need to be considered.

### **2.1. Studying the teaching materials repeatedly**

The teaching materials need to be studied repeatedly by teachers to ensure a deep understanding of the content, from the overall structure and the author's main purpose and intention to the supporting detailed information. This is considered the cornerstone for determining teaching activities <sup>[3]</sup>. In this sample lesson, the reading material themed "Technology and Innovation" was taught, which is divided into four paragraphs. The main purposes and intentions are presented in the first and fourth paragraphs. It is illustrated in the first sentences of the first and fourth paragraphs that technology has changed people's lives. The second and third paragraphs provide detailed discussions, using methods such as contrast between past and present, examples, and providing data to support the arguments. The contrast method is primarily used in the first and third paragraphs, with time markers such as "in the past, now" and "in the beginning, but now" being employed. The second paragraph uses the example of Internet of Things to argue that technology is all around us. The last sentence of the first paragraph, "more than 90% of them prefer online shopping," is used to provide data demonstrating the significant impact of technology on people's lives. In the fourth paragraph, the change in tenses in the sentences is noticed to reflect the ideological element that the impact of technology on people's lives is ongoing.

### **2.2. Designing reading activities**

The alignment of the learning activities and questions in the textbook with the ideological and political elements of this lesson was carefully considered by the author, with the main idea selection question retained and content modifications made to the mind map following the reading material. The textbook required students to fill in the main details based on the thinking framework. To help students understand the basic argumentative methods of argumentative essays, a new mind map was designed, which required students to list the argumentative methods instead. Given that students were encountering the argumentative essay for the first time, the difficulty of the activity was lowered. The parts demonstrating a certain argumentative method were marked in different colors to make it easier for students to grasp the targeted argumentative method, and specific markers such as "in the past," "now," etc., were highlighted in the corresponding argumentative methods on the mind map. The ideological and political elements and important information reflected in each paragraph were processed by the author, leaving blanks and marking the paragraph sources of the information to be filled in. For example, in Para. 1, "You can order food online and \_\_\_\_\_ to your doorsteps." In the fourth paragraph, an activity was designed for students to observe and



underline the tenses “have truly changed, are benefiting, has not stopped, will surely welcome,” to guide students to actively experience the ongoing impact of technology on people’s lives.

### **2.3. “Weaving the thread”**

Once all reading activities have been designed, the main thread connecting these activities will be carefully conceived. The emotional experience of ideological and political education serves as an invisible guiding line, leading students through the text and learning activities to appreciate the positive impact of technology on people’s lives. Initially, the relevant reading content is introduced through a thematic video, allowing students to embark on a journey exploring how technology transforms life, thereby initiating their reading process. The emotional tone of ideological and political education is established by clarifying the article’s main purpose—demonstrating that technology enhances life. Mind map-based learning tasks are employed to help students recognize and understand the argumentation methods used in argumentative essays. Evidence supporting the transformative effects of technology on life is identified, with key details supplemented for each paragraph, such as “Every person is surrounded by technology such as \_\_\_\_\_,” reinforcing the power of technology. Through the analysis of verb tenses in the fourth paragraph, students ultimately perceive the ongoing influence of technology, with the future of technological development awaiting their exploration. Consequently, the ideological and political education component reaches its climax.

## **3. Teaching implementation strategies**

This section elaborates on the implementation of a secondary vocational English reading lesson with ideological and political education as its foundation. The discussion encompasses teaching objectives, selection of reading materials, design of learning activities, expert reviews, and reflections.

### **3.1. Clarifying learning objectives and integrating ideological and political elements**

Teaching objectives represent the core requirements that must be clearly defined before a series of teaching activities can be effectively implemented<sup>[4]</sup>. During the initial phase of instructional design, ideological and political educational goals, centered on fostering virtue through education, are integrated into reading instruction. In this reading lesson, based on the latest English curriculum standards, the teaching materials are thoroughly analyzed, and interconnected learning tasks are carefully designed according to the learning characteristics of students majoring in mechanical and electrical engineering. These tasks guide students in conducting and completing corresponding learning activities, enabling them to comprehend the structural framework of the text and recognize the argumentative methods employed in the essay. On this basis, students gain a deeper understanding of the continuous impact of technology on people’s lives, fostering their appreciation for technological innovation. Furthermore, their enthusiasm and aspirations for technological advancement are inspired, nurturing a spirit of innovation and a sense of responsibility.

### **3.2. Selecting reading materials with educational value reflecting the ideological and political theme**

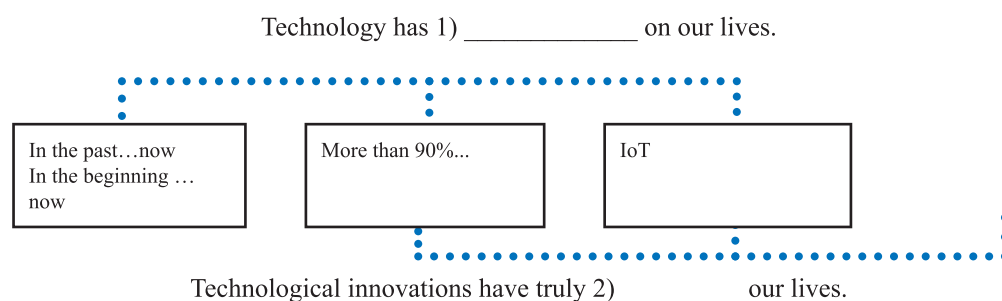
The selection of reading materials with an ideological and political theme is crucial. When determining teaching content, its relevance to the ideological and political theme should be prioritized<sup>[5]</sup>. In this case, the teaching content is centered on the theme of “Invention and Innovation,” an argumentative essay discussing how technology

transforms people's lives. The essay highlights the impact of technology from the past to the present and even the future, closely aligning with the ideological and political theme of "innovation, technology, and the future." Such materials not only correspond to the professional background of secondary vocational students but also encourage them to reflect on the social value of technological innovation. Consequently, students' understanding of ideological and political themes is deepened while acquiring language knowledge, thereby fulfilling the educational objective of the English subject in shaping well-rounded individuals.

### 3.3. Implementing rich and effective teaching activities to strengthen ideological and political education

As teaching activities are conducted, ideological and political education should be seamlessly integrated into the entire class rather than treated as a separate component from foreign language teaching, avoiding a "two separate skins" approach <sup>[6]</sup>. In the lesson, video teaching materials were used twice. To stimulate students' interest in reading, the unit theme "Invention and Innovation" was introduced through a video about a smart home, allowing students to grasp the transformative power of technological innovation. During the post-reading session, another video illustrating how technology illuminates the future was used to reinforce the ideological and political elements of the course.

Ideological and political reading was primarily explored through activities such as identifying the writing intention, constructing mind maps, extracting key information, and analyzing tenses. During implementation, verbs in the four answer choices for the writing intention question in the textbook were bolded and highlighted to draw students' attention to different verb forms. The construction of mind maps aimed to help students organize key information reflecting ideological and political elements (see **Figure 1**). In practice, students were able to easily identify the main idea but struggled to provide supporting evidence. To address this, the corresponding evidence was presented in different colored fonts, reducing the difficulty of the activity. Students performed well in completing the key information cloze task and in analyzing sentence tenses in the fourth paragraph. In the post-reading activity, students were encouraged to engage with the theme through the message: "The past is history, today is a gift, but the future is a mystery. The future of technology is in your hands. Please create your life through technological innovation." This encouraged students to actively participate in technological advancements and contribute to realizing the Chinese Dream. Finally, through a self-evaluation task, students internalized the knowledge gained, transforming it into personal values and action guidelines while assessing their comprehension and acceptance of ideological and political elements.



**Figure 1.** Mind maps help organize key information reflecting ideological and political elements

## 4. Conclusion

To foster virtue through education and subject-based learning, an English reading lesson was designed and implemented for second-year students majoring in mechanical and electrical engineering at a secondary vocational school, adopting a curriculum-based ideological and political education perspective. In the teaching design, key elements were emphasized. More importantly, teaching implementation strategies were proposed and analyzed from various aspects, including the formulation of teaching objectives, the selection of reading instructional materials, and the design and progression of teaching activities. The goal is to enhance the quality of English teaching in secondary vocational education through iterative teaching design and continuous practice, thereby achieving the educational objectives of curriculum-based ideological and political education, helping students develop a positive outlook on life and values, and cultivating their comprehensive literacy and innovative abilities.

## Disclosure statement

The authors declare no conflict of interest.

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# Application of Situational Cognitive Learning Theory in College English Teaching

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**Abstract:** College English teaching is a crucial component of higher education. Enhancing college students' English learning outcomes has long been a primary focus for educators. With the continuous evolution of educational philosophies, traditional college English teaching methods no longer meet the learning needs of contemporary students. Situational cognitive learning theory emphasizes learner-centered approaches and highlights the contextual and practical application of knowledge, offering innovative perspectives for reforming college English teaching. When applied effectively, situational cognitive learning theory can optimize teaching methods and significantly improve learning outcomes. This paper explores the connotation and characteristics of situational cognitive learning theory, evaluates its applicability in college English teaching, and discusses its practical implementation in this context. The aim is to provide theoretical and practical references for improving the quality of college English education.

**Keywords:** Situational cognitive learning theory; College English; Teaching application

**Online publication:** March 4, 2025

## 1. Introduction

In the context of the modern era, societal expectations for high-caliber professionals are continuously evolving. In addition to mastering specialized knowledge, excellent communication skills—particularly in foreign languages—have become indispensable. Therefore, college English teaching should place greater emphasis on cultivating students' practical abilities. Students need to acquire a solid foundation of language knowledge and develop the ability to apply it flexibly in real-world scenarios. The application of situational cognitive learning theory can help students optimize their English thinking processes, strengthen their practical communication skills, enhance their overall English proficiency, and better align with the demands of future society.

## 2. Connotation and characteristics of situational cognitive learning theory

Situational cognitive learning theory originates from social cognitive theory. Its core idea is that learning and

behavior occur within specific contexts, and learning cannot be separated from these contexts. The theory posits that the acquisition and application of knowledge are situational processes, resulting from learners actively constructing meaning through interactions within a specific environment. Learners are not passive recipients of knowledge; instead, they actively select, organize, and integrate information during situational interactions, ultimately forming their own cognitive structures <sup>[1]</sup>.

The main characteristics of situational cognitive learning theory include:

- (1) Contextualization: Situational cognitive learning theory asserts that the acquisition of knowledge and skills is inseparable from the specific situational environment. Learning should take place within specific contexts, enabling learners to integrate knowledge into these situations to truly understand and apply it.
- (2) Social interaction: The theory emphasizes that learning is a social practice involving interaction between learners and others. Knowledge and skills are acquired through participation in social practices, as well as through communication and collaboration.
- (3) Practical application: Situational cognitive learning theory highlights the importance of focusing on real-world contexts rather than abstract learning. Learners must engage in specific practical activities to construct and apply knowledge effectively in real-life situations.
- (4) Emotional engagement: Emotional factors play a critical role in learning, according to the theory. Intrinsic motivation, interests, emotional responses, and other affective factors profoundly influence cognitive activities and learning outcomes.
- (5) Constructivism: The theory views learning as an active process in which learners construct knowledge rather than merely accepting it. Learners reorganize and integrate knowledge based on their cognitive structures and the characteristics of specific contexts <sup>[2]</sup>.

### **3. Applicability of situational cognitive learning theory in college English teaching**

First, the “situational” characteristics advocated by situational cognitive learning theory align closely with the goals of college English teaching—namely, cultivating students’ practical English skills. Unlike the traditional knowledge-focused teaching model, this theory emphasizes integrating knowledge into real-world contexts. Such an approach enhances students’ ability to use English in authentic communication scenarios, thereby improving their overall language proficiency.

Second, situational cognitive learning theory prioritizes learners’ active participation and subjectivity, which corresponds to the direction of ongoing reforms in college English teaching. These reforms advocate shifting from the traditional, exam-oriented, and lecture-based teaching model to a student-centered, interactive approach. This transformation encourages students to think critically, engage actively, and develop their language application skills alongside independent problem-solving abilities. Situational cognitive learning theory offers a theoretical foundation to support this shift.

Third, the theory highlights the social and contextual nature of knowledge, aligning well with the developmental characteristics of college students. College students are in a critical period of cognitive growth; they possess a certain level of analytical thinking and intrinsic motivation, which makes them more receptive to constructing knowledge through social interaction and situational practice. Integrating situational cognitive learning theory into college English teaching can stimulate students’ intrinsic motivation, foster teamwork, and enhance their communication skills.

In summary, situational cognitive learning theory provides valuable theoretical support for the reform of college



English teaching. Its application to curriculum design, teaching methods, and assessment is expected to facilitate a shift from knowledge transfer to skill development, thereby improving students' comprehensive English proficiency and achieving an overall enhancement of college English education <sup>[3]</sup>.

## **4. Application of situational cognitive learning theory in college English teaching**

### **4.1. Curriculum design and teaching objectives**

Situational cognitive learning theory emphasizes that college English curriculum design should take into account students' actual needs and the contexts they encounter. It advocates for formulating teaching objectives that align with students' characteristics while creating favorable conditions for their English learning and practical application.

Firstly, curriculum design should adopt a student-centered approach, clearly defining English learning goals for different stages of study. For instance, during the freshman year, the focus can be on developing students' foundational English skills, such as listening, speaking, reading, and writing. In the sophomore year, the emphasis can shift to fostering intercultural communication competence and enhancing students' ability to use English in real-life contexts. By the junior year, attention can be directed toward cultivating professional English application skills, preparing students for future career opportunities and personal growth <sup>[4]</sup>.

Secondly, when setting curriculum objectives, priority should be given to students' ability to apply the language effectively in daily life, academic contexts, and professional settings, rather than merely emphasizing knowledge retention or isolated language skills. For example, objectives such as “conducting effective business negotiations in English” or “writing academic paper abstracts in English” can be introduced to encourage students to apply their knowledge in real-world scenarios. Additionally, exercises targeting future career situations—such as participating in interviews or writing resumes—can be incorporated to help students prepare for professional development <sup>[5]</sup>.

### **4.2. Integration of teaching content and resources**

Situational cognitive learning theory emphasizes embedding knowledge acquisition into real-life contexts. Therefore, when selecting college English teaching content and integrating teaching resources, it is crucial to fully consider students' actual needs and circumstances, create diverse English learning environments, and enhance the contextual and practical application of knowledge.

First, regarding course content selection, situational tasks closely aligned with students' needs and interests should be designed. These tasks can be derived from their daily lives, academic pursuits, or future career aspirations, incorporating relevant language knowledge points. For instance, tasks such as “booking a hotel room” or “participating in an international academic conference” can be introduced. While completing these tasks, students naturally acquire and apply vocabulary, grammar, oral communication, and other related language skills <sup>[6]</sup>.

Second, in the integration of teaching resources, multimedia technology should be fully utilized to create immersive and realistic situational environments. For example, scenarios like business negotiations and academic presentations can be visually simulated using videos, images, and other multimedia tools, allowing students to engage in role-playing and on-the-spot practice. Additionally, real-life materials, such as school-organized social practice reports or alumni employment experiences, can be incorporated into lessons. These resources enhance the authenticity and contextual relevance of learning <sup>[7]</sup>.

### **4.3. Teaching methods and activity design**

According to situational cognitive learning theory, the acquisition of knowledge should be grounded in real-world contexts. Therefore, situationally centered teaching methods should be implemented in college English teaching, with

corresponding teaching activities carefully designed to enhance learning outcomes.

Firstly, regarding teaching methods, task-driven approaches, situational simulation, and case-based teaching can be employed to encourage students' active participation and facilitate the application of knowledge in real-life scenarios. For instance, when teaching English business negotiation, students can take on the roles of buyers and sellers, engage in specific negotiation scenarios, and simulate the negotiation process. This approach helps them practice English negotiation skills while gaining hands-on experience. Similarly, when teaching English news reporting, students can undertake tasks such as conducting interviews, searching for news materials, and writing news articles. This not only develops their ability to use English in news gathering and editing contexts but also sharpens their critical thinking and communication skills. By employing such participatory learning methods, students can master both language skills and the ability to think independently and collaborate effectively<sup>[8]</sup>.

Secondly, in terms of teaching activities, interactive practices such as situational simulations, role-playing, and group discussions can be designed to foster active student engagement and demonstrate the practical use of English in diverse contexts. For example, organizing an English debate contest allows students to assume different social roles and engage in debates on current hot topics. This activity not only enhances their English expression skills but also cultivates critical thinking. Similarly, English sitcom performances, where students create plots and dialogues based on given situations, provide an engaging way to practice and refine their English skills through performance<sup>[9]</sup>.

Furthermore, in college English teaching, teachers should strive to establish a positive interactive relationship with students, encouraging them to ask questions and providing timely feedback and guidance. For instance, when assigning homework, teachers can invite students to pose questions and respond patiently. During lessons, teachers can engage in real-time discussions with students to gauge their understanding of new concepts. Such meaningful interaction enables teachers to monitor students' learning progress, adjust teaching strategies as needed, and promote effective learning outcomes<sup>[10]</sup>.

#### **4.4. Teaching evaluation and feedback mechanism**

Situational cognitive learning theory emphasizes a learner-centered approach, focusing on emotional experiences and the application of knowledge transfer during the learning process. Therefore, these aspects should also be incorporated into the evaluation of college English teaching.

Firstly, regarding evaluation methods, emphasis should be placed on process evaluation, highlighting students' actual performance in using English in specific contexts. For instance, students' abilities in English communication and problem-solving in various scenarios can be assessed through situational simulations, role plays, and group collaborations. Additionally, self-evaluation and peer evaluation can be employed to gain a comprehensive understanding of students' learning progress, encouraging self-reflection and mutual support among learners<sup>[11]</sup>.

Secondly, in terms of evaluation content, attention should be directed toward students' ability to apply English, rather than being limited to the mastery of linguistic knowledge. For example, assessments can focus on students' proficiency in using English in daily communication, professional settings, and other practical contexts, evaluating whether they can effectively apply what they have learned to real-life situations. Moreover, students' learning motivation and emotional engagement should also be considered to identify their challenges and needs during the learning process<sup>[12]</sup>.

Finally, with respect to the feedback mechanism, teachers should provide timely and targeted feedback and guidance based on evaluation results. For example, specific recommendations can be offered to help students enhance their English usage in particular contexts. Teachers can also analyze students' learning motivations and emotional states to assist them in discovering suitable learning strategies. Simultaneously, it is essential for teachers to collect

feedback from students to continuously refine teaching plans and improve overall teaching quality <sup>[13]</sup>.

#### **4.5. Teacher role and professional development**

Situational cognitive learning theory introduces new requirements for the roles of college English teachers and their professional development. Teachers are expected to redefine their roles, acting as guides and regulators of the learning process, while continuously enhancing their situational teaching skills to meet the evolving needs of college English instruction in the modern era.

First, regarding role orientation, teachers are no longer merely transmitters of knowledge but facilitators and regulators of the learning process. They should develop a thorough understanding of students' needs and cognitive characteristics, design scenarios relevant to students' lives and future careers, and guide them in actively engaging with learning to explore the essence of knowledge through practice. Additionally, teachers should position themselves as learning partners, collaborating with students to reflect on and discuss challenges in English learning, thereby jointly advancing teaching reforms <sup>[14]</sup>.

Second, in terms of professional development, teachers must continuously improve their situational teaching skills. This includes not only acquiring a comprehensive understanding of situational cognitive learning theory but also developing competencies in situational design, interaction, and evaluation. For instance, teachers need to analyze students' specific needs and design teaching content and activities that align with their real-world contexts. They should master instructional strategies such as situational simulations and role-playing to foster active student participation. Furthermore, teachers should employ diverse evaluation methods, focusing on students' ability to use English effectively in practical situations.

In addition, teachers should maintain a proactive and innovative learning mindset, continuously exploring effective pathways for situational teaching. They should share their teaching experiences and contribute to the professional development of the broader teaching team. For example, participating in relevant training programs or learning exchange activities can help teachers stay updated on the latest theories and practices in situational teaching. Collaborative teaching research and reform practices with peers can further drive improvements in the quality of college English instruction <sup>[15]</sup>.

### **5. Conclusion**

In conclusion, situational cognitive learning theory offers new insights into college English teaching. Applying this theory across teaching objectives, content, methods, and evaluation contributes to cultivating students' practical English skills and enhancing teaching quality. However, its implementation should be flexibly adapted and optimized based on institutional conditions, student characteristics, and other factors to ensure effective outcomes.

### **Disclosure statement**

The author declares no conflict of interest.

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# Research on the Secondary Creation and Artistic Innovation of the Guangdong Han Opera “Wang Zhaojun”

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**Abstract:** Guangdong Han Opera, known as the “Peony of the South,” is a treasured art form with a history of over 300 years. As one of the three major opera genres in Guangdong, it primarily uses Pi and Huang tuning, incorporating Kunqu, Gaoqiang, Chuiqiang, and minor tunes, with Zhongzhou rhyme as its stage language. The roles are divided into seven categories: Sheng, Dan, Chou, Gong, Po, and Jing (including Hongjing and Wujing). Its accompaniment instruments, particularly the Touxian, Dasuluo, and Haotou, are distinctive, making it an excellent Pi and Huang opera genre in southern China. In 2008, Guangdong Han Opera was listed in the national intangible cultural heritage, recognizing its artistic value and entrusting it with the mission of inheriting and developing this opera genre. This paper focuses on the Guangdong Han Opera “Wang Zhaojun” and employs methods such as literature review and case analysis to explore its achievements in secondary creation and artistic innovation. The opera has achieved innovations in script, character, music, and stagecraft, and made breakthroughs in performance form, narrative technique, and cultural connotation, promoting the inheritance and development of Guangdong Han Opera and providing insights into contemporary drama innovation.

**Keywords:** Guangdong Han Opera; Wang Zhaojun; Secondary creation; Artistic innovation

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## 1. Introduction

Guangdong Han Opera has a long history, incorporating various tunings, rich role categories, and unique accompaniment instruments<sup>[1]</sup>. It was selected for the national intangible cultural heritage list in 2008. However, in modern society, it faces challenges such as audience loss and insufficient inheritance of talents. “Wang Zhaojun” is a carefully crafted stage artwork after the implementation of the revitalization and development plan of the Guangdong Han Opera, possessing significant research value<sup>[2]</sup>. This opera reproduces the humanistic style of the Western Han Dynasty and the vast desert through traditional and elegant stage presentation and concentrated and exquisite



character settings. Simultaneously, it seeks artistic leaps in style innovation, endowing characters with new thinking and life choices, and shaping an emotionally rich, distinct love and hate, youthful, and patriotic image of Wang Zhaojun. Based on inheriting the fine traditions of Guangdong Han Opera, it learns from, integrates, and incorporates various contemporary artistic elements, making it a production with modern aesthetic taste and aesthetic level.

Although current research on Guangdong Han Opera and “Wang Zhaojun” has achieved certain results, there are still many deficiencies. This paper focuses on the secondary creation and artistic innovation of the Guangdong Han Opera “Wang Zhaojun,” conducting in-depth research from multiple dimensions such as script, music, and stage performance. The aim is to expand research areas and provide new ideas and methods for the inheritance and development of Guangdong Han Opera.

## **2. Overview of Guangdong Han Opera and the play “Wang Zhaojun”**

### **2.1. Historical origins and artistic characteristics of Guangdong Han Opera**

The singing style of Guangdong Han Opera is an important embodiment of its artistic characteristics <sup>[3]</sup>. It primarily uses Pi and Huang tunings, incorporating various tunings such as Kunqu, Gaoqiang, Chuiqiang, and minor tunes, preserving numerous ancient melodies. Additionally, it employs Zhongzhou rhyme as its stage language. This diverse fusion system gives Guangdong Han Opera a unique singing style. In different plot scenes, music can appropriately enhance the atmosphere and strengthen the drama’s appeal <sup>[4]</sup>. When expressing heroes’ lofty aspirations, the exciting and sonorous Pi and Huang tunings fully demonstrate their brave and fearless spirit. Whereas, when expressing delicate emotions, the melodious and winding minor tunes can vividly portray the characters’ inner worlds. The division of role categories is also a prominent feature of Guangdong Han Opera, mainly divided into seven categories: Sheng, Dan, Chou, Gong, Po, and Jing (including Hongjing and Wujing). Each category has its unique performance norms and artistic characteristics <sup>[5]</sup>.

### **2.2. Evolution of the “Wang Zhaojun” story in drama**

The story of “Wang Zhaojun” has been performed in drama for a long time. In the Yuan Dynasty, “Breaking the Lonely Dream of a Wild Goose in the Han Palace Autumn” presented the love tragedy and national pain between Han Yuan Di and Wang Zhaojun from Han Yuan Di’s perspective, portraying Wang Zhaojun as patriotic and loyal but with limitations <sup>[6]</sup>. In the Ming Dynasty, Wang Zhaojun’s image became more three-dimensional in “He Rong Ji,” expressing resistance to fate. In the Qing Dynasty, “Hanging Pipa” enriched Wang Zhaojun’s emotional layers. Modern drama genres have diverse interpretations of this story. The large-scale new Guangdong Han Opera “Wang Zhaojun” is based on Mr. Cao Yu’s namesake play, undergoing secondary creation and artistic innovation. The opera reproduces the humanistic style of the Western Han Dynasty and the vast desert through traditional and elegant stage presentation and concentrated and exquisite character settings. Simultaneously, it seeks artistic leaps in style innovation, endowing characters with new thinking and life choices, shaping an emotionally rich, distinct love and hate, youthful, and patriotic image of Wang Zhaojun.

### **2.3. Creative background and early versions of Guangdong Han Opera “Wang Zhaojun”**

In terms of artistic expression, early “Wang Zhaojun” productions followed the traditional norms of their respective genres in music, singing, and performance forms <sup>[7]</sup>. For example, in Peking Opera, diverse tunings such as Xipi and Erhuang have unique charm and expressiveness when portraying Wang Zhaojun’s emotions and plot developments. The performance emphasizes basic skills such as singing, recitation, acting, and martial arts, showcasing the characters’ inner worlds through delicate movements and expressions. Yue Opera, known for its beautiful singing and

lyrical performance style, portrays Wang Zhaojun as more gentle and graceful, emphasizing her delicate emotions and resignation to fate.

Compared to these early versions, the large-scale new Guangdong Han Opera “Wang Zhaojun” offers significant innovations<sup>[8]</sup>. In plot setting, it breaks through the traditional framework of love tragedy and national pain, exploring more diverse themes and connotations. For instance, it delves deeper into Wang Zhaojun’s inner world, highlighting her self-awareness and national responsibilities, and enriching the plot. In character portrayal, it breaks away from the traditional image of weakness and passivity, endowing Wang Zhaojun with a more distinct personality and contemporary characteristics. This shapes a new image that is emotionally rich, distinct in love and hate, youthful, and patriotic.

### **3. Secondary creation practice of Guangdong Han Opera “Wang Zhaojun”**

#### **3.1. Script adaptation: Theme deepening and plot reconstruction**

The traditional “Wang Zhaojun” stories often focus on the personal fate tragedy of Wang Zhaojun and the political game between the Han Dynasty and the Xiongnu. However, Guangdong Han Opera “Wang Zhaojun” elevates the theme to a new level, emphasizing mutual understanding, tolerance, and integration between nations. The expression of native land emotion in the script is also more delicate and in-depth. Wang Zhaojun’s missing feelings for her hometown and relatives are no longer expressed through a few lyrics but through a series of plots and detailed depictions, showing the contradictions and struggles in her heart. Before deciding to go to the frontier, Wang Zhaojun was filled with fear of the unknown life and attachment to her hometown. However, she knew that her choice was related to the peace and tranquility of the country, so she resolutely stepped on the road to the frontier. This deep exploration of native land emotion makes Wang Zhaojun’s image fuller and allows the audience to resonate emotionally more easily.

Guangdong Han Opera “Wang Zhaojun” carries out secondary creation on the traditional script through theme deepening and plot reconstruction, making this classic story retain the traditional cultural connotation and better meet the aesthetic needs and value orientation of contemporary audiences<sup>[9]</sup>. This innovative script adaptation provides a useful reference for the inheritance and development of Guangdong Han Opera and offers new ideas and methods for script creation in other drama genres.

#### **3.2. Character shaping: Re-exploration and presentation of character images**

In Guangdong Han Opera “Wang Zhaojun,” the shaping of characters by actors is one of the core links of secondary creation<sup>[10]</sup>. Through deep exploration of the characters’ inner world and the use of exquisite performance skills, the emotional changes and personality characteristics of characters such as Wang Zhaojun are vividly presented on the stage. In the process of character shaping, actors pay attention to cooperation with other actors and show the emotional relationship and conflict between characters through tacit performance. The relationship between Wang Zhaojun and Emperor Han Yuan Di, the conflict between Wang Zhaojun and Mao Yanshou, and the mutual respect and cooperation between Wang Zhaojun and the chieftain of the Xiongnu are all realistic and moving under the wonderful performances of the actors. This delicate character shaping and wonderful performance make the character images in Guangdong Han Opera “Wang Zhaojun” vivid and three-dimensional, allowing the audience to feel like they have traveled through time and space, experiencing the vicissitudes of life and the joys and sorrows of the characters in that era.

### 3.3. Music creation: Fusion of tradition and modernity

Music creation retains the characteristics of Guangdong Han music, using classic tunes such as “Lang Taosha” to express emotions. It incorporates elements of Mongolian long tunes, showing regional customs. Modern musical instruments are introduced, and technologies such as mixing and editing are used to innovate sound cavity design, drawing on modern vocal techniques to make the singing more expressive.

In “Wang Zhaojun,” classic tunes of Guangdong Han music such as “Lang Taosha” and “Bai Jia Chun” are widely used. The use of these tunes not only adds a strong Guangdong Han Opera charm to the repertoire but also allows the audience to experience the unique charm of Guangdong Han music. In the scene where Wang Zhaojun misses her hometown, the tune “Lang Taosha” is selected. Its melody is beautiful, and the rhythm is slow. Through delicate playing and the actor’s emotional singing, Wang Zhaojun’s homesickness is expressed incisively and vividly.

Besides absorbing other musical elements, “Wang Zhaojun” actively uses new music technology to enrich sound and expressiveness. In terms of instrumentation, it boldly introduces modern musical instruments such as electronic keyboards and violins, combined with traditional Guangdong Han Opera accompaniment instruments such as head strings and big su gongs to create a richer and more diverse sound effect. The use of electronic keyboards can simulate various sound timbres, adding a fantastical color to the music; the addition of violins enhances the lyricism and appeal of the music, making the melody more beautiful and pleasant. In the scene where Wang Zhaojun and Emperor Han Yuan Di part ways, the wind sound simulated by the electronic keyboard and the sad melody played by the violin echo the deep playing of the head string, creating a desolate and sad atmosphere that fully demonstrates the reluctance between the two people.

In music production technology, modern mixing, editing, and other techniques are used to carefully process the music, making the coordination between different musical instruments and singing voices more harmonious, and the overall effect of the music more perfect. Through mixing technology, the volume, timbre, and spatial position of different musical instruments and singing voices can be adjusted to form an organic whole auditorily, enhancing the three-dimensional and hierarchical sense of music. In terms of editing, the rhythm and duration of the music are precisely controlled so that the music and the development of the plot are more closely integrated, better setting off the atmosphere of the plot and the emotions of the characters. At the critical moment of tense plot development, a tense and exciting atmosphere is created by speeding up the rhythm of the music and enhancing the intensity of the music, allowing the audience’s emotions to tense up accordingly; while in the lyrical scene, a warm and soothing atmosphere is created by slowing down the rhythm of the music and weakening the intensity of the music, allowing the audience to better feel the emotional world of the characters.

### 3.4. Stage design: Creating an immersive stage experience

In the design of stage scenes, “Wang Zhaojun” highly restores the unique style of the Western Han palace and desert grassland. In the Western Han palace scene, traditional Chinese architectural elements such as carved beams and painted rafters, vermilion pillars, and palace gates are used to create a dignified and majestic atmosphere. The interior layout of the palace focuses on details, with exquisite bronze ware, silk curtains, and other props displayed, showing the luxury and elegance of the palace. These scene designs not only conform to the historical background but also provide a real spatial environment for the activities of the characters in the play. For example, when Wang Zhaojun lives in the palace, the audience can feel the repression and restraint of her environment through these scenes, thus better understanding her inner world.

In the scene of going out, the lighting design is even more ingenious. Blue and white cold-tone lights are used to simulate the coldness and loneliness of the desert, and the dynamics of the sand are expressed through the

movement and flickering of the lights. When Wang Zhaojun walks in the desert, the lights move with her steps, as if she is looking for a bright hope in the darkness. This lighting design not only enhances the three-dimensional and spatial sense of the stage but also allows the audience to better feel Wang Zhaojun's firmness and bravery on the way out. Through the careful design of stage scenes, lighting, props, and other aspects, Guangdong Han Opera "Wang Zhaojun" has successfully created an immersive stage experience. In the process of appreciating the performance, the audience seems to travel through time and space, being in the Western Han Dynasty and the desert grassland, and personally experiencing Wang Zhaojun's emotional world and the vicissitudes of history. This immersive stage experience can not only enhance the audience's understanding and feeling of the repertoire but also inject new vitality into the inheritance and development of Guangdong Han Opera.

## 4. Conclusion

The development of Guangdong Han Opera, including the production of "Wang Zhaojun," is filled with both opportunities and challenges, requiring continuous efforts in multiple key areas to achieve sustainable and viable progress. In terms of future creations and performances, it is essential to uphold the spirit of innovation, deeply explore traditional cultural resources, and combine them with contemporary social hotspots and audience demands to create more excellent repertoires with distinctive characteristics of the times and cultural connotations. In music creation, it is necessary to continuously explore the integration of traditional and modern music elements, attempt collisions with different styles of music, and present a rich and diverse range of musical genres. In stage design, it is crucial to keep up with technological trends, and fully utilize modern technological means such as virtual reality and augmented reality technologies, to present a more shocking visual experience for the audience and create an immersive stage effect with a strong visual impact and artistic appeal.

Secondly, the talent cultivation system needs further improvement. Close cooperation with universities and art schools should be strengthened, and a stable talent cultivation base should be established to cultivate professional writers, directors, actors, music creators, and stage designers for Guangdong Han Opera. In the cultivation process, emphasis should be placed on combining theory with practice, allowing students more opportunities to participate in actual repertoire creation and performance to accumulate practical experience. A sound talent incentive mechanism should be established, improving the treatment and social status of inheritors, attracting more talents to devote themselves to the cause of the Guangdong Han Opera, and providing solid talent support for its development.

In terms of cultural inheritance, it is essential to strengthen the excavation and inheritance of the cultural connotation of the Guangdong Han Opera. By holding academic seminars, cultural lectures, exhibitions, and other activities every year, we can deeply explore and study the historical origins, artistic characteristics, and cultural values of the Guangdong Han Opera, allowing more people to understand its cultural connotation. Guangdong Han Opera should be incorporated into the school education system, and activities such as "Guangdong Han Opera Entering Campus" should be carried out. Textbooks and courses suitable for students should be developed to cultivate their interest and love for Guangdong Han Opera, ensuring its continuous inheritance and development among the younger generation.

The large-scale new Guangdong Han Opera "Wang Zhaojun" has laid a good foundation for the further development of Guangdong Han Opera. In the future, continuous efforts should be made in areas such as creation and performance, talent cultivation, market expansion, and cultural inheritance, promoting and facilitating the inheritance and promotion of excellent traditional Chinese culture in a broader range.

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# An Analysis of Improving the Effectiveness of Chinese Classroom Teaching in Junior Middle School

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**Abstract:** With the evolution of society, education reform continues to progress, and increasing attention is being paid to the learning outcomes and overall academic quality of junior high school students. As a core subject at this stage, the effectiveness of Chinese language teaching directly influences students' overall academic performance. Therefore, enhancing the effectiveness of junior high school Chinese classroom teaching has become a key focus for educators. Against this backdrop, this paper explores the significance of building an effective classroom environment in junior high school Chinese teaching and provides an in-depth analysis of strategies to improve teaching effectiveness. The goal is to assist teachers in creating efficient classrooms, fostering students' interest in learning, enhancing their overall competence in Chinese, and ultimately improving teaching quality to contribute to the overall advancement of Chinese language education.

**Keywords:** Junior high school; Chinese classroom; Teaching effectiveness; Strategy analysis

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## 1. Introduction

Chinese is a fundamental subject at all educational stages, particularly in junior high school, where it plays a crucial role in developing students' language expression skills, logical thinking, and cultural literacy. With the implementation of the new curriculum standards, Chinese language teaching increasingly emphasizes the enhancement of students' overall competencies, making classroom effectiveness a key metric for evaluating teaching outcomes. As junior high school Chinese teachers, it is essential to optimize teaching methods, actively refine classroom strategies, and explore diverse instructional approaches to maximize the value of classroom teaching and its educational impact.

## **2. Importance of building effective Chinese classroom teaching in junior middle schools**

### **2.1. Promoting the all-round development of students' Chinese literacy**

In Chinese teaching, the cultivation of students' disciplinary literacy encompasses language expression, logical thinking, cultural understanding, and aesthetic appreciation. Effective classroom instruction should integrate these core elements and employ diverse teaching activities, allowing students to experience the richness of Chinese learning from multiple perspectives. Through this process, students can accumulate relevant knowledge by engaging with contemporary literary works, practicing close reading, and developing a deeper appreciation for literature, thereby enhancing their language expression and aesthetic awareness <sup>[1]</sup>. The study of ancient poetry, for instance, enables students to grasp the rhythm of poems through repeated recitation, fostering an emotional connection that transcends time. This practice enhances their sensitivity to language and strengthens their ability to convey emotions effectively. Furthermore, interactive discussions and group collaborations in class help develop students' critical thinking and communication skills, encouraging them to analyze issues from multiple perspectives and refine their problem-solving abilities <sup>[2]</sup>. When appreciating outstanding literary works, students not only encounter unique writing styles and expressive techniques but also cultivate an elevated sense of aesthetics. This immersion in the beauty of language ultimately contributes to the comprehensive enhancement of their Chinese literacy.

### **2.2. Promoting the improvement of teaching quality and efficiency**

The foundation of an efficient Chinese classroom lies in teachers' ability to accurately identify and implement instructional objectives. By carefully designing lesson structures and employing effective teaching methods, educators can ensure that every stage of the learning process is purposeful and well-executed, thereby improving overall teaching efficiency. This approach moves away from the traditional one-way transmission of knowledge and redefines the teacher's role from mere knowledge provider to facilitator and guide. The primary goal shifts toward stimulating students' interest and motivation in learning, encouraging active participation in class, and subtly enhancing teaching effectiveness.

### **2.3. Cultivating students' independent learning ability**

Junior middle school serves as a crucial transition between foundational knowledge acquired in primary school and more complex concepts encountered in high school. Therefore, fostering students' independent learning skills during this stage is particularly important. An effective Chinese classroom provides students with opportunities for self-directed exploration, guiding them to engage in independent inquiry and cooperative learning, thereby strengthening their learning capabilities <sup>[3]</sup>. Through this process, students learn to think independently, manage their study schedules, and take initiative in problem-solving. Additionally, the establishment of an efficient learning environment helps students develop good study habits and self-discipline, laying a solid foundation for their future academic journey in high school and beyond.

## **3. Strategies for improving the effectiveness of Chinese classroom teaching in junior high schools**

### **3.1. Optimizing and adjusting teaching content based on actual classroom needs**

Throughout a student's academic journey, teaching content serves as the primary vehicle for learning and the main source of new knowledge. Therefore, teachers should flexibly adjust the curriculum based on students' actual learning conditions, making it more relevant to their life experiences and cognitive development. As times change,

students' learning needs continue to evolve. While standardized teaching content may fulfill their basic knowledge requirements, addressing more personalized learning needs requires teachers to incorporate students' interests and strengths, making targeted adjustments <sup>[4]</sup>.

By personalizing the teaching content, educators can not only enhance students' engagement but also improve their comprehension and application of knowledge, ultimately leading to better learning outcomes. First, teachers should thoroughly study the curriculum to gain a precise understanding of the textbook's structure, enabling them to seamlessly integrate specific teaching points while maintaining coherence and logical progression. Additionally, it is crucial to consider individual differences in students' learning abilities, integrating key concepts in a way that aligns with their actual progress and comprehension levels, ensuring that each student advances at their own pace <sup>[5]</sup>.

For instance, when students struggle with complex concepts, teachers can lower the difficulty level by breaking down intricate ideas into smaller, more digestible parts and using practical examples to facilitate understanding. Encouraging students to ask questions and engage in discussions can further create an interactive and dynamic learning environment, reinforcing their grasp of the material.

For example, while teaching back the lesson, teachers can design activities that connect the text's emotions to students' personal experiences, guiding them to recall meaningful moments shared with their fathers—whether through unwavering support or silent concern. These personal reflections serve as bridges, allowing students to develop a deeper emotional connection with the text. Additionally, teachers can prompt students to compare their own experiences with those described in the story, fostering a more profound understanding of the different ways family affection is expressed. This approach not only enhances comprehension but also nurtures students' sense of familial and societal responsibility <sup>[6]</sup>.

By employing these strategies, students are encouraged to engage more deeply with their studies while also developing essential moral values that will benefit them in navigating the complexities of society. This, in turn, lays a strong foundation for their future academic and personal growth.

### **3.2. Leveraging information technology to improve teaching efficiency**

In junior middle school Chinese teaching, information technology enables teachers to create a more immersive and realistic learning environment. By utilizing virtual reality (VR), augmented reality (AR), and other technological tools, students can vividly experience the scenes and emotions depicted in texts. This allows them to connect more directly with the author's creative intent, enhancing their comprehension and engagement. Consequently, students can maintain better focus in class, leading to a continuous improvement in learning efficiency.

However, while integrating technology into teaching, it is crucial for educators to ensure that its application aligns closely with the course content <sup>[7]</sup>. For example, when teaching “A Drop of Water Passes through Lijiang,” teachers can employ VR technology to recreate the picturesque scenery of Lijiang's old town. This allows students to virtually stand by the crystal-clear river and observe the journey of a water droplet from the mountains to the town. Such an approach enables students to intuitively grasp the natural landscape and cultural significance described in the text, deepening their appreciation for the beauty and heritage embedded within Chinese literature. Ultimately, this immersive experience can foster a greater enthusiasm for learning Chinese.

While utilizing information technology to support teaching, teachers should also focus on developing students' independent learning skills. It is essential to provide structured guidance alongside technological tools, integrating detailed explanations to maximize the combined benefits of technology and classroom instruction. Additionally, multimedia tools can be used to present relevant historical context, allowing students to explore the background of an author's era and uncover deeper meanings within the text <sup>[8]</sup>. For instance, after studying “A Drop of Water Passes

through Lijiang,” teachers can use online platforms to showcase the historical evolution of the Lijiang region. By comparing images and videos from different time periods, students can witness the passage of time and the continuity of cultural traditions, thereby fostering a deeper respect for cultural diversity<sup>[9]</sup>.

Moreover, junior middle school Chinese teachers can enhance classroom efficiency by incorporating the flipped classroom model. In this approach, students engage with new content through videos, online readings, and other materials before class, effectively extending their study time. This allows teachers to dedicate more in-class time to discussions and personalized guidance, enabling students to share their insights and deepen their understanding. Such an interactive learning environment encourages active participation, making classroom discussions more dynamic and productive<sup>[10]</sup>.

For example, when teaching the last lesson, teachers can provide micro-lesson videos in advance, helping students preview key content and identify potential difficulties. During the lesson, teachers can use instructional videos to reinforce pre-learned concepts while posing thought-provoking questions such as: What is the main idea of the article? How is the text structured, and why? How can it be divided into sections, and what does each section convey? These questions prompt students to analyze the text’s structure and meaning, guiding them toward critical thinking and deeper comprehension. Ultimately, this approach cultivates their ability to analyze and solve problems effectively<sup>[11]</sup>.

### **3.3. Implementing inter-group cooperative exploration to enhance teaching quality**

In education, cooperative exploration among students is a crucial method for fostering teamwork and communication skills. Through group discussions and collaborative task completion, students not only experience the sense of achievement that comes from working together to solve problems but also learn to assume roles and responsibilities within a team, thereby enhancing their core competencies<sup>[12]</sup>.

In Chinese language studies, beyond mastering fundamental linguistic knowledge, it is essential to cultivate students’ ability to deeply analyze textbook content and apply their learning in the teaching process. This approach fosters advanced learning skills, enabling students to continuously discover new knowledge through exploration and enhance their innovative capabilities. Moreover, peer-based cooperative learning provides diverse learning experiences, while healthy competition generates positive pressure and motivation, encouraging students to strive for excellence and maintain continuous progress<sup>[13]</sup>.

Junior middle school Chinese teachers can strategically incorporate cooperative exploration activities into their lessons to enhance classroom interaction and student engagement<sup>[14]</sup>. For instance, when teaching about Suzhou Gardens, teachers should first guide students in developing a basic understanding of the aesthetic and architectural characteristics of these gardens. This includes exploring the architectural techniques of traditional Chinese gardens and understanding ancient Chinese perspectives on aesthetics. Subsequently, teachers can design group-based cooperative exploration activities that encourage students to delve deeper into the architectural design principles and cultural significance of classical gardens.

In these group activities, students can collaborate to discuss topics such as layout design, spatial organization, and landscape construction in Suzhou Gardens, allowing them to explore their interpretations of the “finest gardens.” Each student is expected to contribute their insights and compile a report based on textual content and relevant research. Through teamwork, students not only gain a deeper appreciation of Suzhou garden artistry but also enhance their ability to articulate and communicate their ideas effectively<sup>[15]</sup>.

Finally, during the summary phase, teachers can encourage students to present their findings and reflections on stage, thereby strengthening their presentation skills and critical thinking abilities. This process enables students



to deepen their practical understanding of Suzhou Gardens' cultural significance while simultaneously developing teamwork and communication skills. Such experiences lay a solid foundation for tackling complex problems and participating in social activities in the future.

## 4. Conclusion

In short, the Chinese language plays a vital role in junior middle school education, serving as an indispensable tool for enhancing students' overall and humanistic qualities. Therefore, Chinese language teachers must continuously innovate their teaching methodologies, with a primary focus on improving instructional effectiveness. This involves adopting innovative teaching strategies, optimizing content, and integrating information technology to create more engaging and student-centered learning experiences. By addressing students' diverse and personalized learning needs, teachers can effectively support their long-term academic growth and development.

## Disclosure statement

The author declares no conflict of interest.

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# Hybrid Teaching Reform and Practice in Big Data Collection and Preprocessing Courses Based on the Bosi Smart Learning Platform

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**Abstract:** This study examines the Big Data Collection and Preprocessing course at Anhui Institute of Information Engineering, implementing a hybrid teaching reform using the Bosi Smart Learning Platform. The proposed hybrid model follows a “three-stage” and “two-subject” framework, incorporating a structured design for teaching content and assessment methods before, during, and after class. Practical results indicate that this approach significantly enhances teaching effectiveness and improves students’ learning autonomy.

**Keywords:** Big Data Collection and Preprocessing; Bosi smart learning platform; Hybrid teaching; Teaching reform

**Online publication:** March 4, 2025

## 1. Introduction

Big Data Collection and Preprocessing is a core course for students majoring in Data Science and Big Data Technology. This course systematically introduces the working principles and applications of the ETL open-source tool Kettle, the log collection system Flume, and the data migration tool Sqoop. The primary objective is to equip students with data analysis skills and foundational development abilities for industry-based projects <sup>[1]</sup>. Under the traditional teaching model, students frequently reported difficulties in understanding the course content, leading to a high failure rate and unsatisfactory learning outcomes. To address these challenges, a hybrid teaching model was designed and implemented using the Bosi Smart Learning Platform. This reform was based on an analysis of existing issues and aimed at improving overall teaching effectiveness <sup>[2]</sup>.

## 2. Current status of Big Data Collection and Preprocessing course teaching

Big Data Collection and Preprocessing is a fundamental professional course that has not been offered at our school

for long. The school has not placed sufficient emphasis on this course, and its hardware and software facilities remain inadequate<sup>[3]</sup>. The course covers a broad range of topics and is inherently challenging, leading to low student motivation and poor learning outcomes. Based on previous teaching experience, these issues primarily stem from the following factors<sup>[4]</sup>.

### **2.1. Extensive teaching content with limited instructional hours**

As part of the school's revised talent training program, the course's total credit hours have been reduced from 64 to 48. However, the scope of the content covered by instructors has not decreased, making it more difficult for students to fully absorb and comprehend key concepts<sup>[5]</sup>.

### **2.2. Weak foundational knowledge in prerequisite courses**

Big Data Collection and Preprocessing requires a solid understanding of prerequisite subjects, including Java programming, databases, and big data fundamentals. Since the course content is built upon these foundational topics, students who have not mastered them struggle significantly with the material<sup>[6]</sup>.

### **2.3. Unengaging and challenging teaching content**

This course is highly practical, yet its theoretical components can be tedious when delivered through traditional teaching methods. Students often find lectures unengaging and struggle to grasp key concepts<sup>[7]</sup>. As a result, they accumulate knowledge gaps over time, leading to a gradual decline in interest and motivation to learn<sup>[8]</sup>.

## **3. Hybrid teaching content design for Big Data Collection and Preprocessing courses**

The Bosi Smart Learning Platform, developed by iFlytek, is an online learning platform that supports both PC and mobile applications, allowing students to access learning materials anytime and anywhere. This flexibility makes it highly convenient for users. Additionally, the platform features a simple interface and comprehensive functionalities, including pre-class video learning, in-class discussions, Q&A sessions, and interactive activities, as well as post-class chapter assignments and experiments. These features facilitate independent and comprehensive learning for students. As a result, our institution has widely adopted the Bosi Smart Learning Platform in teaching<sup>[9]</sup>. The Big Data Collection and Preprocessing course is designed around the Bosi Smart Learning Platform and leverages Bosi online courses for hybrid teaching reform and practice. In this hybrid teaching model, both teachers and students play central roles. Throughout the three stages—before class, during class, and after class—the Bosi platform facilitates effective communication, ensuring that course instruction proceeds in an organized manner<sup>[10]</sup>.

### **3.1. Before class**

The pre-class stage serves as the preparatory phase for the Big Data Collection and Preprocessing course. Teacher's role: Before class, teachers create a course group on the Bosi platform, add students enrolled in the course, and upload relevant resources such as PPT slides, preview videos, and assignments based on the teaching schedule. The platform enables teachers to monitor students' online learning progress, allowing them to tailor in-class explanations to address specific knowledge gaps identified through students' pre-class engagement data.

Student's role: Students independently log in to the Bosi platform before class to access learning resources, including PPT slides and instructional videos. After watching the videos, students take note of any unclear concepts, enabling them to focus on these areas during the lecture and actively seek clarification from the instructor.

### **3.2. In class**

The in-class stage occurs offline, where teachers conduct face-to-face instruction while utilizing the Bosi platform. Teacher's role: At the beginning of the class, teachers use the Bosi platform for attendance tracking. They review and reinforce students' pre-class learning tasks and provide detailed explanations of key and challenging concepts. The platform also supports interactive activities such as quizzes and discussions, allowing teachers to assess students' comprehension in real time. These activities enhance students' engagement and enable teachers to identify areas requiring further clarification. During experimental sessions, teachers guide students step by step through the experimental procedures. The entire process is shared via the Bosi platform, and students can provide real-time feedback using the "Comments" function. Teachers address student queries as they arise, ensuring that all concepts are thoroughly explained. Additionally, the teacher records the experimental procedures and uploads the video to the platform, enabling students to review the experiment as needed.

Student's role: Students sign in to the Bosi platform using the roll call password displayed by the teacher. They review their pre-class learning, engage with key concepts, participate in discussions, and complete consolidation exercises on the platform. This process facilitates the internalization of knowledge and enhances learning outcomes.

### **3.3. After class**

Teacher's role: After class, teachers utilize the Bosi platform to upload review materials, assign new preview tasks, and distribute homework and experiment assignments. Submission deadlines are set to encourage timely completion and ensure the quality of submitted work. Teachers evaluate experimental reports, provide detailed feedback, highlight common issues, and offer improvement suggestions. Outstanding experimental reports are showcased in class, and students who excel are encouraged to share their work with their peers.

Student's role: Post-class, students complete review tasks, homework, experiments, and new preview assignments using the Bosi platform. After teachers review and grade their submissions, students can access their scores and feedback, identify mistakes, and make necessary corrections promptly.

## **4. Reform of assessment composition for Big Data Collection and Preprocessing courses**

As a fundamental professional course, the Big Data Collection and Preprocessing course follows a hybrid teaching model based on the Bosi platform. To enhance the assessment process, the weight of process-based assessment has been increased, making it the primary evaluation component, while the final assessment carries a reduced weight. Leveraging the advantages of the Bosi platform, the final grade is composed of two parts: daily performance (60%) and final assessment (40%). The daily performance score consists of attendance (10%), homework and class participation (30%), and computer-based performance (60%). The final assessment is based on comprehensive group projects.

### **4.1. Daily performance**

Attendance (10%): Before each class, the instructor initiates a sign-in process on the Bosi Smart Learning Platform, where students enter a roll call password to confirm attendance. Attendance records collected through the platform determine student scores. Three absences result in a zero for this component, while five absences lead to a zero in major performance assessments.

Homework and class participation (30%): Assignments are released after each chapter, with a total of eight assignments throughout the course. The final assignment grade is the average of these eight scores. Classroom

participation is assessed through bonus points based on student engagement in answering questions and discussions initiated by the instructor.

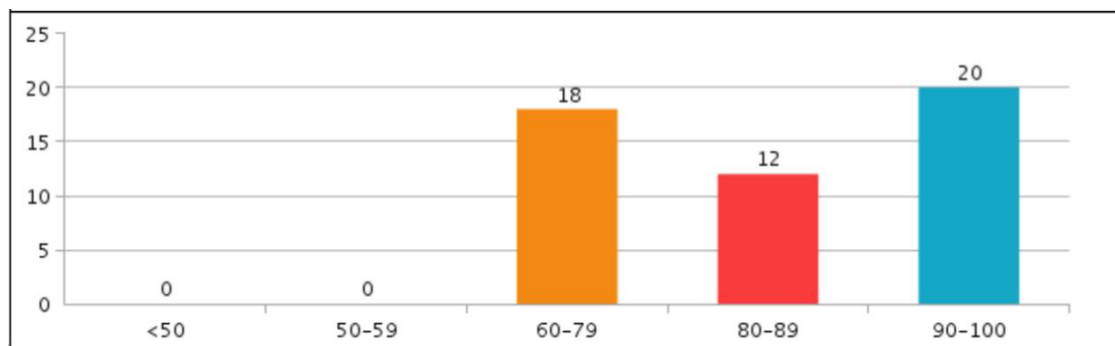
Computer-based performance (60%): Given the experimental nature of this course, practical work is particularly significant. The instructor has designed 22 experiments, each integrating theoretical knowledge covered in class. After completing an experiment, students must upload their reports to the Bosi platform, where the instructor evaluates them based on completion rate and accuracy. Additional points are awarded based on students' in-class performance. The final computer-based score is the average of the 22 experiment scores.

## 4.2. Final assessment

The final assessment constitutes 40% of the total course grade and is conducted through offline project reporting and evaluation. Students are required to form groups of five members. The course spans 16 weeks, and project requirements are announced in the 12th week. Each team must determine a project topic, complete the project design within the given timeframe, and submit project materials before the final defense. Required submissions include a project design report, project presentation (PPT), recorded project video, and source code. Each group is allocated 8 minutes for the defense: 5 minutes for the PPT presentation and 3 minutes for Q&A. During the presentation, teams must showcase their division of labor, project design for data crawling, data cleaning, data collection, and data migration, as well as highlight project innovations and provide a summary. After the presentation, the instructor provides feedback and poses three questions, with individual scores assigned to each team member based on their responses. Students are expected to further refine their projects and upload the final materials to the Bosi platform, where the instructor records and exports the final assessment scores.

## 5. Effects of hybrid teaching reform

Following the implementation of the hybrid teaching reform in this course, student performance has improved significantly. The distribution of final grades is shown in **Figure 1**. The Level 22 Big Data Development Class, specializing in Data Science and Big Data Technology, consists of 50 students. Among them, 18 students scored between 60 and 79, 12 students scored between 80 and 89, and 20 students achieved scores between 90 and 100. Notably, no student failed the course, and the excellence rate reached 40%. After the reform, the average class score rose to 85.62, approximately six points higher than the pre-reform average of 79.41. Upon completing the course, students provided feedback on the teaching model, with 96.49% recognizing it as distinct from traditional teaching and demonstrating superior effectiveness. Additionally, school and college supervisors praised the reform, acknowledging its significant impact and outstanding results. Based on the teaching evaluation outcomes, instructors can identify areas for improvement to better align with course objectives.



**Figure 1.** Distribution of students' final grades



# 6. Conclusion

This study integrates a hybrid teaching model into the Big Data Collection and Preprocessing course, proposing a structured design for course content and assessment methods while evaluating the effectiveness of the teaching reform. The implementation of this hybrid teaching model has yielded positive results, enhancing student engagement and supporting instructors in delivering the course more effectively. Moving forward, further optimization of the hybrid teaching approach will be pursued, with plans to expand its application to additional courses.

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# A Study on the Digital Transformation of Higher Education in Egypt

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**Abstract:** With the advancement of information technology, the digital transformation of higher education has become a global trend in educational reform. Egypt has propelled the modernization of its higher education system through digital means, focusing on enhancing teachers' digital teaching capabilities, improving course quality, and establishing a policy environment that supports digital instruction. The driving forces behind Egypt's transformation include meeting the demand for skilled talent due to economic reforms, participating in internationalization processes, and the impetus provided by public diplomacy. By introducing high-quality international resources, deepening scientific research collaboration, and applying digital technologies, Egypt has effectively alleviated issues of resource insufficiency and uneven development, thereby enhancing its capacity for higher education quality assurance. Egypt's practice demonstrates that digitalization is a key pathway for developing countries to improve the quality of higher education, providing valuable insights for constructing sustainable models of higher education development.

**Keywords:** Higher education; Public diplomacy; Digital transformation

**Online publication:** March 4, 2025

## 1. Introduction

With the rapid development and iteration of information technology, digital technology has permeated all fields, including higher education. The digital transformation of higher education has become an inevitable trend to meet contemporary demands. Today, the world is experiencing profound changes unseen in a century. As the driving force behind a new round of technological and industrial revolution, digital technology is increasingly integrated into all areas and processes of economic and social development, including education. It is profoundly changing modes of production, life, learning, and social governance, providing significant opportunities to rethink and promote educational reform while also presenting new challenges.

Based on the localized needs for digital transformation in Egyptian universities, the Egyptian pilot project has two main objectives: "to enhance teachers' digital teaching capabilities, course quality, and teaching practice" and "to create a favorable policy and institutional environment for digital teaching." According to Dalia Yusuf, director of

the Online Learning Center at Ain Shams University, the Egyptian National Center, under the university's leadership, has established a network covering 23 universities nationwide. Among them, 63 key teachers from 14 Egyptian universities participated in a training program aimed at improving their digital teaching abilities. At the policy and institutional level, national policy dialogues and digital leadership forums were designed and implemented. Through the pilot project, Egypt has facilitated communication and dialogue among the Ministry of Higher Education and Scientific Research, the Supreme Council of Universities, the Higher Education Quality Assurance and Accreditation Agency, and multiple Egyptian universities, promoting national-level exploration of the digital transformation of higher education.

## **2. Drivers of digital transformation in Egyptian higher education**

### **2.1. Meeting the demand for talent and technology in economic reform**

When President Sisi took office, Egypt faced critical economic challenges amid political and social transition, including rapid population growth, a fragile economy, and high unemployment. The economy had fallen into a severe recession after the political upheavals of 2011 and 2013, with GDP growth plummeting and debts escalating. By 2015, nearly 28% of the population lived below the poverty line, and unemployment had risen to 13%, intensifying social unrest.

To address these issues, the Sisi administration prioritized economic reform, proposing a “knowledge-based economy” strategy to enhance social cohesion and competitiveness <sup>[1]</sup>. Emphasizing knowledge, research, and innovation, the government aimed to align these elements with national goals by developing innovation clusters and business incubators.

The government launched major infrastructure projects such as the Suez Canal Expansion and the New Administrative Capital, creating jobs and stimulating growth. It issued the “2020 Industrial Development Strategy” to boost industrial technology and supported small and medium-sized enterprises (SMEs) through initiatives like “Your Factory Has a License.” These efforts heightened the demand for talent, technology, and innovation.

To meet this demand, the Sisi government introduced the “Egypt: A Learning, Thinking, and Innovative Society” initiative in 2014, pledging to increase investment in education and research and to ensure equitable access to quality education. By promoting educational modernization and digital transformation, the government aims to support a knowledge economy and accelerate Egypt's transition to a knowledge-based society.

### **2.2. Drivers behind Egypt's participation in the internationalization of higher education amid globalization**

Since the early 21st century, economic globalization has accelerated the internationalization of higher education. Egypt, one of the most globally integrated countries in the Middle East, has maintained multifaceted exchanges with developed nations such as the United States and European countries. To internationalize its higher education, Egypt participates in international collaborative projects, has established open universities, and attracts international funding.

Beginning in the 1980s, Egypt and the United States signed a series of agreements to enhance inter-university exchanges, build academic trust, and promote joint research. In the early 21st century, Egypt joined the European Union's Mediterranean University Network Program (MEDA-TEMPUS I) to modernize its higher education through reforms <sup>[2]</sup>. Over the past decade, Egypt has deepened educational cooperation with China under the “Belt and Road” initiative, collaborating on academic programs, talent cultivation, and research. These collaborations encompass language teaching, faculty exchanges, attracting international students, and sharing research outcomes.

Egypt aims to align its higher education system with international standards, achieve mutual recognition of degrees globally, and prepare graduates to meet international market demands. Participation in international projects and cooperation with foreign universities enhance educational quality and set benchmarks aligned with global standards. Since 2008, Egypt's involvement in the European Union's Bologna Policy Forum has promoted the development of its higher education quality assurance system, aligning it with European standards and driving digital transformation.

Digital transformation is a crucial tool for internationalizing higher education, enhancing quality, optimizing resource allocation, and supporting transnational cooperation and global knowledge networks. Facing the challenges of globalization, Egypt's adoption of digital methods for international cooperation is both a proactive response to global higher education trends and a necessary pathway to enhance the competitiveness of its higher education system.

### **2.3. The driving role of public diplomacy in the context of globalization**

Public diplomacy has played a significant driving role in the modernization and transformation of Egyptian higher education, particularly in the context of educational internationalization and digital transformation. As a soft power approach that enhances understanding and cooperation among nations through culture, education, and science and technology, public diplomacy has enabled Egypt to establish extensive educational partnerships with countries such as the United States, European nations, and China. Specifically, in participating in international education projects and attracting international funding support, public diplomacy has secured more external resources for Egypt<sup>[3]</sup>. For example, Egypt's participation in the European Union's Mediterranean University Network Program (MEDA-TEMPUS I) allowed it to obtain funding and technical support from the EU for curriculum reform, improvements in teaching methods, and optimization of management models. Additionally, cooperation with China under the framework of the "Belt and Road" Initiative has not only advanced the digital development of Egyptian education but also provided technological support and platforms for talent cultivation. The successful realization of these collaborations is inseparable from Egypt's demonstration, through public diplomacy, of its significant status and potential in regional education.

## **3. Strategies for advancing digital transformation in Egyptian higher education**

### **3.1. Enhancing internationalization: Promoting exchange and cooperation in higher education globally**

An important bottleneck constraining the development of higher education in Egypt is the contradiction between the rapidly growing demand for higher education and the limited domestic resources available. To address this issue, introducing high-quality overseas educational resources has become a key initiative in Egypt's digital transformation and internationalization of higher education. This strategy not only increases the number of higher education institutions in the country, alleviating pressure on the public education system, but also enables Egyptian students to access world-class educational resources domestically.

The Egyptian government actively promotes the establishment of branch campuses by foreign universities within the country. To this end, it established the "Committee for Branch Campuses of Foreign Universities" under the Ministry of Higher Education and Scientific Research, and in August 2018 enacted the Law on Branch Campuses of Foreign Universities and University Institutions in Egypt<sup>[4]</sup>. This legislation fills the legal void concerning the establishment of branch campuses and educational institutions by foreign universities in Egypt, detailing the establishment processes, approval procedures, quality supervision, organizational structures, and specific rights and obligations.

According to this law, foreign universities can either independently establish branch campuses in Egypt or collaborate with Egyptian universities to set up joint campuses that confer joint degrees. This policy innovation not only promotes the diversification of educational resources but also provides Egyptian students with more diverse study options, thereby enhancing the international competitiveness of domestic higher education.

### **3.2. Encouraging international scientific research cooperation**

Egypt's international cooperation in scientific research is also a crucial reform measure for enhancing the quality of higher education. The "Egyptian National Strategy for Scientific Research and Innovation 2015–2030" outlines a future development path centered on international collaboration. The implementation of this strategy is based on two main reasons:

First, there is a practical need to strengthen research capabilities. Although the Egyptian scientific community possesses a certain level of knowledge production, there remains a significant gap in transforming this knowledge into technology, which limits the actual contribution of research to economic development. By partnering with international counterparts, Egypt aims to learn from the advanced experiences of developed countries to promote the localization and application of technology.

Second, addressing global challenges. Issues such as climate change, food security, pandemics, and environmental protection are global problems that Egypt faces alongside other nations. These challenges are difficult to solve relying solely on Egypt's technological capabilities and require collaboration and joint efforts from the international community.

To support international scientific research cooperation, the Sisi government promulgated the "Law for the Encouragement of Science, Technology, and Innovation" on April 21, 2018 <sup>[5]</sup>. This legislation provides policy support and incentives for cross-border collaboration among universities and research institutions, including:

- (1) Flexible policies: Article 5 stipulates that higher education and research institutions may engage in any activities aligned with their objectives and may sign agreements with domestic and foreign individuals, enterprises, banks, and other entities, without being constrained by existing laws or government decisions.
- (2) Tax incentives: Article 7 exempts import duties and value-added taxes on tools, instruments, and materials necessary for scientific research projects.
- (3) Reward support: Article 9 states that bonuses for research project teams funded by external grants are exempt from all taxes and fees.

These measures have reduced costs and increased flexibility and attractiveness for Egyptian universities and research institutions in international collaborations, promoting deep cooperation between Egypt and the global academic and scientific communities.

By introducing high-quality overseas educational resources and encouraging international scientific research cooperation, Egypt has injected new momentum into its domestic education system while enhancing the internationalization of higher education. This approach not only helps alleviate the pressure on educational resources but also facilitates the integration of Egyptian universities with the global community, laying a solid foundation for the modernization and digital transformation of its higher education sector.

## **4. Conclusion**

In the era of the knowledge economy, ensuring the quality of higher education is crucial for narrowing the economic and social gaps between developing and developed countries. While developed nations have globally recognized universities excelling in knowledge innovation and human capital development, developing countries like Egypt face



significant challenges in this area.

Egypt's efforts to build a higher education quality assurance system reveal universal issues faced by developing countries, including scarce resources, faculty shortages, uneven development, late initiation of quality assurance systems, imperfect frameworks, and a weak quality assurance culture. Unique cultural traditions and economic conditions add complexity, especially with the integration of religious and secular education. This complexity has prompted international support for quality assurance projects in developing countries.

Digital transformation has become a key strategy for modernizing higher education in Egypt, enhancing quality assurance through online platforms, big data analytics, and smart campuses. Initiatives such as introducing international online courses and building digital research platforms have energized improvements, addressing faculty shortages and uneven resource distribution. The success of Egypt's higher education quality assurance and accreditation programs results from collaboration among universities, the government, society, and international organizations. Digitalization offers new tools for aligning with international education systems and enhancing global competitiveness.

Egypt's practices demonstrate that building quality assurance systems and pursuing digital transformation must be tailored to each country's specific conditions. Cultivating a strong quality assurance culture and utilizing digital technologies are essential for sustainable higher education development, offering valuable insights for other developing nations.

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# A Study on the Significance of Art Education in the Cultural Development of Adolescents

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**Abstract:** This paper explores the essential role of art education in adolescents' cultural development. By examining the influence of art education on adolescents' aesthetic abilities and observing the cultural stories behind artworks, this paper aims to underscore the importance of art education in nurturing knowledge, fostering cultural identity, and encouraging cross-cultural understanding. Suggestions are put forward correspondingly to ensure the quality of art education and improve adolescents' cultural literacy.

**Keywords:** Art education; Adolescents; Cultural development; Artworks

**Online publication:** March 7, 2025

## 1. Introduction

The significance of studying art has long been a subject of debate. Some argue that teenagers should dedicate more time to learning art in school, while others believe that greater emphasis should be placed on subjects like natural sciences. In the authors' view, learning to appreciate art is vital for the cultural development of adolescents. Through art, teenagers acquire fundamental skills such as observing, reading, exploring, and experimenting with various modes of self-expression <sup>[1]</sup>. Art lessons build their confidence in artistic expression and guide them to create their own creative pieces. This not only helps them navigate the world around them but also fosters teamwork. When art education in schools focuses on personal achievements, students feel empowered to fully explore their creativity, which has a positive impact on their overall development <sup>[2]</sup>. The cultural aspect of art is integral to subject development, enriching students with knowledge that is crucial for the growth of nations <sup>[3]</sup>. In short, the study of art for teenagers should go beyond decoration and entertainment; it should be approached as a significant academic discipline.

## **2. The influence of art education on aesthetic development**

### **2.1. Cultivating aesthetic perception and emotions**

Art education expands students' perceptual abilities. In the fine arts, analyzing paintings and sculptures enhances visual perception, while in music, recognizing melody, rhythm, and harmony improves auditory perception <sup>[1]</sup>. Similarly, dance contributes to heightened bodily awareness. Teachers also help students develop a keen eye for detail in areas such as color combinations and brush techniques, thereby refining their ability to perceive beauty <sup>[4]</sup>.

Furthermore, artworks often evoke strong emotional responses in adolescents. A lively symphony can inspire zeal, while a poignant drama might bring tears. Art education also creates immersive experiences, such as well-designed art classrooms or dance courses enriched with storytelling, enabling students to form deep emotional connections with art <sup>[5]</sup>.

### **2.2. Deepening aesthetic understanding and fostering creativity**

Art education provides students with knowledge about various art forms and their cultural contexts. For instance, studying the history and characteristics of fine art or learning about musical notation and harmony helps students gain a deeper understanding of artworks <sup>[4]</sup>. Discussions on artistic content, forms, and emotional expression in class further broaden their perspectives <sup>[2]</sup>.

Additionally, art studies offer ample opportunities for creativity. Activities like painting, crafting, and composing music nurture students' creative thinking <sup>[1]</sup>. Art teachers inspire students by encouraging them to imagine, experiment with new materials, and explore innovative techniques, thereby sparking their creative potential <sup>[6]</sup>.

## **3. The cultural narratives embedded in artworks and their significance**

### **3.1. Foreign art: Revelations of war and peace**

Picasso's *The Dove of Peace* (1949), created after World War II, symbolizes the universal hope for peace. It serves as a reminder for adolescents of the destructive nature of war and underscores the importance of protecting peace and justice <sup>[7]</sup>. Another of Picasso's masterpieces, *Guernica*, portrays the 1937 bombing of Guernica, vividly illustrating the brutality of war and urging adolescents to remember history and oppose conflict <sup>[7]</sup>.

### **3.2. Domestic art: Insights into history**

Zeduan Zhang's *Riverside Scene at Qingming Festival* captures the bustling scenery along the Bian River, the urban layout, and the economic activities of the Northern Song Dynasty's capital. This artwork provides valuable insights into the geography, history, and folk culture of that era <sup>[4]</sup>. Similarly, Hongzhong Gu's *The Night Revels of Han Xizai* portrays the opulent lifestyle of Southern Tang Dynasty nobles and reflects the political landscape of the time, helping adolescents gain a deeper understanding of this historical period <sup>[4]</sup>.

## **4. Art education: Cultural development**

### **4.1. Expanding horizons and cultivating cultural identity**

Studying artworks from around the world exposes adolescents to diverse cultures, enriching their geographical, historical, and humanistic knowledge <sup>[2]</sup>. Domestic masterpieces, such as *Riverside Scene at Qingming Festival*, inspire pride in Chinese culture, reinforcing adolescents' cultural identity and their awareness of the importance of preserving cultural heritage <sup>[6]</sup>.

## 4.2. Promoting cross-cultural appreciation and shaping values

Engaging with foreign art, such as Picasso's works, teaches adolescents to respect cultural differences, preparing them to become globally minded citizens<sup>[7]</sup>. Pieces like *The Dove of Peace* and *Guernica* convey universal values of peace and justice, guiding adolescents toward developing positive values<sup>[7]</sup>.

## 5. Challenges and countermeasures in art education

### 5.1. Existing problems

Art education is often undervalued as a “minor subject” in the current education system. This results in limited class hours and inadequate teaching resources<sup>[3]</sup>. Traditional teaching methods tend to prioritize knowledge transfer over fostering students' interests and creativity, leaving students disengaged and passive learners<sup>[4]</sup>. Additionally, some schools face challenges with art teachers who lack professional training, rely on outdated teaching methods, or demonstrate inconsistent teaching quality<sup>[3]</sup>.

### 5.2. Improvement suggestions

To address these challenges, governments, schools, and parents must place greater emphasis on art education and allocate resources more effectively<sup>[3]</sup>. Teachers should adopt modern methods such as multimedia teaching, situational learning, and project-based learning to spark students' interest and nurture their creativity<sup>[6]</sup>. Schools should focus on recruiting and training high-quality art teachers while providing a supportive working environment to attract talented individuals into the field of art education<sup>[8]</sup>.

## 6. Conclusion

Art education plays a vital role in adolescents' cultural development. It enhances their aesthetic abilities, broadens their knowledge base, and helps shape their values<sup>[1,2,6]</sup>. Given the current challenges, collaborative efforts from all stakeholders are essential to strengthening art education, enabling it to play a more significant role in the growth and development of young people<sup>[3,7]</sup>.

## Disclosure statement

The authors declare no conflict of interest.

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# Reform Practice of CDIO Teaching Mode Based on the Digital Engine Structure Principle

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**Abstract:** With the continuous advancement of computer and information technology, education and teaching methods have undergone profound changes. Addressing the challenges in the Engine Structure Principle course—such as its highly practical nature, complex principles, and difficulty in student comprehension—a simulation program for the engine oil supply regulation system was developed using digital technology. This paper analyzes key factors affecting engine fuel supply, including tank pressure, engine inlet total temperature, and fuel viscosity. By encouraging inquiry-based learning, the approach enhances students' understanding of theoretical knowledge, improves teaching efficiency, and yields positive learning outcomes. Additionally, the CDIO (Conceiving-Designing-Implementing-Operating) teaching framework is integrated into the course, strengthening students' ability to apply knowledge comprehensively and collaborate effectively in teams.

**Keywords:** Digitalization; Turbojet engine; Fuel supply regulation; CDIO

**Online publication:** March 7, 2025

## 1. Introduction

With the rapid advancement of modern high-tech weaponry and equipment, missiles have become increasingly prevalent in modern warfare due to their flexibility and precision. To extend missile range, the cruise-stage engine typically employs low-fuel-consumption, compact turbojet or turbofan engines as its power source. Therefore, mastering the structural principles and operational processes of turbojet and turbofan engines—particularly the regulation of their oil supply systems—is crucial for proper use, maintenance, and enhanced combat support capabilities.

The Engine Structure Principle course covers the fundamental structure and maintenance of various missile power systems and serves as a core component of training for engine major students. Classified under Equipment Structure Principle education, the course involves complex theoretical and practical concepts, particularly in the case of turbojet and turbofan engine oil supply systems. Traditional teaching methods primarily rely on multimedia demonstrations, supplemented by a limited number of physical engine components for hands-on learning. However,

the absence of modern teaching tools makes it difficult for students to grasp essential concepts, such as the internal structure, working process, and functional principles of engines, leading to ineffective learning outcomes.

To address the theoretical challenges in engine principle instruction, a simulation program for the engine oil supply regulation system was developed using digital technology. The program analyzes critical factors influencing fuel supply, such as tank pressure, engine inlet total temperature, and fuel viscosity. This approach deepens students' theoretical understanding, enhances teaching efficiency, and optimizes learning outcomes. Furthermore, to improve students' ability to apply knowledge comprehensively and work collaboratively, the CDIO teaching framework<sup>[1-4]</sup> was incorporated into the classroom, fostering engagement, problem-solving skills, and teamwork.

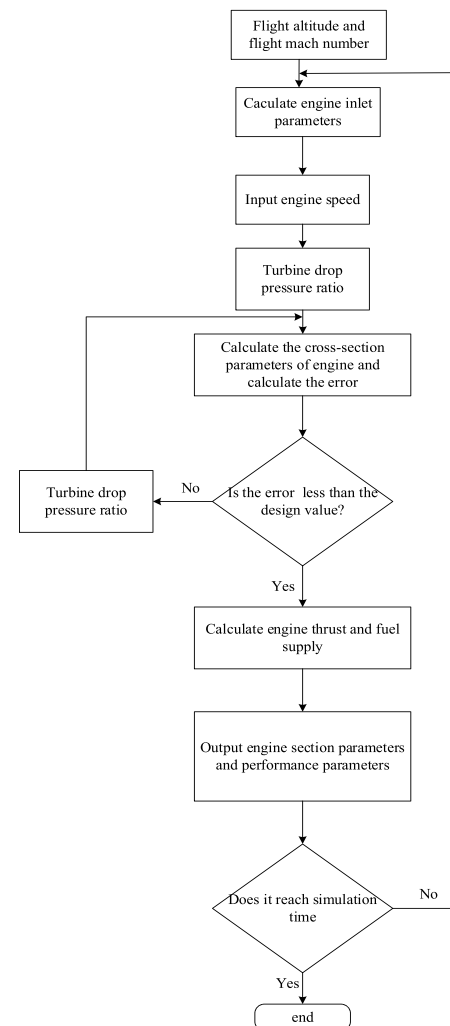
## 2. Development of a simulation program for the engine oil supply regulation system based on digital technology

The simulation of the engine oil supply regulation system is closely aligned with the operational processes of turbojet engines. Therefore, based on the characteristics of components such as compressors and turbines, a dynamic model was developed. This model integrates the rotor motion equation, flow balance equation, and pressure balance equation, following the principle of component matching. Various iterative solutions were then applied to solve the equations.

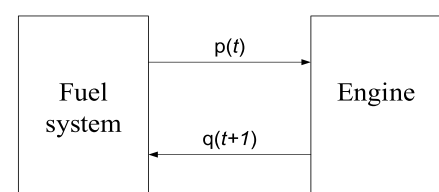
The accuracy of the mathematical model is critical for simulating the engine's working process. The model must effectively reflect the oil supply regulation mechanisms under different operating conditions. Given specific working parameters—such as flight altitude, Mach number, and engine speed—the system iterates the engine compressor boost ratio and turbine pressure drop ratio based on power balance and airflow equilibrium across components. Subsequently, error analysis is conducted to ensure that the direct parameters align with design accuracy. Once validated, the computed boost ratio, pressure drop ratio, and other relevant parameters are used to determine engine oil supply, thrust, and other performance metrics. The model's computational process is illustrated in **Figure 1**.

The engine system model is composed of the fuel system model and the engine model, and the simplified sub-model relationship is shown in **Figure 2**, where  $p(t)$  is the pump pressure at the  $t$  moment and  $q(t+1)$  is the oil supply at the  $t+1$  moment.

In the whole mathematical model, the nozzle flow at time  $t$  is first obtained from the engine model. The fuel is burned in the combustion chamber and drives the engine rotor to rotate. At the same time, the main shaft of the engine is connected to the pump shaft of the fuel pump through the gear. The rotation of the fuel pump generates the pump pressure and the fuel flow at time  $t+1$  is obtained by the model of the oil



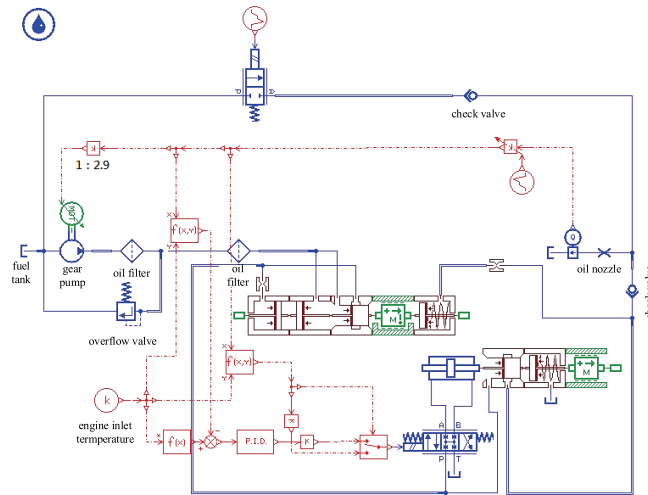
**Figure 1.** Flow chart of steady-state engine solution



**Figure 2.** Schematic diagram of sub-model relationships in the system model

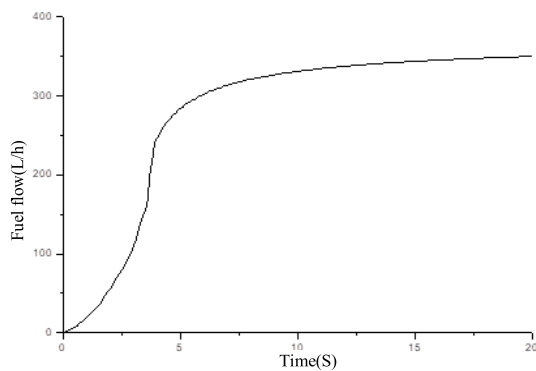
supply regulating system.

According to the schematic diagram of the fuel system of a turbojet engine, a model of the fuel system was built, and the principle of the model was shown in **Figure 3**. The system includes bypass pipeline, differential pressure valve, metering valve, electronic fuel controller, oil filter, relief valve, nozzle, and other components.

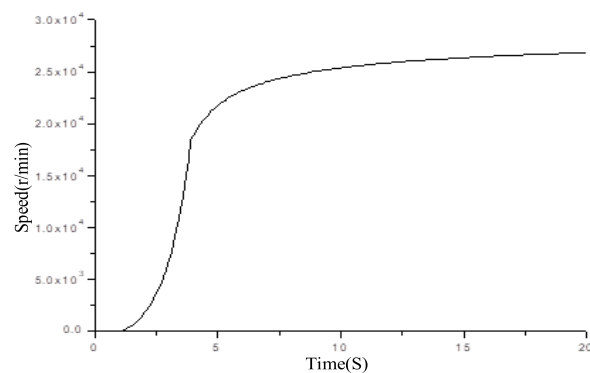


**Figure 3.** Schematic diagram of oil supply system

Set the temperature to 25°C, the fuel tank pressure to 3 bar, and the simulation time to 20s, and draw the simulated fuel flow curve and speed curve according to the simulation results, as shown in **Figures 4 and 5**.



**Figure 4.** Fuel flow curve of fuel system

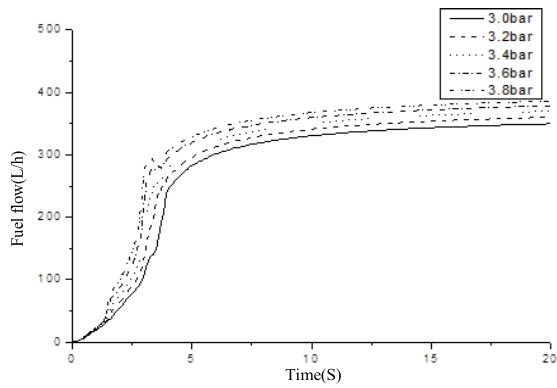


**Figure 5.** Fuel system speed curve

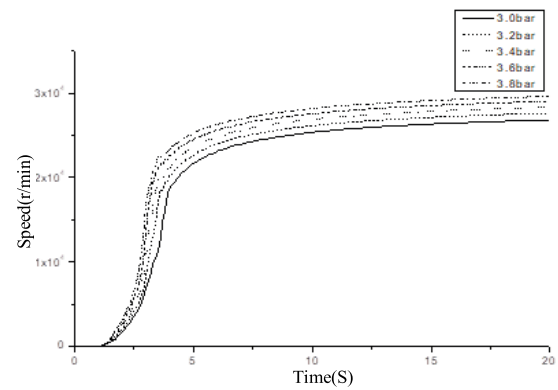
### 3. Influence of key parameter changes on turbojet fuel supply regulation

#### 3.1. Influence of fuel tank pressure on engine fuel supply regulation

During engine operation, variations in fuel tank pressure affect the engine's performance. To analyze this impact, fuel tank pressures of 3.0 bar, 3.2 bar, 3.4 bar, 3.6 bar, and 3.8 bar were selected. A fuel regulation model was established to conduct simulation calculations under identical environmental and fuel system conditions. To facilitate comparative data analysis, the engine fuel flow curve and engine speed curve for different fuel tank pressures were plotted within the same coordinate system, as shown in **Figures 6 and 7**.



**Figure 6.** Engine fuel flow curve under different fuel tank pressures

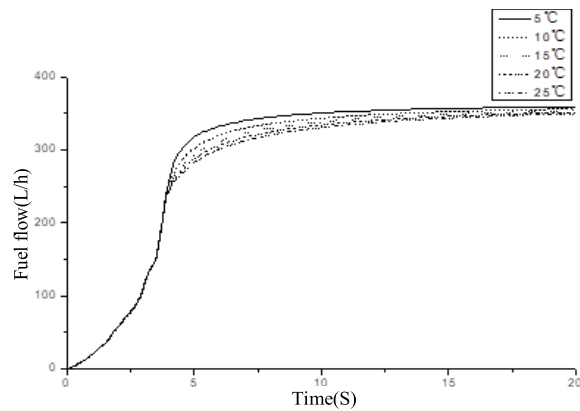


**Figure 7.** Engine speed curve under different fuel tank pressures

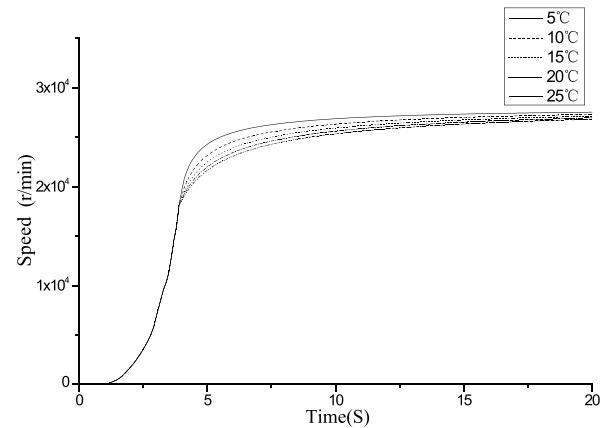
As illustrated in **Figures 6** and **7**, engine performance varies with fuel tank pressure. Within a certain range, an increase in fuel tank pressure reduces the time required for the engine speed to stabilize while also increasing both engine speed and fuel flow. Taking a fuel tank pressure of 3.0 bar as the baseline, it was observed that higher fuel tank pressure results in greater fuel flow and engine speed. Specifically, at a fuel pressure of 3.3 bar, fuel flow increases by 10.44%, while engine speed rises by 10.39%.

### 3.2. Influence of total engine inlet temperature on engine fuel supply regulation

Changes in the total temperature of the engine inlet also influence engine performance. To investigate this effect, inlet temperatures of 5°C, 10°C, 15°C, 20°C, and 25°C were selected. A fuel supply adjustment model was developed, and simulations were performed under consistent environmental and fuel system conditions. The resulting curves are presented in **Figures 8** and **9**.



**Figure 8.** Engine fuel flow curve at different outlet temperatures



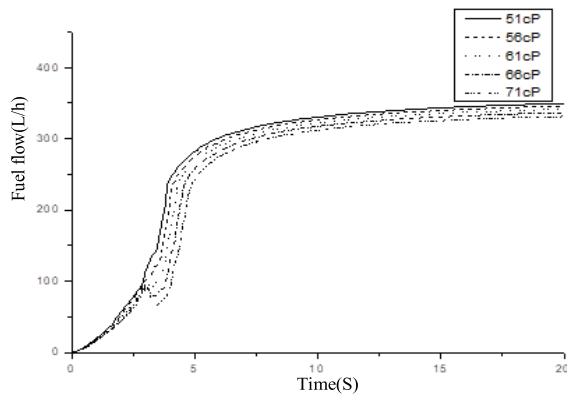
**Figure 9.** Engine speed curve at different outlet temperatures

**Figures 8** and **9** show that variations in total engine inlet temperature affect the time required for the engine to reach equilibrium. Within a certain range, higher inlet temperatures lead to an extended adjustment time, while both engine speed and fuel flow decrease slightly at equilibrium. Using an inlet temperature of 25°C as a reference, it was found that higher temperatures correlate with lower fuel flow and engine speed, though the overall impact

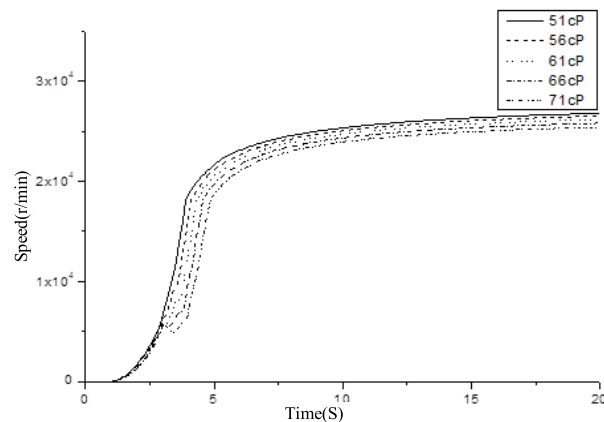
remains minor. When the total inlet temperature is 5°C, fuel flow and engine speed increase by 2.69% and 2.67%, respectively.

### 3.3. Influence of fuel viscosity on engine fuel supply regulation

Fuel viscosity also affects engine performance. To examine this factor, fuel viscosity values of 51 cP, 56 cP, 61 cP, 66 cP, and 71 cP were selected while maintaining all other conditions constant. Simulations were conducted using a turbojet fuel system model, and the resulting fuel flow and engine speed curves are shown in **Figures 10 and 11**.



**Figure 10.** Engine fuel flow curves under different fuel viscosities



**Figure 11.** Engine speed curve under different viscosities

**Figures 10 and 11** indicate that fuel viscosity has a measurable impact on engine performance. As viscosity increases, fuel flow and engine speed gradually decrease, though the rate of change diminishes over time. Using a fuel viscosity of 51 cP as a reference at 20 seconds, it was observed that higher viscosity results in lower fuel flow and engine speed. At a viscosity of 71 cP, fuel flow decreases by 5.21%, while engine speed declines by 5.22%.

Using a validated fuel system model, simulations were conducted to evaluate the effects of varying fuel tank pressure, total engine inlet temperature, and fuel viscosity on engine performance. Based on the comparative analysis of engine fuel flow and speed curves, the following conclusions were drawn:

- (1) Effect of fuel tank pressure: Increasing fuel tank pressure within a certain range shortens the time required for the engine speed and fuel flow to stabilize, leading to higher equilibrium values of both parameters.
- (2) Effect of total engine inlet temperature: As inlet temperature increases within a certain range, the time required for engine speed and fuel flow to stabilize extends, while both parameters decrease slightly at equilibrium.
- (3) Effect of fuel viscosity: Higher fuel viscosity results in lower fuel flow and engine speed, with the rate of decrease slowing as viscosity increases.

## 4. Reform practice of CDIO teaching mode based on digitalization

In traditional classroom teaching, the focus is primarily on explaining principles and configuring components. Although multimedia tools such as images and videos can be incorporated to enhance visualization, students still engage in passive learning, resulting in poor learning outcomes and an inability to apply knowledge comprehensively.

By leveraging digital technology, the fuel regulation model integrates theoretical calculations with principle demonstrations, thereby improving learning efficiency. Furthermore, when combined with hands-on practical



teaching, it stimulates students' intrinsic motivation for learning. Throughout the learning process, students transition from theoretical knowledge in textbooks to real-world applications, deepening their understanding of engineering theories and principles while enhancing teaching effectiveness. While this approach meets students' cognitive needs and improves classroom teaching quality to some extent, it does not sufficiently foster teamwork skills, which are essential for training modern military talent.

After multiple teaching practices, the CDIO <sup>[5-8]</sup> curriculum framework—conceived as Conceive-Design-Implement-Operate based on project or product development—was introduced into classroom instruction. This teaching philosophy emphasizes “learning by doing,” a concept rooted in Dewey’s educational theory, which critiques traditional schooling and advocates pragmatism. Dewey emphasized students’ instincts and interests, asserting that “learning by doing” involves acquiring knowledge through experience and practice, linking school-based learning with real-life activities. He argued that experiential learning is superior to passive listening, aligning with fundamental cognitive principles <sup>[9-12]</sup>.

With the adoption of this teaching model, students’ enthusiasm has significantly increased. Driven by project-based tasks, they have shifted from passive learners (“I have to learn”) to active participants (“I want to learn”). Within the curriculum knowledge framework, theoretical research, structural principles, and design processes are systematically integrated, enabling students to “see while learning,” “do while learning,” and “apply while learning.” The synergy between digital technology and the CDIO approach effectively stimulates students’ desire to learn and yields positive learning outcomes.

Between 2020 and 2024, the CDIO teaching model has been applied to the Engine Structure Principles course for students in relevant majors. The reform efforts have focused on strengthening students’ ability to apply knowledge comprehensively, enhancing teamwork and collaboration skills, and incorporating self-assessment and peer evaluation to foster autonomy and competency. To create an engaging learning environment, instructors established a supportive teaching platform. At the beginning of the course, students were voluntarily grouped into teams of four to five members, each led by a team leader selected through open competition to ensure fairness and transparency. Once selected, team leaders assigned tasks based on the project implementation plan proposed by the instructor, considering individual abilities and preferences. Each team member was given clear deadlines and performance expectations, ensuring structured and effective project execution.

## **5. Evaluation of the teaching effect of CDIO courses based on digitalization**

After five years of teaching reform practice, a questionnaire survey was conducted among missile engine majors who had participated in the CDIO teaching model. The results showed that the majority of students held a generally positive attitude toward the teaching reforms under the CDIO framework. Approximately 91% of students believed that the CDIO concept could be effectively applied to teaching engine structure principles and that the CDIO curriculum reform model was worth promoting. These findings indicate a strong level of student recognition and approval of the course reforms.

As technology and educational paradigms continue to evolve, teachers should actively adapt their perspectives and teaching methods to meet the learning needs of the new generation of students. The traditional instructor-led “one-way transmission” teaching model is no longer well received by students, whereas a student-centered, skills-oriented approach is highly favored.

Through the reform process, approximately 94% of students reported that the CDIO teaching model enhanced their ability to apply knowledge comprehensively and improved their communication skills. Additionally, around

96% affirmed that the model effectively fostered teamwork skills. Communication and teamwork are among the most critical competency indicators in the CDIO framework, highlighting the feasibility and effectiveness of this teaching approach. Therefore, the instruction of engine structure principles should move beyond an exam-focused approach and instead emphasize quality education aimed at developing students' communication, collaboration, and practical problem-solving skills.

A comparative analysis of students' theoretical assessment results under the traditional teaching method and the CDIO model revealed a significant improvement in academic performance among those using the CDIO approach. On average, students following the CDIO model achieved notably higher scores, particularly in theoretical analysis and comprehensive calculation questions, with an approximate 25% increase. This demonstrates that students' ability to apply theoretical knowledge comprehensively has improved significantly. They not only grasp theoretical concepts but also integrate them with specific equipment applications, linking prior coursework in a coherent manner, thereby enhancing their problem-solving capabilities.

Furthermore, instructors of subsequent courses, particularly those supervising undergraduate graduation projects, reported that students who had participated in the CDIO reform demonstrated stronger practical problem-solving abilities, greater hands-on skills, improved language expression, and superior teamwork capabilities compared to their peers. These strengths were especially evident in graduation projects, with many being rated as outstanding theses. The teaching reforms have enhanced students' classroom engagement, effectively strengthened their learning abilities, cultivated critical thinking habits and overall competencies, and laid a solid foundation for their future professional roles.

## Disclosure statement

The authors declare no conflict of interest.

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# Research on the Teaching Efficiency of Ideological and Political Classrooms Based on Blended Teaching

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**Abstract:** This paper focuses on the research on the teaching efficiency of ideological and political classrooms under the background of blended teaching. It analyzes the connotation and characteristics of blended teaching, explores the impact of blended teaching on the teaching efficiency of ideological and political classrooms from multiple aspects, and conducts empirical research through case analysis and data collection. The results show that blended teaching can effectively improve the teaching efficiency of ideological and political classrooms, enhance students' learning enthusiasm and participation, and promote the improvement of students' ideological and political qualities. Finally, corresponding suggestions and countermeasures are put forward to provide a reference for the improvement of the teaching quality of ideological and political courses.

**Keywords:** Blended teaching; Ideological and political classroom; Teaching efficiency; Empirical research

**Online publication:** March 7, 2025

## 1. Introduction

In the context of the rapid development of information technology, education is also undergoing profound changes. Blended teaching, which combines traditional face-to-face teaching with online teaching, has become an important teaching mode. Ideological and political education, as an essential part of cultivating students' correct values and worldviews, also needs to adapt to this new teaching trend. Improving the teaching efficiency of ideological and political classrooms is of great significance for enhancing the effectiveness of ideological and political education and cultivating socialist builders and successors with all-round development of morality, intelligence, physique, aesthetics, and labor.

- (1) Theoretical significance: It enriches the research on the teaching mode of ideological and political courses, and provides a new perspective and theoretical basis for the in-depth study of the relationship between teaching mode and teaching efficiency.
- (2) Practical significance: It helps teachers to better apply blended teaching in ideological and political

classrooms, improve teaching methods, and enhance students' learning effects. At the same time, it can also provide a reference for the educational administrative departments to formulate relevant educational policies.

## **2. Literature review**

### **2.1. Research on blended teaching**

Many scholars have conducted in-depth research on blended teaching. Graham<sup>[1]</sup> defined blended teaching as a combination of traditional face-to-face teaching and online learning, aiming to leverage the advantages of both. Watson *et al.*<sup>[2]</sup> pointed out that blended teaching can improve students' learning satisfaction and outcomes. In China, scholars such as He<sup>[3]</sup> also carried out a lot of research on blended teaching models and implementation strategies, emphasizing the importance of integrating information technology into teaching.

### **2.2. Research on the teaching efficiency of ideological and political classrooms**

Regarding the teaching efficiency of ideological and political classrooms, scholars mainly focus on teaching methods, curriculum design, and teacher-student interaction. For example, Zhang<sup>[4]</sup> believed that innovative teaching methods can effectively improve the teaching efficiency of ideological and political classrooms, and Li<sup>[5]</sup> emphasized the role of reasonable curriculum design in promoting students' learning. However, the research on the impact of blended teaching on the teaching efficiency of ideological and political classrooms is still relatively insufficient.

## **3. Connotation and characteristics of blended teaching**

### **3.1. Connotation of blended teaching**

Blended teaching is a teaching concept and method that organically combines traditional classroom teaching and online teaching. It not only retains the advantages of traditional face-to-face teaching, such as real-time interaction between teachers and students and an intuitive teaching atmosphere, but also makes full use of the advantages of online teaching, such as rich teaching resources, flexible learning time and space, and personalized learning paths. In blended teaching, teachers can use online platforms to provide students with pre-class learning materials for preliminary learning before class, such as video lectures, e-books, and pre-class test questions. In class, teachers can focus on in-depth discussion and guidance on key and difficult points, and use various teaching methods such as group discussions and case analyses to promote students' in-depth understanding of knowledge. After class, students can use the online platform to review, complete assignments, and communicate with teachers and classmates.

### **3.2. Characteristics of blended teaching**

**Flexibility:** Students can arrange their learning time and place according to their own schedules and learning habits. They can learn at home, in the library, or on the go, breaking the limitations of time and space in traditional teaching.

**Personalization:** Through online learning platforms, teachers can collect students' learning data, such as learning time, test scores, and participation in discussions, and analyze students' learning situations. According to the analysis results, teachers can provide personalized learning guidance and resource recommendations for students, meeting the different learning needs of students.

**Rich resources:** The Internet provides a large number of teaching resources, including excellent courses from famous universities at home and abroad, documentaries, and research reports. Teachers can select appropriate resources according to the teaching content and integrate them into the teaching process, enriching the teaching content and



broadening students' horizons.

**Interactive:** In addition to the interaction in the traditional classroom, blended teaching also provides more interactive channels, such as online discussion forums, group chat tools, and video conferencing. Students can communicate with teachers and classmates at any time, ask questions, and exchange ideas, which helps to improve students' learning enthusiasm and participation.

## **4. Impact of blended teaching on the teaching efficiency of ideological and political classrooms**

### **4.1. Improving students' learning interest**

The rich forms and diverse resources of blended teaching can effectively stimulate students' learning interest in ideological and political courses. For example, through online video resources, students can watch real-life cases, historical documentaries, and interviews related to ideological and political content, which makes abstract ideological and political knowledge more vivid and concrete. In a traditional classroom, the teaching content is mainly presented through textbooks and teachers' lectures, which is relatively monotonous. In contrast, blended teaching can use multimedia resources to create a more vivid teaching atmosphere. For instance, when teaching the content of socialist core values, teachers can play short videos of ordinary people practicing socialist core values in their daily lives, so that students can more intuitively understand the connotation and practical significance of socialist core values, thus stimulating their interest in learning.

### **4.2. Enhancing students' autonomous learning ability**

Blended teaching emphasizes students' autonomous learning. Before class, students need to independently complete pre-class learning tasks through online platforms, such as watching video lectures and reading relevant materials. This process requires students to actively plan their learning time, arrange learning tasks, and solve problems encountered in learning. In the process of autonomous learning, students gradually develop the ability to think independently, search for information, and solve problems. For example, in the pre-class learning of a certain ideological and political topic, students may encounter some difficult concepts. They need to search for relevant information on the Internet, consult reference books, or communicate with classmates in the online discussion area to understand these concepts. This not only deepens students' understanding of knowledge but also improves their autonomous learning ability.

### **4.3. Promoting teacher-student interaction and class participation**

In blended teaching, in-class teaching is more focused on interaction and discussion. Teachers can use students' pre-class learning data to understand students' learning difficulties and confusion, and then conduct targeted guidance and discussion in class. At the same time, the use of group discussion, role-playing, and other teaching methods in class can also promote students' active participation. For example, in a group discussion on a current social hot-issue related to ideological and political theory, students can express their own views and arguments, and through communication and collision with their classmates, they can gain a deeper understanding of the problem. Teachers can also participate in the discussion as a guide, timely correct students' wrong views, and guide students to think from a more comprehensive and in-depth perspective.

### **4.4. Optimizing teaching evaluation**

Blended teaching can realize a more comprehensive and scientific teaching evaluation. In addition to the traditional

paper-and-pencil tests, online learning platforms can record students' learning process data, such as the number of logins, learning time, participation in online discussions, and completion of online assignments. These data can comprehensively reflect students' learning attitudes, learning efforts, and learning progress. Teachers can use these data to conduct formative evaluations, provide timely feedback on students' learning situations, and adjust teaching strategies. For example, if a teacher finds that a student has a long learning time but low test scores, the teacher can analyze whether the student has problems with learning methods through further understanding of the student's learning process data, and then provide personalized learning suggestions for the student.

## **5. Empirical research on the teaching efficiency of ideological and political classrooms based on blended teaching**

### **5.1. Research design**

Research subjects: Two parallel classes of the same grade in a certain school were selected as the research subjects, one class as the experimental class (adopting blended teaching) and the other as the control class (adopting traditional teaching).

Research tools: Questionnaires, tests, and classroom observation were used to collect data. The questionnaire is mainly used to investigate students' learning attitudes, learning interests, and satisfaction with teaching methods; the test is used to evaluate students' knowledge mastery; classroom observation is used to record students' participation in class and teacher-student interaction.

Research process: In the experimental class, blended teaching was carried out for one semester. Before class, learning resources such as teaching videos and pre-class reading materials were uploaded on the online learning platform; in class, face-to-face teaching was combined with group discussions, case analyses, etc.; after class, students were to complete online assignments and participate in online discussions. The control class carried out traditional teaching throughout the semester, mainly through teachers' lectures, blackboard writing, and after-class homework. At the end of the semester, a questionnaire survey, a final test, and classroom observation were conducted in both classes.

### **5.2. Data collection and analysis**

Questionnaire results: A total of 100 questionnaires were distributed in each class, 95 valid questionnaires were recovered in the experimental class, and 92 valid questionnaires were recovered in the control class. The results show that 85% of the students in the experimental class are interested in the blended teaching method, while only 60% of the students in the control class are interested in the traditional teaching method. In terms of satisfaction with teaching methods, 80% of the students in the experimental class are satisfied, while only 55% of the students in the control class are satisfied.

Test results: The final test scores of the two classes were statistically analyzed. The average score of the experimental class is 82 points, and the average score of the control class is 75 points. The *t*-test shows that there is a significant difference in the test scores of the two classes ( $P < 0.05$ ), indicating that the students in the experimental class have a better mastery of knowledge.

Classroom observation results: Through classroom observation, it is found that the participation rate of students in the experimental class is 80%, and the number of times of teacher-student interaction is 30 times per class on average. In the control class, the participation rate of students is 50%, and the number of times of teacher-student interaction is 15 times per class on average.

### 5.3. Research conclusions

The empirical research results show that blended teaching can significantly improve the teaching efficiency of ideological and political classrooms. Students in the experimental class have higher learning interests, stronger autonomous learning abilities, more active classroom participation, and better learning achievements. Blended teaching can better meet the learning needs of students in the information age and promote the improvement of the teaching quality of ideological and political courses.

## 6. Conclusion

This paper comprehensively analyzed the impact of blended teaching on the teaching efficiency of ideological and political classrooms. Through theoretical analysis and empirical research, it is found that blended teaching has unique advantages in improving students' learning interests, enhancing autonomous learning ability, promoting teacher-student interaction, and optimizing teaching evaluation. However, in the implementation process of blended teaching, some problems need to be solved, such as strengthening teacher training, optimizing teaching resources, and establishing a scientific teaching management system. In the future, with the continuous development of information technology and the deepening of educational reform, blended teaching will play an increasingly important role in the teaching of ideological and political courses, and will continuously promote the improvement of the teaching quality and teaching efficiency of ideological and political courses.

## Disclosure statement

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# Geography Education and Earth Science: Bridging Concepts in Chinese High School Teaching

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**Abstract:** The teaching of earth science in Chinese senior high school geography has faced significant challenges, particularly in the compulsory module “The History of the Earth.” Despite being part of the 2019 curriculum reform, current teaching practices often fail to emphasize the geographical nature of the subject, instead treating it as a mix of geology, biology, and historical facts. This paper addresses this challenge by proposing a framework that maintains a geographical focus while teaching earth science concepts. The framework consists of three integrated approaches. First, it introduces a structured method for teaching geological time through an “Eon → Era → Period → Year” progression, helping students build a comprehensive understanding of temporal scales from a geographical perspective. Second, it demonstrates how to effectively use the “Trade Space for Time” method alongside stratigraphic analysis, enabling students to connect spatial and temporal aspects of geographical phenomena. Third, it develops geographical thinking by following the logical pathway of “Fossil → Biology → Environment,” ensuring that biological evidence is interpreted within a geographical context. For successful implementation, the paper recommends two key strategies: managing interdisciplinary content while maintaining geography’s core focus, and emphasizing geographical characteristics throughout specific teaching content. This approach ensures that “The History of the Earth” fulfills its role in developing students’ geographical literacy while contributing to their broader understanding of earth science within China’s senior high school curriculum.

**Keywords:** Earth science education; Senior high school geography; History of the Earth; Teaching objectives; Teaching implementation

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## 1. Introduction

### 1.1. Earth science education as a fundamental component of science education

Earth science is a foundational discipline that examines the processes, changes, and interactions within the Earth’s system. In contemporary education, the primary goal of science education is to enhance the public’s scientific literacy. As part of this broader aim, earth science literacy constitutes a significant aspect of scientific understanding

among citizens <sup>[1]</sup>. As an important part of the compulsory 1 module of the Chinese high school geography curriculum, earth science plays a significant role in teaching and examination. Earth science education contributes to comprehending the Earth system, recognizing humanity's place in the universe, fostering a balanced perspective on human-environment interactions, and making informed, responsible decisions in public affairs.

## **1.2. Integration of earth science in high school geography curricula**

In primary and secondary education, earth science is primarily taught through science and geography courses. High school geography, in particular, encapsulates themes of the heavens, the Earth, and human interactions. Earth science research has historically evolved from geographical studies, making earth science one of the foundational traditions of geography <sup>[2]</sup>. The current high school geography curriculum emphasizes earth science education, incorporating topics such as Earth's history and motion. This curriculum effectively integrates earth science principles, ensuring alignment between its content and educational goals, while embedding scientific thinking into geography instruction at the high school level.

## **1.3. Integrating earth science in senior high school geography to reflect its disciplinary nature**

The updated curriculum standards for high school geography emphasize that the “Geography curriculum reflects the nature of the discipline and incorporates geographical thought and methods.” Following these standards, the revised high school geography textbooks were officially introduced in 2019. However, in the design and delivery of the compulsory “Geography 1” module, particularly the “History of the Earth” lesson, many teachers fail to adequately emphasize the geographical aspects of the subject. Instead, the teaching approach often lacks a clear geographical focus, resembling lessons in biology or history. To deepen course content, some educators explore topics such as fossils, the characteristics of geological eras, and paleontology, transforming the lesson into a blend of geology, biology, and history. This approach results in students memorizing extensive material without understanding its geographical relevance.

This raises two important questions: What should the key teaching objectives of the “History of the Earth” be? How can teaching methods be designed to fully highlight the geographical nature of the subject and emphasize its unique educational value? This paper seeks to address these questions and contribute to the ongoing discussion.

## **2. Teaching goal of “The History of the Earth” and emphasis on the nature of geography**

Clear learning objectives and logical frameworks enhance students' ability to understand and retain knowledge. According to the 2019 edition of the compulsory Geography textbook for high school, “The History of the Earth” carries significant educational value. It helps students develop an understanding of geological time, examine Earth's history, and cultivate geographical thinking.

### **2.1. Constructing a cognitive framework of geological time: Eon → Era → Period → Year**

Although geological history is addressed in current classroom teaching, the emphasis on its vastness and significance remains insufficient. According to cognitive development theory, students' understanding of abstract concepts like time requires progression from intuitive perception to deeper cognitive construction. Highlighting the grand scale of geological time is therefore essential.

From the perspective of constructivism, individual initiative is a crucial factor in building cognitive structures.



Methods that encourage students to actively participate in this construction process should be further developed<sup>[3]</sup>. Geography teaching can guide students to independently and collaboratively construct a time cognition system organized as “Eon → Era → Period → Year.” This approach enables students to grasp the spatial-temporal logic underlying geological time representation. Engaging in this process not only deepens understanding but also aligns with the core purpose of geography education regarding time concepts.

To summarize, by emphasizing the grand scale of geological time and guiding students in constructing a cognitive framework of “Eon → Era → Period → Year,” geography teaching equips students to interpret geological time representations effectively.

### **2.1.1. Enhancing the unique geographical framework for large-scale time cognition**

Reflecting on the “Universe” section covered earlier, geological time and the concept of “eon” are closely linked to the broader study of the universe. The “eon” serves as a foundational unit of time, offering a more detailed perspective within this framework. According to the theory of learning transfer, the likelihood of effective transfer depends on the learner encountering relevant information or skills during the memory retrieval process<sup>[4]</sup>.

The evolutionary history of the universe, connected through the medium of the Sun (discussed in the second section, “The Influence of the Sun on the Earth”), supports students in integrating prior knowledge with current topics. This facilitates learning transfer and gradually refines their understanding of geographical time. Starting with “eon,” students can construct a hierarchical time framework of “Eon → Era → Period → Year,” emphasizing the logical connections among knowledge points and the disciplinary thinking modes underlying them. This approach aligns with the concept of “powerful knowledge,” a term widely recognized in international educational contexts<sup>[5]</sup>.

Geography’s perspective on time is distinct from other disciplines. For instance, in physical geography fieldwork, the Quaternary period—a span of geological time often perceived as lengthy—is regarded by geographers as relatively short, even momentary, when considering geomorphic changes, climate evolution, or river development. Such practical examples highlight the relativity of large-scale time in geography. Case-based teaching grounded in real-world observation allows students to grasp abstract concepts through tangible examples, fostering a deeper understanding of the subject matter and strengthening their cognitive framework.

### **2.1.2. Establishing cognitive connections between time series and geographical processes**

The textbook section titled “The History of the Earth” encapsulates geography’s perspective on history and time. High school students are already familiar with the concept of “history” through prior learning. In primary school mathematics, they grasped the “year-month-day-hour-minute-second” framework and its quantitative relationships. Additionally, history courses in junior and senior high school introduced them to larger temporal units such as dynasties, eras, and periods, including concepts like the Neolithic Age or the prehistoric period. These frameworks allow students to understand human history in terms of centuries, millennia, or even larger epochs.

However, this foundational knowledge is insufficient for understanding “The History of the Earth” in geography, where time is measured on vastly larger scales. For instance, historian Arnold Toynbee described nations as mere “fragments” of human civilization within a large-scale temporal framework<sup>[6]</sup>. Similarly, Earth’s history represents natural geographical processes that unfold over millions or even billions of years, a scale far beyond that of human civilization.

Teachers can guide students to explore the differences between the time scale of human history and the natural geographical time scale. By using descriptive and interpretative models developed by international scholars, teachers can integrate a problem-oriented approach into the learning process<sup>[7]</sup>. This approach encourages students to think critically and ask questions. When new knowledge challenges their existing cognitive structures, it stimulates curiosity and a deeper thirst for understanding. Through solving such problems, students gain a clear appreciation of

the distinct educational value of geography as a discipline.

### **2.1.3. Integrating multiple disciplines to develop a systematic concept of time**

In the broader context of senior high school geography education, the curriculum follows systematic geographical frameworks. From the perspective of the discipline's nature—moving from ontology to epistemology—understanding geographical processes with significant temporal characteristics requires students to engage with large time scales. For instance, the evolutionary processes of physical geographical elements, such as living organisms, unfold over durations that far exceed the timescales of human civilization.

From an interdisciplinary teaching perspective, the educational value of geographical time scales serves as a foundational, overarching, and complementary component. Geography courses not only shape students' geographical understanding but also cultivate their broader scientific literacy. Teachers can enhance this through project-based learning, encouraging students to undertake interdisciplinary research projects. By connecting temporal concepts across geography, history, mathematics, and physics, students develop a more integrated understanding of time. For example, students might apply mathematical models to calculate the duration of geographical evolution or use physical principles to explore the relativity of time and space. Such interdisciplinary methods help students form a cohesive concept of time, fostering a deeper appreciation for its complexity and relevance. Additionally, this approach equips students with a temporal awareness that is valuable not only academically but also as informed members of society.

## **2.2. Investigating the History of the Earth through the “Trade Space for Time” method and stratigraphic structure**

There are numerous methods scientists use to study Earth's extensive history. From a geographical perspective, physical geographers typically prioritize the study of strata as their primary research focus. Consequently, when students explore “The History of the Earth,” particular attention is given to the method of “Trade Space for Time,” which is closely tied to an understanding of stratigraphic structures.

### **2.2.1. Understanding the relationship between stratigraphic structure and Earth's composition**

Strata serve as a key research focus in physical geography, providing a foundational representation of geographical processes and enabling the localized interpretation of natural laws. Physical geography examines the vast spatial field spanning from the sedimentary lithosphere's base to the troposphere's upper boundary. Within this framework, strata form the bedrock of the physical geographical environment, playing an essential role in interpreting the Earth's natural systems.

Strata not only underpin the broader natural environment but also serve as a repository for both natural and human activities. On a macro level, strata constitute a principal component of the lithosphere, reflecting large-scale processes such as plate tectonics. On a micro level, they comprise various chemical elements, illustrating processes like deposition and erosion. Whether examined from the perspective of large-scale tectonic movements or microscopic sedimentary interactions, stratigraphic structures directly mirror Earth's composition and processes.

### **2.2.2. Combining the “Trade Space for Time” method of stratigraphic structure society**

Integrating the “Trade Space for Time” method with stratigraphic study directly supports the development of students' geographical core competencies. By focusing on strata, students simulate geographers' investigative processes, strengthening practical geographical skills. This method also facilitates the transfer of knowledge and thinking. Analyzing stratigraphic phenomena, such as trends and inclinations, helps students connect spatial patterns with temporal processes. This integration enhances their ability to combine time and space perspectives, fostering comprehensive geographical thinking. Overall, the “Trade Space for Time” approach holds substantial methodological value for un-

derstanding the Earth and reconstructing past processes.

### **2.2.3. Applying the “Trade Space for Time” method in stratigraphic analysis**

The “Trade Space for Time” method helps students connect knowledge acquisition with problem-solving by following the pathway of “geographical phenomenon perception → geographical process reasoning → geographical problem-solving.” By analyzing formation structures and applying the method, students deduce geographical processes, link spatial characteristics to events, and explore the natural environment’s history and development. This reflects the disciplinary paradigm of “pattern and process coupling” and the approach of “explaining the past → describing the present → predicting the future.” When students apply their knowledge to real-world problems, they integrate disciplinary thinking with methods. This practical application not only enhances their motivation and sense of achievement but also deepens their understanding of geographical concepts.

### **2.3. Following the disciplinary logic to develop the geographical thinking path of “Fossil → Biology → Environment”**

Studying Earth’s evolutionary history through strata involves various approaches, with fossils serving as a key focal point. In addition to fossils, features such as the particle size, distribution, and orientation of rocks within formations also provide valuable evidence. In this context, fossils are emphasized as an essential entry point, enabling students to follow the disciplinary logic and establish the geographical thinking path of “Fossil → Biology → Environment.”

To align with the nature of geography as a subject, teaching must guide students to understand and construct the significance of fossils within the discipline. The emphasis on fossils in textbook content reflects the inherent logical framework of geography. Three fundamental premises must be clarified: (1) fossils represent the remains or traces of once-living organisms; (2) biology forms a core component of geographical elements; and (3) the growth and development of organisms are deeply influenced by their geographical environment.

By studying fossils, students enhance their understanding of biological elements and strengthen the foundation for geographical analysis and integrated thinking. Drawing on their prior knowledge from middle school biology, students are already familiar with aspects of biological elements such as physiological structure, respiration, photosynthesis, community dynamics, and density. Fossils, as the remnants of organisms, are also biological elements and should be viewed within this broader framework.

This perspective allows students to not only study living organisms but also consider their remnants, thereby adopting a more comprehensive approach to understanding biological elements. This process reflects the internal logic of “Fossil → Biology → Environment,” which illustrates the association mechanism of “geographical elements → geographical environment.” This sequence extends from the relationships among biological elements to the broader natural environment.

Developing a geographical understanding of fossils enables students to build effective geographical thinking methods, fostering their ability to analyze connections between organisms and their environments and integrate these insights into the study of natural systems.

## **3. Key points in implementing “The History of the Earth” teaching with a geographical focus**

To emphasize the geographical nature of teaching “The History of the Earth,” two key points must be addressed: (1) ensuring an appropriate balance between geography and other disciplines to maintain the integrity of the geography class, and (2) reflecting the core characteristics of geography in the specific teaching content.

### **3.1. Managing the synergistic relationship between geography and other disciplines**

#### **3.1.1. Knowledge organization: Balancing geography with other disciplines**

“The History of the Earth” section naturally intersects with fields such as biology and history. Integrating knowledge from multiple disciplines enriches students’ understanding, strengthens their knowledge networks, and facilitates the transfer and application of information across subject areas. Geographer Harter noted that in organizing knowledge within systematic geography, it is possible to “seek the principles that govern the distribution in accordance with the systematic science of an element”<sup>[8]</sup>. Similarly, international scholars have observed that geography incorporates procedural laws from other disciplines to establish its morphological principles<sup>[9]</sup>.

Adolescence is a crucial stage for cognitive and intellectual development. Interdisciplinary approaches during this period promote advanced thinking skills and enhance students’ cognitive abilities. From the perspective of knowledge organization, effectively managing the relationship between geography and other disciplines involves actively integrating relevant concepts from biology, history, and other fields. This integration lays a solid foundation for studying Earth’s history while maintaining the geographical focus.

#### **3.1.2. Thinking construction: Developing a comprehensive approach through interdisciplinary integration**

“The History of the Earth” section can be enriched by incorporating biological evolutionary thinking and historical time-based reasoning. Different disciplines approach real-world problems from unique perspectives: biology focuses on species evolution and ecosystem succession, while history emphasizes the progression of time and periodization.

To maximize the educational value of the geography curriculum, it is essential to not only focus on its internal structure but also connect it to other subject areas. Expanding the curriculum to incorporate interdisciplinary perspectives fosters a broader understanding of human development<sup>[10]</sup>.

Geography’s inherently integrative nature complements its associated thinking methods, which also exhibit comprehensive characteristics. By aligning with the approaches of other disciplines, geographical thinking can develop holistic perspectives on various phenomena. This interdisciplinary collaboration allows students to construct more complete and integrated ways of understanding the world.

#### **3.1.3. Conceptual development: Establishing value-based judgment beyond factual knowledge**

In teaching the complex content of “The History of the Earth,” it is important to consider the psychological principles of memory. Over time, students may forget specific details, such as the Archean, Mesozoic, or Neogene geological ages, their corresponding periods, or even the entire geological time scale. However, the concepts and thinking methods cultivated through deep learning are retained more effectively. This means that while students might not recall precise chronological details years later, they will retain a general understanding of large-scale time divisions, the principles of stratigraphy, and the use of fossil records. These foundational concepts enable them to comprehend Earth’s evolution through geological time and apply this knowledge to analyze representative materials. More importantly, this process helps students develop value-based judgments and disciplinary beliefs that extend beyond factual knowledge. Cultivating this conceptual framework fosters lifelong learning and equips students with the intellectual tools needed for continued personal and academic development.

### **3.2. Key points in teaching implementation based on specific content**

#### **3.2.1. Emphasizing the “Earth” component in the Earth surface system**

High school students, having already developed their cognitive frameworks, may approach the “Earth History” sec-



tion with preconceived points of interest. The inclusion of the term “history” in the title often shifts their focus toward narratives of the past, potentially framing the content as “science popularization” rather than maintaining a strong focus on the Earth as the subject. As a result, students may concentrate on “history” while overlooking the role and significance of the Earth.

To address this, geography teaching should emphasize the time sequence of “past, present, and future,” which aligns with the disciplinary nature of the subject. Teachers must respect students’ perspectives and cognitive foundations, using them as logical starting points for instruction. By systematically organizing the content, starting with Earth’s cosmic environment and the Sun’s influence on Earth, the teaching can guide students from spatial contexts toward understanding Earth itself. This approach establishes a clear framework that ensures the “Earth” remains the central focus of this chapter.

### **3.2.2. Emphasizing “Geochemistry” as the basis for the geological time scale**

Geological knowledge forms a vital part of the geographical knowledge system, with the introduction of “geological time representation” serving as a foundation for subsequent teaching of geological concepts. Students often focus their questions on how different geological ages are defined by the presence of fossils in specific strata. This indicates their interest lies not in memorizing chronological conclusions but in understanding the progressive deepening and development of geographical research processes.

From a teaching perspective, the objective should be to encourage students’ active engagement and knowledge construction. Teachers can build on students’ cognitive questions to expand and deepen their understanding while maintaining a strong geographical perspective. Emphasizing the geochemical basis for compiling the geological time scale helps students appreciate the physiochemical principles that underpin this framework.

### **3.2.3. Viewing the evolution process of the geographical environment through the “wholeness” of “The History of the Earth”**

The “Evolution of the Earth” is a key topic outlined in the curriculum standards. This content, in the third section of the first chapter of Compulsory 1, serves as the foundation and introduction for high school students studying geography. The textbook presents this topic by following a logical sequence: “the present year → the evolution of Earth’s seas and lands → crustal movements → paleontology.” It explains the evolution of the geographical environment across major periods, including the Precambrian, Paleozoic, Mesozoic, and Cenozoic eras.

While students gain cognitive memories of specific geological ages through this learning process, their understanding often remains scattered and fragmented. This fragmented approach can lead to an oversight of the holistic characteristics of each age and the overall environment during these periods. To address this, students must integrate and organize knowledge to form a systematic cognitive structure.

As a comprehensive discipline, geography requires students to connect geographical phenomena using integrative thinking. By analyzing the spatial and temporal combinations of geographical elements and utilizing geological time representations, students can develop a more cohesive understanding of Earth’s history and the evolution of its geographical environment.

## **4. Conclusion**

Teaching “The History of the Earth” in Chinese high school geography represents a critical opportunity to strengthen students’ geographical understanding while maintaining the subject’s disciplinary focus. This paper has outlined three key approaches: establishing a clear geological time cognition framework, implementing the “Trade Space for Time”



method, and developing geographical thinking through the “Fossil → Biology → Environment” pathway. These approaches help address the current challenge where teachers often drift away from geographical perspectives when teaching this module.

The successful implementation of these teaching strategies requires a careful balance between geographical focus and interdisciplinary integration. By emphasizing geographical characteristics while incorporating knowledge from related fields, teachers can help students develop a comprehensive understanding of Earth’s history from a distinctly geographical perspective. This approach aligns with the 2019 curriculum reform’s goals of strengthening disciplinary thinking in geography education.

Looking ahead, there is a need to further develop practical teaching methods that maintain geographical focus while engaging students with complex Earth science concepts. Through proper implementation of the strategies discussed, “The History of the Earth” module can serve its intended purpose: developing students’ geographical literacy while building a strong foundation for understanding Earth science. This will ensure that the module achieves its educational objectives within China’s senior high school geography curriculum framework.

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# Information Management in University Online Education: A Triadic Analysis

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**Abstract:** Online education has become a critical mode of instruction in Chinese universities, particularly during and after the COVID-19 pandemic. This study examines information management in online education through a triadic framework encompassing classroom information management, teaching effectiveness management, and teaching information management. Drawing on in-depth interviews with administrators, teachers, and students, the findings reveal three primary challenges in online education: the absence of embodied information, the uncontrollable nature of online platforms, and nonverbal overload caused by Zoom fatigue. Teachers face difficulties maintaining presence and interaction due to limited feedback from students and risks associated with class recordings. Students experience increased psychological and physical fatigue due to the overlap of learning and living spaces. Recommendations to address these issues include enhancing teacher-student interaction to foster a sense of presence, improving the transparency of course information to align expectations, and adopting user-friendly teaching platforms with privacy safeguards. These insights aim to improve the security, effectiveness, and experience of online education in higher education institutions.

**Keywords:** Online education; Information management; Class interaction

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## 1. Introduction

The China Internet Network Information Center (CNNIC) released its *51st Statistical Report on Internet Development in China*, stating that as of December 2022, the number of Internet users in China had reached 1.067 billion, an increase of 35.49 million compared to December 2021<sup>[1]</sup>. During the pandemic, online teaching became the primary mode of education, and online education has garnered significant attention from both academia and industry, domestically and internationally, in recent years. Key policy documents, such as the *Guiding Opinions on Promoting the Healthy Development of Online Education*<sup>[2]</sup> jointly issued by the Ministry of Education and ten other departments in 2019, and the *Several Opinions on Strengthening the Management of Online Open Course Teaching in General Higher Education Institutions*<sup>[3]</sup> issued by five departments at the beginning of 2022, have underscored

the importance and potential of online teaching within the higher education system. The COVID-19 pandemic has further elevated the role of online education, with the Ministry of Education issuing multiple notices to guide the orderly transition between online and offline teaching. These directives aim to ensure the quality of online education and minimize the pandemic's disruption to the normal order of teaching and learning. Online teaching presents both opportunities and challenges. Recent incidents, such as the disruption of online classes through Zoombombing, highlight the need to examine the mechanisms of information management and the factors influencing online education. Strengthening effective interaction among teachers-students-institution is essential to enhance the security and quality of online teaching.

Research on online teaching primarily focuses on the following areas: (1) the design of teaching platforms based on information technology <sup>[4]</sup>; (2) analysis of current practices with proposed optimization strategies, alongside an exploration of alternative educational methods such as flipped classroom models (FCM) <sup>[5]</sup> and small private online courses (SPOC) <sup>[6]</sup>. These efforts aim to enhance teaching effectiveness through new approaches. However, there is a lack of research on information flow and the management of unexpected information within online classrooms. In contrast, international studies tend to adopt a systemic perspective, exploring topics such as the impact of information flow in online education on learning outcomes. Consequently, examining information management in online education from a communication studies perspective and addressing related information risks presents significant potential for further exploration. Drawing on the online teaching framework proposed by Martin *et al.* <sup>[7]</sup>, this study adopts a communication perspective, conceptualizing online teaching as the flow and feedback of information between teachers, students, and supervisory institutions. This interaction shapes the dynamics and development of these three entities. Based on this framework, the study identifies three types of information within online teaching: classroom information management (i.e., the interaction between teachers and students), teaching effectiveness management (i.e., the interaction between supervisory institutions and students), and teaching information management (i.e., the interaction between teachers and supervisory institutions).

### **1.1. Classroom information management**

Based on the framework and a review of the existing literature, online interaction between teachers and students can be categorized into two types: instructional information and emotional information. Instructional information includes teaching communication, online guidance <sup>[8]</sup>, Q&A support <sup>[9]</sup>, and responses and feedback <sup>[10]</sup>, which primarily represent teacher-to-student information output. It also encompasses student-centered interaction activities such as questioning <sup>[11]</sup> and participation <sup>[12]</sup>. Emotional information refers to the learning states conveyed by students <sup>[13]</sup> as well as the care and support provided by teachers <sup>[14]</sup>. Most studies assess the relationship between teacher-student interaction and learning outcomes through quantitative analyses, employing measures such as satisfaction and learning engagement <sup>[15]</sup> to propose strategies for enhancing classroom interaction and improving learning outcomes. A large body of literature indicates a positive correlation between teacher-student interactions and learning outcomes <sup>[16]</sup>. Furthermore, compared to traditional learning, the effectiveness of online learning places greater emphasis on the quality of instructional information, including course resources and design <sup>[17]</sup>.

### **1.2. Teaching effectiveness management**

Research on the interaction between supervisory institutions and students can also be divided into two categories: teaching evaluation and learning monitoring. Teaching evaluation refers to students providing feedback on their learning outcomes to supervisory institutions. This indirectly supervises teacher behavior through teaching assessments. Common strategies include conducting teaching evaluations <sup>[18]</sup>, establishing comprehensive evaluation

models <sup>[19]</sup>, and monitoring teaching effectiveness and classroom practices <sup>[20]</sup>. Learning monitoring involves supervisory institutions overseeing students' information, such as tracking their online learning behaviors and emotional fluctuations <sup>[21]</sup>. This allows for the timely identification of issues and prompts appropriate interventions, such as sending emails or issuing pop-up alerts <sup>[22]</sup>. Thus, research on teaching effectiveness management can be regarded as a complement and extension of classroom information management. It builds on the information exchange and transfer between teachers and students in the classroom. Supervisory institutions, through direct interaction with students, measure learning outcomes and, in turn, indirectly monitor and manage teacher behavior via learning outcomes and teaching evaluations.

### **1.3. Teaching information management**

There is a limited number of studies on the information flow between supervisory institutions and teachers. Most focus on the technical aspects, discussing how information science can assist teachers in teaching management through platform establishment. These include functions like course scheduling, grade management, online training, and technical support <sup>[23]</sup>. The interaction primarily occurs indirectly via platforms, lacking feedback mechanisms. This creates a one-sided flow of information from supervisory institutions to teachers, with limited research highlighting reverse supervision, such as teachers evaluating the service quality or document management capabilities of supervisory institutions.

In summary, classroom information management, teaching effectiveness management, and teaching information management represent the information generated through the interaction of teachers, students, and supervisory institutions. However, the interactions among these three entities are not equal, and the boundaries between certain types of information are ambiguous. This ambiguity leads to gaps in information management. Therefore, the research questions addressed in this paper are: What issues currently exist in online teaching in higher education? How can these issues be resolved?

## **2. Research design**

In-depth interviews were conducted as the main research method for this study. Six teachers and students from a large institution in west China were recruited (**Table 1**). Questions explore key aspects of online teaching information management and interaction from the perspectives of administrators, teachers, and students. Administrators are asked about the structure and systems in place for managing online teaching information, including challenges in monitoring student engagement, maintaining classroom order, and ensuring transparency. They also address difficulties in obtaining certain data and strategies for managing crises like sudden incidents or public opinion issues. Teachers are asked about the information they manage, their interaction with students, and how they monitor classroom dynamics. Questions include the ideal teacher-student interaction model, unmet needs for student-related data (e.g., learning expectations), and difficulties in making teaching materials public. Crisis management measures and response strategies are also explored. Students focus on their access to teaching information, the impact of teacher behavior and platform design on engagement, and ideal interaction models. They are also asked about the transparency of academic records and their preferences for sharing personal information. Each interview lasted between 45 and 120 minutes. Approval from the institution was obtained before the study.

**Table 1.** General information of the research subjects

Name	Occupation	Gender	Age	Role	Online education experience (hours)
S1	Staff	M	50	Administer	101-150
S2	Staff	M	31	Teacher	101-150
S3	Student	F	24	Student	31-50
S4	Staff	F	40	Administer	151-200
S5	Student	F	23	Student	51-100
S6	Student	M	24	Student	51-100

### 3. Results and discussion

Interview results revealed that online teaching offers students greater convenience but presents more significant challenges for teachers. These challenges are specifically reflected in the following three aspects.

#### 3.1. Absence of embodied information: Separated physical environments

Interviews with both teachers and students highlighted that the lack of a shared physical environment is widely acknowledged as a critical factor affecting classroom information transmission. From the teachers' perspective, teaching is a ritualistic activity that relies on embodied interactions within a shared space to create a communicative and interactive environment. However, in online settings, teachers face digital representations rather than real individuals, as one participant described, "It's basically just a black screen" (S2).

Without the ability to observe students' facial expressions, body language, or engagement levels during class, teachers experience a lack of feedback, weakening their sense of presence and engagement in teaching. Consequently, online instruction struggles to foster the community awareness inherent in campus life or cultivate close teacher-student relationships. As one teacher noted, "After a whole semester, many students barely know their instructors, and teachers are even less likely to recognize all their students. Forget about cultivating shared values—it's basically just reading the PPT and wrapping up" (S1).

#### 3.2. Uncontrollable online information: Risks of platform recordability

For teachers, a primary challenge of online teaching lies in the ambiguity and broadening of the audience. As one teacher stated, "You don't know who is listening on the other side. It could be their parents, friends, or siblings. The sense of teaching to a specific audience becomes very weak" (S1). This expansion of the audience introduces uncontrollable risks to the classroom, as sensitive or controversial topics intended solely for students may be misunderstood by others. "Some content is meant only for students. University classrooms should discuss controversial topics, but for some people, they just can't understand it" (S1).

Additionally, the recordability of online classes is a significant concern for teachers. Many online teaching platforms, often designated by institutions, come with full recording capabilities. While this feature benefits students, it creates challenges for teachers, as one noted, "Recordings can be watched repeatedly to review content that was missed during the live session" (S1). Recordings remove the ephemeral nature of teaching and may compromise the "right to be forgotten." As one teacher expressed, "Teaching is an all-encompassing process. If someone takes a segment out of context and posts it online, it might be impossible to restore the original meaning of the lesson" (S1).



### **3.3. Nonverbal overload: The unconscious exhaustion of Zoom fatigue**

Zoom fatigue, or the pervasive physical and mental exhaustion caused by video interactions, arises from the blending of work, life, and study spaces, leading to nonverbal overload <sup>[24]</sup>. Zoom fatigue could be attributed to psychological and technical factors. Unlike the flexible transitions between physical spaces in offline environments, most students are confined to learning at home, where study, dining, and living spaces overlap. This lack of spatial separation exacerbates the fatigue brought by online courses, often surpassing that of in-person classes. However, this exhaustion is subtle and varies depending on the type of course. As one participant noted, “Some courses are well-suited for online settings, like those that are more technical and easier to focus on” (S4).

The design of online communication platforms often excludes a significant amount of nonverbal cues, limiting interaction to the confines of a small video frame. “When I’m online, it feels like everyone else is in the dark, and I’m the only one in the spotlight” (S1). While enabling video can enhance the sense of presence, it introduces another challenge: seeing one’s own image on-screen can lead to objectification, triggering constant self-evaluation and adjustment. This can even escalate into “mirror anxiety,” further contributing to the psychological burden of online learning.

## **4. Recommendations**

Through the established framework, online teaching information management can be categorized into three interrelated and intertwined types: classroom information management, teaching outcome management, and teaching information management. Analyzing these three aspects alongside the in-depth interviews reveals that online education in Chinese universities currently faces challenges such as a lack of embodied information, strong uncontrollability of information, and nonverbal overload. These findings provide valuable insights for improving online teaching information management in the future. Based on the interview analysis, the following recommendations are proposed.

### **4.1. Classroom information management: Enhancing interaction directness and creating a sense of presence**

Classroom information management is a crucial part of information management, as it directly impacts how teachers and students perceive teaching information. “The way a teacher asks questions affects my learning state” (S5). The analysis suggests that improving interactivity and fostering a sense of presence can create a better atmosphere for teacher-student communication, thereby reducing communication barriers. For example, “When the teacher jokes with students, it boosts my focus during class” (S6).

Teachers are encouraged to use dynamic and engaging teaching methods to increase interaction. Incorporating live polls, student Q&A sessions, and playful elements could help simulate in-person classroom engagement and improve the learning experience.

### **4.2. Teaching effectiveness management: Improving course selection processes and increasing information transparency**

Students typically select courses based on information provided by supervisory institutions. The transparency and clarity of this information significantly influence both student and teacher expectations of the course. “I need to know who the instructor is and whether they’ll be replaced midway” (S3). Vague course descriptions may lead to mismatched expectations, which can negatively impact teaching outcomes.

Detailed course information should be provided, such as the instructor’s research focus, course content, syllabus,

and teaching methods. This transparency will help students make more informed choices, reducing mismatched expectations and improving overall satisfaction.

### **4.3. Teaching information management: Opting for user-friendly platforms and protecting teaching privacy**

The exchange of information between supervisory institutions and teachers also impacts teaching effectiveness. Notably, the design of the teaching platform interface can significantly influence the teaching and learning experience. “Many lectures now use [a particular platform] because its interface is clean and free from distracting ads” (S4). Additionally, privacy concerns about recorded lectures must be addressed.

Teaching platforms with intuitive and minimalistic interfaces that enhance usability and avoid unnecessary distractions are chosen. Robust privacy protection measures are implemented, such as allowing administrators to remove unauthorized participants from online classrooms. Additionally, it is necessary to limit the accessibility and use of recorded lectures to safeguard teachers’ intellectual property and prevent misuse.

## **5. Conclusion**

This study has preliminarily established a framework of three interrelated and intertwined types of online teaching information management: classroom information management, teaching effectiveness management, and teaching information management. Through an examination of these three aspects and in-depth interviews, it was found that online education in Chinese universities still faces significant challenges, including a lack of embodied information, strong uncontrollability of information, and nonverbal overload. These findings offer valuable insights for improving online teaching information management in the future.

## **Disclosure statement**

The author declares no conflict of interest.

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# Research on Teaching Strategies of Ideological and Political Education in College English Courses at Vocational Universities: A Case Study of Universities in Hainan Province

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**Abstract:** This study focuses on vocational undergraduate institutions in Hainan Province, exploring the current status, issues, and optimization strategies for integrating ideological and political education into college English courses. Through questionnaires, interviews, and classroom observations, the research identifies problems such as insufficient integration of ideological content, monotonous teaching methods, and low student engagement. To address these issues, this paper proposes a four-in-one teaching strategy encompassing teaching objectives, content, methods, and evaluation mechanisms. The effectiveness of this strategy is validated through teaching practices. The results indicate that the optimized teaching strategy significantly enhances students' English proficiency and ideological literacy, providing practical references for the reform of ideological and political education in college English courses at vocational undergraduate institutions.

**Keywords:** Vocational undergraduate institutions; College English; Ideological and political education; Teaching strategies; Hainan Province

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## 1. Introduction

### 1.1. Research background

With the deepening of ideological and political education in higher education, college English, as an essential public foundational course, bears the dual responsibility of cultivating students' language skills and cultural literacy. Vocational undergraduate institutions, aiming to cultivate applied talents, should place greater emphasis on integrating ideological education into English teaching to enhance students' professional ethics and social responsibility. As an international tourism hub and free trade port, Hainan Province's vocational undergraduate institutions possess unique regional characteristics and industry demands in English teaching.

## **1.2. Research significance**

This study aims to explore optimization strategies for integrating ideological and political education into college English courses at vocational undergraduate institutions, providing theoretical support and practical guidance for English teaching reform in Hainan Province. Additionally, the research findings can serve as a reference for ideological and political education in vocational undergraduate institutions in other regions.

## **2. Literature review**

### **2.1. Theoretical foundations of ideological and political education**

Ideological and political education is a crucial concept in higher education in the new era. Its core lies in integrating ideological and political elements into professional courses, achieving a unity of knowledge impartation and value guidance. Relevant theories include constructivism and holistic education theory <sup>[1]</sup>. Constructivism emphasizes students' active construction during the learning process, while holistic education theory focuses on students' comprehensive development, including knowledge, skills, and values.

### **2.2. Current research on ideological and political education in college English**

In recent years, domestic scholars have conducted extensive research on ideological and political education in college English. For example, Zhang and Chen proposed methods for identifying ideological and political elements in college English courses <sup>[2]</sup>, while Liu and Zhao explored the application of task-based teaching methods in ideological and political education <sup>[3]</sup>. However, research targeting vocational undergraduate institutions remains limited, especially studies incorporating regional characteristics <sup>[4]</sup>.

### **2.3. Characteristics of English teaching in vocational undergraduate institutions**

Vocational undergraduate institutions aim to cultivate applied talents, and their English teaching emphasizes practicality and professionalism. Therefore, ideological and political education should be integrated with industry demands and professional ethics, designing targeted teaching content <sup>[5]</sup>. For example, incorporating local Hainan culture into tourism English courses and emphasizing professional ethics in business English courses <sup>[6]</sup>.

## **3. Research methods**

### **3.1. Research subjects**

This study selected college English teachers and students from three vocational undergraduate institutions in Hainan Province (Hainan Vocational University of Science and Technology, Hainan College of Vocational Technology, and Sanya Institute of Technology) as research subjects. A total of 300 questionnaires were distributed, with 280 valid responses collected. Additionally, 10 teachers and 20 students were interviewed.

### **3.2. Data collection**

**Questionnaires:** The questionnaire covers students' awareness, attitudes, and learning outcomes regarding ideological and political education.

**Interviews:** Semi-structured interviews were conducted to collect teachers' views and suggestions on ideological and political education.

**Classroom observations:** The integration of ideological content in actual teaching was recorded, with a focus on teaching methods and student engagement.



### **3.3. Data analysis**

Quantitative data were analyzed using SPSS25.0, and qualitative analysis was conducted based on interview content.

## **4. Current situation analysis**

### **4.1. Teaching status**

Insufficient integration of ideological content: Surveys show that 65% of teachers believe that existing textbooks lack sufficient ideological elements, making effective integration difficult.

Monotonous teaching methods: 80% of classes still rely on traditional lecturing, lacking interactive and practical elements.

Low student engagement: 70% of students express little interest in ideological content, perceiving it as unrelated to English learning.

### **4.2. Causes of problems**

Inadequate teacher training: 90% of teachers interviewed reported not receiving systematic training in ideological and political education.

Lack of textbook support: Existing textbooks contain few ideological elements and fail to align with the characteristics of vocational undergraduate institutions.

Imperfect evaluation mechanisms: There is a lack of scientific evaluation systems to comprehensively assess students' ideological literacy.

## **5. Teaching strategy design**

### **5.1. Teaching objectives**

Language objectives: To improve students' English listening, speaking, reading, and writing skills.

Ideological objectives: To cultivate students' cultural confidence, professional ethics, and social responsibility.

### **5.2. Teaching content**

Integration of professional ethics: Such as work ethics and teamwork.

Incorporation of regional culture: Such as Hainan's tourism culture and free trade port development.

Introduction of international perspectives: Such as cross-cultural communication and global competence.

### **5.3. Teaching methods**

Case teaching: Real-life cases are used to guide students in reflecting on ideological issues. For example, introducing the cultural background of Hainan tourist attractions in tourism English courses.

Task-based teaching: Tasks with ideological significance are designed, such as simulating international conferences or writing career plans.

Blended online and offline teaching: Online platforms are used to expand ideological education resources, such as learning cross-cultural communication cases through MOOCs.

### **5.4. Evaluation mechanisms**

Process evaluation: Focusing on students' performance in classroom discussions and task completion.

Outcome evaluation: Assessing students' ideological literacy through exams and essays.

## 6. Practice and effectiveness analysis

### 6.1. Strategy implementation

A one-semester teaching practice was conducted at Hainan Vocational University of Science and Technology, with two classes selected as the experimental and control groups. The experimental group adopted the optimized teaching strategy, while the control group continued with traditional methods.

### 6.2. Effectiveness evaluation

Student feedback: The experimental group's approval of ideological education increased from 50% to 85%.

Classroom performance: The experimental group showed significantly higher engagement and interaction.

Exam results: The experimental group outperformed the control group in both English proficiency and ideological literacy.

### 6.3. Problems and improvements

Problems: Some students still struggled to understand ideological content.

Improvements: Increasing pre-class preparation and post-class tutoring can help students better grasp ideological concepts.

## 7. Conclusion

This study, through questionnaires, interviews, and classroom observations, systematically analyzed the current status, issues, and optimization strategies for integrating ideological and political education into college English courses at vocational undergraduate institutions in Hainan Province. The research identified problems such as insufficient integration of ideological content, monotonous teaching methods, and low student engagement. To address these issues, a four-in-one teaching strategy was proposed and validated through teaching practices. Key conclusions include:

- (1) Teaching status and problems: The integration of ideological content with English teaching is not seamless, and some teachers lack systematic training. Teaching methods are predominantly lecture-based, lacking interactivity and practicality, which fails to engage students. Students have low awareness and acceptance of ideological content, perceiving it as unrelated to English learning.
- (2) Effectiveness of optimization strategies: Clear teaching objectives balancing language skills and ideological literacy gained widespread student approval. Rich teaching content integrating professional ethics, regional culture, and international perspectives enhanced course appeal. Diverse teaching methods, including case teaching, task-based teaching, and blended learning, significantly improved classroom interaction and student engagement. A scientific evaluation mechanism combining process and outcome evaluations comprehensively reflected students' language abilities and ideological literacy.
- (3) Practical outcomes: The experimental group outperformed the control group in English proficiency, ideological literacy, and classroom engagement. For example, the experimental group's English scores increased by an average of 12%, and their approval of ideological education rose from 50% to 85%.

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# An Analysis of Two Chinese Translations of Motion Events in *The Call of the Wild* from the Perspective of Skopos Theory

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**Abstract:** This article centers on *The Call of the Wild*, an English novel by American author Jack London, alongside two Chinese translations by Dajie Liu and Menglin Zhang, and Rongyue Liu. Seventy sentences containing motion events and their corresponding translations were randomly selected for analysis. The study focuses on the primary elements of motion events—manner, path, and ground—and examines their Chinese translations through the lens of Skopos theory. Skopos theory emphasizes whether translators can adopt appropriate translation strategies according to various contextual factors during the translation process. Compared to verb-framed languages, satellite-framed languages possess a richer vocabulary for manner verbs, express more detailed manner information, use more satellite words to indicate paths, and incorporate more background information. Verb-framed languages, by contrast, typically express manner information only when necessary and tend to include less background information. The analysis reveals that both Chinese translations embody the core principle of Skopos theory: translation strategies are determined by their purpose. To fulfill the novel's translation objectives, the translators adeptly adjust their strategies for motion event components based on different contextual needs. It is noted that the Chinese translations do not fully retain the characteristics of English as a typical satellite-framed language. This observation aligns with Skopos theory's purpose-oriented approach, which prioritizes translation goals over strict adherence to source text characteristics.

**Keywords:** Skopos theory; Motion event translation; Manner; Path; Ground

**Online publication:** March 5, 2025

## 1. Introduction

The studies of translation tend to have a closer link to other disciplines these days. How language is acquired, produced, used, and comprehended has been studied by cognitive linguistics, as well as how expressions vary with

people from different language backgrounds. It provides new perspectives to the study of translation by focusing on the process of translation instead of the translation result itself, and the role of translators has been transferred to the mediators between languages rather than just language experts.

Motion events typically involve an entity's movement moving from one position place to the other, which is the most basic and pervasive experience in daily life <sup>[1]</sup>. Motion events have emerged as a focal point in cognitive linguistics, with numerous studies exploring their cross-linguistic expressions. In 1985, Fillmore proposed the Source-Path-Goal motion schema within *Frames and the Semantics of Understanding*. However, Talmy presented an alternative model, the Figure-Motion-Path-Ground schema <sup>[2-5]</sup>, which has since gained wide acceptance in motion event theory. According to Talmy <sup>[2-5]</sup>, four basic internal elements make up a motion event, namely figure, motion, path, and ground. The figure represents the moving object, typically expressed as a subject noun. Motion refers to the act or state of movement, whether dynamic or static, and is often embedded within verbs. The path component can be viewed from two perspectives: if in motion, it indicates the trajectory relative to the ground, and if locative, it shows the figure's position on the ground. This path component may be encoded directly in the verb (a "path verb") or as a bound affix or a particle (a "satellite"), as seen in English. The ground serves as the reference object that the figure interacts with, such as the starting or ending point of the movement. In addition to the aforementioned internal components, external components like manner and cause are also included to form a co-event. By looking into the way of the path component encoding, Talmy divided languages into two categories: the verb-framed language and the satellite-framed language. Verb-framed languages characteristically encode path information in main verbs, whereas satellite-framed languages characteristically encode path information in particles that subordinate to the main verbs. Talmy <sup>[5]</sup> believed that both English and Chinese should fall into the category of satellite-framed languages.

In Slobin's study in 1996 <sup>[6]</sup>, he put forward the concept of plus-ground clause and minus-ground clause. The former refers to a clause that includes at least one or more ground components, and the latter refers to a clause that does not contain any ground components. Slobin further classified manner verbs into two tiers <sup>[6]</sup>. First-tier manner verbs include commonly used verbs such as *run*, *walk*, *jump*, and *fly*. Second-tier manner verbs convey more nuanced manner details, like *waddle* (walking with short steps like a duck), *limp* (walking with difficulty due to an injury), *stagger* (walking unsteadily as if about to fall), and *shuffle* (walking slowly with feet barely lifting off the ground).

Previous studies on the typology of languages have shown that motion events are expressed differently in different languages <sup>[4,5,7-9]</sup>. In the studies of lexicalization patterns, Talmy <sup>[3]</sup> distinguished two notions: meaning and form. The elements of meaning, which are also the semantic components of motion events, include motion, path, figure, manner, and cause. In the linguistic expressions of form notion, the elements involve categories of words such as verbs, prepositions, nouns, or sentences and clauses. The satellite morpheme proposed by Talmy belongs to form elements. On the basis of these notions, Talmy's studies of lexicalization patterns focus on the matching relation between meaning and form, which later triggered Slobin's translation study on motion events in 1996 <sup>[9]</sup>. In *Two Ways to Travel: Verbs of Motion in English and Spanish*, Slobin studied motion events and their translations in several English and Spanish novels <sup>[9]</sup>. Then, he did a similar research with 11 languages <sup>[10]</sup>, which inspired other researchers like Ibarretxe-Antunano <sup>[11]</sup> and De Knop and Gallez <sup>[12]</sup>. Researchers in China, like Yan <sup>[13]</sup>, Shao <sup>[14,15]</sup>, Luo <sup>[16]</sup>, and Li <sup>[17]</sup> studied how English and Chinese are different in motion event expressions. Bai and Li <sup>[18]</sup> did research on the relexicalization process of motion events during English-to-Chinese (E-C) translation in 2009.

This article aims to explore the conveyance of manner, path, and ground information during the E-C translation process of *The Call of the Wild* by analyzing the expressions of these key motion event components in the original English text and two translated versions. The significance of this study lies in its unique approach; while prior research has been conducted on translations of *The Call of the Wild*, almost none have examined it from the perspective of motion events. This study represents a novel application of Skopos theory, potentially providing



valuable insights into the integration of translation theory and motion event analysis in literary works.

## 2. Skopos theory

Put forward in the 20th century, Skopos theory may be regarded as the most significant theory of functional translation. “The end justifies the means”<sup>[19]</sup> is the core idea of Skopos theory. It characterizes translation as an intercultural exchange process that is driven by distinct objectives and aims<sup>[20]</sup>. It advocates that translation should break away from the bondage of the source language, and the translator should adopt translation strategies and methods according to the purpose of the target language.

The theoretical development has experienced three main stages. Katharina Reiss first proposed Skopos theory in her book entitled *The Possibilities and Limitations of Translation Criticism*<sup>[21]</sup>. Although her study was still on the basis of equivalence theory, she believed that sometimes it was not possible to realize equivalence between the source language texts and the target language texts. The purpose of the translation instead of the equivalence should be taken into consideration first, and this is the origin of Skopos theory. Then her student Hans Vermeer developed Skopos theory<sup>[22]</sup>. He published an article entitled “General Translation Theory Framework” in 1978, in which he first proposed the basic principles of Skopos theory. In 1984, he and his teacher Reiss co-authored the book *General Theory of Translation*. In this book, Vermeer believed that translation (including interpretation) was based on the conversion of the source text. Skopos theory was further developed by Christiane Nord after Reiss’ and Vermeer’s achievements. He believed that most translation activities have various kinds of intentions<sup>[23]</sup>. He also proposed that translators must be able to defend their chosen purposes in specific translation cases, which aimed to get a better understanding of the choices of literal translation and free translation<sup>[24]</sup>. The translator may choose literal translation, free translation, or any other strategies according to the different translation purposes.

“Skopos rule” is regarded as the guiding principle in Skopos theory. It means the translation activities are decided by their purposes, or “the end justifies the means”<sup>[25]</sup>. Vermeer also introduced the coherence rule, referred to as “intratextual coherence,” which asserts that “the target text must be sufficiently coherent to allow the intended users to comprehend it, given their assumed background knowledge and situational circumstances”<sup>[26]</sup>. Nord proposed the fidelity rule, emphasizing the importance of intertextual coherence between the source text and the target text<sup>[23,24]</sup>. Nord perfected the Skopos theory and advocated that the translator should respect the original text and coordinate the relationship with the original author and initiator<sup>[27]</sup>. The hierarchy of these three rules is not equivalent; the coherence rule and fidelity rule are subordinate to the Skopos rule, and the fidelity rule is further subordinate to the coherence rule.

Many translation studies have been conducted with Skopos theory, yet none of them is carried out from the perspective of motion event components.

## 3. Materials and procedure

### 3.1. Materials

The English novel *The Call of the Wild*, authored by American writer Jack London, holds significant literary value and has been translated into Chinese over 40 times. These translations have been the subject of numerous studies, primarily focusing on cultural terminology, language style, and communicative aspects. However, the novel’s rich use of motion event expressions has not yet been thoroughly investigated. This article aims to fill that gap by analyzing how motion events are rendered in the E-C translation process from the perspective of Skopos theory. The study utilizes two Chinese translations as primary materials, examining the treatment of the three key components of

motion events: manner, path, and ground.

This article utilizes *The Call of the Wild*, a renowned 1903 novel by American author Jack London, as the primary material for analysis <sup>[28]</sup>. Set against the backdrop of the Gold Rush, this adventure tale follows Buck, a dog who is stolen and transported to Alaska where sled dogs are in high demand. Buck’s journey from a pampered domestic pet to a sled dog struggling for survival in the harsh Alaskan environment is rich with vivid descriptions of motion events. The original English version used in this research is sourced from Project Gutenberg (<https://www.gutenberg.org/>), which provides access to over 57,000 free eBooks that are no longer under copyright.

With more than 30 Chinese translations of *The Call of the Wild*, there is significant variability in quality. This study examines two versions of Chinese translations: one <sup>[29]</sup> by Dajie Liu and Menglin Zhang, who were the first to translate the novel in 1935, and the other <sup>[30]</sup> by Rongyue Liu, whose translation was published by Shanghai Translation Publishing House in 2011. The latter is notable as this publishing house is the largest comprehensive translation publisher in China, ensuring a high standard of translation quality.

### 3.2. Procedure

To fulfill the objectives of this research, this article randomly selects seventy sentences from the complete seven chapters of the novel as sample materials. Each selected sentence includes at least one motion event and represents a complete motion event: in the narrative, the protagonist is depicted in a different location following the movement <sup>[9]</sup>. These motion events can manifest as brief trajectories (tracking) as shown in example 1a or as extended (stretched) journeys illustrated in example 1b, both featuring motion event clauses in which the protagonist clearly ends in a new location after moving. This study focuses primarily on self-initiated motion, while caused motion will not be analyzed.

#### Example 1

a. He entered the camp.

他走入帐篷。

b. The rabbit sped down the river, turned off into a small creek, up the frozen bed of which it held steadily.

雪兔迅速沿河跑去，转入一条小支流，沿其冰冻的河床始终跑得飞快。

The corresponding motion event translations of the selected sentences are collected from the translation versions from Rongyue Liu, which will be referred to as Text (Liu), as well as from Dajie Liu and Menglin Zhang, which will be referred to as Text (L & Z) in the article.

In this article, manner, path, and ground components in motion events will be located and counted separately to display the differences between the source text and target texts. Then the causes that lead to the results, which are the different translation strategies adopted during the language conversion process, will be discussed from the perspective Skopos theory.

The categories of manner, path, and ground expressions collected in this article are presented with examples in **Table 1**.

**Table 1.** The category and examples of manner, path, and ground expressions

Category		English examples	Chinese examples
Manner	First-tier manner verb	run, walk, fly, jump	跑, 跳, 飞, 走
	Second-tier manner verb	wonder, stagger, limp, rush	徘徊, 阔步, 疾动
	Manner adverbial	slowly, softly, smoothly, restlessly, leap by leap,	平稳, 慢慢, 飞速, 像逝影般地
	Manner description	in a friendly manner, panting and frothing, astonished, wounded	喘着气, 流着口沫的, 受惊的, 受伤的

**Table 1 (Continued)**

	Category	English examples	Chinese examples
Path	Path verb	advance, leave, follow, exit	离开, 跟随, 上, 下, 回
	Satellite	in, out, over, across, through, toward, to	来, 去, 出, 起
Ground	Plus-ground clause	he skirted the frowning shores on rim ice; he plunged through the wooded breast of the island	卡车离开汽船后把它送到了一个大火车站; 它又穿过大营地四处去找

## 4. Results

Results of the manner, path, and ground component expressions will be presented separately in this part.

### 4.1. Encoding of manner

Regarding manner expressions in the source text and translations, this research has the following results from the data collected.

#### 4.1.1. Frequency and types of manner verbs

Motion verbs integrated with manner information are manner verbs: the main verb of a motion event is a semantic integration of motion and manner components.

Among the 70 samples, there are 55 manner verbs in the source text, 54 manner verbs in the Text (Liu), and 63 manner verbs in the Text (L & Z). The number of manner verb types is presented in **Table 2**.

**Table 2.** Number of manner verb types

	Source text	Text (Liu)	Text (L & Z)
Number of manner verb types	29	16	19

The manner verb types from the samples are listed as below:

Source text: lurch, shoot, spring, burst, sweep, leap, roll, run, limp, race, plunge, fly, stagger, swing, drive, rush, dart, truck, walk, flash, twist, wander, dash, scramble, slid, dance, roam, crawl, stamp

Text (Liu): 射, 扑, 冲, 跑, 奔, 走, 爬, 涌, 跃跳, 奔跑, 扎, 跨, 游荡, 跳舞, 纷飞, 徘徊

Text (L & Z): 疾动, 走, 跳, 扑, 闪, 冲, 蹒跚, 飞舞, 掠, 拖, 爬, 狂奔, 阔步, 徘徊, 跃, 游走, 跳舞, 驰, 急驰

It can be observed that the number of manner verbs does not vary significantly among the three texts. Yet regarding the number of manner verb types, the source text is obviously higher than that in both translation texts: the source text is 81.25% higher than Text (Liu) and 52.63% higher than Text (L & Z).

From the data collected, it is clear that the source English text contains more types of second-tier manner verbs. For example, regarding the motion of walk, the source text includes “lurch,” “limp,” “sweep,” “stagger,” “stamp,” “dash,” “wander,” etc., while the Text (Liu) only includes “游荡” and “徘徊” and the Text (L & Z) includes “蹒跚,” “阔步,” “徘徊,” and “游走.” The source text evidently outnumbers the types of second-tier manner verb numbers in both Chinese translations (**Table 3**)

**Table 3.** Second-tier manner verb type in the source text and translations

	Source text	Text (Liu)	Text (L & Z)
Number of second-tier manner verb type	26	15	16

It also can be observed that regarding the use of motion verbs, the source text makes finer distinctions: when describing the same motion, the source text has more diverse manner verb types than the translations. Some examples from the materials are presented in **Table 4**.

**Table 4.** English manner verb and its translation

Original English text	Chinese translations
spring, plunge, bound, dash, shoot,	跳
scramble, crawl, across	爬
spring, drive, sweep, rush, leap, fly	扑
burst, spring, drive, rush, flash, plunge, dart	冲

It should be noted that some Chinese manner verbs, such as “爬,” are polysemous words. It contains two types of motion, as explained in the *Modern Chinese Dictionary*, the first is “人或动物伏地慢行” (humans or animals move slowly with body close to the ground), the second is “攀登, 攀援而上” (go up). Thus, its corresponding manner verbs in English are also different according to the context and they represent totally different motions. Very few Chinese polysemous manner verbs are collected from the samples and their meaning are identified during data collection.

The results displayed in **Table 3** and the examples in **Table 4** show support for Slobin’s opinion: as a satellite-framed language, English usually expresses manner information by manner verbs and it has a diverse lexicon in the types of manner verbs.

#### 4.1.2. Frequency of manner adverbials

Slobin<sup>[8]</sup> pointed out that, in verb-framed languages, main verbs are usually used to express the path of motion, so manner information is mostly encoded by other approaches. This is another difference between verb-framed languages and satellite-framed languages. One way to express manner of motion is to use manner adverbials. The number of manner adverbials employed in the original English novel and in the two translations is shown in **Table 5**.

**Table 5.** Number of manner adverbials (word and phrase)

	Source text	Text (Liu)	Text (L & Z)
Number of manner adverbials (word and phrase)	21	33	31

From the data collected, a higher frequency of manner adverbial employment is observed in Text (Liu) and Text (L & Z). Neither of them outnumbers Jack London’s source text in the manner adverbial quantity, indicating that manner adverbials are more frequently used in Chinese to express manner information, which is consistent with Li and Bai’s<sup>[18]</sup> study in 2009. This result implies that the Chinese do not have the same satellite-framed language features as the original English novel does.

### 4.1.3. Frequency of descriptions

Descriptions are used to describe the “internal state or physical condition of a moving entity” or “features of the physical setting that could influence the manner of motion”<sup>[31]</sup>.

As shown in **Table 6**, 16 descriptions can be found in the original version, 16 in Text (Liu) and 16 in Text (L & Z), which means regardless of forms, the translations and English are the same when conveying manner information by using descriptions.

**Table 6.** Number of descriptions

	Source text	Text (Liu)	Text (L & Z)
Number of descriptions	16	16	16

## 4.2. Encoding of path

Path verbs refer to the verbs that are integrated with path information. Path expressions in the source text and the target texts, relevant data are collected as below.

### 4.2.1. Frequency of path verbs

From the chosen examples, the number of path verbs in three texts is displayed in **Table 7**.

**Table 7.** Number of path verbs in the source text and translations

	Source text	Text (Liu)	Text (L & Z)
Path verbs	37	51	48

There are a total of 37, 51, and 48 path verbs in the source text, Text (Liu), and Text (L & Z) respectively. Both Chinese translations have more path verbs than the English text, which indicates that Chinese are more likely to express path information by using path verbs. According to Slobin<sup>[32]</sup>, a higher frequency of path-verb employment in path information representation is a characteristic of verb-framed languages, which means the data here suggests the Chinese translation is not a typical satellite-framed language as the source text does.

### 4.2.2. Frequency of satellites

From the chosen examples, the number of satellites in three texts is displayed in **Table 8**.

**Table 8.** Number of satellites in the source text and translations

	Source text	Text (Liu)	Text (L & Z)
Satellite	93	63	47

In terms of the total amount of satellites, the numbers are 93, 63, and 47 for the source text, Liu’s text, and L & Z’s text respectively. Both Chinese translations have fewer satellites than the source text, which is in line with the previous study that Chinese employs fewer satellites than the satellite-framed languages do.

## 4.3. Encoding of ground

The reference of the motion is ground. On the basis of Slobin<sup>[9]</sup>, ground clauses are categorized into plus-ground clauses and minus-ground clauses. The former includes one or more ground components, and the latter does not



contain any ground components.

The percentages of plus-ground information in every motion event in the three texts are presented in **Table 9**.

**Table 9.** Percentages of plus-ground information in every motion event

	Source text	Text (Liu)	Text (L & Z)
Plus-ground information	76.4%	74.6%	70.8%

From **Table 9**, Chinese presents a slightly lower plus-ground information percentage in every motion event, which supports Slobin's opinion<sup>[32]</sup>. He stated that satellite-framed language users tend to use more ground elements per clause than verb-framed language users do. Thus, the way Chinese translations expressing ground information is not quite similar to the English source text, which is a typical satellite-framed language.

#### 4.4. Summary

After data collection, results are presented as follows: when expressing manner components, the English text utilizes a much larger number of second-tier manner verbs than translations do; the number of adverbials (word and phrase) in Chinese translations is much bigger than that in English source text; the source text and its translation have the same manner description number; when expressing path components, the source text is likely to use path satellites, which are far less showed in Chinese translations; during path translation, there are more path verbs in Chinese translations than that in English version; Chinese's percentages of plus-ground information in every motion event are slightly lower than that in English.

The comparisons between the source text and target text show that English is more inclined to use manner verbs to express manner components and to use satellites to express path components; while Chinese tend to use adverbials to express manner information and use path verbs to express path information. Regarding the number of ground component expressions, Chinese is slightly lower than that in English. The expressions of these three elements in English samples conform to the characteristics of satellite languages, which proves that English is a typical satellite-framed language. The two Chinese versions, however, as the translations of a typical satellite-framed language, do not embody all the characteristics of it.

#### 5. Discussion

Unlike the translation of practical texts, literary translation does not have a definitive standard regarding how much of the source text should be preserved. Skopos theory views translation as a purposeful human action, with the objectives of the translation determining the strategies to be employed. This theory presents a new perspective on literary translation, framing it as a goal-oriented process rather than one that rigidly adheres to the source text.

In essence, since the target text is intended for target readers, the primary aim of translating a novel is to faithfully convey as much of the plot and scenes as possible, while maintaining the vividness and readability of the original. This ensures that the translation provides an optimal reading experience. To achieve this, translators must adapt their strategies according to specific contexts and requirements.

Previous research on motion events has demonstrated that languages with different typological structures express motion events in varying ways. In the previous part, this article highlights differences in the expressions of motion event components between the original English text and its Chinese translations. Based on the findings, this part will explore the translation strategies applied during the process, analyzed through the lens of Skopos theory.

## 5.1. Manner translation

### 5.1.1. Manner verb translation

As previously discussed, manner verbs are motion verbs that convey the manner of movement and are prominently featured in satellite-framed languages<sup>[5]</sup>. Slobin highlighted that satellite-framed languages have a more extensive and nuanced lexicon of manner verbs compared to verb-framed languages, which allows for richer and more detailed expressions of motion events.

The typological classification of Chinese remains debated within linguistic circles. This article identifies that manner verbs in the English novel *The Call of the Wild* are rendered differently in its Chinese translations, a finding consistent with earlier research by Li and Bai<sup>[18]</sup>.

In this section, the focus will be on analyzing the translation strategies used for manner verbs during the E-C translation process. These strategies will be discussed by using Slobin's manner verb categorization as a framework, while applying Skopos theory to illustrate how goal-oriented translation decisions are made to adapt manner expressions effectively in Chinese translations.

#### (1) First-tier manner verbs translation

##### i. Manner<sub>(first-tier)</sub> Verb → Manner<sub>(first-tier)</sub> Verb

Slobin categorized manner verbs into two tiers. The first-tier verbs are those that describe basic and general motions encountered in everyday life, such as *run* (“跑”), *fly* (“飞”), *climb* (“爬”), *jump* (“跳”), and *walk* (“走”). These verbs often have direct equivalents in both Chinese and English, likely due to the fundamental nature of human cognition at this level. Lakoff<sup>[33]</sup> argued in *Women, Fire, and Dangerous Theories: A Critique of Lakoff's Theory of Categorization* that people from diverse cultural backgrounds generally share basic-level categorizations because of universal cognitive capacities. This shared categorization explains why first-tier manner verbs in Chinese and English align closely and have nearly identical counterparts.

As a result, during the translation process, when manner information is expressed using first-tier manner verbs, translators often opt for a literal translation. They employ the equivalent Chinese manner verbs to create a faithful rendition of the source text. This approach maintains the clarity and fidelity of the original content. Below is an example illustrating this translation strategy.

#### Example 2

- a. He walked to the center of the open space and listened.
- b. 它走到空旷地中间听着。Text (Liu)
- c. 它走到平野的中央处听着。Text (L & Z)

It is widely recognized that the movement “walk” represents a common type of motion in everyday experiences and does not carry complex manner information. It serves as a quintessential first-tier manner verb with an exact equivalent in Chinese, “走.” Since both “walk” and “走” convey the same manner and motion, both translators of the selected versions opted for a literal translation. This approach aligns with Skopos theory and the fidelity rule: the source text's meaning is preserved as closely as possible, ensuring that readers are provided with the necessary motion information to fully comprehend the narrative.

##### ii. Manner<sub>(first-tier)</sub> Verb + Adverbial → Adverbial + Manner<sub>(first-tier)</sub> Verb

Furthermore, when first-tier manner verbs are accompanied by manner adverbials (words or phrases) to convey additional manner information, translators often adopt a similar approach by translating both the adverbials and the manner verb literally. This strategy ensures that the vividness of the source text is retained in the target text, preserving both the motion and the descriptive richness for the reader. Below is an example illustrating this translation approach.

### Example 3

- a. A moisture came into his eyes, and, as the whipping continued, he arose and walked irresolutely up and down.  
b. 他眼睛湿润了，鞭子还在抽着，他起身犹豫不决地走来走去。Text (Liu)  
c. 他的两眼已带着泪花，当哈尔的鞭子，继续地打在巴克的身上时，他站了起来，踌躇不决地走来走去。

Text (L & Z)

In this example, the manner information is conveyed through a combination of a first-tier manner verb and an adverbial: *walked irresolutely*. The verb *walk* has an exact equivalent in Chinese, “走,” which is why it is translated literally in the example. The adverb *irresolutely*, which describes a state of hesitancy or uncertainty, has similar meanings to certain Chinese adverbs, such as “犹豫不决地” and “踌躇不决地,” both used in this context. This demonstrates that when first-tier manner expressions and their accompanying adverbials in the source text have corresponding expressions in Chinese, translators often choose a literal translation. This approach ensures that the manner and descriptive quality of the English text are fully conveyed, achieving the same communicative intent as the original.

#### iii. Manner<sub>(first-tier)</sub> Verb → Manner<sub>(second-tier)</sub> Verb

In addition to translating literally, a less common approach of first-tier manner verb translation is found from the samples collected, which is rendering the first-tier manner verb into second-tier manner verb, as shown in example 4.

### Example 4

a. ...and with a ferocious snarl he bounded straight up into the blinding day, the snow flying about him in a flashing cloud.

b. .... 发出一声凶猛的嚎叫，纵身跃入眼花缭乱的白昼，此时正大雪纷飞。Text (Liu)

c. .... 他发出极其凶猛的咆哮，一跃就跳到那昏眩的白日中，雪就像闪光的云彩似的，在他的周围飞舞。

Text (L & Z)

As a domesticated dog raised in an affluent household, Buck had never encountered a hostile environment prior to his abduction. The scene depicted in this sentence takes place shortly after Buck's capture, set in the frozen Alaskan Klondike. The source text uses the first-tier manner verb *fly* to describe the motion of heavy snow. While *fly* has a direct equivalent in Chinese, “飞” translated literally would result in expressions like “大雪飞” or “在他的周围飞,” which sounds unnatural to Chinese readers.

To maintain the vividness and readability of the narrative, both Chinese translations employ a different strategy. Rather than using the first-tier manner verb “飞,” the translators use second-tier manner verbs such as “纷飞” (describing snow or other light objects floating wildly in the air) and “飞舞” (implying movement like dancing through the air). This choice enhances the description, making the snow scene more picturesque and aligning with the Skopos theory's principle of adapting translation to achieve the intended effect on the target audience.

Additionally, in example 4a, the phrase “大雪纷飞” can be seen as a four-character idiom in Chinese. In this context, the translator combines the figure “snow” and the manner verb “fly” into a widely used and familiar expression in Chinese. This approach aligns with typical Chinese linguistic conventions, enhancing the readability of the translation. Thus, it adheres to the principle of coherence, ensuring that the target text is sufficiently comprehensible and culturally appropriate for its intended readers.

#### (2) Second-tier manner verbs translation

As previously mentioned, the classification of Chinese as a satellite-framed language remains a topic of debate. Satellite-framed languages are characterized by a more extensive and varied manner verb lexicon compared to other language types. Beyond the basic, first-tier manner verbs, the source text of *The Call of the Wild* employs many second-tier manner verbs that convey more nuanced and detailed motion information, a categorization proposed by

Slobin.

As indicated by the results above, the original English novel showcases a more extensive collection of second-tier manner verbs compared to its Chinese translations. This lexical disparity can create significant challenges in the E-C translation process. To address these challenges and ensure that the target readers' experience is preserved while maintaining the original essence of this adventure story—central objectives in translating this novel—the following translation patterns and strategies are implemented from the perspective of Skopos theory:

iv. Manner<sub>(second-tier)</sub> Verb → Adverbial + Manner<sub>(first-tier)</sub> Verb

As demonstrated by the results above, English possesses a larger lexicon of second-tier manner verbs compared to Chinese. Consequently, in the translations of *The Call of the Wild*, it is evident that when dealing with second-tier manner verb expressions, translators often avoid literal translation, unlike the approach taken with first-tier manner verbs. Instead, they opt to convey specific and detailed meanings by compensating with additional words, such as adverbials, to preserve the richness of the original text. An example of this translation strategy is presented below.

**Example 5**

a. Only Spitz quivered and bristled as he staggered back and forth, snarling with horrible menace, as though to frighten off impending death.

b. 只有斯皮茨颤抖着，毛发竖立，摇晃着走来走去，威胁地发出可怕的嗥叫，好像要把降临的死神吓跑似的。Text (Liu)

c. 只有司披资前后摇摇欲跌地震动着走着，倒竖着毛，好像要驱逐这迫切的死似地，发出可怕的威胁的咆哮。Text (L & Z)

The situation depicted in example 5 happens during the battle between Buck and Spitz. Buck is cleverer and stronger than Spitz, and Spitz is wounded in the fight. The second-tier verb “stagger” describes the motion of “walking or moving unsteadily, as if about to fall.” It is explained as “蹒跚” in Oxford Advanced Learner's English-Chinese Dictionary. However, the Chinese word “蹒跚” is usually used to describe an elder's behaviors, so it is rarely used to describe the motions of animals because it sounds strange in a literal sense. Under this situation, the manner verb “stagger” is translated into the first-tier manner verb “走” (walk) in both translation versions. Manner information is encoded in manner adverbials “摇晃着” (wobbling) and “摇摇欲跌地震动着” (shaking, as if to fall) before the first-tier verb “走” in order to produce an acceptable and fidelity text.

v. Manner<sub>(second-tier)</sub> Verb + Adverbial → Adverbial + Manner<sub>(first-tier)</sub> Verb

When second-tier manner verb and manner adverbial are combined to describe manner information, the complex manner information and adverbial could be translated together to modify a first-tier motion to deliver rich meaning.

**Example 6**

a. At daybreak they limped warily back to camp, to find the marauders gone and the two men in bad tempers.

b. 黎明时它们一颠一跛、小心翼翼地走回营地，发现抢劫者们已走了，两个男人心情不好。Text (Liu)

c. 天明的时候，它们都谨慎小心地，跛着脚地走回那帐篷里去，知道那些掠夺者已经退去，那两位主人现着不高兴的样子。Text (L & Z)

In the source text, the author uses the second-tier manner verb “limp” along with the adverbial “warily” to create a vivid portrayal of the wounded dogs returning to camp after a fierce battle with marauders. Unlike the basic motion of “walk,” the manner verb “limp” implies a state in which the dogs move slowly and with difficulty due to an injured leg. However, Chinese lacks an exact equivalent for this manner verb. To maintain the target text's fidelity and vividness, both translators choose to convey this additional manner information by incorporating adverbials such as “一颠一跛地” and “跛着脚地.” These adverbials indicate that the figures are moving with difficulty due to leg



injuries, effectively mirroring the manner conveyed by the original English term.

For the adverbial “warily,” which adds an extra layer of caution in the original, the translators use Chinese adverbials with similar meanings, such as “小心翼翼地” (with caution) and “谨慎小心地” (with caution). They then combine these adverbials with the first-tier manner verb “走,” resulting in phrases like “一颠一跛、小心翼翼地走” and “谨慎小心地，跛着脚地走。” This approach effectively conveys the complete manner information of the motion event from the source text, vividly depicting the characters’ movement and adhering to the fidelity and Skopos principles of Skopos theory.

vi. Manner<sub>(second-tier)</sub> Verb → Adverbial Phrase + Manner<sub>(first-tier)</sub> Verb

In addition to adding adverbials and combining them with first-tier manner verbs, adverbial phrases can also be used to translate complex second-tier manner verbs. This strategy ensures that the detailed motion information in the source text is preserved and conveyed effectively in the target language. Example 7 illustrates this approach.

**Example 7**

- a. Buck staggered over against the sleds, exhausted, sobbing for breath, helpless.
- b. 巴克摇摇晃晃走过去靠在雪橇上，精疲力竭，呜呜地喘气，不知所措。Text (Liu)
- c. 巴克走上前靠着橇车，摇摇欲跌地站不住脚。精疲力竭地呻吟着喘着气。Text (L & Z)

In this example, the verb “stagger” is used to depict another type of walking in motion events, indicating movement that is unsteady, as if the individual is about to fall. To convey this nuanced manner in translation, the first version employs the adverbial “摇摇晃晃” to modify the motion verb and provide additional context, effectively capturing the essence of the original movement.

The second translation takes a different approach, using the adverbial phrase “摇摇欲跌地站不住脚” to convey the same manner message. This phrase elaborates on Buck’s weakened state and the appearance of being on the verge of falling as he moves toward the sleds. This method not only describes the unsteady motion but also emphasizes Buck’s vulnerability, aligning with both the fidelity and Skopos principles. By employing these strategies, the translators ensure that the manner message from the source text is fully preserved, offering a vivid and faithful depiction that maintains the original’s communicative intent.

vii. Manner<sub>(second-tier)</sub> Verb → Manner<sub>(second-tier)</sub> Verb

Although previous examples illustrate significant differences between English and Chinese in terms of second-tier manner verbs, there are still instances where overlaps exist between the two languages. The following example demonstrates this overlap.

**Example 8**

- a. Again he wandered about through the great camp, looking for them, and again he returned.
- b. 它又穿过大营地徘徊着，再回到原处。难道在这里？不，那不可能，否则它就不会被赶出来了。Text (Liu)
- c. 它又在那个大的帐篷之间徘徊着，寻找它们，于是又回了转来。Text (L & Z)

The second-tier manner verb “wander” suggests a movement that is leisurely or aimless, and it is rendered in Chinese as “徘徊。” According to the *Modern Chinese Dictionary*, “徘徊” means “往返回旋，来回走动” (walking back and forth) and “彷徨，游移不定的样子” (being uncertain about which way to go). This indicates that “wander” and “徘徊” carry nearly identical semantic meanings, with both words encoding a similar sense of manner. Consequently, “wander” is translated literally in both Chinese versions, faithfully preserving the original manner and meaning. This approach ensures that the translation remains accurate while conveying the nuanced sense of the original term effectively in the target language.



### 5.1.2. Manner description translation

In addition to manner verbs, adverbials, and adverbial phrases, it can also be noted that manner information is sometimes conveyed through descriptive passages. Özçalışkan and Slobin<sup>[31]</sup> refer to these as descriptions of the “internal state or physical condition of a moving entity” or as “features of the physical setting that could influence the manner of motion.” Although such manner descriptions are not as commonly employed as manner verbs or adverbials, they do appear in English texts in certain instances.

#### Example 9

At another time Spitz went through, dragging the whole team after him up to Buck, who strained backward with all his strength, his fore paws on the slippery edge and the ice quivering and snapping all around.

#### Example 10

在这时候, 那一组惊慌失措的拖车的狗子, 都从它们的巢穴里跑了出来, 却被这凶猛的入侵者包围攻击。  
Text (L & Z)

In example 9, the phrase “dragging the whole team after him up to Buck” provides a physical setting that allows readers to infer the manner of motion, emphasizing the forceful and strenuous nature of the movement. Similarly, in example 10, the internal state of the moving entity is described as “那 一组惊慌失措的拖车的狗子” (the group of panicky sled dogs), which gives readers insight into the manner of movement by depicting the dogs’ distressed state.

The findings from the previous part reveal that these descriptions are typically retained during the translation process. The collected data indicates that such descriptions often consist of nouns, adjectives, and phrases. However, the translation strategies for these phrases can vary depending on the context. This section will explore how manner description phrases are rendered during the E-C translation process, discussing the methods translators use to maintain the narrative’s descriptive quality and ensure the target text aligns with the source’s intended effect.

viii. Manner Description<sub>(adverbial phrase)</sub> → Manner Description<sub>(adverbial)</sub>

#### Example 11

- One wolf, long and lean and gray, advanced cautiously, in a friendly manner.
- 有一只又长又瘦的灰狼小心而友好地走上前来。(Text Liu)
- 内中有一匹长瘦灰色的狼, 很小心地走进前来, 现出亲和的样子。(Text L & Z)

This sentence describes Buck’s encounter with a wolf in the wild. The adverbial phrase “in a friendly manner” is used as a description to help readers infer how the wolf approaches Buck, supplemented by the manner adverbial “cautiously.” In translating this manner description, the translators adopted different strategies.

In Text (L & Z), the adverbial phrase is translated into “很小心地走进前来, 现出亲和的样子,” which effectively conveys the manner information but results in a phrase that may not flow smoothly in modern Chinese. Conversely, in Text (Liu), the manner description in the original English sentence is rendered as an adverb “友好地,” combined with the manner adverbial “cautiously.” This approach translates the complete manner information in a more concise and fluent way, producing an expression that feels more natural in Chinese and aligns with the coherence rule of Skopos theory.

A similar translation strategy is observed in example 11, where both translators use a shift in the form of description phrases to create more fluid and acceptable target texts. This strategic adaptation ensures that the meaning is preserved while producing a translation that resonates better with target readers.

#### Example 12

- John Thornton was eating dinner when Buck dashed into camp and sprang upon him in a frenzy of affection, overturning him, scrambling upon him, licking his face, biting his hand.
- 约翰·桑顿正在吃饭, 这时巴克突然冲进营地, 满怀爱意发狂地向他扑去, 把他推倒, 爬在他身上,

舔他的脸，咬他的手。Text (Liu)

c. 巴克跳进天幕来时，蒋沙登正在用膳。它感情并发地一直扑上沙登的身上，把他扑翻在地，爬在他身上舔他的脸咬他的手。Text (L & Z)

In the source text, the manner message is conveyed through the adverbial phrase “in a frenzy of affection,” vividly illustrating Buck’s emotion when he reunites with his owner, John, and depicting how Buck throws himself on John with fervor. In the target text, translators use similar descriptive expressions in Chinese, such as “满怀爱意发狂地” (with affection, crazily) and “感情并发” (with many emotions). These translations effectively capture Buck’s emotional reaction at the reunion after a long separation, allowing readers to infer Buck’s posture and movement as he throws himself on his owner, just as the source text does. This approach aligns with the Skopos rule by achieving the intended purpose of the original description.

When descriptions are expressed as attributive phrases, translators similarly adopt strategies that maintain naturalness and fluency in the target language. This method ensures that the translated text resonates with the target audience while preserving the meaning and vividness of the original.

ix. Manner Description <sub>(attribute phrase)</sub> → Manner Description <sub>(adverbial)</sub>

### Example 13

a. Straight away he raced, with Dolly, panting and frothing, one leap behind.

b. 它速度很快，多利气喘吁吁、口吐白沫紧跟其后。Text (Liu)

c. 他冲出去，杜利只后它一步，喘着气流着口沫地追逐着。Text (L & Z)

Example 13 describes a chase scene that occurs when the dog Dolly goes mad. The attribute phrase “panting and frothing” serves as a descriptive element, illustrating the physical condition of the character to help readers infer the manner and state in which it chases Buck. Instead of translating the phrase “panting and frothing” directly as an attributive phrase, both translators choose to shift its form. Liu translates it as an adverbial phrase modifying the motion verb “紧跟” (to follow closely), and the other translators employ a similar approach.

This shift in translation strategy ensures that the description is rendered in a form that reads smoothly and naturally in Chinese. Such adjustments align with the Skopos theory’s coherence rule, which emphasizes that the target text must be coherent and accessible to the reader, maintaining the intended effect and purpose of the original narrative.

## 5.2. Path translation

### 5.2.1. Path verb translation

When path information is integrated into a motion verb, that verb is known as a path verb. While English is generally recognized as a satellite-framed language and, according to Talmy, tends to combine manner or cause components in motion events, it also contains numerous path verbs that incorporate path and motion components. This characteristic aligns English partially with verb-framed languages such as French and other Romance languages, from which many English path verbs are derived.

Chinese, too, uses path verbs in motion event descriptions, and there is some overlap between English and Chinese regarding the meaning conveyed by certain path verbs. For instance, the English path verb *follow* has a counterpart in the Chinese verb “跟,” and *exit* corresponds to the Chinese verb “出.”

Therefore, when translating common English path verbs, translators can often use the equivalent Chinese path verbs to convey the meaning concisely and effectively, as shown in the following example:

x. Path Verb → Path Verb

### Example 14

a. But Spitz, cold and calculating even in his supreme moods, left the pack and cut across a narrow neck of land where the creek made a long bend around.

b. 但斯皮茨即使处于最极端的情绪时，也是冷静而精明的，它离开了狗群，抄一条狭窄小路跑去，这里的支河弯度很长。Text (Liu)

c. 但是，司披资那怕就是在这极度的快活的时候，仍是冷静而有打算。它离开了那个狗群，从那小河绕了一个大湾的狭颈的地方，横切了过去。Text (L & Z)

In this example, the English path verb “left” encapsulates both motion and path information, conveying the meaning of “to go away from something.” The Chinese path verb “离开” expresses the exact same meaning as “leave,” making it an ideal equivalent. As a result, both translators choose to translate “leave” literally into “离开” in their target texts. This approach ensures that the full meaning of the path component in the source text is accurately conveyed, aligning with the principles of fidelity and the Skopos rule in Skopos theory. This method effectively preserves the intended message and ensures the translated text meets the communicative goals of the original.

#### xi. Path Verb → Ø

Moreover, in some cases, path verbs can be entirely omitted when they convey less critical information, and the omission does not impact the reader’s comprehension. This strategy is often employed to streamline the translation and maintain fluency in the target text. By selectively omitting less significant path details, translators ensure that the translation remains concise and natural, aligning with the Skopos theory’s coherence rule, which emphasizes readability and the target text’s overall effectiveness. This approach allows translators to prioritize essential narrative elements while preserving the meaning and purpose of the source text.

### Example 15

a. Guided by that instinct which came from the old hunting days of the primordial world, Buck proceeded to cut the bull out from the herd.

b. 巴克过去在原始世界捕猎中获得了一种本能，凭着这种本能它开始把雄麋鹿和鹿群断开。Text (Liu)

c. 从原始世界的狩猎时代传来的本能教巴克设法使杜鹿和他互相隔开。Text (L & Z)

In the sample source text describing Buck’s battle with the bull, the motion verb “proceeded” conveys the path information of “moving forward.” However, instead of translating this into its equivalent path verb in Chinese, “前进,” both translators opt for omission as their translation strategy. This decision is made because the path information conveyed by “proceeded” is not crucial; its absence does not impact sentence comprehension. A literal translation would make the sentence unnecessarily redundant. The omission of this path verb during the translation process aligns with the coherence rule of Skopos theory, ensuring that the target text remains clear and effective without superfluous detail.

## 5.2.2. Path satellite translation

A satellite is defined by Talmy in *Toward a Cognitive Semantics* as “the grammatical category of any constituent other than a noun-phrase or prepositional-phrase complement that is in a sister relation to the verb root.” The results indicate that, as a typical satellite-framed language, English often uses satellites to express path information in motion events rather than path verbs.

Regarding Chinese satellites, this article adopts Talmy’s perspective, which views directional complements combined with manner verbs as satellites in a motion event. According to Liu <sup>[34]</sup>, it is widely recognized that Chinese satellites primarily include words like 来 (come), 去 (go), 进 (enter), 出 (exit), 上 (up), 下 (down), 回 (return), 起 (rise), and 开 (open), forming a closed and fixed set of directional complements.

The approaches for translating path satellites are outlined as follows.

xii. Satellite → Satellite

**Example 16**

a. Pike, who had been trembling abjectly, took heart at this open mutiny, and sprang upon his overthrown leader.

b. 派克一直可怜巴巴地发抖，这时也因公开的反抗增添了勇气，向它被推倒的头儿扑去。Text (Liu)

c. 拔格最先是卑屈地震动着，可是看见巴克这么公然的叛逆，便得了勇气，就像那倒下了下去的领导者跃去。Text (L & Z)

In this example, the verb “sprang” functions as the manner verb, conveying the action of moving or jumping suddenly and rapidly upwards or forwards. The satellite “upon” indicates the direction of the motion. In both translations, although the manner verb “sprang” is translated differently, with the constructions “扑去” and “跃去” being used, both employ the combination of a manner verb and a satellite to represent the motion event.

It is noteworthy that the satellite “upon” is rendered as “去” in both translations, fitting into the aforementioned closed-set word class of Chinese satellites. This demonstrates how English motion events using satellites can be effectively translated into Chinese by maintaining the manner verb + satellite structure, ensuring that the motion’s path and direction are preserved. This strategy aligns with Skopos theory by preserving the original motion information while producing a translation that is coherent and natural for the target audience.

xiii. Path Verb + Satellite → Path Verb + Ø

Due to differences in word formation between English and Chinese, there are instances where satellites cannot be translated literally. To create a more readable and natural text, English satellites and the accompanying path verb may be shifted into a single Chinese path verb, as demonstrated in the following example.

**Example 17**

a. His transient masters since he had come into the Northland had bred in him a fear that no master could be permanent.

b. 自他进入北国以来，主人一个接一个换了不少，因此担心不会有一个永久的主人。Text (Liu)

c. 自从它到北地以来，他所从属的那些暂时的主人，已使它得到一个危机，那即是使他怕没有一个永久的主人。Text (L & Z)

In the source text, the path information is conveyed through the combination of the path verb “come” and the satellite “into,” describing a scene where the character moves from one place to another, specifically to the Northland. The satellite “into” corresponds to “进” in Chinese. However, translating the path satellite and path verb literally would result in an unnatural or awkward target text.

To ensure readability, the path information is rendered using Chinese path verbs like “进入” and “到,” which convey similar path meanings as in the source text. These translations preserve the original path information while creating a coherent and natural target text. This shift in word choice adheres to the coherence rule of Skopos theory, ensuring that the translation is both faithful to the original meaning and accessible to the reader.

### 5.3. Ground translation

Ground refers to the reference object in a motion event, providing context for the movement described. As Talmy<sup>[5]</sup> suggests speakers of verb-framed languages often use motion verbs without explicitly including ground components in motion event clauses. However, in satellite-framed languages like English, ground information is frequently included in descriptions of motion events. This pattern is also reflected in the examples from *The Call of the Wild*.

To create smooth and readable translations while providing sufficient context for readers to understand the plot, translators employ flexible strategies when handling ground components. The following example illustrates how this



flexibility can be applied.

In this instance, ground information from the source text may be retained, adapted, or subtly incorporated to maintain the coherence and flow of the target text. This approach ensures that the translated version aligns with the Skopos theory's coherence rule, balancing fidelity to the source with readability and naturalness in the target language.

xiv. Ground<sub>(plus)</sub> → Ground<sub>(plus)</sub>

#### Example 18

a. In the meantime, the astonished team-dogs had burst out of their nests only to be set upon by the fierce invaders.

b. 与此同时，受惊的队狗也从窝里冲出来，却遭到凶残的入侵者袭击。Text (Liu)

c. 在这时候，那一组惊慌失措的拖车的狗子，都从它们的巢穴里跑了出来，却被这凶猛的入侵者包围攻击。Text (L & Z)

The ground component in a motion event can be categorized into three types: source (e.g., “from the forest” and “从树林里”), medium (e.g., “cross the forest” and “穿过树林”), and goal (e.g., “walk into the forest” and “走进树林”). In this specific example, the ground component “out of their nest” serves as the source, indicating where the astonished team-dogs emerge from during an attack. This source information provides essential background support, helping to set the scene and clarify the starting point of the action.

In translation, this type of ground component is necessary to retain to ensure that the full context of the story is conveyed. Thus, in this case, the plus-ground clause is translated literally to preserve the background information and enhance the reader's understanding. This approach aligns with the Skopos rule and the fidelity rule, ensuring that the translation remains faithful to the source text while providing coherence and readability in the target language.

xv. Ground<sub>(plus)</sub> → Ground<sub>(minus)</sub>

In some instances, translators may choose to transform a plus-ground clause into a minus-ground clause to create a sentence that flows more smoothly and is more acceptable to target readers. This involves omitting the ground component when it is not critical for understanding the action or when including it might make the sentence cumbersome or overly detailed.

#### Example 19

a. Yet he knew that here was horror, and fled away from it in a panic.

b. 但它知道可怕的事就在眼前，于是惊恐地逃去。Text (Liu)

c. 但是，它还是知道这种情形是可怕的，就狼狈地逃走了。Text (L & Z)

In this example, the pronoun “it,” referring to a place, serves as the ground component in a plus-ground clause in the English text. However, during the translation process, this ground component is omitted in both translations. This omission is necessary because rendering “it” literally as “它” would result in a sentence that does not conform to natural Chinese expression and would be awkward or unacceptable to readers. Such a literal translation would violate the intratextual coherence rule, which requires that the target text be sufficiently coherent and fluent to allow readers to comprehend it seamlessly within their cultural and linguistic context. This strategic omission ensures that the translation remains readable and consistent with typical Chinese language conventions.

xvi. Ground<sub>(minus)</sub> → Ground<sub>(plus)</sub>

To enhance the readability of the target text and aid readers' comprehension of the story, translators may choose to transform minus-ground clauses into plus-ground clauses by explicitly adding ground information. This strategy ensures that the context of the motion event is clearer and more detailed, helping readers visualize the scene more effectively. The following example demonstrates this approach:



By incorporating ground information that was implicit or absent in the original, the translator provides additional background that enriches the narrative and aligns with the reader's expectations. This method not only improves the coherence and descriptive quality of the text but also adheres to the Skopos theory's goal of creating a purposeful and effective translation that fulfills the communicative intent of the source text.

#### Example 20

a. But when he was at last unearthed, and Spitz flew at him to punish him, Buck flew, with equal rage, in between.

b. 但是它终于被发现了，斯皮茨扑过去惩罚，而巴克也同样愤怒地冲到它们之间。Text (Liu)

c. 但是，当后来拔格终于被掘了出来，司拔资为处罚它，扑向它去的时候，巴克也带着同样的狂暴势子，也扑在它们之间。Text (L & Z)

In the previous context, Buck openly challenges Spitz's leadership, prompting Spitz to stir up conflicts with other dogs to assert his dominance, which sets the stage for this scene. Example 20 describes a fight involving Buck, Spitz, and Pike. In the original English text, the reference subject relative to which Buck moves is not explicitly mentioned, making it a minus-ground clause.

In the target translations, however, the translators choose to render this as a plus-ground clause by adding the pronoun “它们” (them) as the ground component. From the perspective of the Skopos rule, this translation strategy prevents the pitfalls of a literal translation. If “in between” were translated directly as a minus-ground clause, resulting in “在之间,” the target sentence would be awkward and poorly structured, violating the coherence principle. By adding “它们” to create a plus-ground clause, the translation remains smooth, coherent, and comprehensible, fulfilling the communicative purpose and readability requirements of the target text.

## 5.4. Summary

The previous chapter shows the differences in the expression of motion event components (manner, path, and ground) between English and its translations. The reason for these differences is that the translator is flexible in choosing translation strategies rather than simply translating literally. This reflects the idea of Skopos theory: translation should not stick to the source text but should meet the purpose of it.

In this chapter, the main translation strategies of these motion event components are selected and analyzed from the perspective of Skopos theory. This chapter finds that when translating first-tier manner verbs, translators can directly convey the faithful translation by literal translation, or provide a more readable target text according to the context by adding more information. When translating second-tier manner verbs, supplementary adverbials can be compensated to modify motion verbs, in order to make up for the lack of a second-tier manner verb lexicon in Chinese. During the translation of manner descriptions, translators are very likely to retain the description and shift the form of it to produce more readable texts. Regarding path translation, Chinese translators have preferences in shifting it into path verbs according to the habit of target language expressions, in addition to literal translation. While translating the ground component, Chinese translators tend to retain it or omit it in order to make the target text more acceptable to the target readers.

## 6. Conclusion

From the perspective of Skopos theory, this article examined how manner, path, and ground components of motion events are translated from English into Chinese using *The Call of the Wild* and its two Chinese translations as case studies.

Through locating, counting, and comparing these motion event components in both the source and target texts, the research identified several key findings: The English text features a greater number of second-tier manner verbs

than the translations when expressing manner components; The Chinese translations utilize a larger number of manner adverbials (words and phrases) compared to the English source text; The number of manner descriptions remains consistent between the source and target texts; The English source text frequently uses path satellites to express path components, while these are less common in the Chinese translations; Chinese translators often favor path verbs over satellites in path translation; The percentage of plus-ground information retained in Chinese translations is slightly lower than in the English source text.

The differences in expression between the source and target texts are attributed to the flexible translation strategies employed to meet the purpose of the source text. Due to the basic-level categorizations shared by all humans, there is significant overlap between English and Chinese in the use of first-tier manner verbs, which can often be translated literally to effectively convey the intended meaning. However, when it comes to second-tier manner verbs, Chinese, with its smaller and less varied manner verb lexicon compared to English—a prototypical satellite-framed language—compensates by using adverbials to capture the detailed meaning conveyed by English verbs. This method ensures that manner information is retained and enriched, aligning with the characteristics of satellite-framed languages.

For path information, English path verbs can often be directly translated into their Chinese equivalents. When English satellites cannot be rendered directly, translators shift to using path verbs in Chinese, aligning with the Skopos theory's goal-oriented approach. Regarding ground components, there is minimal difference between Chinese and English in retaining these elements, with reductions made only when necessary to enhance the target text's readability.

These findings suggest that the Chinese translations analyzed in this study do not fully replicate the typological features of the English source text, a strong satellite-framed language. This approach reflects the central principle of Skopos theory: translation should be purpose-oriented rather than source-oriented. Skopos theory advocates for translators to choose strategies that achieve the translation's purpose, rather than rigidly adhering to the source text's form, which can be insightful for translating motion events with components lexicalized differently across languages. A strict, source-oriented translation may conflict with the natural language habits of the target language, thus impacting the coherence and readability of the translated text.

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# Cultural Memory in Sounds: A Musical Anthropological Interpretation of the Newly Composed Guangdong Han Opera “Tianfeng Haiyu Meihuadu”

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**Abstract:** This paper employs the theories and methods of music anthropology to conduct a deep analysis of the newly composed Guangdong Han Opera “Tianfeng Haiyu Meihuadu.” By exploring its musical forms, performance rituals, and the cultural connotations of the Hakka people, it reveals the unique cultural memory embedded in the musical aspects of the opera. The study finds that “Tianfeng Haiyu Meihuadu” is not only a representative work of the newly composed Guangdong Han Opera but also an important carrier of Hakka cultural inheritance and dissemination. Its music and performance are closely linked to the history, emotions, and social life of the Hakka people, providing a vivid example for understanding the characteristics of Hakka culture and the functions of musical culture.

**Keywords:** Guangdong Han Opera; Tianfeng Haiyu Meihuadu; Music anthropology; Hakka culture; Cultural memory

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## 1. Introduction

Guangdong Han Opera, as one of the three major opera genres in Guangdong, boasts a profound historical and cultural heritage, earning the reputation of being the “Peony of the South”<sup>[1]</sup>. It integrates the characteristics of Central Plains culture and Lingnan culture, exhibiting the charm of regional culture through unique music and performance forms. “Tianfeng Haiyu Meihuadu” is a newly composed large-scale production of Guangdong Han Opera, themed on the solemn and stirring history of the Hakka people’s migration to Southeast Asia<sup>[2]</sup>. It vividly portrays the Hakka people’s patriotism and fighting spirit during a specific historical period.

Music anthropology emphasizes studying music within a cultural context, focusing on the interrelationships between music and factors such as society, culture, and history. From this perspective, the music in “Tianfeng Haiyu Meihuadu” is not merely auditory art but also carries significant symbols of Hakka cultural memory. Through an anthropological interpretation of the opera’s music, this paper delves into the cultural connotations behind it, understands its role in the inheritance and development of Hakka culture, and explores how it reflects the collective



memory and identity of the Hakka people.

## **2. Cultural background and plot overview of “Tianfeng Haiyu Meihuadu”**

### **2.1. Historical background of Hakka migration to Southeast Asia**

The migration of Hakka people to Southeast Asia is a magnificent chapter in history <sup>[3]</sup>. Since the Ming and Qing dynasties, due to factors such as livelihood and warfare, a large number of Hakka people left their hometowns and traveled across the ocean to seek a better life in Southeast Asia and other regions. They endured hardships in foreign countries, worked hard, and gradually established themselves overseas. In this process, the Hakka people not only spread Chinese culture but also absorbed local cultural elements, forming a unique overseas Hakka culture.

“Qiaopi” is an important cultural phenomenon in the history of Hakka migration to Southeast Asia <sup>[4]</sup>. It refers to remittance vouchers sent back to China by overseas Chinese through informal channels and financial and postal institutions, often accompanied by letters or simple messages. These vouchers carried the thoughts and concerns of overseas Chinese for their families at home, reflecting the socio-economic conditions of that time and the life experiences of the overseas Chinese.

### **2.2. Plot introduction of “Tianfeng Haiyu Meihuadu”**

Set in the late Qing Dynasty, “Tianfeng Haiyu Meihuadu” tells the story of Tang Haishun (Shun Shu), a water carrier who frequently travels between Southeast Asia and Meizhou, delivering “Qiaopi” for his villagers <sup>[5]</sup>. By chance, he learns that his townsman Ye Changlin has been working overseas for many years without any news, and his wife, Youying, struggling in poverty, is forced to sell their young daughter to treat her mother-in-law’s illness. Youying tearfully begs Shun Shu to find Ye Changlin and redeem their daughter. Shun Shu embarks on a journey to find Ye Changlin, enduring countless hardships and searching throughout Southeast Asia. He even crosses the ocean to find Ye Changlin working on the construction of the Trans-Pacific Railway in the Sierra Nevada Mountains of the United States. On their way back to Meizhou, they encounter many misfortunes such as shipwrecks, but Shun Shu remains committed to his promise and ultimately completes his mission.

Meihuadu, as an important scene in the opera, symbolizes the place where the Hakka people depart and return. The ancient town of Meihuadu gathers the spirit of the Hakka people of that era, embodying their steadfastness, patriotism, perseverance, and enterprising spirit.

## **3. Musical form analysis of “Tianfeng Haiyu Meihuadu”**

### **3.1. Singing music**

#### **3.1.1. Vocal music system**

The singing system of Guangdong Han Opera is rich and diverse, with Pi and Huang tunes as the main component, integrated with various vocal styles such as Kunqu and Gaoqiang. It also adopts Zhongzhou rhyme as the stage language. This diverse fusion characteristic is fully reflected in “Tianfeng Haiyu Meihuadu.”

As the dominant part of the opera’s singing, the Pi and Huang tunes play unique roles. The Xipi tune, with its bright rhythm and smooth melody, has strong narrativity and expressiveness. It is often used to express characters’ excited emotions, tense plots, and cheerful scenes. For example, in the singing passage where Shun Shu decides to embark on a journey to find someone, the use of the Xipi tune makes the rhythm compact and the notes jump powerfully, fully highlighting his courageous and resolute character traits and determination. Through a high-pitched and bright voice, combined with the melody of the Xipi tune, the actor showcases Shun Shu’s lofty aspirations

vividly, allowing the audience to deeply feel his inner sense of justice and responsibility.

The integration of Kunqu adds a delicate and graceful charm to the singing of “Tianfeng Haiyu Meihuadu.” Known for its elegant and beautiful style, Kunqu plays a significant role in some lyrical scenes. For instance, in singing passages that express the character’s delicate emotions, the Kunqu melody flows gently like a babbling brook, unfolding the character’s inner feelings delicately and making the audience more deeply experience their inner world.

The application of Gaoqiang plays a crucial role in expressing the character’s intense emotions and dramatic conflicts. Characterized by its high-pitched and passionate style, Gaoqiang often pushes the atmosphere to a climax when the plot develops into tense and intense conflicts. For example, during the singing passage where Shun Shu and Ye Changlin encounter a shipwreck, the use of Gaoqiang makes the melody soaring and passionate. Through powerful singing, combined with the rhythm and melody of Gaoqiang, the actors portray their struggle and strong desire for survival on the brink of death, creating a shocking experience for the audience and immersing them in the thrill of the shipwreck and the resilience of the characters.

### **3.1.2. Melody characteristics**

The melody of “Tianfeng Haiyu Meihuadu” possesses distinct Hakka characteristics and strong emotional expressiveness, closely related to Hakka culture and dialect features.

The melody line mainly consists of stepwise and small jumps, which not only align with the phonetic characteristics of the Hakka dialect but also make the melody easy to sing. Adopting Zhongzhou rhyme as the stage language, combined with the rich tones and melodious voice of the Hakka dialect, the stepwise and small jumps in the melody better complement the changes in dialect tones, making the lyrics more natural and smoother when sung. For instance, in some narrative singing passages, the melody progresses steadily and smoothly, telling the story like a detailed narration, allowing the audience to clearly understand the content of the lyrics. When expressing the excited emotions of characters or emphasizing certain important scenes, the use of small jumps creates certain ups and downs in the melody, enhancing the expressiveness of the music and the infectiousness of the plot.

### **3.1.3. Lyric characteristics**

Lyrics are an integral part of “Tianfeng Haiyu Meihuadu,” exhibiting strong cultural characteristics of the Hakka people. The lyrics are simple and vivid, and heavily utilize Hakka dialect vocabulary and colloquial expressions, fully showcasing the unique charm of the Hakka language. For example, phrases like “not afraid of hardship” and “searching for loved ones” are commonly used expressions in the Hakka dialect, giving the lyrics a distinct regional cultural flavor of the Hakka people and allowing the audience to experience the rich Hakka customs.

The lyrics are closely centered around the plot, combining narration with lyrical expression, and possess strong infectiousness. In terms of narration, the lyrics detail the characters’ experiences and the development of the story, enabling the audience to clearly understand the context of the plot. For instance, when Shun Shu sings about his arduous journey of searching for people in Southeast Asia, the lyrics vividly describe the various difficulties and challenges he encounters, making the audience feel like they are accompanying him on that treacherous journey. In terms of lyrical expression, the lyrics deeply convey the characters’ emotions. For example, when Youying sings about her missing daughter, the delicate lyrical description reveals her inner thoughts and suffering, allowing the audience to deeply feel her helplessness and deep love as a mother.

## **3.2. Instrumental accompaniment**

### **3.2.1. Use of traditional instruments**

The traditional instruments of Han Opera in Guangdong play an indispensable role in the accompaniment of “Tianfeng

Haiyu Meihuadu.” Their unique timbres and playing characteristics add rich colors to the music of the opera.

As the leading instrument, the first string occupies a central position in the orchestra. Its bright and crisp sound, with strong penetrating power, can clearly lead the melody in the orchestra, setting the tone and dominating the musical rhythm. The playing of the first string is particularly prominent in some important arias and scenes. For example, when Shun Shu appears, the first string, with its unique melody and rhythm, lays the groundwork for his image, showing Shun Shu’s integrity and courage through lively melodies. In some tense and exciting plots, the fast playing and passionate melodies of the first string enhance the tension and drama of the storyline, making the audience’s emotions rise accordingly.

String instruments such as the dihu (two-stringed Chinese fiddle) and yehu provide rich harmonic support for the singing. The soft and mellow sound of the dihu and the slightly ancient and mellow sound of the yehu complement each other with the first string, forming a harmonious string combination. When actors sing, the playing of string instruments varies according to the melody and emotion of the singing, enriching the musical hierarchy. When the singing is more lyrical, the string instruments highlight a warm and romantic atmosphere with gentle playing. When the singing is passionate, the string instruments increase their intensity, echoing the singing and enhancing the expressive power of the plot.

### **3.2.2. Functions of percussion instruments**

Percussion instruments play an important role in creating an atmosphere, enhancing emotions, and controlling the rhythm in “Tianfeng Haiyu Meihuadu.” Their use makes the storyline more vivid, tense, and dramatic.

The combined use of percussion instruments such as drums, gongs, and cymbals can create various sound effects according to the needs of the plot. When portraying a shipwreck scene, the rapid drum beats are like surging waves, and the strong sound of gongs and cymbals is like the howling of the wind. They intertwine to simulate a turbulent and dangerous sea, creating a tense and dangerous atmosphere. This immersive experience allows the audience to feel the fear and struggle of the characters in the shipwreck.

Percussion instruments can also express characters’ emotional changes through rhythm variations. When a character is emotionally excited, the rhythm of the percussion instruments speeds up and the intensity increases to highlight the character’s excitement. When the character is calm, the percussion instruments play in a gentle and slow rhythm, creating a peaceful atmosphere.

### **3.2.3. Coordination between music and performance**

The instrumental accompaniment and actors’ performances are closely coordinated and intertwined in “Tianfeng Haiyu Meihuadu,” creating a splendid stage effect.

When actors sing, the instrument playing closely matches the singing, varying according to the rhythm, melody, and emotions of the singing, enhancing the expressive power of the performance. When actors sing high notes, the volume of the instruments increases appropriately, and the playing intensity is strengthened to highlight the exciting emotions. When actors sing low notes, the instruments accompany them with gentle playing, highlighting the lyrical atmosphere. For example, when You Ying sings an aria expressing sadness, the string instruments accompany her with a slow and gentle melody, complementing her singing and rendering the sadness even more deeply.

Music can also enhance the infectivity of actors’ performances by creating an atmosphere. In some emotionally profound scenes, the melody and rhythm of the music can enhance the corresponding atmosphere, allowing actors to better integrate into their roles and express their characters’ emotions. At the same time, it also makes it easier for the audience to immerse themselves in the storyline and emotionally resonate with the characters.

## **4. Performance ritual and cultural significance of “Tianfeng Haiyu Meihuadu”**

### **4.1. Components of the performance ritual**

The performance ritual of “Tianfeng Haiyu Meihuadu” encompasses various elements such as actor makeup, costume dressing, stage arrangement, and stylized movements during the performance. The actors’ makeup follows the tradition of Guangdong Han Opera, with different designs based on the character’s personality, identity, and gender. For instance, the female roles have delicate and elegant makeup, while the male roles exhibit a more dignified look.

Costume dressing is also meticulously considered, with various characters wearing clothing that reflects their specific styles and symbolic meanings. For example, Shun Shu’s attire represents his identity as a traveler, being simple and practical, while Youying’s clothing showcases the traditional dress style of Hakka women, which is concise and elegant.

The stage arrangement creates different atmospheres through sets and props, such as the quaint scene of Meihuadu or the exotic ambiance of the South Seas. Stylized movements during the performance, including singing, reciting, acting, and fighting, are integral to Guangdong Han Opera. The actors showcase these movements with exquisite skill, conveying the plot and characters’ emotions.

### **4.2. Cultural significance of the performance ritual**

The performance ritual of “Tianfeng Haiyu Meihuadu” carries multiple cultural significances. Firstly, it serves as a showcase of Hakka culture, allowing viewers to intuitively experience its unique characteristics, such as Hakka clothing and architectural culture, through the actors’ performances and stage presentations.

Secondly, the performance ritual fulfills the function of inheriting cultural memory. As a traditional art form, Guangdong Han Opera bears the historical memories and cultural traditions of the Hakkas. During the performance, elements like music and acting pass down the historical stories and spirit of the Hakkas’ journey to the South Seas, enabling the younger generation to understand and remember their ancestors’ struggling journey.

Furthermore, the performance ritual enhances social cohesion. Watching the show becomes a cultural activity shared by Hakkas and other audiences. In this process, people share cultural experiences, strengthening their cultural identity and sense of belonging, and promoting social cohesion.

## **5. Hakka cultural memory carried by “Tianfeng Haiyu Meihuadu”**

### **5.1. Native land emotion and struggling spirit**

The characters’ experiences in the play deeply reflect the Hakkas’ native land emotion and struggling spirit. Shun Shu, determined to fulfill Youying’s entrustment, bravely crosses mountains and rivers to find Ye Changlin, demonstrating the Hakkas’ emphasis on loyalty and responsibility towards others.

Ye Changlin and other Hakkas work hard overseas, participating in building the Trans-Pacific Railway, showcasing their diligence and perseverance. While struggling in a foreign country, they never forget their hometown and maintain contact through “overseas Chinese letters,” reflecting a strong native land emotion. These spirits constitute an essential part of Hakka cultural memory, inspiring generations of Hakkas.

### **5.2. Cultural identity and identity construction**

“Tianfeng Haiyu Meihuadu” reinforces Hakka’s cultural identity and identity construction by exhibiting Hakka cultural elements. The music, costumes, language, and other elements in the play possess distinct Hakka characteristics, serving as cultural symbols that evoke Hakkas’ sense of identity and belonging to their culture.

For overseas Hakkas, watching the play allows them to revisit their hometown's cultural memories and strengthen their identification as Hakkas. Simultaneously, the play showcases the unique charm of Hakka culture to other groups, promoting cultural exchanges and understanding, and facilitating the spread and recognition of Hakka culture in a broader context.

## 6. Conclusion

As a newly composed representative repertoire of Guangdong Han Opera, “Tianfeng Haiyu Meihuadu” vividly showcases the rich connotations of Hakka culture through its unique music, performances, and storyline. From the perspective of ethnomusicology, the play's musical forms and performance rituals are closely linked to Hakka cultural memory, making it a crucial carrier for inheriting and expressing Hakka culture.

Studying this play not only provides insights into the artistic characteristics and cultural values of Guangdong Han Opera but also offers a clearer understanding of music's essential role in cultural inheritance, social cohesion, and identity recognition. In the current globalized context, protecting and inheriting traditional art forms like Guangdong Han Opera is significant for maintaining cultural diversity and preserving national cultural memory. In the future, further research and promotion of traditional arts such as Guangdong Han Opera should be strengthened to unleash new vitality in the new era and continuously inherit and promote the excellent cultural traditions of the Chinese nation.

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## Disclosure statement

The authors declare no conflict of interest.

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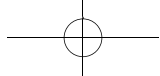
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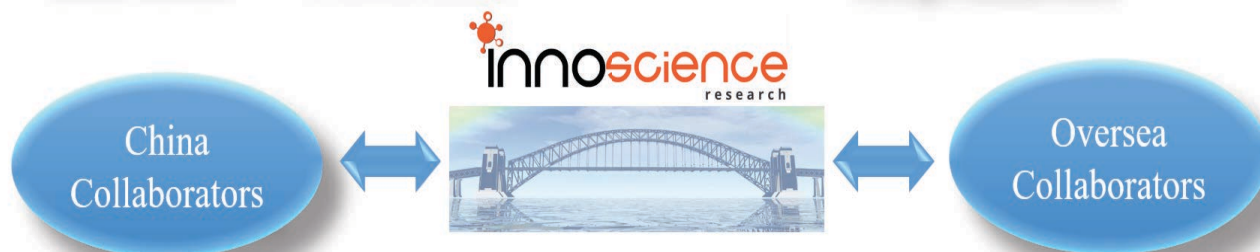
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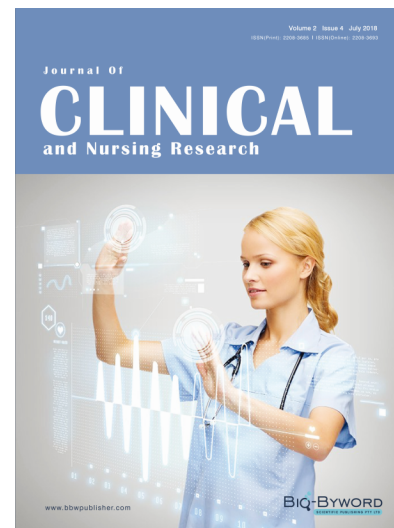
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